IN THE UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

In re:	§	Chapter 11
	§	
RHODIUM ENCORE LLC, *et al.*,[1]	§	Case No. 24-90448 (ARP)
	§	
Debtors.	§	
	§	(Jointly Administered)
	§	

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC
(Relates to ECF Nos. 953, 954, 1069, 1413)

IF YOU OBJECT TO THE RELIEF REQUESTED, YOU MUST RESPOND IN WRITING. UNLESS OTHERWISE DIRECTED BY THE COURT, YOU MUST FILE YOUR RESPONSE ELECTRONICALLY AT HTTPS://ECF.TXSB.USCOURTS.GOV/ BY TUESDAY, AUGUST 12, 2025. IF YOU DO NOT HAVE ELECTRONIC FILING PRIVILEGES, YOU MUST FILE A WRITTEN OBJECTION THAT IS ACTUALLY RECEIVED BY THE CLERK BY TUESDAY, AUGUST 12, 2025. YOU MUST SERVE A COPY OF YOUR RESPONSE ON THE PERSON WHO SENT YOU THE NOTICE; OTHERWISE, THE COURT MAY TREAT THE PLEADING AS UNOPPOSED AND GRANT THE RELIEF REQUESTED.

[1] The Debtors in these chapter 11 cases and the last four digits of their corporate identification numbers are as follows: Rhodium Encore LLC (3974), Jordan HPC LLC (3683), Rhodium JV LLC (5323), Rhodium 2.0 LLC (1013), Rhodium 10MW LLC (4142), Rhodium 30MW LLC (0263), Rhodium Enterprises, Inc. (6290), Rhodium Technologies LLC (3973), Rhodium Renewables LLC (0748), Air HPC LLC (0387), Rhodium Shared Services LLC (5868), Rhodium Ready Ventures LLC (8618), Rhodium Industries LLC (4771), Rhodium Encore Sub LLC (1064), Jordan HPC Sub LLC (0463), Rhodium 2.0 Sub LLC (5319), Rhodium 10MW Sub LLC (3827), Rhodium 30MW Sub LLC (4386), and Rhodium Renewables Sub LLC (9511). The mailing and service address of the Debtors in these chapter 11 cases is 2617 Bissonnet Street, Suite 234, Houston, TX 77005.

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Pursuant to Rule 56 of the Federal Rules of Civil Procedure, as made applicable to this proceeding by Federal Rule of Bankruptcy Procedure 7056, Rhodium Encore LLC, and its affiliates, as debtors and debtors in possession (collectively, the "Debtors" or "Rhodium") in the above-captioned chapter 11 cases, hereby file this summary judgment motion in support of *Debtors' Amended Omnibus Objection To Claim Numbers 004, 062, and 068-072 Filed by Midas Green Technologies LLC* (the "Objection") set for remote hearing at 8:30 am on August 22, 2025.[2] In support of this motion, the Debtors respectfully state as follows:

INTRODUCTION

1. Midas Green Technologies, LLC ("MGT," "Midas Green," or "Midas") submitted itself to this Court's jurisdiction by filing multiple proofs of claim seeking at least $25 million—and as much as $43 million. Its claims are based on alleged patent infringement at Debtors' former Temple and Rockdale locations. Midas's claims so utterly lack merit that Midas cannot maintain them in good faith. This is true for at least two independent reasons:

2. First, Midas already litigated its claims and lost. Midas's proofs of claim attached the same operative complaint it previously filed in District Court—without informing this Court that the District Court already considered the issues and claim and found in Rhodium's favor on summary judgment. The upshot is that multiple doctrines bar Midas from taking another bite at the apple in this forum. Midas's only counterargument is to assert that because it was unwritten, the District Court's noninfringement ruling is not final. That assertion misstates the facts and the law. And Midas has only attempted to respond to two of the doctrines that foreclose its claims (issue and claim preclusion). It has offered no answer to the other doctrines (law of the case, which

[2] Capitalized terms used but not otherwise defined herein have the meaning ascribed to them in the Objection.

does not require finality, and a doctrine unique to patent litigation called *Kessler*). All four doctrines shield Debtors as a matter of law from having to relitigate infringement.

3. Second, on the merits, Midas's infringement claim is baseless. The record before the District Court and this Court makes clear that Rhodium never used any invention patented by Midas. This is true for multiple reasons, but this motion focuses on one reason that applies to every claim in both of the Midas patents: Every claim of both patents contains a requirement that Rhodium's accused facilities obviously and demonstrably lacked. Specifically, every asserted claim in both patents requires a "control facility adapted to coordinate the operation of" two different fluid circulation facilities—a first and a second—"as a function of the temperature of the dielectric fluid in the tank," which holds and cools bitcoin miners.

4. Rhodium maintained tank cooling systems at Rockdale and Temple, an example of which is below:[3]

5. In each system, the tanks contained miners submerged in the liquid to help keep them cool while they mined bitcoin. Although every asserted claim of both Midas patents requires

[3] Rhodium used two models of accused tanks at its two facilities, but they operated similarly and did not differ in any way relevant to the infringement analysis.

the invention to have had or used a claimed "control facility" adapted to coordinate the operation of two different facilities for circulating the liquid based upon the temperature of the fluid in the tank, Rhodium had and did nothing of the sort. Not at Temple, where the main system Midas accused was never completely installed and was concededly inoperable. And not at Rockdale, at which Midas levied throw-away allegations it never meaningfully sought to defend or substantiate at summary judgment. At both facilities it is beyond dispute that Rhodium never measured or made any attempt to assess the temperature of the fluid in its immersion tanks. It did not use, and was not adapted to control or coordinate, anything based upon that tank-fluid temperature. In fact, Rhodium did not coordinate its two circulation facilities based on any temperature. Because its systems lacked necessary features, Rhodium did not infringe in the past. And because Rhodium has now sold both facilities, Rhodium cannot be found to infringe in the present or future.

6. Midas's claims thus fail as a matter of law, and the Court should enter summary judgment for Rhodium.

7. What's more, Midas has no good faith basis to continue maintaining its claims of alleged patent infringement against the Debtors. Pursuant to Rule 11 and 35 U.S.C. § 285, Midas should drop these claims immediately. If Midas elects to continue pressing its baseless claims after the Rule 11 safe harbor period, Debtors will seek compensation for costs and attorneys' fees the estate is forced to incur defeating the claims (again).

UNDISPUTED FACTS

I. The District Court Case

8. On January 13, 2022, Midas filed suit against Rhodium in the Western District of Texas (the District Court), *Midas Green Technologies, LLC v. Rhodium Enterprises, Inc. et al.*, Case No. 6:22-CV-00050-ADA, and amended its original complaint for patent infringement several times. It filed its operative complaint, the Third Amended Complaint ("TAC"), on March

29, 2023, naming defendants Rhodium Enterprises, Inc., Rhodium Technologies LLC, Rhodium 10MW LLC, Rhodium 2.0 LLC, Rhodium 30MW LLC, Rhodium Encore LLC, Rhodium Renewables LLC, Rhodium Renewables Sub LLC, and Rhodium Ready Ventures LLC (collectively, "Rhodium" or "Debtors").

9. In the TAC, Midas alleged that the liquid immersion cooling systems Rhodium used at its previously owned Temple and Rockdale facilities infringe certain claims of two patents, U.S. Patent No. 10,820,446 (the "'446 Patent") and U.S. Patent No. 10,405,457 (the "'457 Patent")[4] both entitled "Appliance Immersion Cooling System."

10. Midas's TAC accused Rhodium of infringing several claims of both the '446 and 457 Patents. However, by the time the case reached summary judgment, Midas had dropped the '446 Patent entirely, and had abandoned its infringement arguments as to all but two claims of the '457 Patent – Claims 1 and 5. **Exhibit 14**. Claim 1 of the '457 Patent is an "independent" claim. Among its limitations, it requires:

> a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

Exhibit 1, col. 9, ll. 56-69.

11. Claim 5 of the '457 Patent is "dependent" on Claim 1 – to cover a narrower invention (in the event Claim 1 were to be invalidated), it incorporates all of the limitations of Claim 1, including the control facility limitation, and then adds others (which are not germane to this motion).

[4] A true and correct copy of the '446 Patent is attached hereto as **Exhibit 2**.

12. As a result: to infringe Claims 1 and/or 5 of the '457 Patent, the only theories Midas sought to take to trial, Rhodium's tank systems must meet the control facility limitation.[5]

13. Rhodium's co-founder Chase Blackmon designed key aspects of its liquid immersion cooling systems at Temple and Rockdale, which were proprietary to Rhodium and did not use any inventions patented by Midas. As this Court may judicially notice, one of the patent applications that names Mr. Blackmon as an inventor and was pending during the district court litigation has now issued to Rhodium Technologies. **Exhibit 16** (U.S. Patent No. 12,317,450).

14. Rhodium's Answer and Counterclaims to the Midas Third Amended Complaint denied infringement, including because a key limitation of its patents does not exist in Rhodium's cooling systems. **Exhibit 12**. The parties engaged in extensive litigation including 699 pages of written discovery, and over 700,000 pages of production documents, 6 expert reports, and 25 depositions. Brannen Decl. at ¶ 3. Reflecting Midas's narrowing of the case, the parties' infringement/non-infringement and damages expert reports addressed only Claims 1 and 5 of the

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[5] Midas cannot attempt to revive infringement theories it has abandoned, particularly at this late date. But, even if it could, the claims it has abandoned each contain the same control facility limitation discussed in this motion, so each revived theory would fail as a matter of law.

Midas previously also asserted Claims 1, 2, 5-7, 10, 11, 14 and 15 of the '457 Patent. Claims 1 and 6 are independent. Claims 2 and 5 depend from Claim 1 (that is, they incorporate and add to Claim 1) and Claims 7, 10, 11, 14, and 15 depend from Claim 6. From the '446 Patent, Midas previously asserted Claims 1, 2, 5-7 and 10. Claims 1 and 6 are independent. Claims 2 and 5 depend from Claim 1 and Claims 7 and 10 depend from Claim 6.

Each of Midas's asserted claims, therefore, incorporated the limitations of either Claim 1 or Claim 6 of the respective patents. And each of those independent claims includes a control facility limitation. Claim 1 in both patents requires "a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank." **Exhibit 1**, col. 9, ll. 56-69; **Exhibit 2**, col. 9, ll. 55-58. And, Claim 6 in both patents requires "a control facility adapted to control the operation of the primary fluid circulation facility as a function of the temperature of the dielectric fluid in the tank." As a result, each of the claims Midas has ever asserted fails for the reasons set out in this motion.

'457 Patent. In total, in the District Court Litigation Midas sought damages of up to $12 million through trial and almost $22 million.

15. Discovery closed on February 9, 2024. Trial was scheduled for April 22, 2024.

16. The parties filed numerous dispositive and other pretrial motions. On March 1, 2024, Rhodium filed the *Motion for Summary Judgement of Noninfringement* (the "Summary Judgment Motion")[6] arguing that Rhodium's immersion cooling systems lacked key features necessary for a finding of patent infringement. Specifically, Rhodium pointed out that Midas's patent describes a cooling system that uses the temperature of the fluid in the system's tank containing the bitcoin miners to control two different circulation facilities.[7] However, Rhodium's cooling systems do not even measure the temperature of the fluid in the tank, let alone use that temperature to control any of its processes.[8] Rhodium also filed *Daubert* motions aimed at Midas's technical and damages experts and certain motions in limine.

17. Midas subsequently filed responses opposing the motions. **Exhibit 4**; **Exhibit 7**. Rhodium filed replies. **Exhibit 5**; **Exhibit 8**.

18. The District Court held a pretrial conference on April 9, 2024.[9] At the conference, the Court granted Rhodium's *Daubert* motion to exclude challenged portions of Midas's technical expert, **Exhibit 9** at 13:12-18:6, 20:9-23, and the portions of Rhodium's damages *Daubert* motion with respect to lost profits (as opposed to reasonable royalty) damages, *id.* at 26-27, and with respect to damages calculated based upon sales projected to happen after trial, *id.* at 27-28. The

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6 A true and correct copy of the Summary Judgment Motion is attached hereto as **Exhibit 3**.
7 *See* **Exhibit 3** at 7.
8 *Id.*
9 A true and correct transcript of the April 9, 2024 hearing is attached hereto as **Exhibit 9**.

District Court indicated that the plaintiff would have the opportunity to have its expert redo the lost profits analysis. *Id.* at 27.

19. Later in the hearing—after considering extensive briefing and hearing argument on the Summary Judgment Motion—the District Court issued a bench ruling granting the Motion, ruling that Rhodium's systems do not infringe the asserted claims of Midas' '457 Patent. *Id.* at 54 at 10-13. The District Court declined to reach the motions in limine in light of its summary judgment ruling, and further concluded that its ruling "obviates the need for a trial." *Id.* at 54:16.

20. At the conclusion of the hearing, Midas requested the opportunity to re-address the District Court's ruling after revising its technical expert's report. *Id.* at 54 19-22. The Court expressed that it did not think there was anything additional an expert would say that would allow the plaintiff to re-address the summary judgment ruling and that it would let the parties know if that changed. *Id.* at 54-55. The Court never sought further submissions from the parties.

21. On February 3, 2025, the Debtors filed a Notice informing the District Court of this Court's ruling. The District Court clerk instructed the parties to submit their proposed form of order "reflecting" the Court's rulings, so that the Court could enter a written order "reflecting those rulings," *see* **Exhibit 15**, which they did on February 7, 2025. The District Court has not yet issued a written order.

II. The Proofs of Claim

22. On September 18 and November 21, 2024, Midas filed seven substantially similar proofs of claim alleging patent infringement against Debtors Rhodium Enterprises, Inc., Rhodium 10MW LLC, Rhodium 30MW LLC, Rhodium 2.0 LLC, Rhodium Technologies LLC, Rhodium

Renewables Sub LLC, and Rhodium Encore LLC.[10] To each claim, Midas attached its Third Amended Complaint filed in the District Court Litigation on March 29, 2023 (**Exhibit 11**), and listed a wide range as the claimed amount:

Claim Number	**Debtor**	**Claimed Amount**
004	Rhodium Enterprises, Inc.	No amount specified
062	Rhodium 30MW LLC	$933,685 – $2,422,095
068	Rhodium 10MW LLC	$410,351 – $913,154
069	Rhodium 2.0 LLC	$1,436,228 – $3,196,039
070	Rhodium Technologies LLC	$11,899,377 – $21,295,440
071	Rhodium Renewables LLC	$9,093,236 – $13,121,268
072	Rhodium Encore LLC	$1,025,877 – $2,282,885

23. In total, the Midas Claims amount to between approximately $25 million and $43 million in alleged damages. Midas has not attempted to substantiate those amounts, but they exceed what it claimed in the District Court and, based on its own expert analysis, necessarily include compensation for infringement continuing into the future—which is not possible after the sale of Temple and Rockdale.

24. Consistent with Midas's plan to force an expensive and time-consuming redo of the District Court Litigation in this new forum, Midas claims damages based on a calculation method that the District Court already rejected. The asserted value of Midas's patent claim is greatly overstated for several reasons, including that Midas roughly doubled its alleged damages by

[10] Midas does not appear to have filed a claim against Rhodium Renewables LLC – only Rhodium Renewables Sub LLC. However, Rhodium Renewables LLC is listed in Attachment A to each claim, whereas Rhodium Renewables Sub LLC is not.

impermissibly including future infringement—that is, acts of infringement it assumes will occur subsequent to the previously scheduled April 2024 trial, and to the Petition Date.[11] As the District Court noted, in granting-in-part Rhodium's *Daubert* motion to exclude Midas's damages expert, Midas was barred from seeking post-trial damages. Additionally, this sort of anticipatory damages cannot be used as the basis of its Claims against the Debtors. *See Porretto v. City of Galveston Park Bd. of Trs.*, 113 F.4th 469, 487 (5th Cir. 2024) ("…Porretto's claims all allege post-bankruptcy petition conduct. Generally, post-petition claims are not dischargeable in bankruptcy and, therefore, do not affect the estate.").

25. The unique context of these cases reveals the particularly odious nature of Midas' attempts to deplete estate resources based on future infringement that has not and will never occur. With this Court's approval, the Debtors have sold both the Temple and Rockdale cryptocurrency mining sites, as well as many of the purportedly infringing miner immersion cooling systems. As a result, there can be no ongoing or future infringement by Rhodium as the Midas patent claim presumes.

III. The Bankruptcy & Relevant Portions of the Bankruptcy Proceedings

26. On August 24, 2024 and August 29, 2024, the Debtors each filed a voluntary petition for relief under Chapter 11 of the United States Bankruptcy Code, 11 U.S.C. §§ 101-1330, as amended (the "Bankruptcy Code"), in the United States Bankruptcy Court for the Southern District of Texas (the "Bankruptcy Court"), *In re Rhodium Encore LLC et al.*, Case No. 24-90448 (Jointly Administered). On August 30, 2024, Rhodium filed a Suggestion of Bankruptcy in this Court (ECF No. 188), acknowledging this matter as stayed.

[11] **Exhibit 9** at 21:19-24, 22:3-23:23.

27. On January 7, 2025, the Debtors filed the *Debtors' Motion for Entry of an Order Granting Limited Relief from Automatic Stay to Continue District Court Litigation* (the "Stay Relief Motion") (ECF No. 611), seeking limited relief from the automatic stay to allow the District Court to issue an order memorializing its ruling. The Court entered an order granting the Stay Relief Motion on January 30, 2025.

28. On or about November 26, 2024, Temple was sold with this Court's approval (ECF No. 509). On or about April 8, 2025, Rockdale and substantially all of Rhodium's assets at the Rockdale facility were sold with this Court's approval (ECF No. 921).

ARGUMENT

I. Multiple Doctrines Bar Midas Green's Patent Infringement Claims

A. The District Court's Ruling is Final and Bars Midas's Claims as a Matter of Both Issue and Claim Preclusion

29. As Rhodium has previously explained, the doctrines of issue preclusion and claim preclusion bar Midas's patent infringement claims. The District Court considered the issue of Rhodium's infringement of Midas's liquid immersion cooling systems patents,[12] considered Midas's patent infringement claims, and "grant[ed] the motion for summary judgment of noninfringement."

30. As Debtors have previously explained, both doctrines thus bar Midas from asserting its patent infringement claim against them in these proceedings. (ECF Nos. 954, 1413) Issue preclusion bars parties from relitigating an issue that has already been decided by a final judgment of another court. *Montana v. United States*, 440 U.S. 147, 153 (1979). The doctrine works to "relieve parties of the cost and vexation of multiple lawsuits, conserve judicial resources, and, by

[12] Midas has previously conceded, as it must, that the District Court litigation concerns the same patent infringement at issue in this case. (ECF No. 1069 ¶ 5).

preventing inconsistent decisions, encourage reliance on adjudication." *Allen v. McCurry*, 449 U.S. 90, 94 (1980).

31. Res Judicata—or claim preclusion—relieves parties from litigating claims that have already been litigated. *SimpleAir, Inc. v. Google LLC*, 884 F.3d 1160, 1165 (Fed. Cir. 2018).[13] As with issue preclusion, claim preclusion promotes the twin public policy goals of judicial economy and finality of court judgments. *Senju Pharm. Co. v. Apotex Inc.*, 746 F.3d 1344, 1348 (Fed. Cir. 2014). It applies when "the scope of the asserted patent claims in the two suits is essentially the same." *Indivior Inc. v. Dr. Reddy's Lab'ys, S.A.*, 752 F. App'x 1024, 1034 (Fed. Cir. 2018).

32. Here, the patents and complaint are the same, and Midas concedes that it is pursuing the same causes of action it already litigated in District Court: its Claims are part of its effort to "pursue its claims for damages for patent infringement in District Court". (ECF No. 1069 ¶ 2). Midas thus cannot require the Debtors to relitigate successive patent infringement claims against the same systems. *Indivior Inc.*, 752 F. App'x at 1034 (claim preclusion bars further litigation "if the scope of the asserted patent claims in the two suits is essentially the same"); *Mars Inc. v. Nippon Conlux Kabushiki-Kaisha*, 58 F.3d 616, 620 (Fed. Cir. 1995) ("The injury claimed by Mars in the two complaints therefore does not give rise to separate causes of action for purposes of claim preclusion analysis…every act underlying Mars' cause of action in this suit is intimately intertwined with events that were litigated in *Conlux USA.*'"); *Ohio Willow Wood Co. v. Alps S., LLC*, 735 F.3d 1333, 1342 (Fed. Cir. 2013) ("Collateral estoppel protects a party from having to

[13] Claim preclusion applies when "(1) the parties in the later action are identical to, or in privity with, the parties in the earlier action; (2) the judgment in the earlier case was rendered by a court with proper jurisdiction; (3) there has been a final judgment on the merits; and (4) the earlier case and later case involve the same cause of action." *Duffie v. United States*, 600 F.3d 362, 372 (5th Cir. 2010).

litigate issues that have been fully and fairly tried in a previous action and adversely resolved against a party-opponent.").

33. In response, Midas has conceded that the District Court issued an "oral ruling," and "stated its intent to grant summary judgment in favor of the Debtors," (ECF No. 1069 ¶ 1), but has nevertheless taken the position that the District Court's ruling was not final. But the District Court's "grant of summary judgment constitutes a final adjudication" of Midas's patent claims. *Hibernia Nat. Bank v. Carner*, 997 F.2d 94, 104 (5th Cir. 1993), as clarified on denial of reh'g (Sept. 15, 1993); *In re Keaty*, 397 F.3d 264 (5th Cir. 2005) ("[C]ourts regularly apply the doctrine of issue preclusion in instances when there has not been a trial or evidentiary hearing in the first case....Courts also apply the doctrine of issue preclusion to issues decided on summary judgment—which itself does not require a trial or evidentiary hearing."); *see also* 18 James W. Moore et al., *Moore's Federal Practice* § 132.03 ("Issue preclusion generally applies when the prior determination is based on a motion for summary judgment.").

34. This is true even though the District Court ruled from the bench. "A bench ruling can be effective without a written order." *Ueckert v. Guerra*, 38 F.4th 446, 449 (5th Cir. 2022) (ruling is final if court "intended that its order be effective immediately"). "The fact that a ruling has not been memorialized in writing does not defeat the doctrine of collateral estoppel*." In re Armstrong*, 294 B.R. 344, 358 (B.A.P. 10th Cir. 2003), aff'd, 97 F. App'x 285 (10th Cir. 2004).

35. What matters is whether "the judge intends to have nothing further to do—with … the case." *Ueckert,* 38 F.4th at 450. If so, the ruling is final. *Id.* Here, the District Court cancelled trial, declined to hear the pending motions in limine, and requested a joint order reflecting its ruling. (Judge Albright stated: "[t]he Court is going to grant the motion for summary judgment of noninfringement. *I think that fully takes care of the case for the time being. I'm not going to take*

up the motions in limine *given my ruling* on that motion, which I think *obviates the need for a trial at this time*.") (emphasis added).

36. To contend, as Midas does, that the ruling was insufficiently final because Midas requested—and did not receive—a do-over defies reality. The position so lacks merit it is sanctionable. *Earlier in the hearing* the District Court had excluded Midas's technical expert while granting Rhodium's *Daubert* motion with leave to amend.[14] The District Court's *later* grant of summary judgment of noninfringement mooted that just as much as it obviated the need to decide the motions in limine or hold trial. In response to Midas's request to "readdress" the issue of summary judgment after amending its expert's report, the District Court said, "you've had your chance" and that it "d[id]n't think it [an amendment] would" benefit the Court, but that it would let Midas know.[15] The District Court never indicated, as Midas claims, that it was considering how to rule. Those polite statements do not negate the finality of its ruling, and Midas's arguments to the contrary represent a deliberate attempt to contort the record to serve its own ends.

37. In the year since, the only communication from the District Court to the parties occurred when its clerk instructed the parties to "submit a joint proposed order reflecting the parties' understandings of **Judge Albright's rulings at the 4/9/2024 hearing**," and stated that it intended to "enter the order **reflecting those rulings** shortly thereafter."[16] This email from chambers shows that it intends to memorialize its existing ruling that bars Midas's claim. These actions make clear that the case is over. This Court need go no further to deny Midas's bankruptcy claims as barred by issue and claim preclusion.

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[14] **Exhibit 9** at 13:12-18:6, 20:9-23.

[15] **Exhibit 9** at 54:19-55:3.

[16] *See* Jan. 30, 2025 email from Clerk Corey Brown to counsel attached hereto as **Exhibit 10**.

38. Nevertheless, Midas contends that a summary judgment *cannot* be valid without a fulsome explication of the Court's rationale. Wrong. Two of the cases Midas cites – Federal Circuit precedents—explicitly state that though preferable, explanation is *not* required. *Cable Elec. Prods., Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1021 (Fed. Cir. 1985) (affirming summary judgment and noting "there is no legal requirement that the rationale behind a nonpartial grant of summary judgment, including a recitation of undisputed factual inferences and applications of legal principles, be made explicit."); *Telectronics Pacing Sys., Inc. v. Ventritex, Inc.*, 982 F.2d 1520, 1526 (Fed. Cir. 1992) ("While certainly preferable from the viewpoint of a reviewing court, a trial court does not have to explicitly set forth findings and conclusions to support its decision on summary judgment.").

39. Midas's remaining authorities state only that if the trial court's reasoning cannot be determined, an appellate court *may* remand for further explanation. *Nazomi Commc'ns, Inc. v. Arm Holdings, PLC*, 403 F.3d 1364, 1371 (Fed. Cir. 2005) (remanding for additional explanation of the court's claim construction ruling where "the court construed the claims differently than" either party; here, the District Court adopted Rhodium's position completely); *Superior Fireplace Co. v. Majestic Prods. Co*., 270 F.3d 1358, 1377 (Fed. Cir. 2001) (remanding for clarification when the court ruled on a motion requiring analysis of a multi-factor test "without oral argument and without issuing an opinion"; here, the District Court held oral argument and only one fact was in issue); *Bott v. Four Star Corp.*, 807 F.2d 1567, 1574-75 (Fed. Cir. 1986) (remanding where the Court did not make a specific factual finding required to award damages; here, there is no disputed predicate factual finding); *Application of Frilette*, 423 F.2d 1397, 1401 (C.C.P.A. 197) (remanding for further explanation where the Court's rationale could have applied under more than one statute (35

U.S.C. §§ 101 and 112) and multiple prongs of one statute (§ 112); there is no statutory ambiguity here).

40. There is no ambiguity here. Rhodium moved for summary judgment on one ground, applicable to each asserted claim: that the Temple and Rockdale systems do not infringe because they do not, and cannot, coordinate anything as a function of the temperature of the fluid in the tanks. **Exhibit 3** at 6.

41. Rhodium showed that there is not a scintilla of evidence that its products meet this limitation, and Midas presented nothing to the contrary. There was, and is, no fact question for a jury to decide. Rhodium did not make any other arguments on which the District Court could have based its decision.[17] And the hearing transcript confirms that the Court in fact based its decision on the single non-infringement argument presented: the "control facility" limitation. **Exhibit 9** at 54:10-16.

42. The District Court entered a final, valid summary judgment based on Rhodium's single merits argument, recognizing the inexorable conclusion that Midas had not, and cannot, show that Rhodium meets the "control facility" limitation. No clarification of the District Court's final order is needed. This Court should likewise enter summary judgment.

B. The District Court's Noninfringement Ruling is the Law of the Case

43. On summary judgment, the District Court determined that Rhodium's liquid immersion cooling systems at Temple and Rockdale did not infringe Midas's patent claims as a matter of law. That determination is the law of the case. *See, e.g., Christianson v. Colt Indus. Operating Corp.*, 486 U.S. 800, 816-17 (1988) (noting that "the doctrine applies as much to the

[17] Of course, Rhodium contends that other such grounds exist, and would have presented them at trial had its motion been denied.

decisions of a coordinate court in the same case as to a court's own decisions" and that it "expresses the practice of courts generally to refuse to reopen what has been decided") (cleaned up).

44. Midas has attempted no answer to this argument and offered no reason to subject the Debtors to re-litigating what has already been decided. This doctrine "has also been used as a rule of comity for decisions made by trial courts." *Gulliford v. Thrash,* 8 F. App'x 766, 768 (9th Cir. 2001) (recognizing that doctrine applies to decisions of a coordinate court in the same case). *Id.* Midas has not offered, and cannot offer, any reason why this Court should do anything other than adhere to and apply the law of the case to the District Court's summary judgment determination of noninfringement. *See United States ex rel. Kennard v. Comstock Res., Inc.*, 2009 WL 10708957, at *8 (E.D. Tex. Feb. 20, 2009) (applying law of the case based on 10th Circuit ruling).

C. The Kessler Doctrine Also Bars Midas's Claims

45. To the extent there is any gap left by other preclusion doctrines, courts apply the *Kessler* doctrine, a type of preclusion specific to patent law, to fill it. On this issue, too, Midas has attempted no response.

46. Under the *Kessler* doctrine, Rhodium's liquid immersion cooling systems at its former Temple and Rockdale facilities enjoy a "non-infringing status" that cannot be undone in a second action. *See, e.g.*, *Wisconsin Alumni Research Foundation v. Apple Inc.*, 112 F.4th 1364, 1384-86 (Fed. Cir. 2024). *Kessler* and its progeny protect Rhodium's systems from subsequent actions alleging infringement. *SimpleAir, Inc.,* 884 F.3d at 1170 (the Kessler doctrine "protects 'an adjudged non-infringer' from 'repeated harassment for continuing its business as usual post-final judgment.'"); *Corning Inc. v. Wilson Wolf Mfg. Corp.*, 569 F. Supp. 3d 920, 933 (D. Minn. 2021).

47. Rhodium's right to have its confirmed noninfringing systems "freely bought and sold without restraint or interference" attached to its accused miners and liquid immersion cooling infrastructure in Temple and Rockdale, which have been sold with this Court's approval. *Wisconsin Alumni Rsch. Found.*, 112 F.4th at 1384–85 (quoting *Rubber Tire Wheel Co. v. Goodyear Tire & Rubber Co.*, 232 U.S. 413, 418 (1914)) (the non-infringer's right to have the product "freely bought and sold without restraint or interference" …. "attaches to its product—to a particular thing—as an article of lawful commerce") (cleaned up).

II. On the Merits, Midas Green's Infringement Claims are Baseless and Fail as a Matter of Law

48. As the patent holder, Midas must prove infringement by a preponderance of the evidence. Infringement is assessed on a claim-by-claim basis. That means, for each asserted patent claim, Midas must be able to present evidence that Rhodium made, used, sold, or offered for sale in the United States a product or system meeting all of the requirements of (i.e., "covered by") that claim. 35 U.S.C. § 271(a). But Midas has no evidence, and no right to prevent or seek compensation from Rhodium for using any of its inventions, because Rhodium's systems did not use, and were not covered by, any of Midas's patent claims.

49. There are a number of reasons why this is true—a number of reasons why Rhodium's Temple and Rockdale systems did not contain the elements of any of the Midas patent claims. At the hearing on August 22, Rhodium may discuss more than one of these reasons.[18] For purposes of this motion, however, Debtors focus on the same single argument, relying on the same briefing and evidentiary record, upon which they prevailed in District Court: a key limitation of

[18] Midas cannot prove infringement by Rhodium for all of the reasons stated in Rhodium's Answer and Counterclaims to the Midas Third Amended Complaint (**Exhibit 12**). For example, Rhodium has additional noninfringement arguments because its accused systems lacked the claimed weir and other elements required by the asserted claims. Rhodium also maintains its invalidity and unenforceability defenses and counterclaims.

Midas's patents was missing. It never existed in Rhodium's accused liquid immersion cooling systems. Because infringement would require Rhodium's systems to have had that limitation, but the systems at Temple and Rockdale never possessed the required feature (or anything like it), the systems did not (and do not) infringe as a matter of law.

50. In addition, to recover damages on its patent claims after any finding of infringement, Midas would have to prove the amount of its damages. If proven, Midas would be entitled to "damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer. . . ." 35 U.S.C. § 285. But the evidentiary record before the District Court and this Court make clear that Rhodium never made any such use. Nor, after the sale of Temple and Rockdale, will Rhodium ever make such use. And the expert opinions Midas proffered regarding damages were far too speculative to be admissible. As a result, Midas's proof of claim in this Court fails as a matter of law for a second reason: Midas cannot prove damages.

A. For the Same Reasons Proved in District Court, Rhodium Never Infringed

51. Assessing infringement requires comparing the limitations (i.e., elements) recited in the asserted patent claims to the instrumentality (e.g., the device or system) accused of infringement. *Markman v. Westview Instruments*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). "To find literal infringement, each limitation of the claim must be present in the accused device. Any deviation from the claim precludes such a finding." *Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1330 (Fed. Cir. 2001). Under the "doctrine of equivalents," infringement can also be shown if there are insubstantial differences, such that "the accused product performs substantially the same function in substantially the same way with substantially the same result" as claimed in the patent. *Crown Packaging Tech., Inc. v. Rexam Bev.*

Can Co., 559 F.3d 1308, 1312 (Fed. Cir. 2009); *Gemalto S.A. v. HTC Corp.*, 754 F.3d 1364, 1374 (Fed. Cir. 2014) ("A plaintiff must provide particularized testimony and linking argument to show the equivalents are insubstantially different.") (citation omitted).

52. Importantly, a plaintiff must show that the accused device infringes in its current state. *High Tech Med., Inc. v. New Image, Inc.*, 49 F.3d 1551, 1555 (Fed. Cir. 1995); *Telemac*, 247 F.3d at 1330 ("[T]hat a device is capable of being modified to operate in an infringing manner is not sufficient, by itself, to support a finding of infringement."). There is no infringement if a "new functionality not currently present" would have to be added for the device to meet the claim. *Nazomi Commc'ns v. Nokia Corp.*, 739 F.3d 1339, 1346 (Fed. Cir. 2014).

53. The asserted patent claims require two circulation facilities that must be governed by a "control facility," which is "adapted to coordinate" their "operation . . . ***as a function of the temperature of the dielectric fluid in the tank***." *See, e.g.*, **Exhibit 11** at ¶ 101 (describing limitations of '457 patent claims), 103 (describing limitations of '446 patent claims). In other words, to infringe Midas's asserted claims, Rhodium's cooling system must (1) take (or otherwise determine) the temperature of the dielectric fluid while it is in the tank, and (2) use that temperature to coordinate the two different circulation facilities.

54. As Rhodium's summary judgment briefing and supporting evidence presented in its opening and reply briefs established, Rhodium's cooling systems did not possess this limitation and were incapable of doing what it requires, for multiple reasons. They did not measure or even estimate the temperature of the dielectric fluid in the immersion tanks, and did not use that temperature to coordinate or control anything, let alone what Midas pointed to as the two different control facilities. It follows that Rhodium never used the patented inventions.

B. Rhodium's Temple Facility Lacked the "Control Facility" Limitation

55. In fact, as the summary judgment briefing and transcript from the District Court April 9, 2024, hearing make clear, the primary instrumentality Midas accused of infringement was a partially installed, inoperable system that a vendor (Prime Controls) had been engaged to install at Rhodium's former bitcoin mining facility located in Temple, Texas (the "Temple Facility"). That system was never completed and was incapable of measuring temperature, as Midas's expert witness on infringement conceded. He admitted that its temperature sensors were inoperable because they were not physically connected to the rest of the system:

> Q. Yeah, so I'm reading your testimony. "**Until the installation is completed by, among other things, connecting the sensors, it is not capable of sensing temperature, correct?**"
>
> And your answer was, "**Yeah, it's provisioned for, but it is not capable of right now.**"
>
> Are you changing that answer?
>
> A. **For it to be measuring the temperature, you need to connect it.** So it's provisioned for. **It's capable if you connect the sensor connectors together.**
>
> Q. **But in its present state, it is not capable of sensing temperature, correct?**
>
> A. **In the present state, it cannot measure temperature.**

Exhibit 3 at 222 (emphases added).[19] Because the system could not measure the temperature of the dielectric fluid, it obviously could not coordinate anything as a function of that temperature. Therefore, it was not and could not be "adapted to coordinate the operation" of other facilities "as

[19] See also **Exhibit 3** (Deposition Transcript of Rhodium 30(b)(6) witness Chase Blackmon) at 265 ("Q. Are there any temperature probes installed in the Kelvion coolers? A. Not to my knowledge."), 257-258, 263-265, 268 (Prime Controls installed saddles to leave option of adding sensors in future), 257-258 (there is no monitoring of fluid temperatures at the Temple facility).

a function of the temperature of the dielectric fluid in the tank," and could not meet the claim.[20] This is discussed more fully in Rhodium's summary judgment briefing. **Exhibit 3** at 13-14; **Exhibit 5** at 10-12.

56. Moreover, Temple's unfinished, unconnected sensors were not even located in the tanks, but in a different building. Thus, even if the sensors had been installed, they would have measured a different fluid temperature from the one in the tank—and could not infringe for that second, independent reason. Midas's infringement expert admitted the system was "designed to measure fluid temperature in the fluid pipes" entering and exiting the dry cooler, which was outside the building holding the tanks and "quite far away." **Exhibit 3** at 82, 233. These pictures from Dr. Pokharna's report show the path of the coolant fluid from the tanks through the pipes, to a separate building containing the dry cooler:

[20] Whether any of Rhodium's past or present systems *could*, if physically altered, coordinate its systems based on dielectric tank fluid temperature bears no relevance to the question of past or present infringement. *See Telemac*, 247 F.3d at 1330 ("[T]hat a device is capable of being modified to operate in an infringing manner is not sufficient, by itself, to support a finding of infringement.").

Exhibit 3 at 80.

57. Midas's expert admitted that the temperature in the pipes entering and exiting the dry cooler differed from the temperature in the tanks. **Exhibit 3** at 235-237; *but see id.* at 236 (admitting there would be heat loss from the fluid pipes during the winter). That difference alone means there can be no infringement. *Smith & Nephew, Inc. v. Arthrex, Inc.*, 2010 WL 457142, at *2 (E.D. Tex. Feb. 5, 2010) ("accused device [must] contain each limitation of the claim exactly; any deviation from the claim precludes a finding of literal infringement"). This is discussed more fully in Rhodium's summary judgment briefing. **Exhibit 3** at 14-19.

58. There is a third independent reason why there was no infringement: Rhodium's systems did not and could not use a temperature reading to coordinate the primary and secondary circulation facilities. Midas identified the structures that circulated fluid through the tank, including a pump and piping, as the primary fluid circulation facility. **Exhibit 3** at 79. For the secondary fluid circulation facility, Midas identified the dry coolers and their hardware. **Exhibit 3** at 81, 91, 100. But Midas presented no evidence that Rhodium's systems had "a control facility adapted to coordinate the operation of" these two facilities as a function of temperature. At most

it pointed to aspects of the systems that could allegedly affect one or the other, but not both. This does not meet the claim.

59. And even those inadequate assertions fall apart upon the slightest scrutiny. Midas pointed to a supposed "adaptive control system" for the Temple dry cooler that it claimed was "adapted to adjust the cooler's fan speed response to the temperature of the input and output fluid." **Exhibit 3** at 91. Even if true, that would show control of only the secondary facility (the dry cooler), not coordination of the secondary and primary facilities. This is discussed more fully in Rhodium's summary judgment briefing. **Exhibit 3** at 12; **Exhibit 5** at 14-15.

C. Rhodium's Rockdale Facility Also Had No "Control Facility"

60. The situation was the same for Rhodium's mining facility in Rockdale, Texas (the "Rockdale Facility"). At Rockdale, Rhodium could measure the fluid temperature *outside* of the immersion tanks—after it was pumped to another location for cooling, at the output point of the Guntner brand dry coolers (also called "evaporative coolers") located outside the building containing the tanks. As with Temple, that measurement was of a completely different temperature than the tank fluid, in a completely different location. Midas's expert report showed the dry coolers outside the building that contained the immersion tanks:

Exhibit 3 at 89.

61. Midas's expert conceded that in the Rockdale facility, the temperature sensors were located "in the output fluid line" and "sense[d] the temperature of the dielectric fluid flowing out of the evaporative cooler." **Exhibit 3** at 91. He admitted that this meant the temperature was measured after the fluid was cooled, when its temperature would be close to that of the outside air and similar to its temperature before it entered the tank. **Exhibit 3** at 239. Midas's expert conceded that was very different from the temperature of the dielectric fluid in the tank, where it is heated by anywhere from 36 to 54 degrees. *Id.* at 231-232. This obviously did not satisfy the limitation of the asserted claims of the '457 Patent (or the previously asserted and withdrawn '446 Patent) requiring the accused system to coordinate the two circulation facilities "as a function of the temperature of the dielectric fluid ***in the tank***." This is discussed more fully in Rhodium's summary judgment briefing. **Exhibit 3** at 19-20; **Exhibit 5** at 12-13.

62. As with Temple, Midas did not point to any system at Rockdale that was even arguably capable of coordinating the operation of the primary and secondary circulation facilities based on a temperature. Midas identified only a system that, it claimed, adjusted the fan speed of the dry cooler—that is *one* of the alleged circulation facilities, not both. **Exhibit 3** at 91. This is discussed more fully in Rhodium's summary judgment briefing. **Exhibit 3** at 12; **Exhibit 5** at 14-15.

D. Midas's Arguments Applicable to Both Facilities Failed the Red Face Test

63. For both facilities, Midas also made the absurd argument that Rhodium's use of software to reboot its miners when they overheated was an infringing act. But Midas did not even assert, much less show, that the rebooting of the miners coordinated the primary and secondary circulation facilities. The miners are not part of what Midas pointed to as the circulation facilities. And Midas presented no evidence whatsoever that the simple act of rebooting the miners coordinated the operation of either of those facilities, let alone both as the asserted claims require.

64. Nor did Midas present evidence that the temperatures of the chips and printed circuit boards in the miners were the same as the fluid temperature in the tank—its expert opined only that these temperatures were "correlated" with the tank fluid temperature in an unspecified way. **Exhibit 3** at 85. In other words, they are different from the fluid temperature in the tank, and using them to determine when to reboot could not be a function of the temperature of the dielectric fluid ***in the tank***. Midas's infringement theory fails for this additional, independent reason. This is discussed more fully in Rhodium's summary judgment briefing. **Exhibit 3** at 24-25; **Exhibit 5** at 13-14.

65. Midas also initially advanced various theories of infringement under the doctrine of equivalents, but these were so weak it omitted them entirely from its opposition to summary

judgment and thus waived them. *D&M Specialties, Inc. v. Apache Creek Props., L.C.*, Civ. Action No. SA-12-CA-588-FB, 2014 WL 12493290, at *3 (W.D. Tex. Aug. 21, 2014) ("Where a party fails to respond to arguments in the opposing party's motion for summary judgment, the points are conceded.") Rhodium's summary judgment briefing refuted these theories, and Midas did not attempt to defend them. **Exhibit 3** at 18 n. 39, 20-28; **Exhibit 5** at 7.

E. Midas's Bankruptcy Claim Also Fails Because Midas Cannot Prove Damages

66. The Court should also reject Midas's bankruptcy claims because Midas cannot possibly prove non-speculative damages. Midas's damages expert, J. Duross O'Bryan, offered two alternative calculations for Midas's supposed damages: a lost profits calculation and a reasonable royalty analysis. **Exhibit 6** at 42-43. O'Bryan offered these calculations both through the time of anticipated trial in the patent case and through 2026 (a calculation he reached by assuming that Rhodium would keep infringing even if it lost at trial). **Exhibit 6** at 173. The District Court easily rejected Midas' claims for post-trial damages, **Exhibit 9** at 27:17-28:14, which were based entirely on speculation, **Exhibit 6** at 17-19, and black-letter law confirms that Midas cannot recover post-petition damages via these claims, *Porretto*, 113 F.4th at 487 ("…Porretto's claims all allege post-bankruptcy petition conduct. Generally, post-petition claims are not dischargeable in bankruptcy and, therefore, do not affect the estate.").

67. But even if Midas were only to present O'Bryan's damages analysis through the time of trial (as scheduled before summary judgment), that analysis would be unreliable and inadmissible. The District Court excluded O'Bryan's lost profits analysis – and for good reason. **Exhibit 9** at 26:24-27:1. O'Bryan's lost profits analysis fails because O'Bryan cannot reliably testify that Midas would have captured Rhodium's sales in the absence of alleged infringement, **Exhibit 6** at 11-15, and inflated his conclusions by including millions of dollars in "convoyed

sales" (a patent doctrine allowing the seller of a patented invention to recover for sales of ancillary products with a "functional relationship" to the infringed device) by applying the wrong standard in an incomplete way. *Id.* at 15-17.

68. O'Bryan's reasonable royalty analysis is likewise unreliable. At the threshold, the analysis is entirely derivative of O'Bryan's inadmissible lost profits theory. *Id.* at 19-21. It is also rife with methodological errors, including that O'Bryan overlooked Midas's negotiations with its key customer (Riot) and did not address competing technologies. *Id.* at 21-25.

69. As a result: even if Midas might show infringement (and it can't), it will never be able to prove the amounts of its claims in any reliable way. (Instead, at most, it might be entitled to nominal damages. *Prism Techs., LLC v. Sprint Spectrrum L.P.*, 849 F.3d 1360, 1371-72 (Fed. Cir. 2017) (explaining that when a patentee fails to prove the amount of its injury, damages may be nominal); *see also Spex Techs., Inc. v. Western Digital Corp.*, 2025 WL 1748190, at *11 (C.D. Cal. June 16, 2025) (reducing a jury's award of $315.72 million to $1 because the damages amount was unsupported by evidence).) The Court should not let Midas waste estate resources on such futile claims.

CONCLUSION

The Court should enter summary judgment for Rhodium and dismiss Midas' claims.

RESERVATION OF RIGHTS

70. Nothing contained herein is intended to be or shall be deemed as (i) an admission as to the validity of any claim against the Debtors, (ii) a waiver or limitation of the Debtors' or any party in interest's rights to dispute the amount of, basis for, or validity of any claim, (iii) a waiver of the Debtors' rights under the Bankruptcy Code or any other applicable nonbankruptcy law, (iv) an agreement or obligation to pay any claims, (v) a waiver of any claims or causes of action which may exist against any creditor or interest holder, or (vi) an approval, assumption, adoption, or

rejection of any agreement, contract, lease, program, or policy under section 365 of the Bankruptcy Code. Likewise, if the Court grants the relief sought herein, any payment made pursuant to the Court's order is not intended to be and should not be construed as an admission to the validity of any claim or a waiver of the Debtors' rights to dispute such claim subsequently.

NOTICE

71. Notice of this Motion will be provided to (i) the Office of the United States Trustee; (ii) counsel to the Creditors' Committee; (iii) Midas, (iv) any other party that has requested notice pursuant to Bankruptcy Rule 2002; and (v) any other party entitled to notice pursuant to Local Rule 9013-1(d).

WHEREFORE, the Debtors respectfully request entry of the Proposed Order granting the relief requested herein and such other and further relief as the Court may deem just and appropriate.

Respectfully submitted this 29th day of July, 2025.

QUINN EMANUEL URQUHART & SULLIVAN, LLP

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Certificate of Service

I, Patricia B. Tomasco, hereby certify that on the 30th day of July, 2025, a copy of the foregoing Motion was served by the Electronic Case Filing System for the United States Bankruptcy Court for the Southern District of Texas and to Midas Green Technologies, LLC, c/o Joseph Thomas, 18101 Von Karman Avenue, Suite 230, Irvine, CA 92612, email jthomas@twtlaw.com.

/s/ Patricia B. Tomasco
Patricia B. Tomasco

IN THE UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

In re:	§	Chapter 11
	§	
RHODIUM ENCORE LLC, *et al.*,[1]	§	Case No. 24-90448 (ARP)
	§	
Debtors.	§	
	§	(Jointly Administered)
	§	

DECLARATION OF ELIZABETH BRANNEN IN SUPPORT OF DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

I, Elizabeth R. Brannen, pursuant to section 1746 of title 28 of the United States Code, hereby declare under penalty of perjury that the following is true to the best of my knowledge, information, and belief:

1. I am the Managing Partner of Stris and Maher LLP ("Stris" or the "Firm") and serve as special litigation counsel for Debtors in the above-referenced action. I submit this declaration (the "Declaration") in support of *Debtors' Summary Judgment Motion in Support of Amended Omnibus Objection to Claim Numbers 004, 062, and 068-072 Filed By Midas Green*

[1] The Debtors in these chapter 11 cases and the last four digits of their corporate identification numbers are as follows: Rhodium Encore LLC (3974), Jordan HPC LLC (3683), Rhodium JV LLC (5323), Rhodium 2.0 LLC (1013), Rhodium 10MW LLC (4142), Rhodium 30MW LLC (0263), Rhodium Enterprises, Inc. (6290), Rhodium Technologies LLC (3973), Rhodium Renewables LLC (0748), Air HPC LLC (0387), Rhodium Shared Services LLC (5868), Rhodium Ready Ventures LLC (8618), Rhodium Industries LLC (4771), Rhodium Encore Sub LLC (1064), Jordan HPC Sub LLC (0463), Rhodium 2.0 Sub LLC (5319), Rhodium 10MW Sub LLC (3827), Rhodium 30MW Sub LLC (4386), and Rhodium Renewables Sub LLC (9511). The mailing and service address of the Debtors in these chapter 11 cases is 2617 Bissonnet Street, Suite 234, Houston, TX 77005.

Technologies LLC (the "Motion"), contemporaneously filed herein.[2] Except as otherwise indicated, all statements in this Declaration are based on my personal knowledge and my review (or the review of others under my supervision) of (i) the patents at issue; (ii) the relevant pleadings and exhibits in *Midas Green Technologies, LLC v. Rhodium Enterprises, Inc. et al.*, Case No. 6:2022-CV-00050-ADA (W.D. Tex. 2022) ("the District Court Litigation"); and (iii) the Objection and related briefing filed in this Court. If called as a witness, I could and would competently testify to the facts set forth herein.

2. Since April 10, 2023, I have served as lead counsel representing Rhodium in the District Court Litigation. I was intimately involved in all aspect of the case, including drafting Rhodium's Summary Judgment Motion and arguing the motion in front of the District Court.

3. In the District Court Litigation, the parties engaged in extensive discovery, including 25 depositions totaling over 130 hours, 6 expert reports, 699 pages of written discovery, and over 700,000 pages of production documents. The Debtors estimate that attorneys and experts spent close to 10,000 hours on the case, and a conservative estimate of the combined fees and costs for both sides exceeds $5 million.

4. Attached hereto as **Exhibit 1** is a true and correct copy of U.S. Patent No. 10,405,457(the "'457 Patent").

5. Attached hereto as **Exhibit 2** is a true and correct copy of U.S. Patent No. 10,820,446 (the "'446 Patent").

6. Attached hereto as **Exhibit 3** and filed under seal is a true and correct copy of Defendants' Motion for Summary Judgment of Noninfringement filed by Rhodium in the District

[2] Capitalized terms used but not defined herein shall have the meaning ascribed to them in the Motion. Unless otherwise specified, the Docket No. citations in this Declaration are to the docket in the District Court Litigation.

Court Litigation (Docket No. 155), along with the contemporaneously filed supporting declaration of Peter J. Brody (Docket No. 155-1), Exhibits 1 through 6 (Docket Nos. 155-2 through Docket Nos. 155-7), and the proposed order (Docket No. 155-8). Bookmarks and sequential page numbers have been added in the preparation of this exhibit to assist the Court's analysis.

7. Attached hereto as **Exhibit 4** and filed under seal is a true and correct copy of Plaintiff's Opposition to Defendants' Motion for Summary Judgment of Noninfringement filed by Midas Green in the District Court Litigation (Docket No. 164), along with the contemporaneously filed supporting declaration of Joseph E. Thomas (Docket No. 164-1) and Exhibits A through K (Docket Nos. 164-2 through Docket Nos. 164-12). Bookmarks and sequential page numbers have been added in the preparation of this exhibit to assist the Court's analysis.

8. Attached hereto as **Exhibit 5** and filed under seal is a true and correct copy of Defendants' Reply in Support of Motion for Summary Judgment of Noninfringement (Docket No. 169), along with the contemporaneously filed supporting declaration of Peter J. Brody (Docket No. 169-1) and Exhibits 7 and 8 (Docket No. 169-2 and Docket No. 169-3). Bookmarks and sequential page numbers have been added in the preparation of this exhibit to assist the Court's analysis.

9. Attached hereto as **Exhibit 6** and filed under seal is a true and correct copy of Defendants' Motion to Strike Opinions of and to Exclude Testimony of J. Duross O'Bryan filed by Rhodium in the District Court Litigation (Docket No. 154), along with the contemporaneously filed supporting declaration of Peter J. Brody (Docket No. 154-1) and Exhibits 1 through 15

(Docket Nos. 154-2 through Docket Nos. 154-16). Bookmarks and sequential page numbers have been added in the preparation of this exhibit to assist the Court's analysis.

10. Attached hereto as **Exhibit 7** and filed under seal is a true and correct copy of Plaintiff's Opposition to Defendants' Motion to Strike Opinions of and to Exclude Testimony of J. Duross O'Bryan filed by Midas Green in the District Court Litigation (Docket No. 161), along with the contemporaneously filed supporting declaration of Joseph E. Thomas (Docket No. 161-1), Exhibits A through G (Docket Nos. 161-2 through Docket Nos. 161-8), and the proposed order (Docket No. 161-9). Bookmarks and sequential page numbers have been added in the preparation of this exhibit to assist the Court's analysis.

11. Attached hereto as **Exhibit 8** and filed under seal is a true and correct copy of Defendants' Reply in Support of Defendants' Motion to Strike Opinions of and Exclude Testimony of J. Duross O'Bryan filed by Rhodium in the District Court Litigation (Docket No. 168), along with the contemporaneously filed supporting declaration of Peter J. Brody (Docket No. 168-1) and Exhibits 16 through 20 (Docket Nos. 168-2 through Docket Nos. 168-6). Bookmarks and sequential page numbers have been added in the preparation of this exhibit to assist the Court's analysis.

12. Attached hereto as **Exhibit 9** is a true and correct transcript of the April 9, 2024 District Court hearing (Docket No. 187).

13. Attached hereto as **Exhibit 10** is a true and correct copy of the January 30, 2025 email correspondence from the Corey W. Brown, law clerk for the Honorable Alan D. Albright, regarding the necessity for the parties to submit a joint proposed order reflecting the parties' understandings of Judge Albright's rulings at the April 9, 2024 hearing.

14. Attached hereto as **Exhibit 11** is a true and correct copy of Plaintiff's Third Amended Complaint for Patent Infringement filed by Midas Green in the District Court Litigation (Docket No. 106).

15. Attached hereto as **Exhibit 12** is a true and correct copy of Defendants' Answer to Plaintiff's Third Amended Complaint and Counterclaims filed by Rhodium in the District Court Litigation (Docket No. 113).

16. Attached hereto as **Exhibit 13** is a true and correct copy of Plaintiff's Answer to Defendants' Counterclaims filed by Midas Green in the District Court Litigation (Docket No. 125).

17. Attached hereto as **Exhibit 14** is a true and correct copy of a Joint Status Report filed by the parties in the District Court Litigation (Docket No. 144).

18. Attached hereto as **Exhibit 15** is a true and correct copy of a correspondence from Joseph E. Thomas to Corey W. Brown, law clerk for the Honorable Alan D. Albright, attaching joint proposed rulings on the motions in limine and pre-trial motions as requested in the January 30, 2025 email correspondence from the Court.

19. Attached hereto as **Exhibit 16** is a true and correct copy of U.S. Patent No. 12,317,450 (the "'450 Patent") issued to Rhodium Technologies on May 25, 2025.

I hereby declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information, and belief.

Dated: July 29, 2025

Respectfully submitted,

/s/ Elizabeth R. Brannen
Elizabeth R. Brannen

EXHIBIT 1

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

US010405457B2

(12) **United States Patent**
Boyd et al.

(10) **Patent No.: US 10,405,457 B2**
(45) **Date of Patent: Sep. 3, 2019**

(54) **APPLIANCE IMMERSION COOLING SYSTEM**

(71) Applicants: **Christopher L. Boyd**, Austin, TX (US); **James P. Koen**, Round Rock, TX (US); **David Christopher Laguna**, Austin, TX (US); **Thomas R. Turner**, Georgetown, TX (US); **Kenneth D. Swinden**, Hutto, TX (US); **Mario Conti Garcia**, Austin, TX (US); **John Charles Tribou**, Austin, TX (US)

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(73) Assignee: **Midas Green Technologies, LLC**, Austin, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 680 days.

(21) Appl. No.: **14/355,533**

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(52) **U.S. Cl.**
CPC ***H05K 7/20236*** (2013.01); ***H01L 23/44*** (2013.01); ***H05K 7/20272*** (2013.01)

(58) **Field of Classification Search**
CPC H05K 7/20236; H05K 7/20272; H01L 23/42; H01L 23/44
(Continued)

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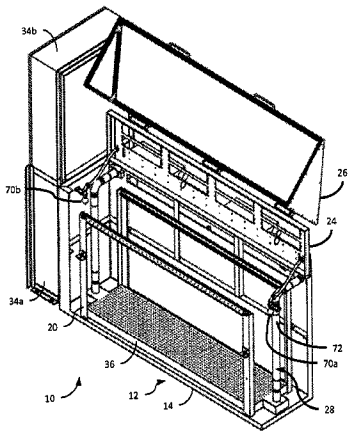
(74) *Attorney, Agent, or Firm* — Jeffrey Van Myers

(57) **ABSTRACT**

A appliance immersion tank system comprising: a generally rectangular tank adapted to immerse in a dielectric fluid a plurality of appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, the long axis of the tank; a primary circulation facility adapted to circulate the dielectric fluid through the tank; a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted; and a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank. A plenum, positioned adjacent the bottom of the tank, is adapted to dispense the dielectric fluid substantially uni-
(Continued)



formly upwardly through each appliance slot. A weir, integrated horizontally into a long wall of the tank, is adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot. All active and most passive components of both the primary and secondary fluid circulation facilities, and the control facility are fully redundant, and are adapted automatically to operate in a fail-soft mode.

16 Claims, 7 Drawing Sheets

(58) **Field of Classification Search**
USPC 361/699
See application file for complete search history.

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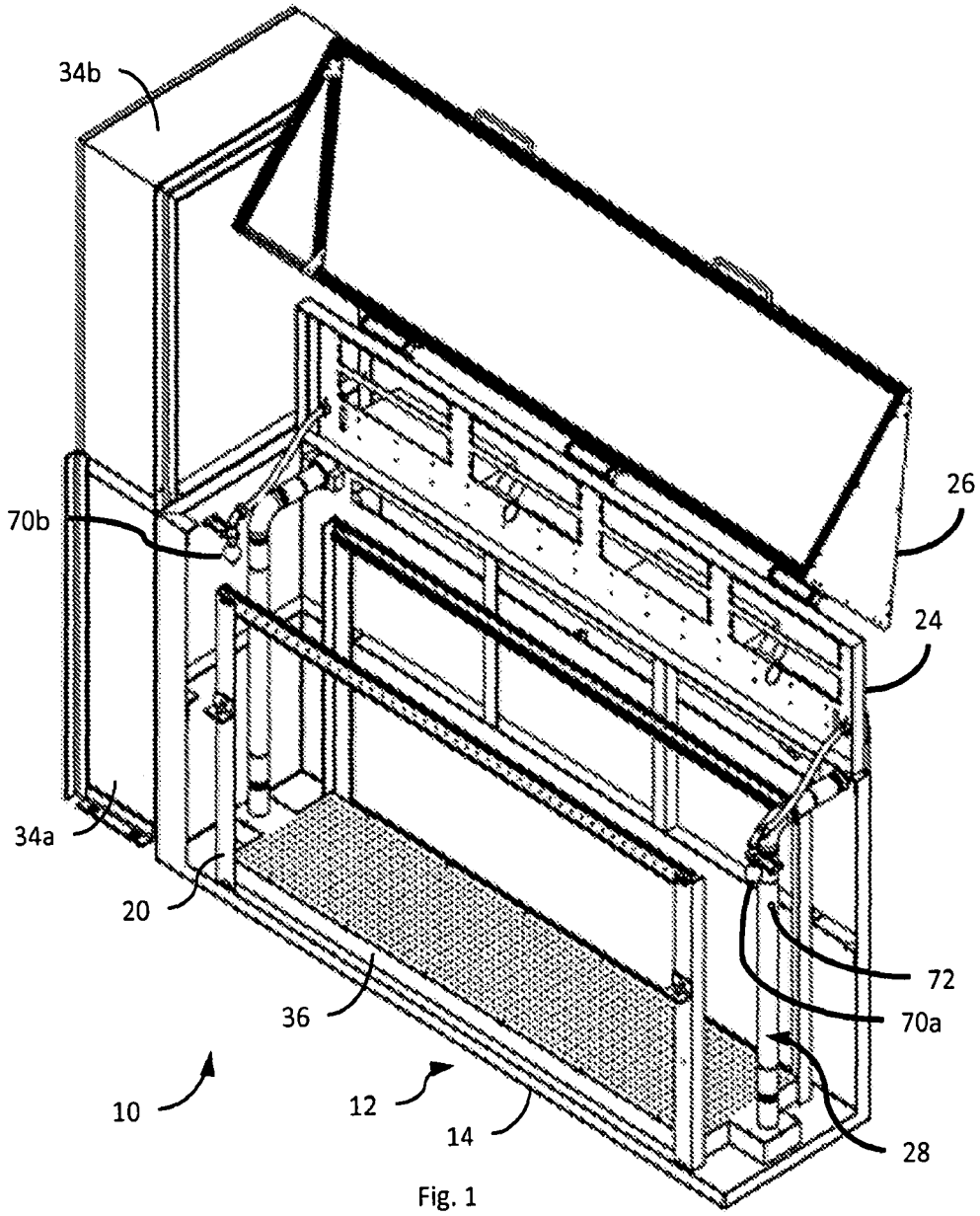


Fig. 1

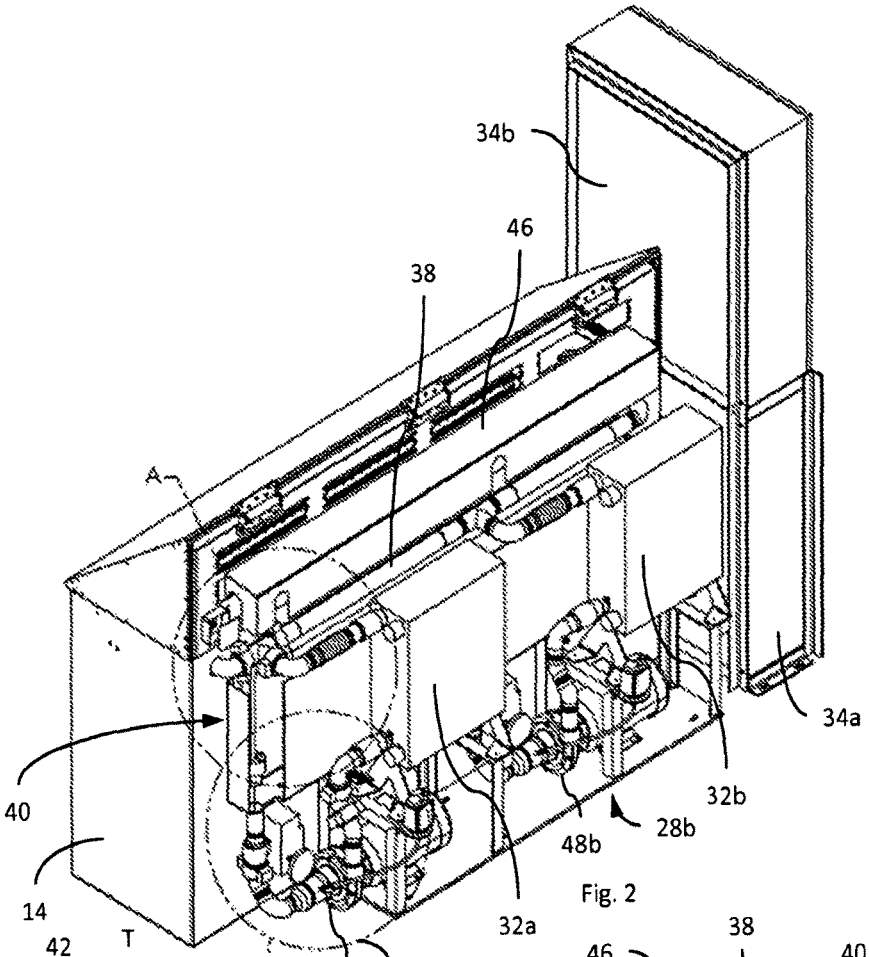


Fig. 2

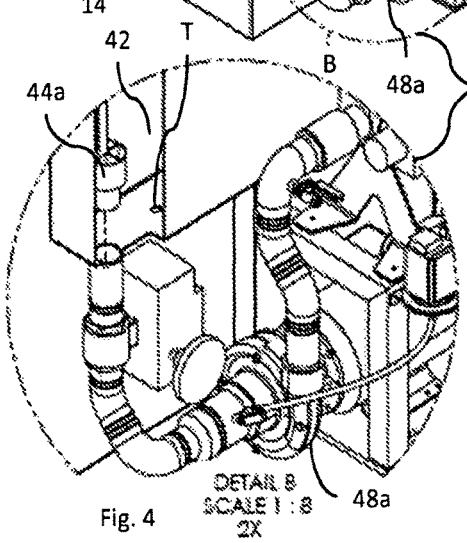


Fig. 4

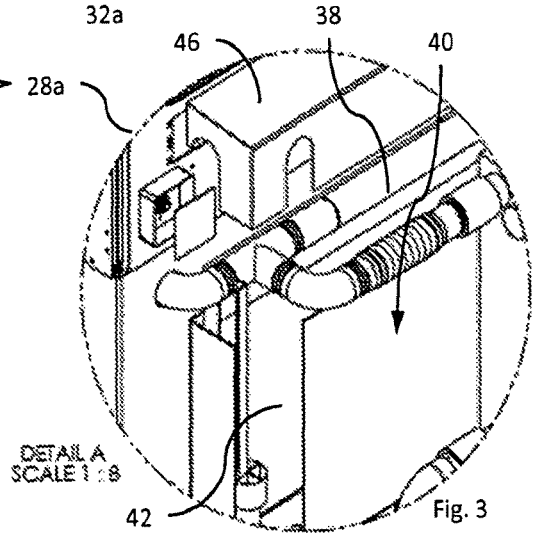


Fig. 3

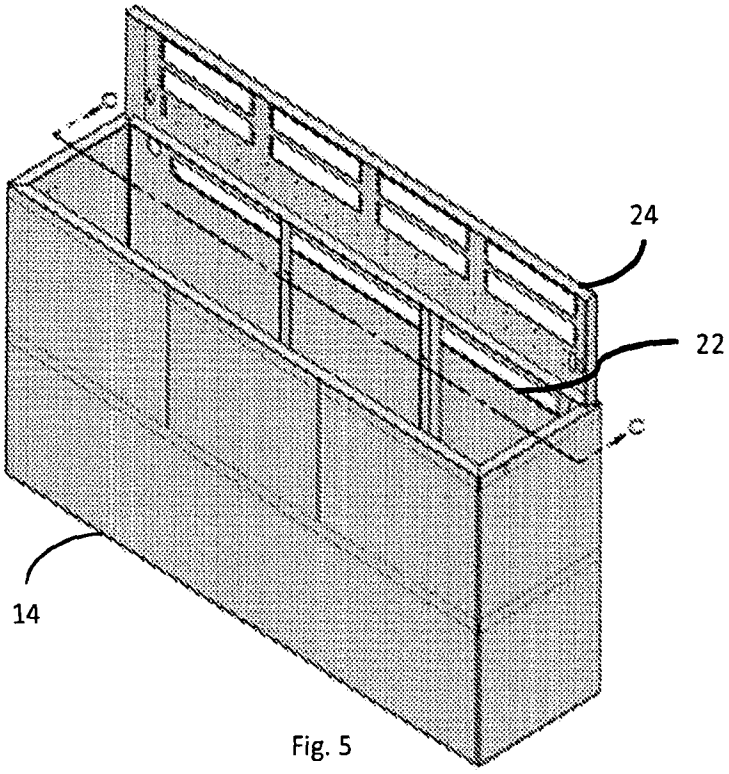
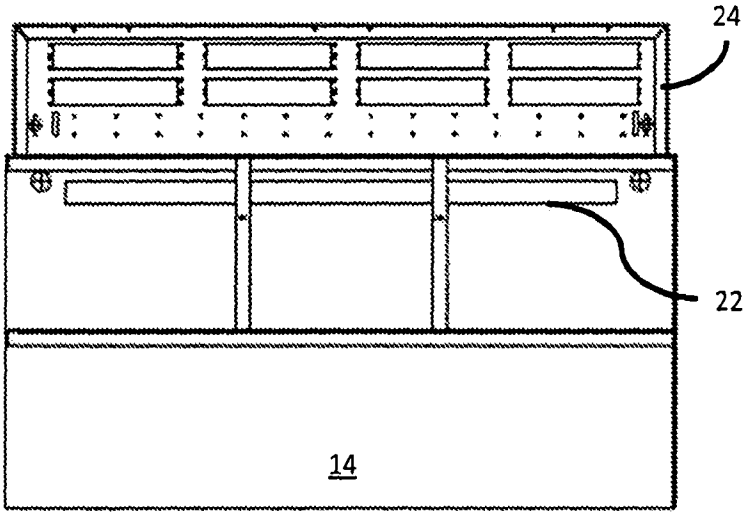


Fig. 5



Section C-C

Fig. 6

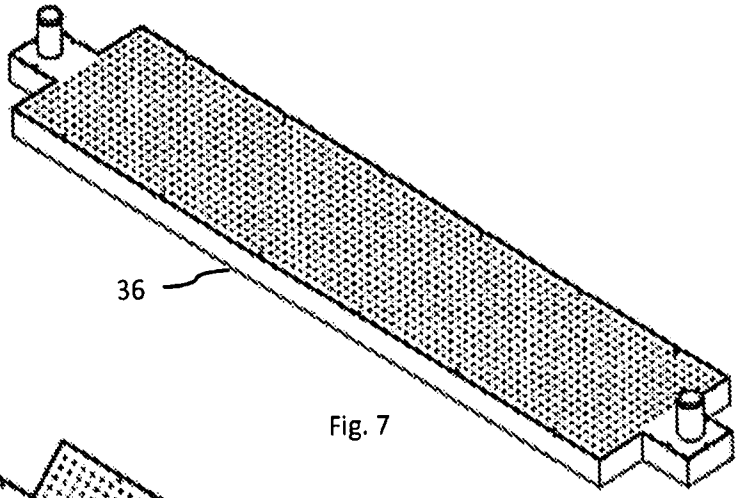


Fig. 7

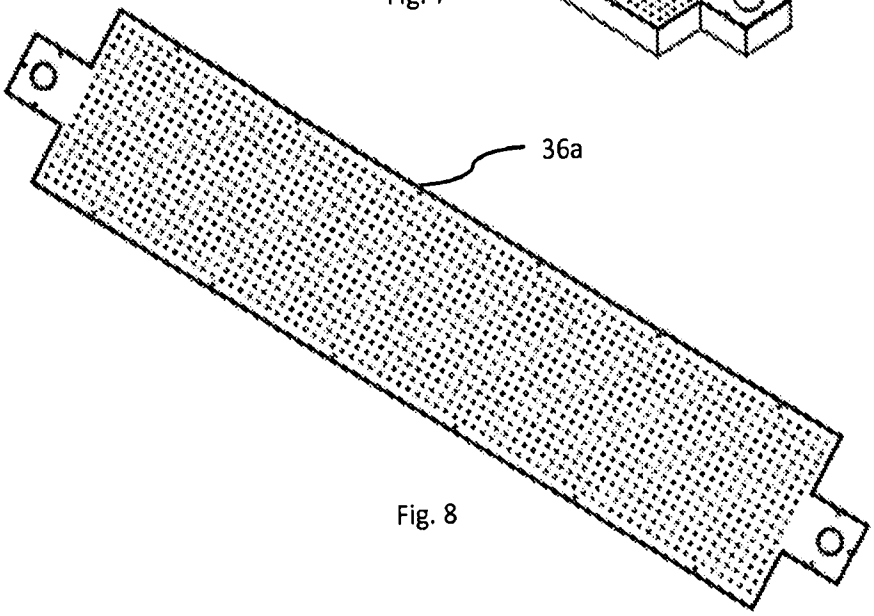


Fig. 8

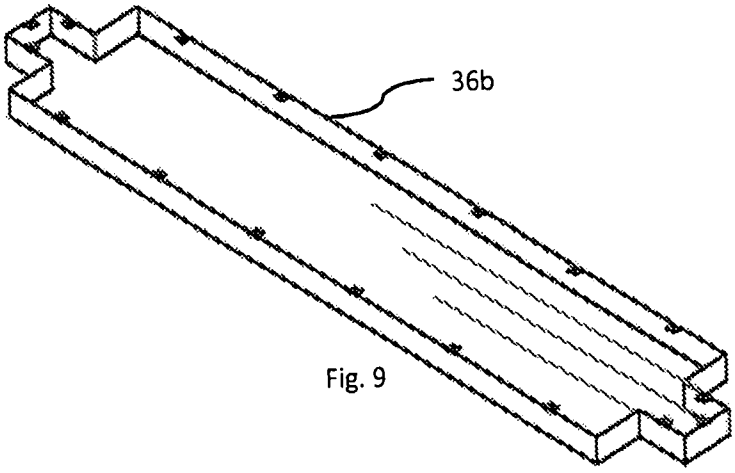


Fig. 9

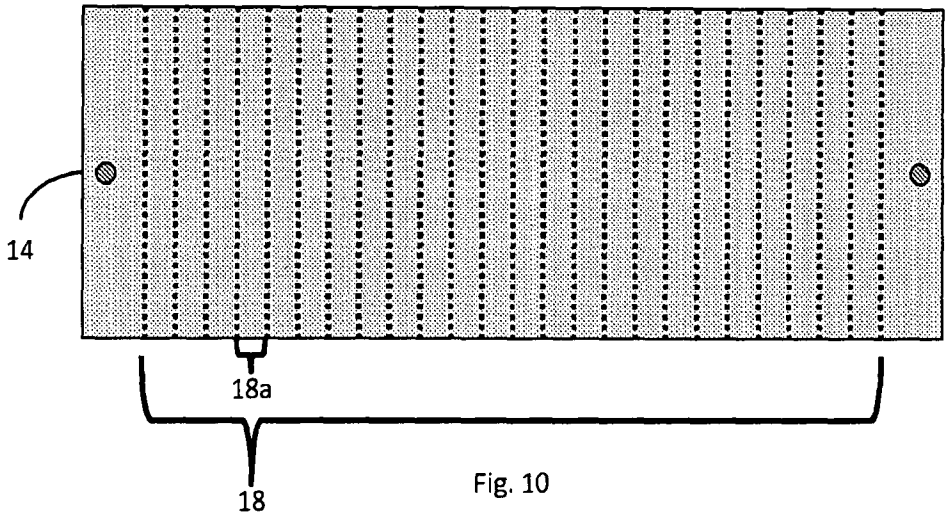


Fig. 10

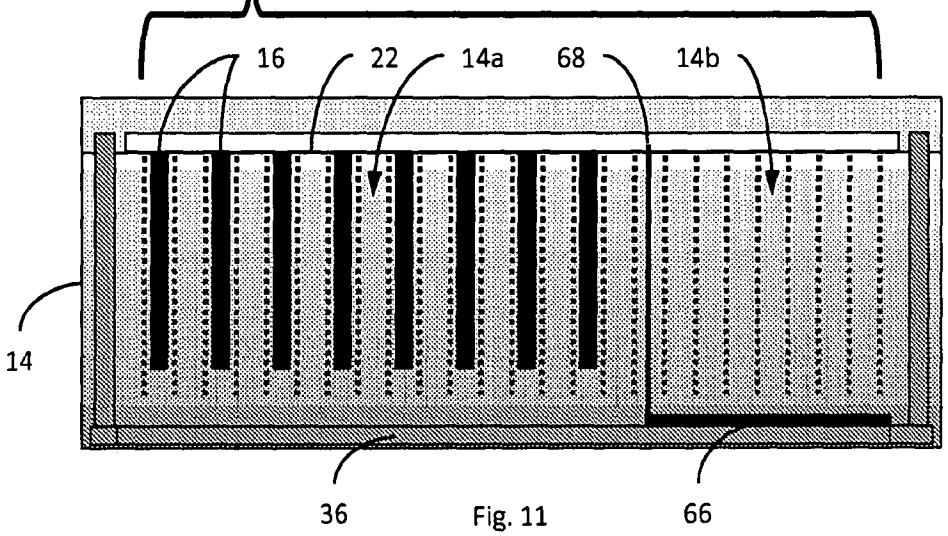


Fig. 11

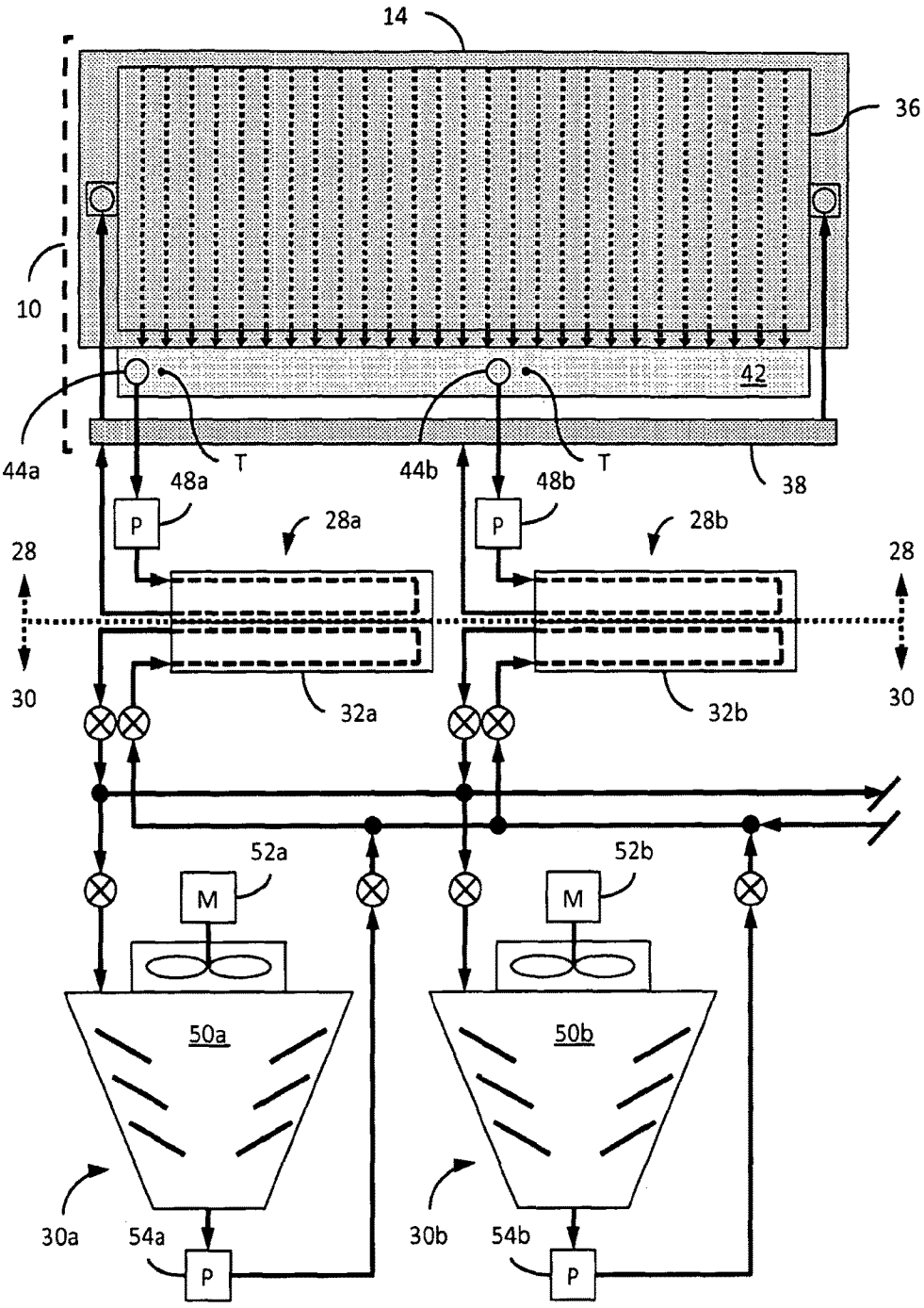

14
36
10
42
44a
T
44b
T
38
48a
48b
P
P
28a
28b
28
28
30
30
32a
32b
52a
52b
M
M
50a
50b
30a
54a
30b
54b
P
P

Fig. 12

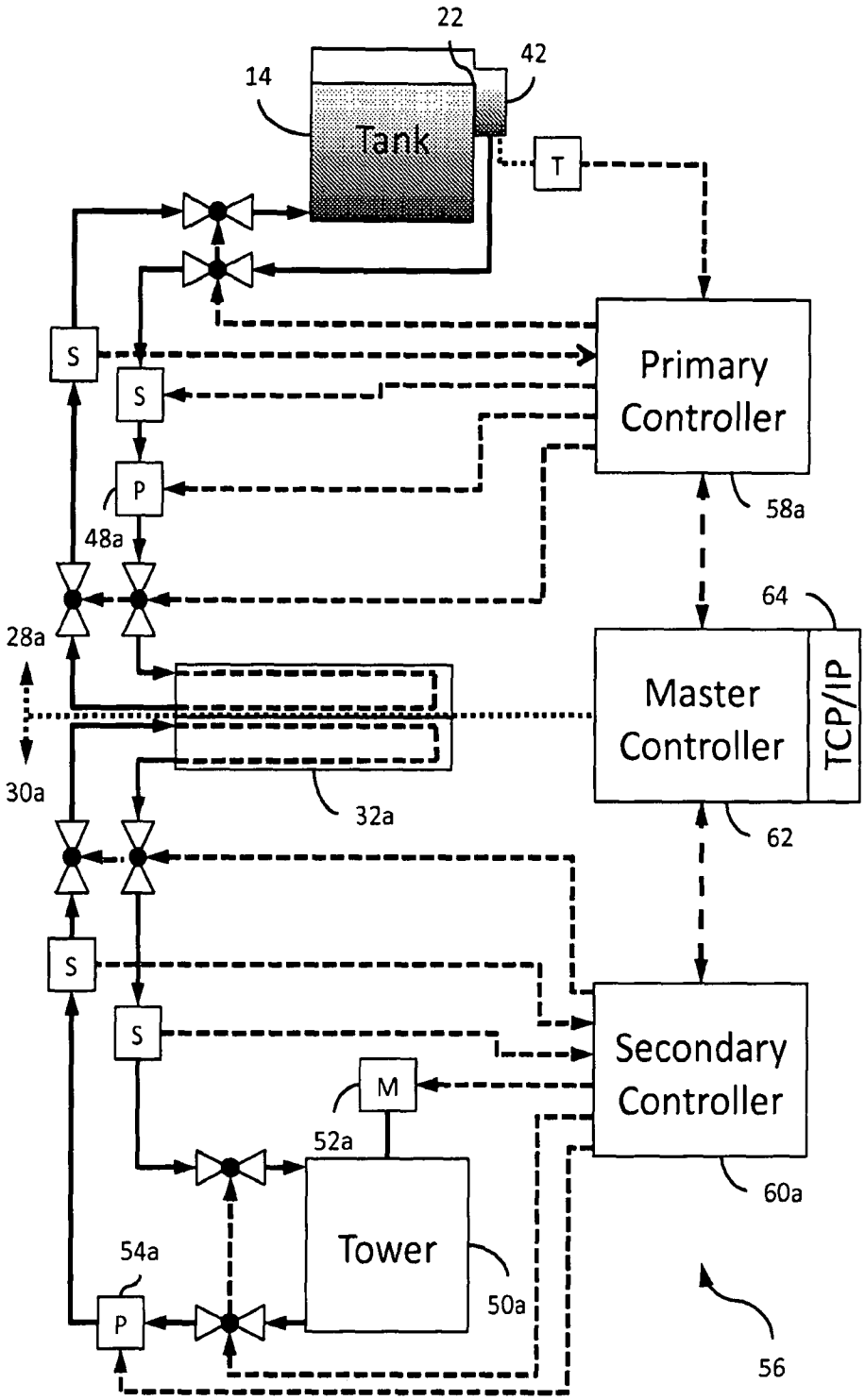

22
42
14
Tank
T
S
S
P
48a
Primary Controller
58a
64
28a
Master Controller
TCP/IP
30a
32a
62
S
S
M
52a
Secondary Controller
60a
Tower
54a
P
50a
56

Fig. 13

APPLIANCE IMMERSION COOLING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is related to the following Provisional Applications:

1. Ser. No. 61/737,200, filed 14 Dec. 2012 ("First Parent Provisional"); and
2. Ser. No. 61/832,211, filed 7 Jun. 2013 ("Second Parent Provisional");

and hereby claims benefit of the filing dates thereof pursuant to 37 CFR § 1.78(a)(4). (Collectively, "Parent Provisionals"). The subject matter of the Parent Provisionals, each in its entirety, is expressly incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to electrical appliance cooling systems, and, in particular, to an improved appliance immersion cooling system and method of operation.

2. Description of the Related Art

In general, in the descriptions that follow, we will italicize the first occurrence of each special term of art which should be familiar to those skilled in the art of immersion cooling systems. In addition, when we first introduce a term that we believe to be new or that we will use in a context that we believe to be new, we will bold the term and provide the definition that we intend to apply to that term.

U.S. Pat. No. 4,590,538, "Immersion Cooled High Density Electronic Assembly", Cray (filed 18 Nov. 1981 and issued 20 May 1986) ("Cray"), is an early example of an immersion system for cooling electronic components during normal operation. On information and belief, the machine disclosed therein was the Cray-2 super-computer ("Cray-2") manufactured by Cray Research, Inc. ("Cray Research"), of Chippewa Falls, Wis. Of particular interest to the present application is the description of the significant advantages resulting from using an electrically non-conductive or dielectric fluid to extract heat from electronic circuit assemblies during normal operation (see, e.g., col. 1, line 66-col. 2, line 29).

On information and belief, Cray Research released, in 1985, a marketing brochure entitled "The CRAY-2 Computer System" (a copy of which is submitted herewith) describing the Cray-2. Of particular interest in this brochure is the description therein of the significant advantages resulting from using a dielectric fluid to extract heat from electronic circuit assemblies during normal operation (see, pages 10 and 13).

U.S. Pat. No. 5,167,511, "High Density Interconnect Apparatus", Krajewski, et al. (issued 27 Nov. 1992) ("Krajewski"), discloses another example of an immersion system for cooling electronic components during normal operation (see, e.g., col. 2, lines 43-51). On information and belief, a machine implementing the Krajewski system was also marketed by Cray Research as a follow-on super-computer to the Cray-2.

One particular problem in the vertical-stack-type systems disclosed in the above references is the necessity of draining the cooling fluid whenever physical access to the electronic modules was required. In general, such an operation, besides being time consuming, requires the entire system to be switched off, especially if the component requiring attention

is an essential element in the system architecture, such as the central processing unit ("CPU"). One possible solution to this problem is to immerse circuit assemblies vertically into a tank containing the cooling fluid such that each of the various assemblies can be withdrawn independently from the tank for servicing, replacement, upgrade, etc. One interesting example of such a system is disclosed in a web-presentation entitled "Puget Custom Computer's mineral-oil-cooled PC", by Nilay Patel ("Puget") (posted 12 May 2007 at 11:57 AM; a copy of which is submitted herewith). As noted by the author, the lack of supplemental apparatus in the Puget system to extract waste heat from the oil inherently limited its operating capabilities.

Another problem with the Cray Research systems in particular is the nature and cost of the chosen cooling fluid: fluorocarbon liquids. As is known, other dielectric fluids, such as mineral oil, have better heat transfer characteristics; of course, being an oil, the use thereof does represent a greater residue problem on modules that may be repairable. Notwithstanding, the Puget system implemented precisely this design choice.

US Patent Application Publication 2011/0132579, "Liquid Submerged, Horizontal Computer Appliance Rack and Systems and Method of Cooling such a Appliance Rack", Best, et al. ("Best"), discloses a appliance immersion tank system, include support apparatus for extracting waste heat from the tank cooling fluid and dissipating to the environment the heat so extracted. Although an improvement in several respects over the prior art discussed above, this system exhibits, inter alia, the following problems: generally non-uniform flow patterns through the several appliance slots within the tank, potentially resulting in uneven cooling across all slots; constricted dielectric fluid supply and return ports resulting in unnecessarily high fluid flow velocities at the respective points of connection to the tank; poor scalability; and inadequate attention to fail-soft operation.

The subject matter of all of the prior art references discussed above, each in its entirety, is expressly incorporated herein by reference.

We submit that what is needed is an improved appliance tank immersion system and method of operation. In particular, we submit that such a system should provide performance generally comparable to the best prior art techniques but more efficiently and effectively than known implementations of such prior art techniques.

BRIEF SUMMARY OF THE INVENTION

In accordance with a preferred embodiment of our invention, . . .

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

Our invention may be more fully understood by a description of certain preferred embodiments in conjunction with the attached drawings in which:

FIG. **1** illustrates, in partial cut-away form, a front perspective of a tank module of an appliance immersion cooling system constructed in accordance with our invention;

FIG. **2** illustrates a rear perspective of the tank module shown in FIG. **1**;

FIG. **3** illustrates a close-up perspective of a detail A of FIG. **2**;

FIG. **4** illustrates a close-up perspective of a detail B of FIG. **2**;

FIG. **5** illustrates, in perspective view, several details of the tank shown in FIG. **1**, with special emphasis on the dielectric fluid recovery weir integrated into the long rear wall of the tank;

FIG. **6** illustrates, in cross-section view, the section C-C in FIG. **5**;

FIG. **7** illustrates, in perspective view, the plenum facility shown in FIG. **1**;

FIG. **8** illustrates, in top plan view, the orifice plate portion of the plenum facility shown in FIG. **7**;

FIG. **9** illustrates, in perspective view, the chamber portion of the plenum facility shown in FIG. **7**;

FIG. **10** illustrates, in top plan view, a plurality of appliance slots distributed vertically along, and extending transverse to, a long axis of the tank of FIG. **1**;

FIG. **11** illustrates, in longitudinal cross-sectional view, the plurality of appliance slots distributed vertically along, and extending transverse to, the long axis of the tank of FIG. **1**;

FIG. **12** illustrates, in flow schematic form, one instantiation of a flow arrangement suitable for implementing our invention; and

FIG. **13** illustrates, in control schematic form, one instantiation of a flow control facility suitable for implementing our invention.

In the drawings, similar elements will be similarly numbered whenever possible. However, this practice is simply for convenience of reference and to avoid unnecessary proliferation of numbers, and is not intended to imply or suggest that our invention requires identity in either function or structure in the several embodiments.

DETAILED DESCRIPTION OF THE INVENTION

Shown in FIG. **1** (front view) and FIG. **2** (rear view) is a tank module **10** adapted for use in an appliance immersion cooling system constructed in accordance with a preferred embodiment of our invention. For convenience of reference, we have illustrated in FIG. **1** the tank facility **12** of the immersion module **10** in partial cut-away to emphasize several important internal facilities; we have shown the tank facility **12** in isolation in FIG. **5**. In general, the tank facility **12** comprises: a tank **14** adapted to immerse in a dielectric fluid a plurality of electrical appliances **16**, e.g., contemporary computer servers (see, e.g., FIG. **11**), each in a respective appliance slot **18***a* distributed vertically along, and extending transverse to, a long axis of the tank **14** (see, generally, FIG. **10**); an appliance rack facility **20** of convention design adapted to suspend the appliances **16** (see, e.g., FIG. **11**) in respective appliance slots **18** (see, FIG. **10**); a weir **22** (best seen in isolation in FIG. **5** and FIG. **6**), integrated horizontally into one long wall of the tank **14** adjacent all appliance slots **18**, and adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each of the appliance slots **18**; an interconnect panel facility **24** attached to the upper rear edge of the tank **14** and adapted to mount various appliance power distribution equipment, cable interconnection panels and the like (none shown); and a cover **26** adapted to be opened and closed from the front of the tank **14** (and which may include a translucent portion to allow viewing of the interior of the tank **14** when in the closed position). In addition to the tank facility **12**, the immersion module **10** comprises: a primary circulation facility **28** (portions of which are shown in both FIG. **1** and FIG. **2**); a secondary fluid circulation facility **30** (of which only redundant heat exchangers **32***a* and **32***b* are shown in FIG. **2**); and control equipment cabinets **34***a* and **34***b*, each adapted to accommodate the module status and control equipment associated with a respective one of the primary circulation facilities **28***a* and **28***b* (see, FIG. **13**).

As can be best seen in FIG. **2**, the primary circulation facility **28** (comprising redundant sub-facilities **28***a* and **28***b*) comprises both passive (conduits, couplers, etc.) and active (valves, pumps, sensors, etc.) components; a subset of the passive components are shared, whereas, in general, the active components are duplicated and adapted to cooperate in operation as separate, redundant sub-facilities. Excluding the tank **14**, the primary shared component is the plenum facility **36** (see, FIG. **1** and FIG. **7**) comprising an orifice plate **36***a* (see, FIG. **8**) and a plenum chamber **36***b* (see, FIG. **9**). As can be seen in FIG. **1**, cooled dielectric fluid is pumped into both ends of the plenum facility **36** via a shared distribution header **38** (see, FIG. **2** and FIG. **3**). In general, the plenum plate **36***a* comprises at least one row of orifices vertically aligned with each appliance slot **18***a*, with the dimensions and flow rates of each set being adapted to provide substantially equal flow of the dielectric fluid upwardly into each appliance slot **18***a*. Preferably, each appliance slot **18***a* is supplied via several rows of orifices, thus generally tending to reduce the volume of the dielectric fluid exiting each orifice and to make the flow of dielectric fluid more uniform upwardly through the appliance slots **18**. One further shared component is the dielectric fluid recovery facility **40** (FIG. **2**) comprising a dielectric fluid recovery reservoir **42** (see, FIG. **3**, FIG. **4** and FIG. **13**) positioned vertically beneath the overflow lip of the weir **22** and adapted smoothly to receive the dielectric fluid as it flows over the weir **22**; the dielectric fluid recovery reservoir **42** is further adapted to allow the recovered fluid to be removed from the reservoir **42** via redundant recovery ports **44***a* and **44***b* (only port **44***a* can be seen in FIG. **2** as the port **44***b* is obscured by the heat exchanger **32***a*; but see FIG. **12**). As can be seen in both FIG. **3** and FIG. **4**, we consider it desirable to provide a vortex breaker at the input of each of the recovery ports **44**. Also, we provide a removable recovery reservoir cover **46** adapted to also cover a major portion of the distribution header **38**; note that, in both FIG. **2** and FIG. **3**, we have illustrated the reservoir cover **46** in a partially raised orientation so as to better depict details that would otherwise be obscured. Note that we have constructed the reservoir **42** such that the average height of dielectric fluid above the recovery ports **44** develops sufficient hydrostatic head to meet the requirements of the pumps **48**, while also tending to minimize the likelihood of breaking suction during normal operation.

At this point in the primary circulation facility **28**, we provide fully redundant sub-facilities **28***a* and **28***b*, each comprising a primary circulation pump (**48***a* and **48***b*) and associated passive and active components which, collectively, provide the motive power for circulating the dielectric fluid through the shared components and tank **14**. As can be generally seen, each of these sub-facilities **28***a* and **28***b* is adapted to recover the dielectric fluid exiting the tank **14** via the weir **22**, re-pressurize the recovered fluid, pass the re-pressurized fluid through a respective one of the heat exchangers **32***a* and **32***b*, and then back to the plenum facility **36** via the header **38**.

Shown in FIG. **12** is one flow arrangement suitable for integrating our tank module **10** into a fully redundant, appliance immersion cooling system, comprising the primary circulation facility **28** and the secondary fluid circulation facility **30**. In general, the secondary fluid circulation facility **30** comprises redundant secondary circulation sub-

facilities **30***a* and **30***b*, each of which is adapted to circulate a cooling fluid, e.g., treated water, through the respective heat exchanger **32***a* and **32***b* to extract heat from dielectric fluid counter-circulating therethrough and to dissipate to the environment the heat so extracted. In the illustrated embodiment, each of the secondary fluid sub-facilities **30***a* and **30***b* comprise conventional cooling towers **50***a* (including fan facility **52***a*) and **50***b* (including fan facility **52***b*), and secondary circulation pumps **54***a* and **54***b*. To facilitate flexible operation in installations including multiple immersion modules **10** in combination with a plurality of secondary circulation sub-facilities **30**, a common header arrangement can be implemented as illustrated in the secondary fluid circulation loop, with flow control valves located at key flow control points as is known.

Shown in FIG. **13** is a control facility **56** adapted to monitor and control the operation of both the immersion module **10** (including all active components of the primary circulation facility **28**), and the secondary fluid circulation facility **30**. As will be evident to those skilled in this art, efficient operation of our immersion module **10** requires continuous monitoring and control of several essential operating parameters, including fluidic temperatures, pressures, conductivity and pH at several points in the primary and secondary circulation loops. Although the several sensory and control functions can be implemented using traditional dedicated hardware components, we prefer to employ at least one programmable logic controller ("PLC"), commercially available from any of a number of respected vendors, e.g., the Allen-Bradley brand of PLCs from Rockwell Automation, Inc. In the instantiation illustrated in FIG. **13**, we have depicted: a primary controller **58***a* adapted to monitor and control the operation of the primary circulation sub-facility **28***a* as a function of the temperature of the dielectric fluid in the tank **14**; a secondary controller **60***a* adapted to monitor and control the operation of the secondary fluid circulation sub-facility **30***a* as a function of the temperature of the dielectric fluid flowing through the heat exchanger **32***a*; and a master controller **62** adapted to coordinate the activities of the primary controller **58***a* and secondary controller **60***a*. As can be seen, we have incorporated into the primary circulation sub-facility **28***a*: supply and return sensors, including a temperature probe, T, inserted into a thermowell (not shown) installed in the bottom of the reservoir **42** adjacent a respective return port **44***a* (note that, in FIG. **4**, only one of the holes that receive the thermowells is illustrated, but both holes are illustrated in FIG. **12**); a pair of sensor facilities, S, which may sense temperature, pressure and conductivity, as deemed desirable); and return (and, if desired, supply) flow control valves and controls for the primary circulation pump **48***a*; of course, a redundant set of these components exists for the primary circulation sub-facility **28***b*. In general, the goal is to maintain the temperature of the dielectric fluid in the tank **14** between a predetermined minimum temperature and a predetermined maximum temperature.

As noted above, we have provided separate control equipment cabinets **34***a* and **34***b*, each adapted to accommodate the several components comprising a respective one of the primary controllers **58***a* and **58***b*. For convenience of access, we prefer to co-locate with each of the cooling towers **50** a protective housing (not shown) for the respective secondary controller **60**. Of course, the control facility **56** can be instantiated as a single, multi-module PLC facility, with similar or other combinations of monitoring devices as deemed most appropriate for a particular installation. Alternatively, one or more, and perhaps all, of the functions performed by the controllers **58**, **60** and **62** may be implemented in the form of dedicated application-specific software executing on a conventional computer platform having the appropriate resources; indeed, it would be entirely feasible to implement the entire control facility **56** on a server **16** installed in a tank **14**.

One desirable enhancement that we recommend is a remote control facility, implemented, e.g., via the master controller **62** (or by way of a direct, per-controller interface), adapted to facilitate remote monitoring of system status (e.g., temperatures, pressures, etc.) and control over system control parameters (e.g., temperature and pressure limits, etc.) to the primary controllers **58** and secondary controllers **60**. For example, using a conventional data communication hardware module **64**, e.g., an ethernet card implementing the TCP/IP protocol, a modern web browser can be adapted to provide a graphical user interface ("GUI") with sufficient functionality to facilitate monitoring and control of an entire installation from a remote location. Such a GUI may be implemented using any of a number of programming paradigms, e.g., PHP, .NET and the like.

Operational control of redundant, continuous process flow systems is generally well known. Preferable, each of the several redundant sub-facilities are routinely activated to assure current functionality, and to allow the inactive sub-facility to be serviced according to an established schedule. We believe this continuous rotation of system resources to be so important that we recommend switching the sub-facilities at least once, and preferably, several times, per day; although this is possible to implement manually, we prefer to enable the master controller **62** to control the sequencing of the several switch-over operations. One further aspect of this sophistication in control is the ability to perform stress testing of the several sub-systems under controlled conditions so as to assure appropriate response to real-time emergencies.

In our First Parent Provisional, we have disclosed an alternate embodiment comprising an appliance immersion tank facility wherein the function of the plenum facility **36** is performed by a manifold facility comprising a ladder-arrangement of tubular spray bars, each bar of which supplies dielectric fluid to a respective appliance slot. As we noted, one particular advantage of this arrangement is that individual spray bars may be shut off if the respective appliance slot is not occupied and, thus, save energy. To further increase energy efficiency, we have provided optional vertical flow barriers adapted to partition the tank into an active portion, having active appliances, and a stagnant portion, having no active appliances. One further enhancement we disclosed is the provision of temperature sensors per appliance slot, such that the flow rate through each spray bar can be dynamically varied as a function of the temperature of the dielectric fluid exiting the respective slot. Other operative configurations will be readily perceived by those skilled in this art.

In a manner analogous to the embodiment described in our First Parent Provisional, it would be advantageous, from an energy point of view, to provide a plurality of flow barrier plates **66** (shown by way of example only in FIG. **11**), each adapted to be attached to the top of the plenum facility **36** so as substantially to block the flow of the dielectric fluid through the row(s) of orifices in the plenum plate **36***a* corresponding to at least a respective one of the appliance slots **18***a*; an elastomeric layer (not shown) could be provided on the interface surface of the plate(s) **66** to enhance the sealing effect. Such an arrangement would allow the total flow through the plenum facility **36** to be adjusted, in the

field, as a function of the actual number of active appliances **16** in the tank **14**. Further, this arrangement can incorporate a relocatable vertical baffle plate **68** (see FIG. **11**) adapted substantially to partition the tank **14** into an active portion **14***a* containing the active appliances **16** and an inactive portion **14***b* containing no appliances (or at least no active appliances **16**); preferably, the baffle plate **68** is adapted to be mounted in the appliance rack facility **28** in a manner similar to an actual appliance **16** (the baffle plate **68** need not fully block the flow of dielectric fluid between the active portion **14***a* and inactive portion **14***b*, but only significantly impede the flow between these portions). Note that, in the example scenario illustrated in FIG. **11**, we have shown one possible arrangement of a total of 8 active appliances **16** distributed across 16 appliance slots **18***a* so as to spread the total heat load across adjacent empty slots **18***a*. Such an optimal arrangement is possible only if less than a majority of the available appliance slots **18***a* are occupied by an active appliance **16**. Clearly, such optional adjunct facilities enhance flexibility in operation, accommodating dynamic adjustment of the flow rates in the primary circulation sub-facilities **28***a* and **28***b* under variable heat loads, while providing opportunities to conserve energy that might otherwise be expended moving the dielectric fluid through the inactive portion **14***b* of the tank **14**. Other operative configurations will be readily perceived by those skilled in this art.

In our Second Parent Provisional, we have disclosed another embodiment comprising a more conventional, less-modularized instantiation with appropriate flow and control facilities. In this embodiment, we chose to implement tank clusters, comprising, e.g., **4** appliance immersion tank facilities, with substantially all of the other equipment being constructed from stand-alone, commercially available components. Such an arrangement offers greater opportunities to select and install improved components, or to add enhancements to the installation, as deemed desirable after initial installation. Other operative configurations will be readily perceived by those skilled in this art.

As we noted above with reference to the embodiment illustrated in FIG. **12**, the secondary flow header facility is well adapted to allow any secondary circulation sub-facility **30** to be connected to any active heat exchanger **32**. Such a facility provides great flexibility in dealing with unusual system conditions, especially in installations wherein the secondary circulation sub-facilities **30***a* and **30***b* are each sized to support a cluster of tank modules **10**. Imagine, for example, that, while one of the secondary circulation facilities **30**, say sub-facility **30***a*, is being serviced, the activities of the set of appliances **16** in one tank **14** in the cluster are higher than normal, resulting in a rise in temperature in that tank **14** above the desired maximum. In response, the master controller **62** can direct Primary Controllers **58***a* and **58***b* assigned to tank **14** to operate both of the primary circulation sub-facilities **28***a* and **28***b* simultaneously, i.e., in parallel. Using the secondary flow header facility, the heat being extracted by both of the heat exchangers **32***a* and **32***b* may be dissipated using the resources of the single on-line secondary circulation sub-facility **30***b*. Thus, one clear advantage of this alternate embodiment is the ability dynamically to perform load balancing across all system resources. Other operative configurations to support sub-system load balancing will be readily perceived by those skilled in this art.

Preferably, one or more filters (not shown) are included in the flow path through each of the primary circulation sub-facilities **28***a* and **28***b* to remove any particulates or other undesirable foreign matter that may have been picked up by the dielectric fluid on its passage though the entire primary circulation facility **28**; chemical sensors may also be provided to detect the presence of unexpected chemicals that may indicate failure of sub-components within one of the appliances **16**. Similar components, such as pH sensors, may also included in the secondary fluid circulation facility **30**.

As can be seen generally in FIG. **1**, we provide a pair of low dielectric fluid level sensors **70***a* and **70***b* adapted to trigger an alarm signal in the event that, for whatever reason, the level of the dielectric fluid in the tank **14** drops below a predetermined minimum level. Additionally, the responsive primary controller **58** can initiate other actions to address the detected problem, including activating audio alarms, transmitting electronic alert signals and the like.

To solve a reciprocal problem, namely leakage from an external portion of the primary circulation loop **28** resulting in the dielectric fluid in the tank **14** being back-siphoned through the plenum facility **36**, we recommend incorporating a siphon breaker **72** (see, FIG. **1**) in the supply pipe at a predetermined location well above the plenum facility **36** but somewhat below the level of the weir **24**. Such a siphon breaker can be as simple as a relatively small diameter hole **72** drilled through the supply pipe at the selected location; due to the relatively high viscosity of the dielectric fluid, even when heated, any resulting leakage during normal operation will be relatively insignificant. Other operative responses to address these and other unusual fluidic conditions will be readily perceived by those skilled in this art.

As is known (see, e.g., Best), many conventional, commercially available electrical/electronic appliances include components that will not function correctly if immersed in a dielectric fluid, especially one as viscous as mineral oil: cooling fans and rotating media disk drives. In general, all cooling fans are unnecessary in an immersion cooling system and can be simply removed. The media drives, however, are usually necessary for normal appliance operation. One option is to remove each drive, totally seal the drive against fluid entry, and reinstall the now-sealed drive (pre-sealed drives are also available). Another option is to remove the drive and mount it on the interconnect panel facility **24**; typically special cabling will be required to re-attach the drive to the internal appliance socket. Yet another option is to replace the rotating media drive with a solid-state drive having no moving components. Other operative configurations will be readily perceived by those skilled in this art.

It will be recognized that, in all of the embodiments described herein, emphasis was placed on minimizing the total volume of the dielectric fluid circulating throughout each immersion module **10**. We submit that the key concept here is to move the secondary fluid to the point of heat exchange with the primary fluid, rather than to move the primary fluid to the point of heat exchange with the secondary fluid. Thus, in our preferred embodiment, all of the essential components of the primary circulation facility **28** are tightly co-located with the tank **14** so as to form a highly-integrated module. Further, our placement of the reservoir **42** outside of (but immediately adjacent to) the tank **14** tends to reduce the total volume of the dielectric fluid (as opposed to the alternative arrangement we proposed in our First Provisional, wherein a recovery trough was disposed within the tank **14**); then, we positioned the components comprising the primary circulation sub-facilities **28** so as to be vertically beneath the footprint of the reservoir **42**. In addition to conserving valuable floor space in a typical data center installation, the resulting modular configuration facilitates both easy initial installation and subsequent

upgrade to efficiently satisfy increasing data center workloads. Indeed, our invention greatly enhances system scalability, a key concern to data center operators. Finally, our system-wide redundancy substantially assures fail-soft operation during periods of unusual environmental conditions, infrastructure instability or political unrest.

Although we have described our invention in the context of particular embodiments, one of ordinary skill in this art will readily realize that many modifications may be made in such embodiments to adapt either to specific implementations. By way of example, it will take but little effort to adapt our invention for use with electronic appliances other than contemporary servers; and to adjust the dimensions of the appliance accommodation slots accordingly. Similarly, practitioners in the art will readily recognize that other, known secondary circulation facilities may be employed effectively, including forced air, vapor compression systems, earth-water sink loops, waste heat recovery and recycling systems, and the like (see, e.g., the several alternatives discussed in Best). Further, the several elements described above may be implemented using any of the various known manufacturing methodologies, and, in general, be adapted so as to be operable under either hardware or software control or some combination thereof, as is known in this art.

Thus it is apparent that we have provided an improved system and method of operation for immersion cooling of appliances and the like. In particular, we submit that such a method and apparatus provides performance generally comparable to the best prior art techniques but more efficiently and effectively than known implementations of such prior art techniques.

What we claim is:

1. An appliance immersion cooling system comprising:

a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank, the tank comprising:

a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, having an overflow lip adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot; and;

a dielectric fluid recovery reservoir positioned vertically beneath the overflow lip of the weir and adapted to receive the dielectric fluid as it flows over the weir;

a primary circulation facility adapted to circulate the dielectric fluid through the tank, comprising:

a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot;

a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted; and

a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

2. The system of claim **1** wherein the tank and primary circulation facility comprise a highly-integrated module.

3. The system of claim **1** wherein the tank further comprises:

an interconnect panel facility adapted to mount appliance support equipment.

4. The system of claim **1** wherein the primary circulation facility further comprises:

at least first and second primary circulation sub-facilities, each adapted to operate independently to circulate the dielectric fluid through the tank;

wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities and the secondary fluid circulation facilities so to maintain the temperature of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.

5. The system of claim **1** wherein the control facility further comprises a communication facility adapted to facilitate monitoring and control of the control facility from a remote location.

6. A tank module adapted for use in an appliance immersion cooling system, the tank module comprising:

a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank, the tank comprising:

a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, having an overflow lip adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot; and;

a dielectric fluid recovery reservoir positioned vertically beneath the overflow lip of the weir and adapted to receive the dielectric fluid as it flows over the weir;

a primary circulation facility adapted to circulate the dielectric fluid through the tank, comprising:

a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot; and

a control facility adapted to control the operation of the primary fluid circulation facility as a function of the temperature of the dielectric fluid in the tank.

7. The module of claim **6** wherein the tank and primary circulation facility comprise a highly-integrated module.

8. The module of claim **6** wherein the tank further comprises:

an interconnect panel facility adapted to mount appliance support equipment.

9. The module of claim **6** wherein the primary circulation facility further comprises:

at least first and second primary circulation sub-facilities, each adapted to operate independently to circulate the dielectric fluid through the tank;

wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities so to maintain the temperature of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.

10. The module of claim **6** wherein the control facility further comprises a communication facility adapted to facilitate monitoring and control of the control facility from a remote location.

11. A tank module (**10**) adapted for use in an appliance immersion cooling system, the tank module comprising:

a tank (**12**) adapted to immerse in a dielectric fluid a plurality of electrical appliances (**16**), each in a respective appliance slot (**18**) distributed vertically along, and extending transverse to, a long wall of the tank (**10**), the tank (**10**) comprising:

a weir **22**, integrated horizontally into the long wall of the tank (**10**) adjacent all appliance slots (**18**),

adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot (**18**);

a primary circulation facility (**28**) adapted to circulate the dielectric fluid through the tank (**10**), comprising:

a plenum (**36**), positioned adjacent the bottom of the tank (**10**), adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot (**18**); and

a control facility (**58**) adapted to control the operation of the primary fluid circulation facility (**28**) as a function of the temperature of the dielectric fluid in the tank (**10**).

12. The tank module of claim **11** wherein the tank further comprises:

an interconnect panel facility (**24**) adapted to mount appliance support equipment.

13. The module of claim **11** wherein the primary circulation facility further comprises:

at least first and second primary circulation sub-facilities (**28***a*, **28***b*), each adapted to operate independently to circulate the dielectric fluid through the tank;

wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities so to maintain the temperature of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.

14. The module of claim **11** wherein the control facility further comprises a communication facility (**62**, **64**) adapted to facilitate monitoring and control of the control facility from a remote location.

15. An appliance immersion cooling system comprising a tank module according to any one of the preceding claims **11** through **14**.

16. An appliance immersion cooling system according to claim **15**, further comprising:

a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted.

* * * * *

EXHIBIT 2

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

US010820446B2

(12) **United States Patent**
Boyd et al.

(10) **Patent No.: US 10,820,446 B2**
(45) **Date of Patent: *Oct. 27, 2020**

(54) **APPLIANCE IMMERSION COOLING SYSTEM**

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(72) Inventors: **Christopher L. Boyd**, Austin, TX (US); **James P. Koen**, Round Rock, TX (US); **David Christopher Laguna**, Austin, TX (US); **Thomas R. Turner**, Georgetown, TX (US); **Kenneth D. Swinden**, Hutto, TX (US); **Mario Conti Garcia**, Austin, TX (US); **John Charles Tribou**, Austin, TX (US)

(73) Assignee: **Midas Green Technologies, LLC**, Austin, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **16/243,732**

(22) Filed: **Jan. 9, 2019**

(65) **Prior Publication Data**

US 2019/0200482 A1 Jun. 27, 2019

Related U.S. Application Data

(63) Continuation of application No. 14/355,533, filed as application No. PCT/US2013/075126 on Dec. 13, 2013, now Pat. No. 10,405,457.
(Continued)

(51) **Int. Cl.**
H01L 23/44 (2006.01)
H05K 7/20 (2006.01)

(52) **U.S. Cl.**
CPC ***H05K 7/20236*** (2013.01); ***H01L 23/44*** (2013.01); ***H05K 7/20272*** (2013.01)

(58) **Field of Classification Search**
CPC H05K 7/20236; H05K 7/20272; H05K 7/20327; H01L 23/44
See application file for complete search history.

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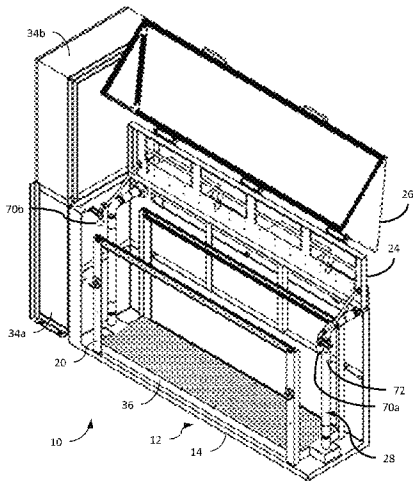
(Continued)

Primary Examiner — Devon Russell
(74) *Attorney, Agent, or Firm* — Jeffrey Van Myers

(57) **ABSTRACT**

A appliance immersion tank system comprising: a generally rectangular tank adapted to immerse in a dielectric fluid a plurality of appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, the long axis of the tank; a primary circulation facility adapted to circulate the dielectric fluid through the tank; a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted; and a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank. A plenum, positioned adjacent the bottom of the tank, is adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot. A weir, integrated horizontally into a long wall of the tank, is adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot. All active and most passive components of both the primary and secondary fluid circulation facilities, and the control facility are fully redundant, and are adapted automatically to operate in a fail-soft mode.

10 Claims, 7 Drawing Sheets



Related U.S. Application Data

(60) Provisional application No. 61/832,211, filed on Jun. 7, 2013.

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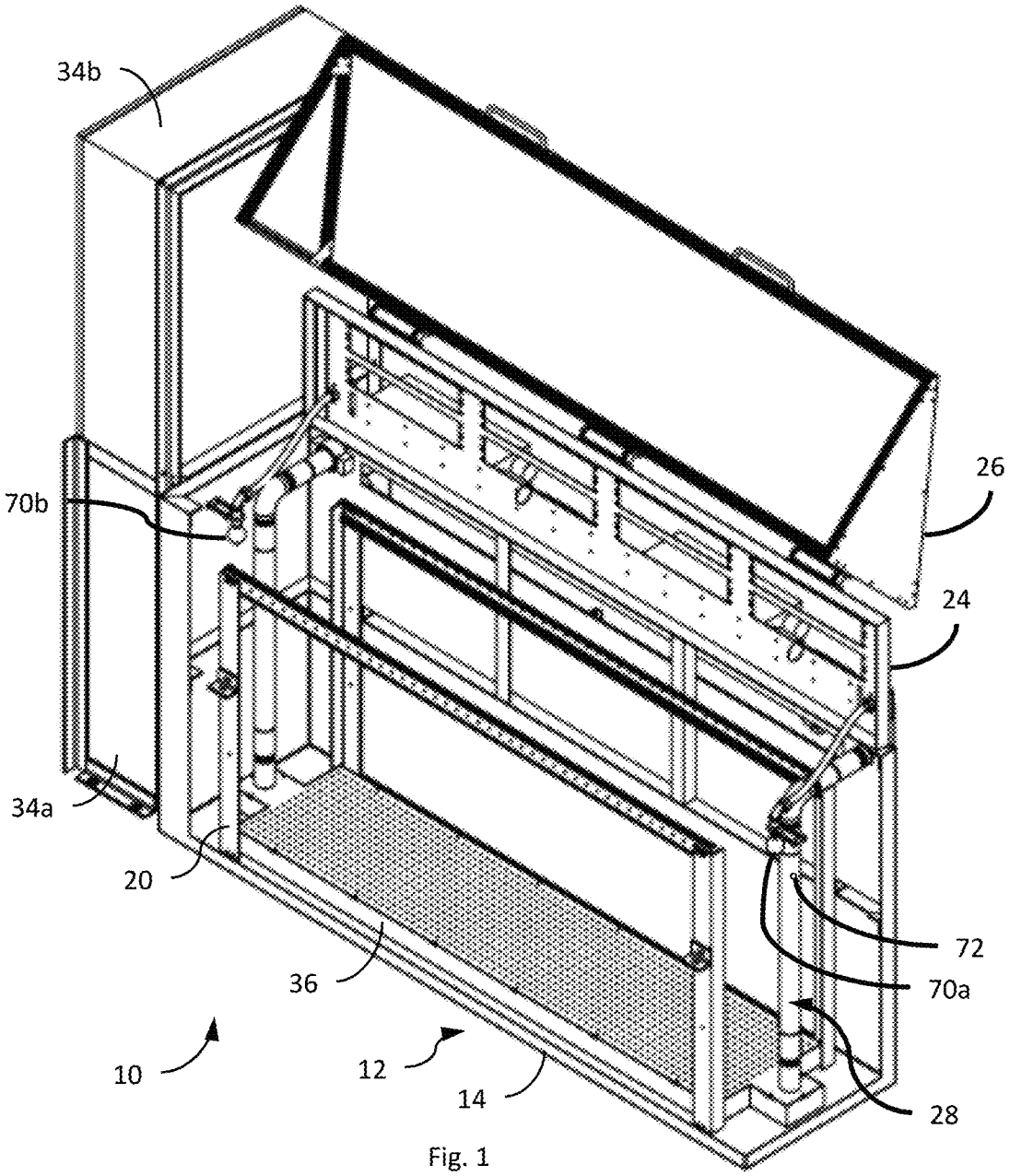


Fig. 1

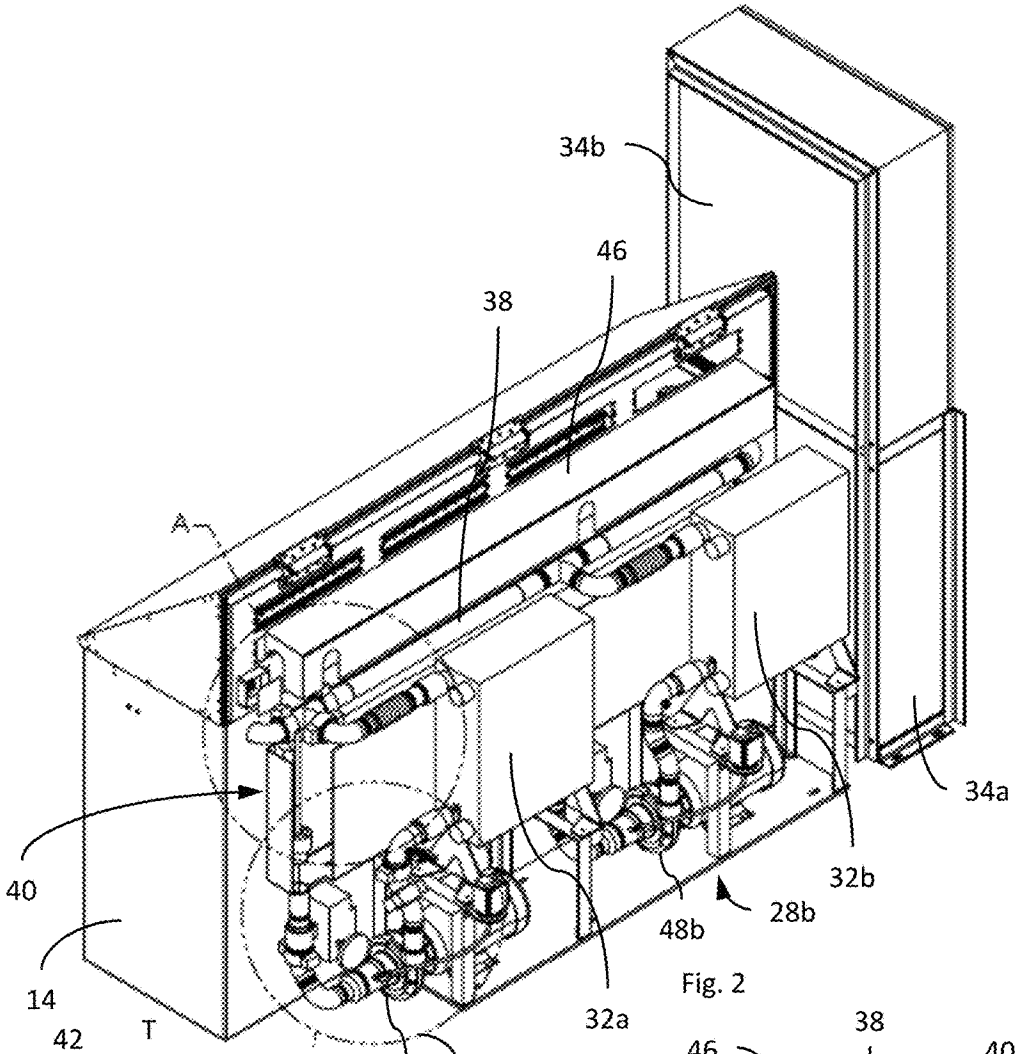


Fig. 2

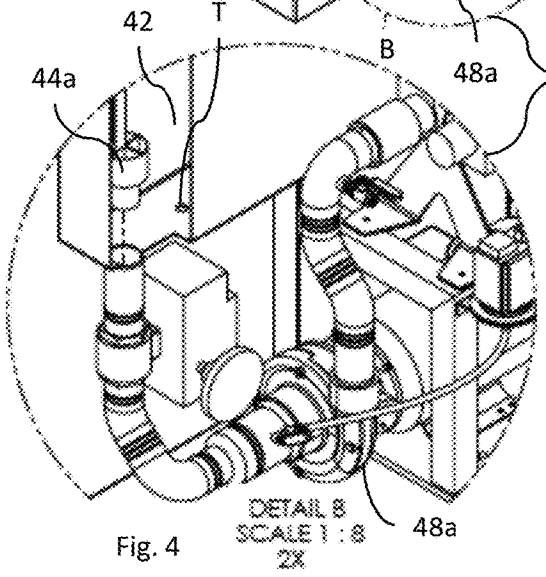


Fig. 4

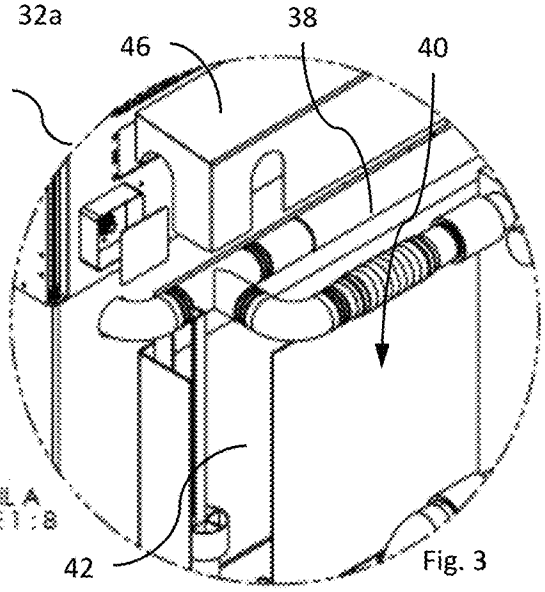


Fig. 3

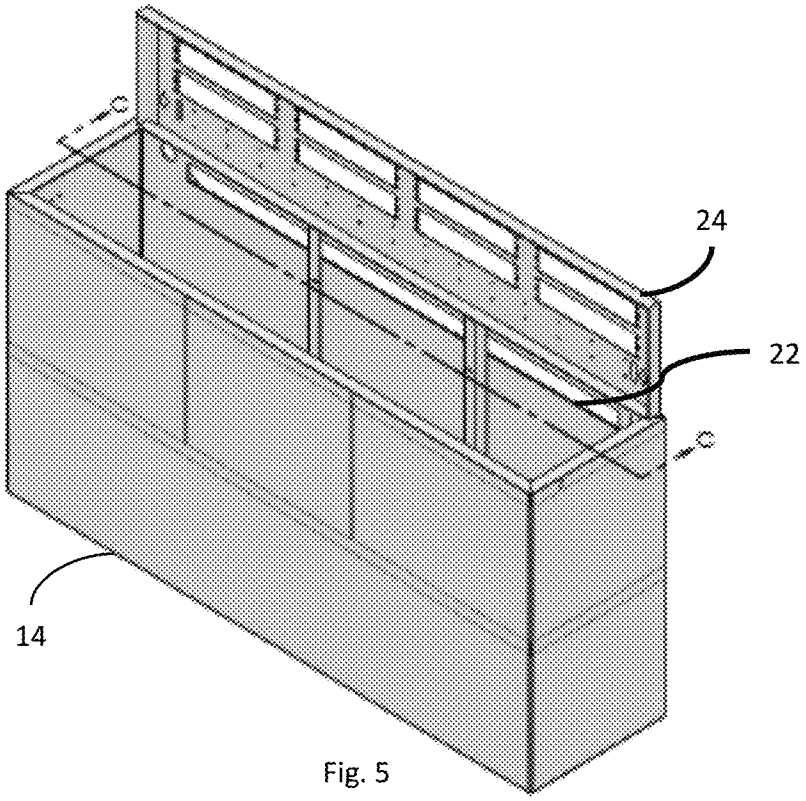
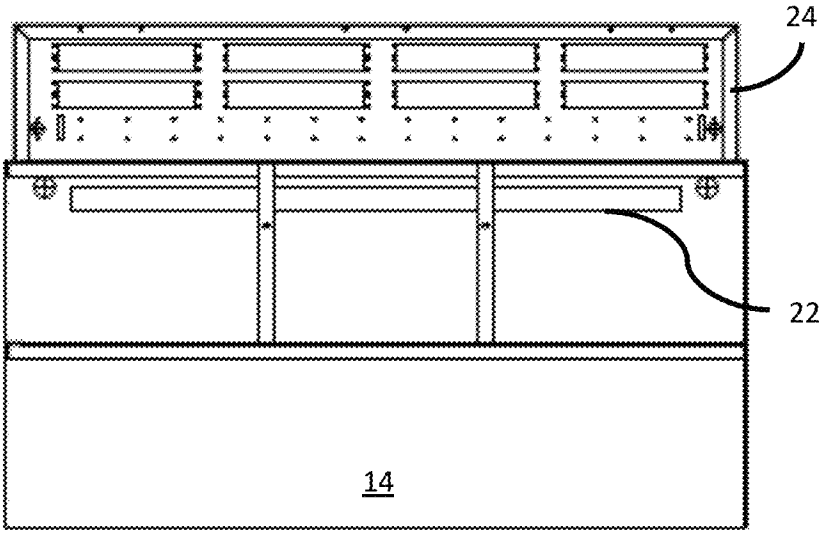


Fig. 5



Section C-C

Fig. 6

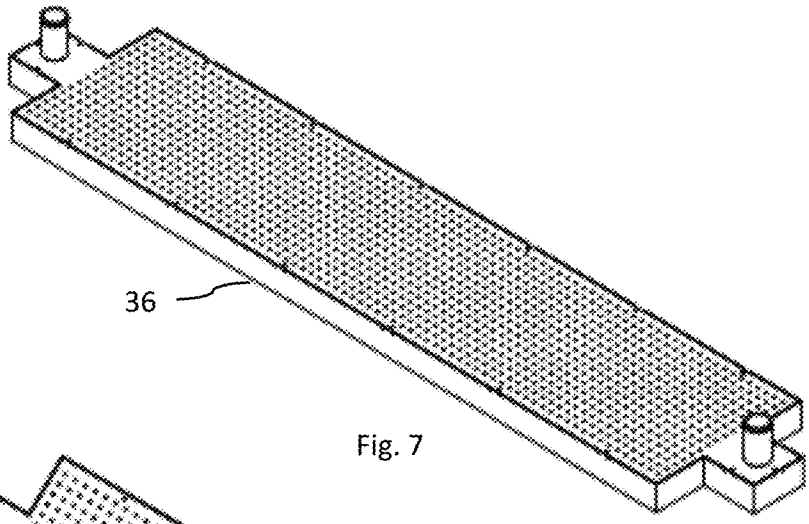


Fig. 7

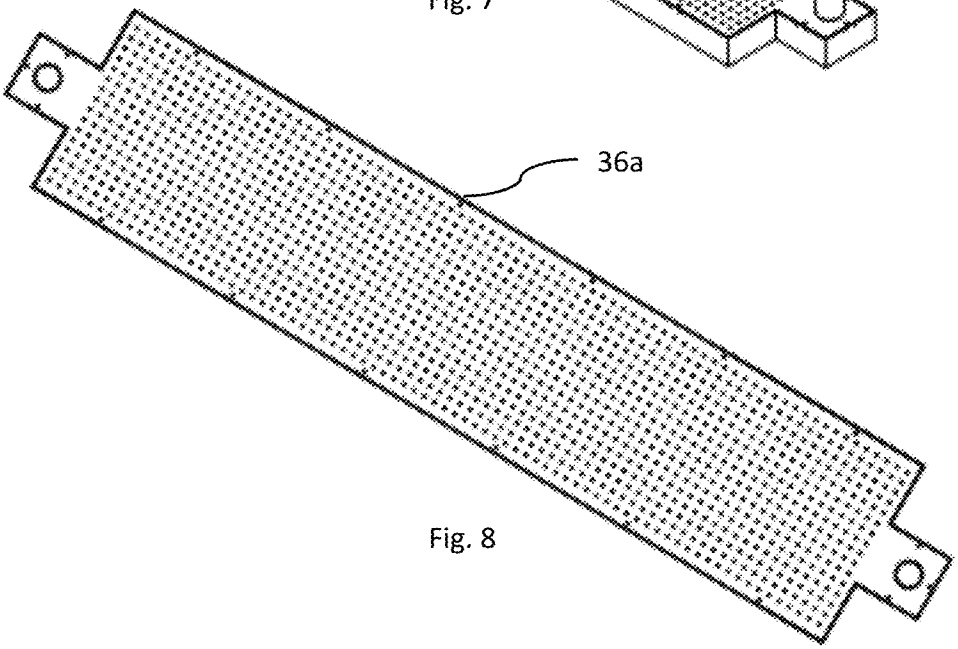


Fig. 8

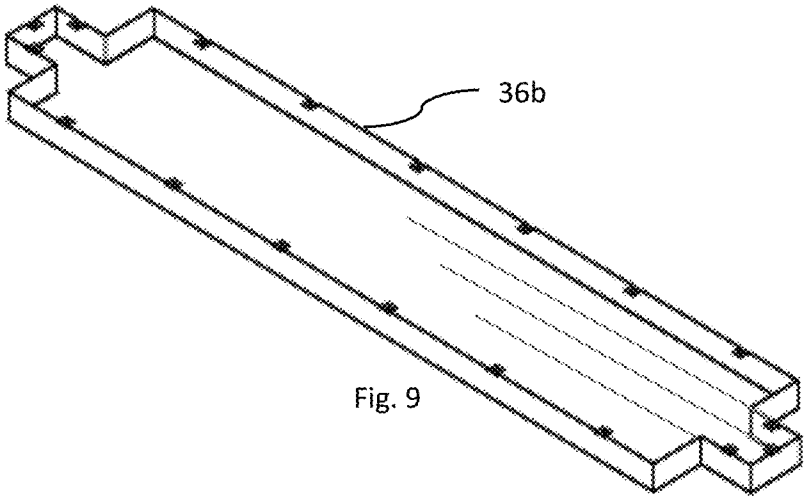


Fig. 9

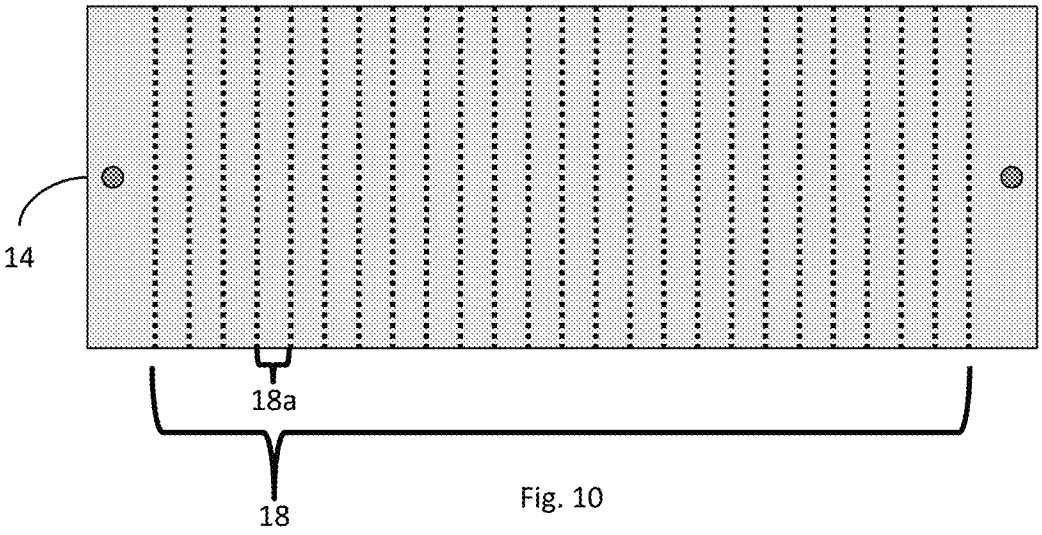


Fig. 10

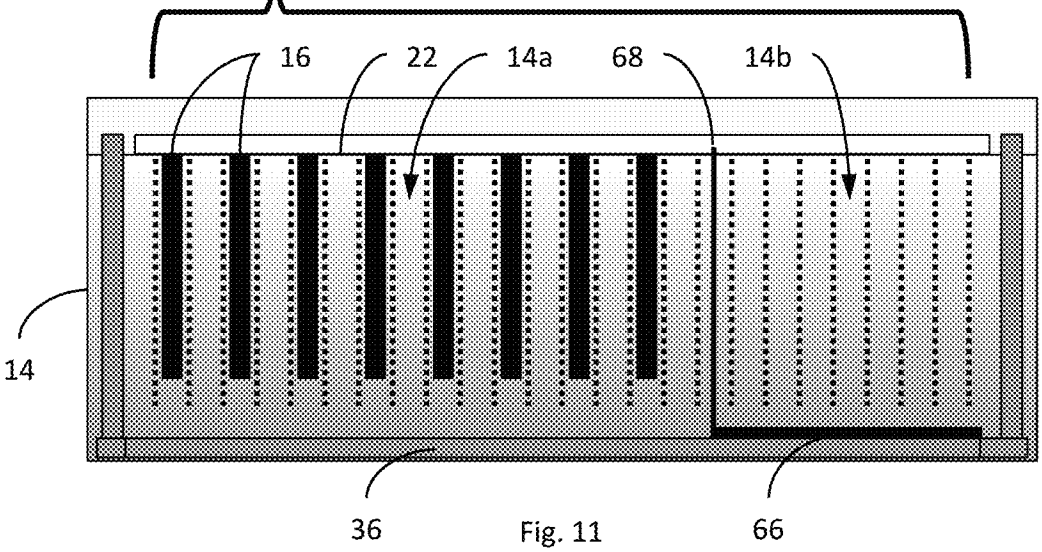


Fig. 11

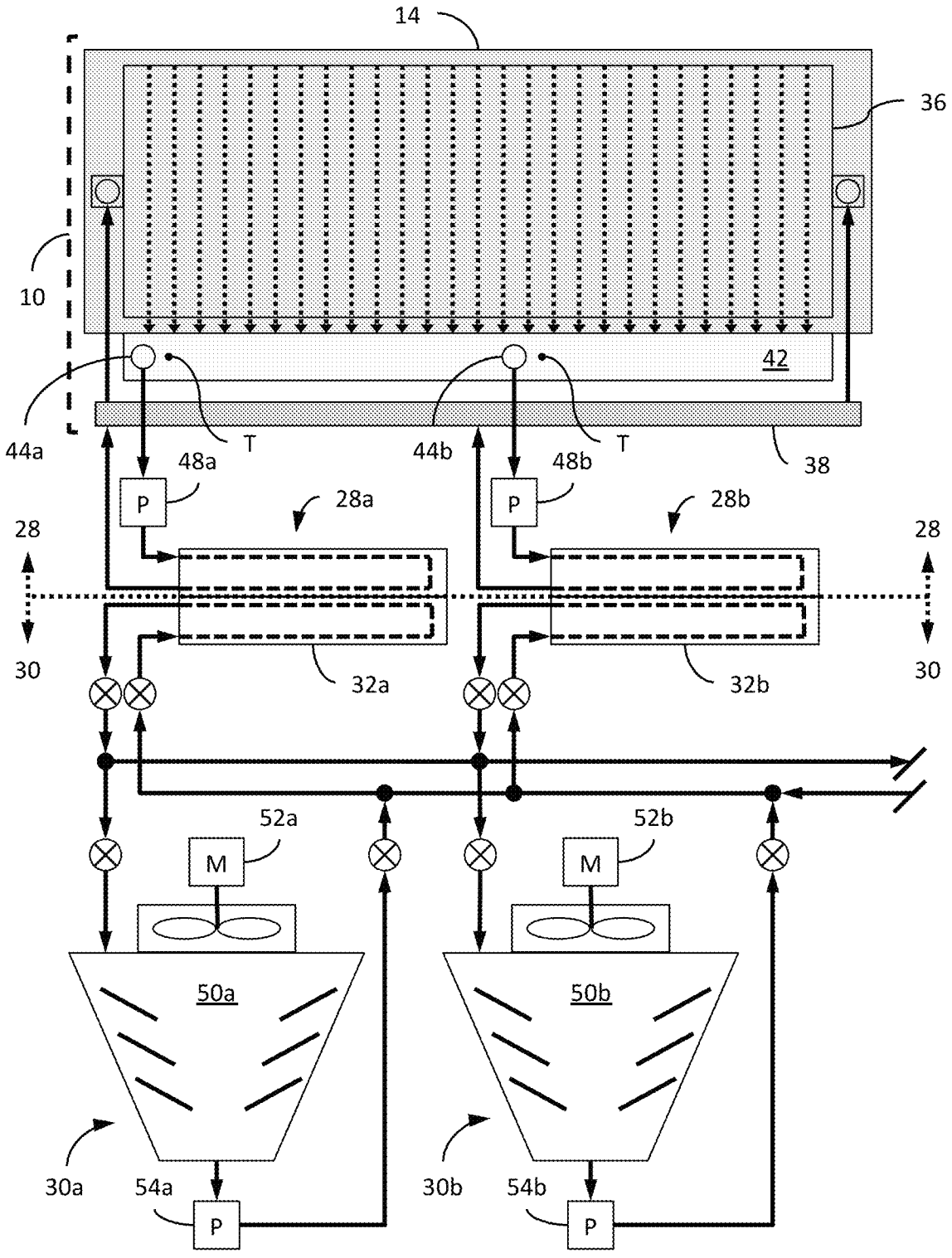

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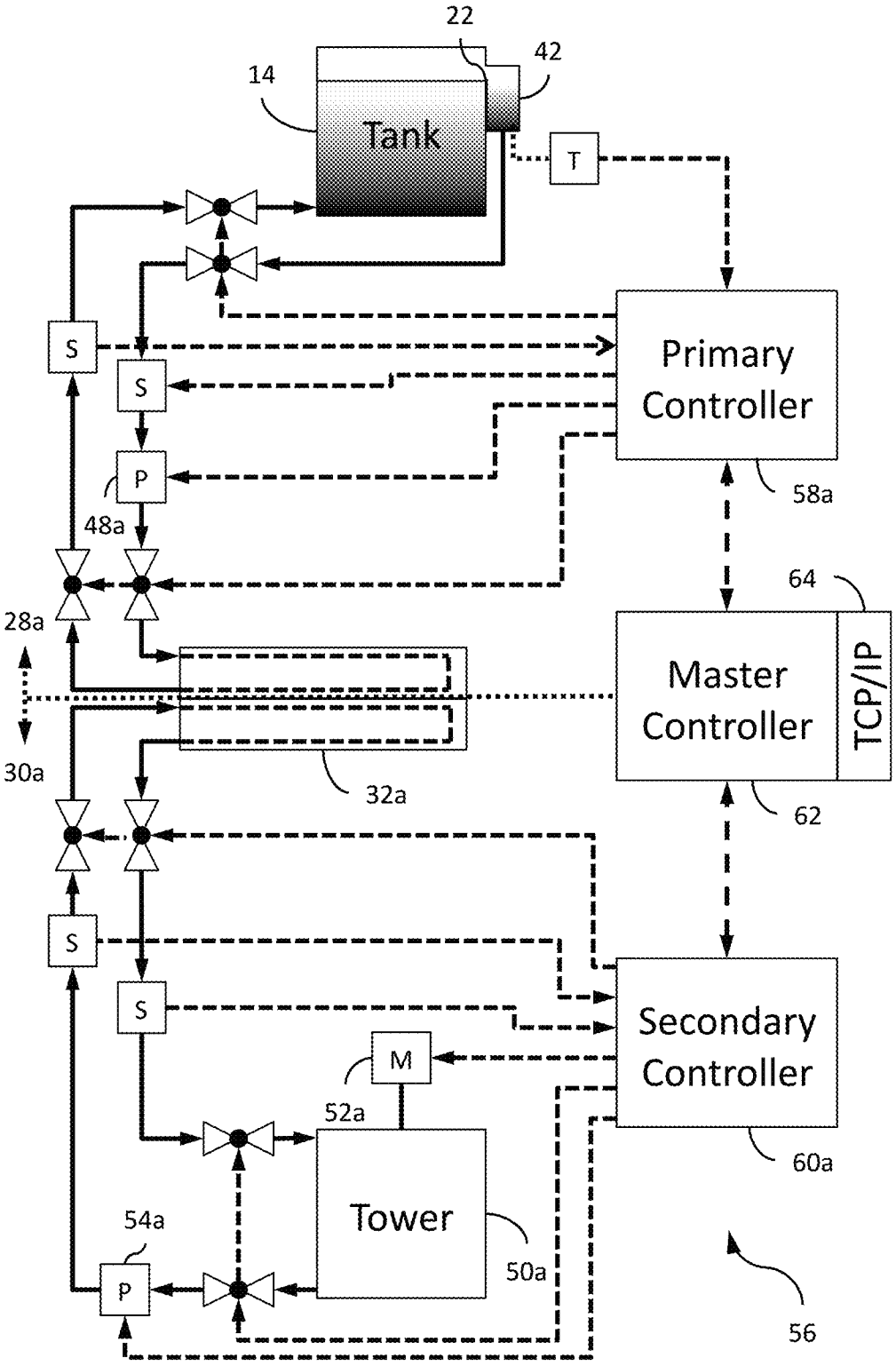
Fig. 12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Master Controller
TCP/IP
30a
32a
62
S
S
Secondary Controller
M
52a
60a
Tower
54a
50a
P
56

Fig. 13

APPLIANCE IMMERSION COOLING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is related to the following Provisional applications:

1. Ser. No. 61/737,200, filed 14 Dec. 2012 ("First Parent Provisional"); and

2. Ser. No. 61/832,211, filed 7 Jun. 2013 ("Second Parent Provisional");

and hereby claims benefit of the filing dates thereof pursuant to 37 CFR § 1.78(a)(4). (Collectively, "Parent Provisionals"). The subject matter of the Parent Provisionals, each in its entirety, is expressly incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to electrical appliance cooling systems, and, in particular, to an improved appliance immersion cooling system and method of operation.

2. Description of the Related Art

In general, in the descriptions that follow, we will italicize the first occurrence of each special term of art which should be familiar to those skilled in the art of immersion cooling systems. In addition, when we first introduce a term that we believe to be new or that we will use in a context that we believe to be new, we will bold the term and provide the definition that we intend to apply to that term.

U.S. Pat. No. 4,590,538, "Immersion Cooled High Density Electronic Assembly", Cray (filed 18 Nov. 1981 and issued 20 May 1986) ("Cray"), is an early example of an immersion system for cooling electronic components during normal operation. On information and belief, the machine disclosed therein was the Cray-2 super-computer ("Cray-2") manufactured by Cray Research, Inc. ("Cray Research"), of Chippewa Falls, Wis. Of particular interest to the present application is the description of the significant advantages resulting from using an electrically non-conductive or dielectric fluid to extract heat from electronic circuit assemblies during normal operation (see, e.g., col. 1, line 66—col. 2, line 29).

On information and belief, Cray Research released, in 1985, a marketing brochure entitled "The CRAY-2 Computer System" (a copy of which is submitted herewith) describing the Cray-2. Of particular interest in this brochure is the description therein of the significant advantages resulting from using a dielectric fluid to extract heat from electronic circuit assemblies during normal operation (see, pages 10 and 13).

U.S. Pat. No. 5,167,511, "High Density Interconnect Apparatus", Krajewski, et al. (issued 27 Nov. 1992) ("Krajewski"), discloses another example of an immersion system for cooling electronic components during normal operation (see, e.g., col. 2, lines 43-51). On information and belief, a machine implementing the Krajewski system was also marketed by Cray Research as a follow-on super-computer to the Cray-2.

One particular problem in the vertical-stack-type systems disclosed in the above references is the necessity of draining the cooling fluid whenever physical access to the electronic

modules was required. In general, such an operation, besides being time consuming, requires the entire system to be switched off, especially if the component requiring attention is an essential element in the system architecture, such as the central processing unit ("CPU"). One possible solution to this problem is to immerse circuit assemblies vertically into a tank containing the cooling fluid such that each of the various assemblies can be withdrawn independently from the tank for servicing, replacement, upgrade, etc. One interesting example of such a system is disclosed in a web-presentation entitled "Puget Custom Computer's mineral-oil-cooled PC", by Nilay Patel ("Puget") (posted 12 May 2007 at 11:57 AM; a copy of which is submitted herewith). As noted by the author, the lack of supplemental apparatus in the Puget system to extract waste heat from the oil inherently limited its operating capabilities.

Another problem with the Cray Research systems in particular is the nature and cost of the chosen cooling fluid: fluorocarbon liquids. As is known, other dielectric fluids, such as mineral oil, have better heat transfer characteristics; of course, being an oil, the use thereof does represent a greater residue problem on modules that may be repairable. Notwithstanding, the Puget system implemented precisely this design choice.

US Patent Application Publication 2011/0132579, "Liquid Submerged, Horizontal Computer Appliance Rack and Systems and Method of Cooling such a Appliance Rack", Best, et al. ("Best"), discloses a appliance immersion tank system, include support apparatus for extracting waste heat from the tank cooling fluid and dissipating to the environment the heat so extracted. Although an improvement in several respects over the prior art discussed above, this system exhibits, inter alia, the following problems: generally non-uniform flow patterns through the several appliance slots within the tank, potentially resulting in uneven cooling across all slots; constricted dielectric fluid supply and return ports resulting in unnecessarily high fluid flow velocities at the respective points of connection to the tank; poor scalability; and inadequate attention to fail-soft operation.

The subject matter of all of the prior art references discussed above, each in its entirety, is expressly incorporated herein by reference.

We submit that what is needed is an improved appliance tank immersion system and method of operation. In particular, we submit that such a system should provide performance generally comparable to the best prior art techniques but more efficiently and effectively than known implementations of such prior art techniques.

BRIEF SUMMARY OF THE INVENTION

In accordance with a preferred embodiment of our invention, . . .

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

Our invention may be more fully understood by a description of certain preferred embodiments in conjunction with the attached drawings in which:

FIG. **1** illustrates, in partial cut-away form, a front perspective of a tank module of an appliance immersion cooling system constructed in accordance with our invention;

FIG. **2** illustrates a rear perspective of the tank module shown in FIG. **1**;

FIG. **3** illustrates a close-up perspective of a detail A of FIG. **2**;

FIG. **4** illustrates a close-up perspective of a detail B of FIG. **2**;

FIG. **5** illustrates, in perspective view, several details of the tank shown in FIG. **1**, with special emphasis on the dielectric fluid recovery weir integrated into the long rear wall of the tank;

FIG. **6** illustrates, in cross-section view, the section C-C in FIG. **5**;

FIG. **7** illustrates, in perspective view, the plenum facility shown in FIG. **1**;

FIG. **8** illustrates, in top plan view, the orifice plate portion of the plenum facility shown in FIG. **7**;

FIG. **9** illustrates, in perspective view, the chamber portion of the plenum facility shown in FIG. **7**;

FIG. **10** illustrates, in top plan view, a plurality of appliance slots distributed vertically along, and extending transverse to, a long axis of the tank of FIG. **1**;

FIG. **11** illustrates, in longitudinal cross-sectional view, the plurality of appliance slots distributed vertically along, and extending transverse to, the long axis of the tank of FIG. **1**;

FIG. **12** illustrates, in flow schematic form, one instantiation of a flow arrangement suitable for implementing our invention; and

FIG. **13** illustrates, in control schematic form, one instantiation of a flow control facility suitable for implementing our invention.

In the drawings, similar elements will be similarly numbered whenever possible. However, this practice is simply for convenience of reference and to avoid unnecessary proliferation of numbers, and is not intended to imply or suggest that our invention requires identity in either function or structure in the several embodiments.

DETAILED DESCRIPTION OF THE INVENTION

Shown in FIG. **1** (front view) and FIG. **2** (rear view) is a tank module **10** adapted for use in an appliance immersion cooling system constructed in accordance with a preferred embodiment of our invention. For convenience of reference, we have illustrated in FIG. **1** the tank facility **12** of the immersion module **10** in partial cut-away to emphasize several important internal facilities; we have shown the tank facility **12** in isolation in FIG. **5**. In general, the tank facility **12** comprises: a tank **14** adapted to immerse in a dielectric fluid a plurality of electrical appliances **16**, e.g., contemporary computer servers (see, e.g., FIG. **11**), each in a respective appliance slot **18***a* distributed vertically along, and extending transverse to, a long axis of the tank **14** (see, generally, FIG. **10**); an appliance rack facility **20** of convention design adapted to suspend the appliances **16** (see, e.g., FIG. **11**) in respective appliance slots **18** (see, FIG. **10**); a weir **22** (best seen in isolation in FIG. **5** and FIG. **6**), integrated horizontally into one long wall of the tank **14** adjacent all appliance slots **18**, and adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each of the appliance slots **18**; an interconnect panel facility **24** attached to the upper rear edge of the tank **14** and adapted to mount various appliance power distribution equipment, cable interconnection panels and the like (none shown); and a cover **26** adapted to be opened and closed from the front of the tank **14** (and which may include a translucent portion to allow viewing of the interior of the tank **14** when in the closed position). In addition to the tank facility **12**, the immersion module **10** comprises: a primary circulation facility **28** (portions of which are shown in both FIG. **1** and FIG. **2**); a secondary fluid circulation facility **30** (of which only redundant heat exchangers **32***a* and **32***b* are shown in FIG. **2**); and control equipment cabinets **34***a* and **34***b*, each adapted to accommodate the module status and control equipment associated with a respective one of the primary circulation facilities **28***a* and **28***b* (see, FIG. **13**).

As can be best seen in FIG. **2**, the primary circulation facility **28** (comprising redundant sub-facilities **28***a* and **28***b*) comprises both passive (conduits, couplers, etc.) and active (valves, pumps, sensors, etc.) components; a subset of the passive components are shared, whereas, in general, the active components are duplicated and adapted to cooperate in operation as separate, redundant sub-facilities. Excluding the tank **14**, the primary shared component is the plenum facility **36** (see, FIG. **1** and FIG. **7**) comprising an orifice plate **36***a* (see, FIG. **8**) and a plenum chamber **36***b* (see, FIG. **9**). As can be seen in FIG. **1**, cooled dielectric fluid is pumped into both ends of the plenum facility **36** via a shared distribution header **38** (see, FIG. **2** and FIG. **3**). In general, the plenum plate **36***a* comprises at least one row of orifices vertically aligned with each appliance slot **18***a*, with the dimensions and flow rates of each set being adapted to provide substantially equal flow of the dielectric fluid upwardly into each appliance slot **18***a*. Preferably, each appliance slot **18***a* is supplied via several rows of orifices, thus generally tending to reduce the volume of the dielectric fluid exiting each orifice and to make the flow of dielectric fluid more uniform upwardly through the appliance slots **18**. One further shared component is the dielectric fluid recovery facility **40** (FIG. **2**) comprising a dielectric fluid recovery reservoir **42** (see, FIG. **3**, FIG. **4** and FIG. **13**) positioned vertically beneath the overflow lip of the weir **22** and adapted smoothly to receive the dielectric fluid as it flows over the weir **22**; the dielectric fluid recovery reservoir **42** is further adapted to allow the recovered fluid to be removed from the reservoir **42** via redundant recovery ports **44***a* and **44***b* (only port **44***a* can be seen in FIG. **2** as the port **44***b* is obscured by the heat exchanger **32***a*; but see FIG. **12**). As can be seen in both FIG. **3** and FIG. **4**, we consider it desirable to provide a vortex breaker at the input of each of the recovery ports **44**. Also, we provide a removable recovery reservoir cover **46** adapted to also cover a major portion of the distribution header **38**; note that, in both FIG. **2** and FIG. **3**, we have illustrated the reservoir cover **46** in a partially raised orientation so as to better depict details that would otherwise be obscured. Note that we have constructed the reservoir **42** such that the average height of dielectric fluid above the recovery ports **44** develops sufficient hydrostatic head to meet the requirements of the pumps **48**, while also tending to minimize the likelihood of breaking suction during normal operation.

At this point in the primary circulation facility **28**, we provide fully redundant sub-facilities **28***a* and **28***b*, each comprising a primary circulation pump (**48***a* and **48***b*) and associated passive and active components which, collectively, provide the motive power for circulating the dielectric fluid through the shared components and tank **14**. As can be generally seen, each of these sub-facilities **28***a* and **28***b* is adapted to recover the dielectric fluid exiting the tank **14** via the weir **22**, re-pressurize the recovered fluid, pass the re-pressurized fluid through a respective one of the heat exchangers **32***a* and **32***b*, and then back to the plenum facility **36** via the header **38**.

Shown in FIG. **12** is one flow arrangement suitable for integrating our tank module **10** into a fully redundant, appliance immersion cooling system, comprising the primary circulation facility **28** and the secondary fluid circu-

lation facility **30**. In general, the secondary fluid circulation facility **30** comprises redundant secondary circulation sub-facilities **30***a* and **30***b*, each of which is adapted to circulate a cooling fluid, e.g., treated water, through the respective heat exchanger **32***a* and **32***b* to extract heat from dielectric fluid counter-circulating therethrough and to dissipate to the environment the heat so extracted. In the illustrated embodiment, each of the secondary fluid sub-facilities **30***a* and **30***b* comprise conventional cooling towers **50***a* (including fan facility **52***a*) and **50***b* (including fan facility **52***b*), and secondary circulation pumps **54***a* and **54***b*. To facilitate flexible operation in installations including multiple immersion modules **10** in combination with a plurality of secondary circulation sub-facilities **30**, a common header arrangement can be implemented as illustrated in the secondary fluid circulation loop, with flow control valves located at key flow control points as is known.

Shown in FIG. **13** is a control facility **56** adapted to monitor and control the operation of both the immersion module **10** (including all active components of the primary circulation facility **28**), and the secondary fluid circulation facility **30**. As will be evident to those skilled in this art, efficient operation of our immersion module **10** requires continuous monitoring and control of several essential operating parameters, including fluidic temperatures, pressures, conductivity and pH at several points in the primary and secondary circulation loops. Although the several sensory and control functions can be implemented using traditional dedicated hardware components, we prefer to employ at least one programmable logic controller ("PLC"), commercially available from any of a number of respected vendors, e.g., the Allen-Bradley brand of PLCs from Rockwell Automation, Inc. In the instantiation illustrated in FIG. **13**, we have depicted: a primary controller **58***a* adapted to monitor and control the operation of the primary circulation sub-facility **28***a* as a function of the temperature of the dielectric fluid in the tank **14**; a secondary controller **60***a* adapted to monitor and control the operation of the secondary fluid circulation sub-facility **30***a* as a function of the temperature of the dielectric fluid flowing through the heat exchanger **32***a*; and a master controller **62** adapted to coordinate the activities of the primary controller **58***a* and secondary controller **60***a*. As can be seen, we have incorporated into the primary circulation sub-facility **28***a*: supply and return sensors, including a temperature probe, T, inserted into a thermowell (not shown) installed in the bottom of the reservoir **42** adjacent a respective return port **44***a* (note that, in FIG. **4**, only one of the holes that receive the thermowells is illustrated, but both holes are illustrated in FIG. **12**); a pair of sensor facilities, S, which may sense temperature, pressure and conductivity, as deemed desirable); and return (and, if desired, supply) flow control valves and controls for the primary circulation pump **48***a*; of course, a redundant set of these components exists for the primary circulation sub-facility **28***b*. In general, the goal is to maintain the temperature of the dielectric fluid in the tank **14** between a predetermined minimum temperature and a predetermined maximum temperature.

As noted above, we have provided separate control equipment cabinets **34***a* and **34***b*, each adapted to accommodate the several components comprising a respective one of the primary controllers **58***a* and **58***b*. For convenience of access, we prefer to co-locate with each of the cooling towers **50** a protective housing (not shown) for the respective secondary controller **60**. Of course, the control facility **56** can be instantiated as a single, multi-module PLC facility, with similar or other combinations of monitoring devices as deemed most appropriate for a particular installation. Alternatively, one or more, and perhaps all, of the functions performed by the controllers **58**, **60** and **62** may be implemented in the form of dedicated application-specific software executing on a conventional computer platform having the appropriate resources; indeed, it would be entirely feasible to implement the entire control facility **56** on a server **16** installed in a tank **14**.

One desirable enhancement that we recommend is a remote control facility, implemented, e.g., via the master controller **62** (or by way of a direct, per-controller interface), adapted to facilitate remote monitoring of system status (e.g., temperatures, pressures, etc.) and control over system control parameters (e.g., temperature and pressure limits, etc.) to the primary controllers **58** and secondary controllers **60**. For example, using a conventional data communication hardware module **64**, e.g., an ethernet card implementing the TCP/IP protocol, a modern web browser can be adapted to provide a graphical user interface ("GUI") with sufficient functionality to facilitate monitoring and control of an entire installation from a remote location. Such a GUI may be implemented using any of a number of programming paradigms, e.g., PHP, .NET and the like.

Operational control of redundant, continuous process flow systems is generally well known. Preferable, each of the several redundant sub-facilities are routinely activated to assure current functionality, and to allow the inactive sub-facility to be serviced according to an established schedule. We believe this continuous rotation of system resources to be so important that we recommend switching the sub-facilities at least once, and preferably, several times, per day; although this is possible to implement manually, we prefer to enable the master controller **62** to control the sequencing of the several switch-over operations. One further aspect of this sophistication in control is the ability to perform stress testing of the several sub-systems under controlled conditions so as to assure appropriate response to real-time emergencies.

In our First Parent Provisional, we have disclosed an alternate embodiment comprising an appliance immersion tank facility wherein the function of the plenum facility **36** is performed by a manifold facility comprising a ladder-arrangement of tubular spray bars, each bar of which supplies dielectric fluid to a respective appliance slot. As we noted, one particular advantage of this arrangement is that individual spray bars may be shut off if the respective appliance slot is not occupied and, thus, save energy. To further increase energy efficiency, we have provided optional vertical flow barriers adapted to partition the tank into an active portion, having active appliances, and a stagnant portion, having no active appliances. One further enhancement we disclosed is the provision of temperature sensors per appliance slot, such that the flow rate through each spray bar can be dynamically varied as a function of the temperature of the dielectric fluid exiting the respective slot. Other operative configurations will be readily perceived by those skilled in this art.

In a manner analogous to the embodiment described in our First Parent Provisional, it would be advantageous, from an energy point of view, to provide a plurality of flow barrier plates **66** (shown by way of example only in FIG. **11**), each adapted to be attached to the top of the plenum facility **36** so as substantially to block the flow of the dielectric fluid through the row(s) of orifices in the plenum plate **36***a* corresponding to at least a respective one of the appliance slots **18***a*; an elastomeric layer (not shown) could be provided on the interface surface of the plate(s) **66** to enhance

the sealing effect. Such an arrangement would allow the total flow through the plenum facility **36** to be adjusted, in the field, as a function of the actual number of active appliances **16** in the tank **14**. Further, this arrangement can incorporate a relocatable vertical baffle plate **68** (see FIG. **11**) adapted substantially to partition the tank **14** into an active portion **14***a* containing the active appliances **16** and an inactive portion **14***b* containing no appliances (or at least no active appliances **16**); preferably, the baffle plate **68** is adapted to be mounted in the appliance rack facility **28** in a manner similar to an actual appliance **16** (the baffle plate **68** need not fully block the flow of dielectric fluid between the active portion **14***a* and inactive portion **14***b*, but only significantly impede the flow between these portions). Note that, in the example scenario illustrated in FIG. **11**, we have shown one possible arrangement of a total of 8 active appliances **16** distributed across **16** appliance slots **18***a* so as to spread the total heat load across adjacent empty slots **18***a*. Such an optimal arrangement is possible only if less than a majority of the available appliance slots **18***a* are occupied by an active appliance **16**. Clearly, such optional adjunct facilities enhance flexibility in operation, accommodating dynamic adjustment of the flow rates in the primary circulation sub-facilities **28***a* and **28***b* under variable heat loads, while providing opportunities to conserve energy that might otherwise be expended moving the dielectric fluid through the inactive portion **14***b* of the tank **14**. Other operative configurations will be readily perceived by those skilled in this art.

In our Second Parent Provisional, we have disclosed another embodiment comprising a more conventional, less-modularized instantiation with appropriate flow and control facilities. In this embodiment, we chose to implement tank clusters, comprising, e.g., 4 appliance immersion tank facilities, with substantially all of the other equipment being constructed from stand-alone, commercially available components. Such an arrangement offers greater opportunities to select and install improved components, or to add enhancements to the installation, as deemed desirable after initial installation. Other operative configurations will be readily perceived by those skilled in this art.

As we noted above with reference to the embodiment illustrated in FIG. **12**, the secondary flow header facility is well adapted to allow any secondary circulation sub-facility **30** to be connected to any active heat exchanger **32**. Such a facility provides great flexibility in dealing with unusual system conditions, especially in installations wherein the secondary circulation sub-facilities **30***a* and **30***b* are each sized to support a cluster of tank modules **10**. Imagine, for example, that, while one of the secondary circulation facilities **30**, say sub-facility **30***a*, is being serviced, the activities of the set of appliances **16** in one tank **14** in the cluster are higher than normal, resulting in a rise in temperature in that tank **14** above the desired maximum. In response, the master controller **62** can direct Primary Controllers **58***a* and **58***b* assigned to tank **14** to operate both of the primary circulation sub-facilities **28***a* and **28***b* simultaneously, i.e., in parallel. Using the secondary flow header facility, the heat being extracted by both of the heat exchangers **32***a* and **32***b* may be dissipated using the resources of the single on-line secondary circulation sub-facility **30***b*. Thus, one clear advantage of this alternate embodiment is the ability dynamically to perform load balancing across all system resources. Other operative configurations to support sub-system load balancing will be readily perceived by those skilled in this art.

Preferably, one or more filters (not shown) are included in the flow path through each of the primary circulation sub-facilities **28***a* and **28***b* to remove any particulates or other undesirable foreign matter that may have been picked up by the dielectric fluid on its passage though the entire primary circulation facility **28**; chemical sensors may also be provided to detect the presence of unexpected chemicals that may indicate failure of sub-components within one of the appliances **16**. Similar components, such as pH sensors, may also included in the secondary fluid circulation facility **30**.

As can be seen generally in FIG. **1**, we provide a pair of low dielectric fluid level sensors **70***a* and **70***b* adapted to trigger an alarm signal in the event that, for whatever reason, the level of the dielectric fluid in the tank **14** drops below a predetermined minimum level. Additionally, the responsive primary controller **58** can initiate other actions to address the detected problem, including activating audio alarms, transmitting electronic alert signals and the like.

To solve a reciprocal problem, namely leakage from an external portion of the primary circulation loop **28** resulting in the dielectric fluid in the tank **14** being back-siphoned through the plenum facility **36**, we recommend incorporating a siphon breaker **72** (see, FIG. **1**) in the supply pipe at a predetermined location well above the plenum facility **36** but somewhat below the level of the weir **24**. Such a siphon breaker can be as simple as a relatively small diameter hole **72** drilled through the supply pipe at the selected location; due to the relatively high viscosity of the dielectric fluid, even when heated, any resulting leakage during normal operation will be relatively insignificant. Other operative responses to address these and other unusual fluidic conditions will be readily perceived by those skilled in this art.

As is known (see, e.g., Best), many conventional, commercially available electrical/electronic appliances include components that will not function correctly if immersed in a dielectric fluid, especially one as viscous as mineral oil: cooling fans and rotating media disk drives. In general, all cooling fans are unnecessary in an immersion cooling system and can be simply removed. The media drives, however, are usually necessary for normal appliance operation. One option is to remove each drive, totally seal the drive against fluid entry, and reinstall the now-sealed drive (pre-sealed drives are also available). Another option is to remove the drive and mount it on the interconnect panel facility **24**; typically special cabling will be required to re-attach the drive to the internal appliance socket. Yet another option is to replace the rotating media drive with a solid-state drive having no moving components. Other operative configurations will be readily perceived by those skilled in this art.

It will be recognized that, in all of the embodiments described herein, emphasis was placed on minimizing the total volume of the dielectric fluid circulating throughout each immersion module **10**. We submit that the key concept here is to move the secondary fluid to the point of heat exchange with the primary fluid, rather than to move the primary fluid to the point of heat exchange with the secondary fluid. Thus, in our preferred embodiment, all of the essential components of the primary circulation facility **28** are tightly co-located with the tank **14** so as to form a highly-integrated module. Further, our placement of the reservoir **42** outside of (but immediately adjacent to) the tank **14** tends to reduce the total volume of the dielectric fluid (as opposed to the alternative arrangement we proposed in our First Provisional, wherein a recovery trough was disposed within the tank **14**); then, we positioned the components comprising the primary circulation sub-facilities **28** so as to be vertically beneath the footprint of the reservoir

42. In addition to conserving valuable floor space in a typical data center installation, the resulting modular configuration facilitates both easy initial installation and subsequent upgrade to efficiently satisfy increasing data center workloads. Indeed, our invention greatly enhances system scalability, a key concern to data center operators. Finally, our system-wide redundancy substantially assures fail-soft operation during periods of unusual environmental conditions, infrastructure instability or political unrest.

Although we have described our invention in the context of particular embodiments, one of ordinary skill in this art will readily realize that many modifications may be made in such embodiments to adapt either to specific implementations. By way of example, it will take but little effort to adapt our invention for use with electronic appliances other than contemporary servers; and to adjust the dimensions of the appliance accommodation slots accordingly. Similarly, practitioners in the art will readily recognize that other, known secondary circulation facilities may be employed effectively, including forced air, vapor compression systems, earth-water sink loops, waste heat recovery and recycling systems, and the like (see, e.g., the several alternatives discussed in Best). Further, the several elements described above may be implemented using any of the various known manufacturing methodologies, and, in general, be adapted so as to be operable under either hardware or software control or some combination thereof, as is known in this art.

Thus it is apparent that we have provided an improved system and method of operation for immersion cooling of appliances and the like. In particular, we submit that such a method and apparatus provides performance generally comparable to the best prior art techniques but more efficiently and effectively than known implementations of such prior art techniques.

What we claim is:

1. An appliance immersion cooling system comprising:
- a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank, the tank comprising:
  - a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot;
- a primary circulation facility adapted to circulate the dielectric fluid through the tank, comprising:
  - a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot;
- a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted; and
- a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

2. The system of claim 1 wherein the tank and primary circulation facility comprise a tightly co-located module.

3. The system of claim 1 wherein the tank further comprises:
- an interconnect panel facility adapted to mount appliance support equipment.

4. The system of claim 1 wherein the primary circulation facility further comprises:
- at least first and second primary circulation sub-facilities, each adapted to operate independently to circulate the dielectric fluid through the tank;
- wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities and the secondary fluid circulation facilities so to maintain the temperature of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.

5. The system of claim 1 wherein the control facility further comprises a communication facility adapted to facilitate monitoring and control of the control facility from a remote location.

6. A tank module adapted for use in an appliance immersion cooling system, the tank module comprising:
- a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank, the tank comprising:
  - a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot;
- a primary circulation facility adapted to circulate the dielectric fluid through the tank, comprising:
  - a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot; and
- a control facility adapted to control the operation of the primary fluid circulation facility as a function of the temperature of the dielectric fluid in the tank.

7. The module of claim 6 wherein the tank and primary circulation facility comprise a tightly co-located module.

8. The module of claim 6 wherein the tank further comprises:
- an interconnect panel facility adapted to mount appliance support equipment.

9. The module of claim 6 wherein the primary circulation facility further comprises:
- at least first and second primary circulation sub-facilities, each adapted to operate independently to circulate the dielectric fluid through the tank;
- wherein the control facility is further adapted to coordinate the operation of the first and second primary circulation sub-facilities so to maintain the temperature of the dielectric fluid in the tank substantially between a predetermined minimum temperature and a predetermined maximum temperature.

10. The module of claim 6 wherein the control facility further comprises a communication facility adapted to facilitate monitoring and control of the control facility from a remote location.

* * * * *

EXHIBIT 3

FILED UNDER SEAL

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

EXHIBIT 4

FILED UNDER SEAL

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

EXHIBIT 5

FILED UNDER SEAL

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

EXHIBIT 6

FILED UNDER SEAL

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

EXHIBIT 7

FILED UNDER SEAL

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

EXHIBIT 8

FILED UNDER SEAL

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

EXHIBIT 9

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

MIDAS GREEN TECHNOLOGIES, LLC *
*
VS. *
*
RHODIUM ENTERPRISES, INC., ET AL. *

April 9, 2024

CIVIL ACTION NO. 6:22-CV-50

BEFORE THE HONORABLE ALAN D ALBRIGHT
PRETRIAL HEARING (via Zoom)

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Proceedings recorded by mechanical stenography, transcript produced by computer-aided transcription.

09:33 (Hearing begins.)

09:33 DEPUTY CLERK: A civil action in Case 6:22-CV-50, Midas Green Technologies, LLC versus Rhodium Enterprises, Incorporated, et al. Case called for a pretrial conference.

09:33 THE COURT: If I could have announcements from counsel, please.

09:33 MR. SMITH: Your Honor, for plaintiff Midas Green, Michael Smith. And with me today are Mr. Joe Thomas, Mr. Bill Kolegraff, and Mr. Grant Thomas; and we're ready to proceed.

09:33 MR. UNDERWOOD: Good morning, Your Honor. Travis Underwood on behalf of the Rhodium defendants. With me is my law partner Melissa Smith. We also have from the Stris & Maher firm our lead counsel, Liz Brannen, along with two other members from her firm, Peter Brody and Sarah Rahimi; and we're ready to proceed.

09:34 THE COURT: With this group, I feel like I'm an honorary Eastern District of Texas judge. What an honor. If I could have only been picked to serve there.

09:34 I will take up first the motion to correct inventorship. And I'll hear argument on that, please.

09:34 Mr. Thomas, I think that's you, or Mr. Kolegraff. Okay.

09:34 MR. KOLEGRAFF: Good morning. This is William Kolegraff.

09:34 THE COURT: Good morning to you, sir.

09:34 MR. KOLEGRAFF: Yes. So this patent was originally issued with seven named inventors. However, during the process of preparing for this case for trial, we discovered that six of the inventors should not have been named. We provided a correction of inventorship document, which was sent to the Patent and Trademark Office about a year ago. We're still waiting to hear back from them.

09:35 So what we did is, in an abundance of caution, just in case we don't get this resolved by the PTO by the time trial starts, we've asked the Court to order the director of the office to correct the inventorship. So right here, we believe we've met our burden for clear and convincing evidence. Every one of the --

09:35 THE COURT: Does that mean I get to tell Kathi Vidal what to do, or is it someone else?

09:35 MR. KOLEGRAFF: Yes. You do. I could help draft that order for you.

09:35 (Laughter.)

09:35 MR. KOLEGRAFF: But we do believe we've met the burden for clear and convincing evidence. First of all, the package that we have duplicated for you in the filing is the exact package that we submitted to the Patent and Trademark Office, which meets all the statutory requirements. All the six inventors that are being removed have signed declarations that they agree that they should be removed from the patent.

09:35 The remaining inventor, Christopher Boyd, has agreed that he is the sole inventor. And Midas Technology, the assignee of all the rights in interest in the patent, has also agreed to this change. So we don't see any reason why this can't be allowed because there's clear and convincing evidence to remove these inventors.

09:36 Now, Rhodium does try to muddy the water and they bring up the names of two other people that they say may be inventors, Rainone and Christian Best. That really is irrelevant to this particular motion.

09:36 This motion is merely to remove six named inventors that were wrongly named on the patent, and if they believe others should be added, then they can take that up at a separate -- separate matter. And just as a point of interest, they don't have any standing to do

this anyway because they don't represent Rainone or Christian Best, as far as we know.

THE COURT: Okay. Response?

MS. BRANNEN: Good morning, Your Honor. Elizabeth Brannen from Stris & Maher on behalf of the Rhodium defendants.

I guess we really should have briefed the point about Ms. Vidal, who -- Director Vidal, who I remember fondly as Kathi Kelly Lutton, but the reason we think this Court should not tell her agency what to do:

First of all, I think they say in their reply, they expect the agency to rule soon anyway. So there is the chance that we can just see what the Patent Office does. But the reason I would ask the Court to deny the motion is that the correct inventorship is a disputed issue in our litigation.

We do contend that there are two omitted inventors, who they're not even trying to add. And we don't think the record that they've submitted to this Court even tries to meet their clear and convincing burden to prove that all six of the guys they say should come off actually didn't contribute.

You know, two of them, and we've cited examples in our brief, testified that they contributed

09:37 to conception of one or more aspects of the claimed
09:38 invention. So I don't -- if you grant the motion, we
09:38 don't believe you'd be correcting anything. We just
09:38 don't think they met their burden. And at this point,
09:38 it may be best to see what the agency does.
09:38 THE COURT: Anything else from the
09:38 plaintiffs?
09:38 MR. KOLEGRAFF: Yeah. Just on the issue
09:38 of disputes of inventorship, there is no dispute on the
09:38 removal of these six. Those six, all six, have agreed
09:38 to do this. All six have testified that they're not
09:38 inventors. All six have testified that they are
09:38 comfortable with, and believe it's correct, that
09:38 Christopher Boyd is the sole inventor.
09:38 That's all, Your Honor.
09:38 THE COURT: Anything else?
09:38 MS. BRANNEN: Your Honor, in our brief,
09:38 we cited testimony from two of them to the effect that
09:38 they contributed to conception, and so that would not
09:38 make it proper to remove them. We don't think they've
09:38 met the clear and convincing burden.
09:38 THE COURT: Okay. I'll be back in a
09:38 second.
09:38 (Pause in proceedings.)
09:43 THE COURT: Okay. I'm going to grant the

09:43 dismissal of the six; but with regard to the additional
09:43 two, I'm not sure -- I'll hear from defendant. I'm not
09:43 sure, procedurally, that issue is in front of me. I
09:43 don't think you're raising it in a response to a motion
09:43 properly put in front of me.
09:44 I'm really asking you. Is that wrong?
09:44 I'm thinking if it were, like, in a pleading or
09:44 something, it would be in front of me, or it's an issue
09:44 that the Patent Office should take up.
09:44 MS. BRANNEN: Good morning, Your Honor.
09:44 I think we would agree that doesn't -- the point I was
09:44 trying to make on this motion is, it wouldn't, from our
09:44 perspective, be a correction. So we were hoping the
09:44 Court would deny this motion on that basis. But I
09:44 think we can present evidence to the jury about whether
09:44 the patent is invalid for failure to list those two
09:44 individuals who we believe should be listed, who
09:44 they're not even asking you to add.
09:44 THE COURT: And have you raised that
09:44 issue formally in the case?
09:44 MS. BRANNEN: We have, Your Honor.
09:44 THE COURT: Okay. Okay. Well, then
09:44 we'll take that up at trial.
09:44 Next up, I have -- give me one second --
09:44 the motion to exclude rebuttal report and testimony of

Dr. Alfonso Ortega.

And for the record, I have: Paragraphs 91, 92, 133 through 146, 178, 184, 189 and 90, 213, 222, 239 and 277.

I'll hear argument on that, please.

MR. THOMAS: Good morning, Your Honor. Joseph Thomas on behalf of the plaintiff Midas Green Technology.

Your Honor, this is a case that is, in my 40 years of practice, I've never seen. A law firm directly engage a party who was supporting an expert and use the privilege to shield from discovery all communications, all test data, all test parameters, and produce nothing but a simple result file, which is what happened here today -- or happened in this case.

We think the law's very clear under Rule 26 that anything the expert relies upon must be produced in a case, and had Mr. Ortega functioned, as the defendants claim, as his support staffer -- is the term that they've used -- all of this would have been discoverable, none of this would have been hidden from us.

And as it stands, the only thing we have access to is a simple result file that, of course, shows a result that Dr. Ortega likes and counsel for

Rhodium likes, but none of the underlying test parameters, test conditions, test failures, the convergence data has been produced. And this kind of -- I guess it's almost a policy argument, I mean, whether the Court would sanction and allow lawyers to --

THE COURT: I got it. I got it.

Is there anything else you need to add?

MR. THOMAS: No, Your Honor. We briefed this and it seems like you've read it. I would just point out, we think the Cellular Communications Equipment case is really on point here, and this report should be excluded.

THE COURT: The portion -- the paragraphs I just read out should be excluded, right?

MR. THOMAS: Well, we think the -- there's a basis to exclude the entire report. We've also, alternatively, cited specifically paragraphs that rely on and use in reference to this CFD report. I can recite those for you if you want, Your Honor. They're in our moving papers.

THE COURT: No. I -- okay.

I'll hear a response.

MS. BRANNEN: Good morning, Your Honor.

We think that the criticisms are wrong on

09:47 the facts about what happened, and also about the law.
09:47 So Dr. Ortega, to start with, opines that limitations
09:48 of the patent claims are missing and this motion, as I
09:48 think the Court has observed, only affects one
09:48 limitation, the plenum limitation.
09:48 And what Dr. Ortega did for that
09:48 limitation, it requires a plenum at the bottom of the
09:48 tank; and that has to be adapted to dispense the
09:48 dielectric fluid in the tank substantially uniformly
09:48 upwardly through each appliance slot.
09:48 The first thing that Dr. Ortega did was
09:48 to look at the design of the tank, the thing they're
09:48 pointing to is the plenum. One part of it has a bunch
09:48 of holes in it and it's designed to send the fluid
09:48 where things are hottest and need to be cooled the
09:48 most.
09:48 And he used his expertise to say this --
09:48 you know, this doesn't go substantially uniformly
09:48 upwardly. He reached that conclusion separately on the
09:48 plenum limitation.
09:48 Then he used data from the CFD analysis
09:48 that they challenge. Now, whether they're right, that
09:49 the -- his graduate student, who he trained how to do
09:49 CFD -- whether they're right, that that was an
09:49 independent expert, nontestifying expert, or whether

09:49 we're right, that that was his support staff, his
09:49 graduate student, the standard for what we had to do
09:49 was the same. Any of the data that Dr. Ortega relied
09:49 upon, reviewed and relied upon, we had to produce to
09:49 them. And we did that.
09:49 And their motion says we didn't give CAD
09:49 files, for example. That's flatly wrong. We can look
09:49 at their own expert's report at Paragraphs 132 and 52,
09:49 and he cites those CAD files because we produced them
09:49 in November.
09:49 They're also -- they also try to say that
09:49 there was cherry-picking. No. Dr. Ortega said,
09:49 here's -- that's a very large set of data. I want to
09:49 see the part that's right -- you know, he chose the
09:49 place he wanted to see it based on the claim language,
09:49 which requires the fluid to be going substantially
09:50 uniformly upwardly through the appliance slot.
09:50 That data that he relied upon, we have
09:50 produced to them. They never asked for additional data
09:50 from us in discovery. They never used this Court's
09:50 robust and efficient discovery dispute processes to say
09:50 we should have given them anything more.
09:50 And they're just wrong that
09:50 communications with support staff or nontestifying
09:50 experts get produced under Rule 26. They don't. The

09:50 thing that gets produced is what we have produced, what
09:50 the expert relied upon.
09:50 There is a case in response to the
09:50 argument they make in reply that I would like to call
09:50 the Court's attention to where the fact pattern is very
09:50 similar and the expert who was undisclosed was found to
09:50 be -- there was no exclusion of the testifying expert's
09:50 report. That is National Wildlife Insurance Company
09:50 versus Western National Life Insurance Company. It's a
09:51 2011 case, 2011 Westlaw 840976, from the Western
09:51 District of Texas on March 3rd of 2011.
09:51 And there is also a major goose/gander
09:51 violation going on here, because we haven't had a
09:51 privilege log or the production of any communications
09:51 with the support staff of any of Midas Green's experts.
09:51 They want to have their Dr. Lee testify
09:51 about claim charts that he admittedly did not prepare.
09:51 They want to have their damages expert Mr. O'Bryan be
09:51 able to rely on hearsay from his subordinates.
09:51 So with everything going on, there's
09:51 certainly no basis, no authority whatsoever, for
09:51 excluding the entirety of Dr. Ortega's opinions. But
09:51 even his opinions about the CFD that they're
09:51 challenging, there is no basis to exclude those, not
09:51 under the facts of what actually happened and not under

09:52 the law of what Rule 26 protects from discovery and
09:52 what it allows to be discoverable.
09:52 THE COURT: I'll be back in just a
09:52 second.
09:52 (Pause in proceedings.)
09:52 THE COURT: The Court is going to grant
09:52 the motion with respect to those paragraphs.
09:52 With respect to the issues that counsel
09:52 brought up at the end under the goose/gander standard,
09:52 if you have issues with what they've done, I'll
09:53 certainly entertain those separately.
09:53 Next I have the motion to exclude
09:53 Dr. Pokharna.
09:53 MS. BRANNEN: Good morning, Your Honor.
09:53 We are asking to control aspects of
09:53 Dr. Pokharna's expert report that we learned about for
09:53 the first time in the -- in his report itself that were
09:53 not in the final infringement contentions and also to
09:53 exclude his opinion about a system at the Temple
09:53 facility of my client that is admittedly inoperable
09:53 because they ran out of money and they never actually
09:53 finished installing what is accused. And so we think
09:53 it would not be -- it's just unreliable to convene a
09:53 jury, and there's no fact issue over that.
09:53 So to start with the new opinions that

were undisclosed, we set those forth in our brief, but I would point out, Your Honor, this is a case where they didn't even tell us they were planning to amend the contentions. They didn't move to amend earlier, give us any warning.

And so the prejudice that we are complaining about is that if we had known that these theories might be something Dr. Pokharna would present, we would have had the ability to take fact discovery and conduct our fact discovery with that in mind.

And it's not a simple case of just getting to depose Dr. Pokharna again for an hour. There are seven named inventors, six of whom are coming off. There were two -- there was a corporate witness for Midas Green and another witness for Midas Green about their systems. There were many Rhodium witnesses.

It's just really unfair, and it shows a disrespect for the rules to have not even alerted us that they wanted to amend the final infringement contentions and to disclose these theories for the first time there.

With regard to the systems that are inoperable, that's just silly to have a trial about that. There's no fact dispute over that, and it would

09:55 be a waste of judicial and party resources to do it.

09:55 So we would ask that that not -- you know, the system was over two years ago. Our client concededly ran out of money, never installed it.

09:55 Their expert has conceded it cannot measure temperature. It's not wired in. There's just nothing to present to the jury.

09:55 And it would be unreliable for Dr. Pokharna to opine that systems in that state practice any of the limitations.

09:55 THE COURT: A response?

09:55 MR. KOLEGRAFF: Yes. This is William Kolegraff.

09:55 First of all, there's absolutely no -- nothing was hidden here from them. There's nothing new that was put in Dr. Pokharna's report. For example, this whole idea that Prime Controls, they were surprised about, is, well, just very surprising.

09:56 Because on March 15th, 2023, we fully set out to them in a supplement to Interrog 4 (sic), which is Exhibit D here, the exact way that the Prime Controls was set up and that Prime Controls was going to be the infringing set of devices.

09:56 In response to our having done that supplement to Rog 10, they came back in their

09:56 Supplement Rog 1 and said: As a result of the system
09:56 described in plaintiff's supplemental response to
09:56 Interrogatory No. 10 and accused in plaintiff's final
09:56 infringement contentions...
09:56 They admitted that what was in the final
09:56 infringement contentions were these Prime Control
09:56 devices. So there's absolutely no surprise here.
09:56 Also, this actually is in the
09:56 contentions. We don't say the name "Prime Controls"
09:56 with the name "Prime Controls," but it's actually set
09:56 out that says: The control -- from the contentions --
09:57 the control facility includes an automated controlling
09:57 with software that measures and monitors and controls
09:57 the pumps, dry coolers, and temperature of the fluid.
09:57 That's exactly what the Prime Control
09:57 systems does. So Prime Control has been fully set out,
09:57 including Exhibit E, which is a manual that we have
09:57 cited to, that is the exact Prime Controls manual.
09:57 As far as the Kelvion coolers, in the
09:57 contentions themselves, we lay out that there are two
09:57 Kelvion coolers. There's a Guntner coolers at the
09:57 Rockdale facilities; there's Kelvion coolers at the
09:57 Temple facility. And they form the second -- secondary
09:57 cooling facility.
09:57 Again, those are fully disclosed in the

09:57 contentions, and they were the basis for Dr. Pokharna's report.

As far as what was installed not being reliable, yes. It is true that they installed significant portions of the Prime Control systems at Temple, and then because they ran out of money, they did delay that process.

However, we do know that there is evidence that says that they are planning on re- -- turning that system on -- finishing that system and turning it on later.

So they have substantially installed the Prime Control systems. They're on the 99-yard line. They just haven't flipped the actual switch.

The system is still adapted to -- it's still capable of taking these measurements once they finish and flip the switch.

So they also have this issue where they don't believe that we have disclosed the slots, that they were surprised that we have the slots.

Well, again, if you look through the -- our opposition, we put pictures of the slots in the first amended complaint. We had -- in our supplement to No. 4, we actually had a picture of the tape with red lines showing where the slots were.

09:59 There's absolutely no surprise whatsoever to anything in the -- Dr. Pokharna's report.

09:59 THE COURT: I'll be back in just a second.

09:59 (Pause in proceedings.)

10:00 THE COURT: The Court grants that motion.

10:00 The next motion we have up is the motion the exclude James Lee. I'll hear from defendants on that.

10:00 MS. BRANNEN: Your Honor, on this motion, we had two aspects of it. Sorry. For a moment, I wasn't sure if you were calling on us or the other counsel.

10:00 But the first aspect is a correction -- what they call a correction, but it's really an addition to Dr. Lee's report that he served at the end of a deposition.

10:00 Their position just doesn't make any sense on this. They argue simultaneously that it is duplicative of what was already in his report and that it's necessary.

10:01 It can't be both. And all I know is that it's too late, and we ask Your Honor to exclude it.

10:01 The other thing that we are focusing on in this motion is the fact that Dr. Lee is their

10:01 rebuttal expert, not their opening expert.

10:01 And he gave an opinion that based on charts that he did not prepare, that apparently counsel prepared, as they say they had been produced in discovery, he gave an opinion that Midas' products practice the patents.

10:01 We think that opinion is unreliable. But in any event, it's too late -- too late for their damages expert, their opening expert to have relied upon it.

10:01 And that's basically about it for that opinion. It's not plausible, and it also is too late for the purposes they want to use it for in the case.

10:02 THE COURT: Who's going to respond to this?

10:02 MR. THOMAS: Joseph Thomas.

10:02 THE COURT: Is there any reason why -- I think I've gone over this -- why this couldn't be taken care of by just allowing this gentleman to be deposed now?

10:02 I'm asking you, Counsel.

10:02 MR. THOMAS: You're asking Mr. Thomas?

10:02 THE COURT: I'm asking you. I'm asking you. I don't know how to make it any clearer. I'm asking you to respond.

10:02 MR. THOMAS: The -- Mr. Thomas. Yes.

10:02 THE COURT: Yes.

10:02 MR. THOMAS: We're happy to let him be deposed again if they want to. We don't think they need to. They had his --

10:02 THE COURT: Well, I'm -- stop while you're ahead. I'm going to allow them -- I'm going to deny the motion and allow them to depose the witness.

10:02 Now, going back to Mr. -- or Dr. Pokharna. Is he your only infringement expert?

10:03 MR. THOMAS: Yes.

10:03 THE COURT: So what I'm going to do is -- it will obviously impact the trial setting, but I'm going to allow you to amend his report, see if you can fix it. And you all will need to get together with opposing counsel and figure out how long you think it'll take for Dr. Pokharna to address any of the issues that you think would make his opinion survive a future challenge.

10:03 And then y'all can set up a schedule to figure out how to deal with that in terms of rebuttal reports and all that. So I'm going to allow him to amend his report.

10:03 Next up I have the motion to exclude -- I don't know if it's a doctor or not. I don't think it

10:03 is -- Duross O'Bryan. This is the defendants' motion.

10:04 MS. BRANNEN: Thank you, Your Honor.

10:04 THE COURT: This one -- this one has both lost profits and a reasonable royalty analysis.

10:04 MS. BRANNEN: That's correct.

10:04 Is my screen successfully sharing? We prepared a few slides on this one.

10:04 Midas' damages opinion -- damages expert makes four main errors that we believe are substantial and not just matters that we should have to cross them on, Your Honor. The first error pervades both his lost profits and his reasonable royalty damages.

10:08 (Clarification by Reporter.)

10:08 (Recess taken.)

10:08 THE COURT: Let's go back on the record.

10:08 MS. BRANNEN: Thank you, Your Honor. This is Elizabeth Brannen, addressing the motion to exclude Midas' damages expert, Mr. O'Bryan.

10:08 The first error he made pervades his lost profits and reasonable royalty opinions, both of them. And he basically doubles his damages number by assuming that Rhodium would continue infringing for almost three years past trial, even if there's a jury verdict of infringement.

10:09 Now, the patent -- he's -- the patent

10:09 doesn't expire till something like 2035. He's not
10:09 giving an opinion about a fully paid-up license. This
10:09 is something different going on. He's saying he has
10:09 the ability to award damages after trial based on
10:09 speculation that my client would continue to infringe.
10:09 And there's just no basis for that. Certainly no
10:09 reliable basis.
10:09 If we look at the basis he said he had --
10:09 I'll try sharing my screen here to put some of this --
10:09 make some of this visible -- he's relying only on a
10:09 single projection, and that projection is something
10:09 that Rhodium filed in connection with a potential
10:09 merger transaction. And that document just says that
10:09 Midas -- that Rhodium -- excuse me -- plans to expand
10:09 its operations to full capacity if the merger goes
10:10 through.
10:10 Well, two problems. First of all,
10:10 expanding your operations doesn't say anything about
10:10 whether you would continue infringing or ignore an
10:10 infringing verdict. And even more importantly, that
10:10 merger never happened. It was canceled. And
10:10 Mr. O'Bryan omitted the -- didn't take into account the
10:10 fact that he just assumed that --
10:10 THE COURT: Let me interrupt you and hear
10:10 a response to that argument.

10:10 MR. THOMAS: Your Honor, the representations made in that S-1 were for a merger that was canceled, but the representations were not conditional. They did not say, If we get the merger, we'll do this expansion. They just said that our business plan is to expand.

That's what they told their investors. They had existing investors and the prospective new investors through the merger. So those representations are from Rhodium of their own expansion plans, which are reasonable for Mr. O'Bryan to rely upon.

THE COURT: Did he or did he not rely on that merger when he -- when he comes in and he says, This is what I did. I looked and there's this document that shows there's going to be a merger and -- to rely on and the merger didn't happen, is that what he's going to say?

MR. THOMAS: No. He's going to say these are representations that they issued that were not conditioned upon the merger. They were made in the public forum. And I'm going to rely on their representations to their investors that they had a plan -- they have a plan to expand.

THE COURT: Okay. Is there anything else you'd like to say with respect to the lost profits

10:11 argument that the defendant is making?

10:11 MR. THOMAS: Yes, Your Honor. The lost profit analysis was done correctly. It was based on information that was available to the experts. Both sides' experts have acknowledged there are no licenses. This is relatively brand-new technology in this field. This immersion cooling technology hasn't been licensed.

10:12 Mr. O'Bryan properly used the sales of the product as a basis, and there's good case law we cited for him to rely upon the sales as a basis to determine the reasonable royalty, and the profits from those sales to support that reasonable royalty analysis.

10:12 THE COURT: Would you give me an example?

10:12 MR. THOMAS: Yes. They -- they -- our deadlines made a significant sale to a company known as RITE. It's a public company. It's one of the largest bitcoin mining companies in the -- North America, if not the U.S. -- if not nationally -- internationally.

10:12 And those sales occurred well within months or within a year or so of the time that the license would have been negotiated. And under the Book of Wisdom, Mr. O'Bryan used those sales to forecast what the expected profits would be of my client in terms of making assumption on how to --

10:13 THE COURT: How does the Book of Wisdom, what does that have to do with lost profits?

10:13 MR. THOMAS: Well, the lost -- we believe that the sale of the --

10:13 THE COURT: No, no. What does the book of profits -- what does that have to do with lost profits? I don't understand.

10:13 MR. THOMAS: Well, the -- we believe that the case law allows Mr. O'Bryan --

10:14 THE COURT: Tell me any case that discusses the Book of Wisdom in a context of lost profits.

10:14 MR. THOMAS: Okay. Well, Your Honor, we don't need the Book of Wisdom. Rhodium installed 200 megawatts. He's using their actual installation as the basis to determine a sale that would have been made by my client to Rhodium of those products. And using those -- that sales information, he projected his lost profits.

10:14 THE COURT: Okay. I'll be back in just a second.

10:14 (Pause in proceedings.)

10:15 THE COURT: This question is for -- sorry for all the coughing -- either party, but I'll start with the party that is moving for this, the defendant.

10:15 What specific paragraphs in his -- in the report are you asking me to strike on lost profits? Can you articulate those into the record?

MS. BRANNEN: Your Honor, I would need a moment to pull it up and articulate them into the record, but we're asking to strike his entire lost profits opinion, because he has no basis --

THE COURT: Is it -- I'm sorry. Is it divided up, lost profits -- I'm making this up -- Page 1 through 10, reasonable royalty, 11 through 20. Is it -- is it that clean?

MS. BRANNEN: I believe it's fairly clean. Let me show my screen to give an example of one page. Let me see if I can do it.

So here's an example of a table in his report. And he's very clear at the top about what his reasonable royalty number is. And then underneath that, he's clear -- he's got a separate line item for what his lost profits opinion is. And so the report is well organized in the sense that his lost profits opinions are coherent. And I apologize that I don't know exactly those, but if we take a short break, I can --

THE COURT: Here's what I'm going to do. We've gone over -- I'm going to grant the motion with

10:17 respect to lost profits. Same deal. If the
10:17 defendant -- I'm sorry -- the plaintiff wants to have
10:17 their expert redo the lost profits and try and go
10:17 again, that's fine. You all need to figure out how to
10:17 do the schedule.
10:17 I'm going to deny the motion with respect
10:17 to the -- his reasonable royalty calculations.
10:17 Next up, I have the motion for summary
10:17 judgment of noninfringement. I'll hear from the
10:17 defendant on that, please.
10:17 MS. BRANNEN: Thank you, Your Honor.
10:17 May I clarify the Court's ruling on
10:17 Mr. O'Bryan? The posttrial damages period that he has
10:17 is in his lost profits, but it also pervades his
10:18 reasonable royalty. Is there a separate ruling on the
10:18 aspect of damages --
10:18 THE COURT: So I usually don't have a
10:18 problem with the jury answering future reasonable
10:18 royalty, because then at least we have a reasonable
10:18 royalty rate. And if the plaintiff is successful, then
10:18 the jury will have spoken as to the reasonable royalty
10:18 rate, which is probably what I would consider applying
10:18 on damages going forward, if you continued to make
10:18 sales.
10:18 And they're not going to get those

10:18 damages, future damages, unless you -- the sales were
10:18 actually made. And the way I've done it in the past,
10:18 both as a lawyer and as a judge, is let's say plaintiff
10:18 wins. Reasonable royalty rate -- I'll make up
10:18 something -- 5 percent. I would allow you -- allow the
10:18 defendant to continue to sell and -- but they would
10:18 have to put into the registry of the Court the
10:19 6 percent. If you stopped selling, there would be no
10:19 future damages under a reasonable royalty deal. Does
10:19 that sound -- is that what you were asking me?
10:19 MS. BRANNEN: Thank you, Your Honor.
10:19 Yes. I think it clarifies it. In other words, as I
10:19 understand it, lost profits, they've got to completely
10:19 redo it if they want to try to get it in.
THE COURT: Correct.
10:19 MS. BRANNEN: Reasonable royalty, they --
10:19 THE COURT: And I'll say right now, lost
10:19 profits -- is there -- let me ask the plaintiffs: Is
10:19 there no request for an injunction here?
10:19 MR. THOMAS: No. No, Your Honor. There
10:19 isn't.
10:19 THE COURT: Okay. Is there a reason
10:19 there's not a request for injunction?
10:19 MR. THOMAS: I'm sorry. I misspoke.
10:19 There is a request for an injunction.

10:19 THE COURT: Okay. So generally speaking again, what I will do is, with regard -- if it's a lost profits, I probably will have to -- I probably won't give them a question on future lost profits, but again, and this is because we don't know whether there'd be any, I will take up the injunction question because you all, I assume, are competitors or you wouldn't have lost profits.

And so but I will -- so don't anticipate getting a lost profits question going forward, but if you can redo it and you think you can get past a Daubert challenge, I'll do it for both prior. And then if -- again, only if the plaintiff wins, if the defendant comes in and says, No, you shouldn't give an injunction, well, then we'll have to figure out a way to be fair to the plaintiff to make sure how we assess damages going forward. And I'll take care of that.

So did I make it clearer or less clear on what I just said for everyone? I'm happy to answer any questions that you have.

MS. BRANNEN: Your Honor, this is Elizabeth Brannen for Rhodium. Just I think it's clear with respect to the original question I was asking.

So for their reasonable royalty, they're not going to get a damages award past trial

automatically, they have to present what it is through trial and then they can get a separate ruling on if Rhodium were to continue to infringe, what could the reasonable royalty be after that. Have I --

THE COURT: Right. And I've seen it handled two ways, and I would let you all argue what's fair. I've seen it where the jury's given an amount -- I'm making this up again -- 5 percent. And so you give the 5 percent. This is where the Book of Wisdom does come in. You know, they will have figured that out.

But I've also seen judges who have considered giving a slightly higher, going forward, because it's now -- the jury's now found infringement. So but they're -- I'm not going to award -- now, I didn't hear anyone talk about a lump sum. If there is a lump-sum award that goes through the end of the -- that would go through the end of the patent, whenever that is, which is a period going forward, but obviously, it's an amount that neither of y'all have done yet and that someone would say, as opposed to reasonable royalty, we would take -- the plaintiff would have taken a lump sum of X and y'all would have paid a lump sum of X and -- y'all have -- but y'all haven't done that. So that's not an issue here.

So as far as I can tell, from the way the

10:22 plaintiffs have structured their damages model, they
10:22 won't be getting future damages until we see if they
10:22 win and what I do on the injunction, and then if there
10:22 is not an injunction and you all do continue to sell
10:22 what the jury has determined to be infringing, I'll
10:22 make sure we come up with some way of making sure the
10:22 plaintiff is protected financially.
10:22 Anything else?
10:22 MS. BRANNEN: Just I would like to
10:22 clarify, my client is not a competitor of Midas Green,
10:23 not even allegedly. And that's part of why they have
10:23 such a trouble of meeting the lost profits standard.
10:23 THE COURT: Well, then they're going to
10:23 have a really tough time getting an injunction.
10:23 MS. BRANNEN: I don't even believe
10:23 there's a live injunction request, Your Honor. That
10:23 was news to me. I do not think they've preserved it.
10:23 I certainly don't think they have --
10:23 THE COURT: Well, they've told me there's
10:23 an injunction request. Maybe there is; maybe there
10:23 isn't. I don't know.
10:23 MS. BRANNEN: Thank you.
10:23 THE COURT: I'm up with the law, that
10:23 they only get one if y'all are competitors. And I
10:23 don't know -- I'll know much better after trial whether

or not I think you're competitors.

MR. THOMAS: Your Honor, that is a disputed issue in this case. We contend, Your Honor, we are competitors.

THE COURT: Well, I have no way of knowing which of you is right.

So next up we have the motion for summary judgment of noninfringement. I'll take that up.

MS. BRANNEN: Thank you, Your Honor.

So the technology at issue involves systems for pooling bitcoin miners. The computers that do the mining get very hot when they're mining bitcoin.

And in particular, the patent and the accused systems -- and you can see a picture -- some of the accused systems, they relate to their immersion cooling systems. Meaning, there are miners that get immersed in dielectric fluid. It doesn't conduct electricity. And as the liquid is circulated through the system, it removes heat from the miners.

We believe a lot of limitations are missing, but we focused our motion on a single claim limitation. And we believe it's the rare case where Midas doesn't have any evidence that Rhodium uses anything like this limitation that's shown here.

And it requires the system to have a

10:24 control facility, and that control facility has to be
10:24 adapted to coordinate the operation of two different
10:25 fluid circulation facilities, a primary facility and a
10:25 secondary facility.
10:25 And it has to be adapted to coordinate
10:25 their operation based on this recited variable as a
10:25 function of the temperature of the dielectric fluid in
10:25 the tank containing the bitcoin miners.
10:25 And we don't -- basically, for the
10:25 primary fluid circulation facility, you can think of
10:25 that as the pipes and pumps. That's what they say it
10:25 is. We may take issue with that at trial, but not for
10:25 purposes of this motion.
10:25 Similarly, for the secondary fluid
10:25 circulation facility, they point to these large coolers
10:25 that have fans in them. So you can think of the
10:25 primary as pumps and pipes; secondary, they say it's
10:25 the fans and the dry coolers.
10:25 And we pointed out in our motion that we
10:25 don't take the temperature of the fluid in the tank,
10:26 and we don't use it for anything, let alone to
10:26 coordinate either of those facilities, those fluid
10:26 circulation facilities.
10:26 Reading their opposition, you could be
10:26 forgiven for assuming that I'd be standing in front of

10:26 you asking for a very narrow special construction of
10:26 this term, but that's not what we're doing.
10:26 Our motion, we construed nothing. We
10:26 agree that this term gets its plain meaning, and we
10:26 don't have this limitation or anything like it.
10:26 And so in our motion, we went through all
10:26 the various theories their expert had put forth, some
10:26 of which have been addressed in the motion to exclude
10:26 Dr. Pokharna, where the opinions weren't in their final
10:26 infringement contentions.
10:26 But we went through all the various
10:26 theories of why they said this limitation was present,
10:26 and we debunked each of them. And we showed why the
10:26 limitation isn't there literally and why, in those
10:26 instances when he had offered an opinion under the
10:26 doctrine of equivalents, there was no -- nothing in the
10:27 report, no evidence that could satisfy that standard
10:27 for insubstantial differences for same
10:27 function-way-result.
10:27 So the first thing I'd like to hopefully
10:27 establish in this motion is that based on the DMM
10:27 Specialities case, which we cite in our reply at Page 2
10:27 and also just common sense, their opposition makes no
10:27 attempt whatsoever to defend or salvage any of
10:27 Dr. Pokharna's theories under the doctrine of

10:27 equivalents.

10:27 You can scour their opposition. The word
10:27 "equivalent" isn't there. "Equivalents" isn't there.
10:27 "DOE" isn't there. "Insubstantial" or "substantial
10:27 differences," it's just not discussed. They have
10:27 waived this.

10:27 And I'm happy also to go through each of
10:27 the things that they have -- all the various theories
10:27 they pointed to and show why there is a failure under
10:27 the plain meaning of this limitation to show that we
10:27 have anything like it.

10:28 But the first system that they accuse are
10:28 the Prime Controls and Kelvion sensors. Those are the
10:28 ones that are admittedly inoperable that I believe have
10:28 been excluded in connection with Dr. Pokharna's report.

10:28 And I don't think this is fixable, Your
10:28 Honor. There is no -- there's attorney argument, and
10:28 we heard some of the attorney argument from
10:28 Mr. Kolegraff.

10:28 But this is a system where most of the
10:28 sensors are missing and none of the sensors they're
10:28 pointing to is wired in. And perhaps more importantly,
10:28 their expert, you can see the interrogatory response
10:28 they cite to in their opposition at Page 13, saying:
10:28 Even where a sensor is connected, it is not wired in.

10:28 Their expert, Dr. Pokharna, conceded that in its present state, this system cannot measure temperature.

10:28 Now, even if this was operational, they haven't explained what they believe the plain meaning of this limitation is or why what this system was designed to measure would actually be adapted to coordinate both control facilities.

10:29 And so that's also another problem with this whole theory, that you can see up here the sensors, where they would go, are in an entirely different building and they have a little sign they have labeled -- their own expert has labeled that the building containing the tanks with the miners is in a completely different place.

10:29 This wouldn't be the variable they need to show that we're using, and they also can't show that it would be adapted to coordinate both fluid circulation facilities.

10:29 The only evidence they give is shown here, that it would be adapted to adjust the fan speed. Well, that's what they say is the secondary circulation facility. In order to survive summary judgment, they should have to present evidence and explain how that evidence could lead a reasonable juror to believe that

10:30 the claim language is satisfied with respect to both
10:30 circulation facilities and being adapted to coordinate
10:30 the operation of both of them. And they just can't do
10:30 that for the main thing that they spent the most time
10:30 on in their brief, which is this Prime Controls and
10:30 Kelvion coolers.
10:30 And by the way, they briefed those
10:30 separately, but Prime Controls and other vendors were
10:30 hired to build the monitoring system for the Kelvion
10:30 cooler. So even though they talk about the Prime
10:30 Control system and then they talk about the Kelvion
10:30 coolers, you can see, for example, from their brief at
10:30 Page 18, the thing they're citing to for the Kelvion
10:30 coolers as evidence that those infringe, that's all
10:30 design documents of Prime Controls. That was
10:30 admittedly never installed and is admittedly
10:30 inoperable, cannot measure any temperature.
10:30 So at the last page of their brief, they
10:30 give a couple throwaways to try to defend a theory of
10:31 infringement based on the Guntner coolers. These are
10:31 shown here. These are only at Rhodium's Rockdale
10:31 facility.
10:31 And again, the tanks containing the
10:31 miners are in one place, and the coolers they're
10:31 pointing to are outside the building. And what their

10:31 theory is here is that Rhodium measures the temperature
10:31 of the fluid after it comes out of the cooler.
10:31 Well, that obviously is not literally the
10:31 same thing as the fluid in the tanks nor is it even
10:31 arguably insubstantially different.
10:31 And they also -- for this one too, all
10:31 they say is that we might use it to adjust the fan
10:31 speed in these coolers. There's no evidence they can
10:31 point the Court to of how this is in any way adapted to
10:31 coordinate the operation of what they've pointed to as
10:31 the primary fluid circulation facility, the pumps and
10:31 the pipes.
10:31 So it's deficient in multiple respects.
10:31 And the single paragraph in their opposition that's
10:32 dedicated to try to revive this doesn't answer the
10:32 question of how this is using the right variable in any
10:32 way, let alone using any variable to control both fluid
10:32 circulation facilities. They only talk about fans.
10:32 Then the final thing that they also try
10:32 to revive is the fact that in both facilities, Temple
10:32 and Rockdale, Rhodium can measure the temperature of
10:32 the chips in the miners and the printed circuit boards
10:32 in the miners.
10:32 Their expert, though -- obviously
10:32 measuring a chip temperature or a board temperature is

10:32 not measuring the temperature of the tank fluid. And
10:32 their expert admitted those are different. So there's
10:32 no literal infringement. There's no analysis of why it
10:32 would be insubstantially different.
10:32 And again, here too, all they say with
10:32 PCB temperature is that we can monitor it. All they
10:32 say with chip temperature is that we can shut off the
10:33 miner or reduce power to the miner.
10:33 But what they haven't said is what
10:33 evidence is there anywhere in the record that we could
10:33 use either the chip or PCB temperature to coordinate
10:33 the operation of the pumps and pipes or of the fans,
10:33 which they say are the primary and the secondary
10:33 circulation facilities.
10:33 There is no evidence. It's a rare case
10:33 where none of their theories even make sense. And we
10:33 hope they should have to articulate one that we can at
10:33 least understand what this jury is going to be asked to
10:33 decide before they would be allowed to proceed.
10:33 THE COURT: A response?
10:33 MR. KOLEGRAFF: Yes. So as -- there are
10:33 just a lot of triable issues of material fact here.
10:33 And what Rhodium has done to try to eliminate those
10:33 facts is they've taken a very unusual reading -- a
10:33 plain reading of Claim 1.

10:33 And what they're trying to say is that you have to have your temperature sensor in the tank to take the temperature of the fluid.

10:34 Their entire motion is based upon that premise, that they have to require a sensor in the tank taking the temperature of the fluid. But the claim just doesn't say that.

10:34 Now, this is extremely important to it. On Page 2 of their motion, they say: In other words, to infringe Midas' asserted claims, a cooling system must take advantage of the dielectric fluid while it is -- must take the temperature while it is in the tank.

10:34 They say the same thing on Page 4: Neither of the tanks have a fluid temperature in the tank.

10:34 This is repeated throughout their motion. That is the basis for this entire motion, is that there has to be a temperature sensor inside the tank in order to take the temperature.

10:34 If we look at Claim 1 and parse it, it talks about: A control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

10:35 That plain reading does not say where a temperature sensor has to be. It certainly doesn't place it in the tank. It certainly doesn't even say you have to take the measurement of the fluid itself.

All you have to do is collect enough information so that you can coordinate the operation of the two circulation facilities.

So here you can have that sensor -- that temperature sensor, you could have it in the tank. You don't have to. But you could have it on the pipe leading out of the tank. You could have it on the inlet pipe to the tank. You could have it further down towards the coolers.

Every one of those data points, every one of those points, is going to give you sufficient data in order to make decisions on how you want to run your pumps and fans.

For example, we are talking about the Guntner coolers, which are the coolers that sit out in the -- outside the building, there, we are measuring the fluid temperature that comes out of the cooler.

That is the exact same temperature as is going into the tank. So we are measuring the temperature of the fluid in the tank, and we adjust the fan speeds of that Guntner -- excuse me -- Rhodium

10:36 adjusts the fan speeds of the Guntner cooler to make sure that that inlet temperature to the tank remains very constant.

We know for a fact that the claim does not require that the temperature sensor be in the tank, and we know it for at least a couple of reasons.

First of all, if we look at Figure 13 of the patent, there are sensors that are shown not only in the reservoir, which is separate from the tank, but the temperature sensors are also shown in the fluid pipes and shown in the fluid pipes of the primary circulation facility and shown as the temperature sensors in the secondary facility.

So even the embodiments that we have in the patent do not show the sensor in the tank.

It's also shown in Figures 4 and 12 where you have the tank, which is numbered 14, the tank 14 does not have a sensor in it. The only sensor is in the recovery reservoir, which is No. 42. So again, even the embodiments that we have in the patent do not require that the sensor be in the tank.

So let's talk a little bit about Prime Controls. Prime Controls is a very sophisticated control system that has no other purpose in life but to control and manage the system at the Temple facility.

10:37 There are temperature sensors, there are pump controls, there are reporting facilities. They spent millions of dollars putting this thing in, and it has no noninfringing functionality.

Again, if you look at Exhibit G of our opposition, you can see that they have the layout of the complete system, the entire plumbing and design system. H shows a picture of the Kelvion and Temple coolers that have the temperature sensors installed. They're already there in the pipes.

They talked about saddles being installed. They purchased saddles to put on those pipes so they can make the finishing of the installation even easier.

If you look at Exhibit I, there is an issued-for-approval manual on how this whole system is supposed to be put together, this Prime Control system, and it shows all of these things working and in operation. So it's almost fully installed. They just haven't flipped the final switch.

And let's -- we're going to suggest here, is that they have just not turned on that switch because of this litigation. As soon as this litigation is over, you know, they're very likely to turn this thing back on because, again, they've got a million

10:39 dollars of sunk costs, that they're going to need to turn on. And we have an e-mail, this is from a Depo Exhibit 77, that says: Our plan -- and that's referring to Rhodium -- Our plan is to get Prime Controls paid back and then have Prime Controls finish the rest of the work on the site.

So that is a huge issue of fact, whether or not Rhodium is going to reactivate or activate this Prime Controls when this litigation is over.

Also, so -- also, how much work they have left to do is also a huge issue of fact as it goes to Prime Controls.

As far as any waiver, we've waved nothing. We attached the entire report of Dr. Pokharna, where he goes not only through literal infringement, he goes through doctrine of equivalents infringement on all of these issues.

As far as the Kelvion systems at Temple, that really reduces down to the same arguments we were just talking about with Prime Controls. That is, the temperature sensors are there. The computers are in place. It's basically all set to go, they just have to finish wiring it up and then they're going to be able to control the Kelvion coolers based upon the temperature of the coolant.

10:40 At Guntner, which is at the Rockdale facility, that we do know is in operation. They actually have the Guntner coolers that sense the temperature of the fluid as it's exiting the Guntner coolers. And based upon that temperature, they adjust the fan speed. This is in the Guntner motor managing manual.

They adjust the speed of the fans to keep that outlook temperature the same. That outlook temperature fluid is the temperature of the fluid as it's going into the tank.

Finally, we get to the Restful API, which is this idea that we're checking the temperature of the fluid in the tank by using functionality built into the miners. These miners, which are just very sophisticated computers, actually have a couple different sets of temperature gauges, sensors inside of the miners. One of those is to measure the temperature of the PCB board, the printed circuit board. And the printed circuit board is what's setting up against the fluid. So that is measuring the temperature of the fluid.

And based upon that, the system automatically puts more power on to the miner, if it can handle warming the fluid similar. If the fluid is

too warm, then it actually powers down the miner; it has the miner generate less power. That way it adjusts the amount of heat that is injected into the system, which is controlling the circulation of both the primary and the secondary circulation facilities.

So here we just have a lot of issues of fact as to whether or not Prime Controls is going to be actually finished. We've got questions of fact as to how the Guntner is actually managing the fan speed to control the temperature of the tank; and really, all gets down to their assertion that the temperature probe has to be in the tank, which is just not the plain meaning of this claim.

So with that, I'll turn it back.

MS. BRANNEN: May I respond?

THE COURT: Rebuttal?

Please.

MS. BRANNEN: Thank you.

So I'll try to make five or fewer points. First, I want to talk about what we did not hear. Normally, to oppose summary judgment where we would -- you would hear the plaintiff saying, This is what I think the plain meaning of this limitation is, and this is the evidence I'm pointing you to, Judge, where a reasonable jury could find that the temperature of the

10:43 fluid in the tank is part of the -- is adapted to
10:43 control both of these variables.
10:43 We've never heard that.
10:43 We've heard them saying that I'm asking
10:43 you to give an overly narrow claim construction. I'm
10:43 not. But they need to be doing something. If they're
10:43 not measuring it with a sensor in the tank, they need
10:43 to be explaining what evidence there is that we do
10:43 anything like using that temperature of the fluid in
10:43 the tank to coordinate the operation -- to be adapted
10:43 to coordinate the operation of two different control
10:43 facilities.
10:43 And I didn't hear counsel give an
10:43 explanation of what that limitation means or what
10:43 evidence satisfies it.
10:43 With respect to Prime Controls -- and
10:43 this applies to Prime Controls and the Kelvion coolers
10:43 where they were going to install sensors but never did.
10:43 The most -- this is where we heard counsel try to point
10:43 to evidence, but he points to some unidentified
10:44 deposition testimony that I'm not sure was even in the
10:44 opposition brief, and is from several years ago, I
10:44 believe, saying that at one point Rhodium planned to
10:44 have Prime Controls finish its work.
10:44 That is of no moment now.

10:44 If we're going to have a trial now, we can't have an advisory opinion about a system that isn't in place. And that would -- even if we could, that would be an enormous waste of resources. We need to have a trial over the system as it exists now. And Mr. Kolegraff is not pointing to any evidence that all Rhodium needs to do is turn on the switch. The evidence is to the contrary.

10:44 Their own evidence that they cite to this Court is that none of the sensors is wired in. Their expert concedes that the system is incapable of measuring temperature. We really ought not to have a trial over Prime Controls and Kelvion, which may never be finished, may be changed. It's not the province of federal courts to have a trial over something that might happen with a system in the future.

10:45 There also is no evidence of how these sensors, which are nowhere near the tank containing the bitcoin miners, if they were operational, would be used to coordinate the operation of both the fans and the coolers. That's what they say they would do, but how would that be adapted to coordinate the operation of what they say counts as the primary circulation facility, the pumps and the pipes?

10:45 We didn't hear that. We won't hear that,

10:45 from them or their expert, because they have no
10:45 evidence of that. And they haven't tried to point Your
10:45 Honor to that evidence now.
10:45 The third point I'd like to make is about
10:45 Guntner. Mr. Kolegraff misstated the record. I will
10:45 show -- this is their opposition brief, Docket 164.
10:46 Near the end, I think we're at Page 21. Yeah.
10:46 Page 21.
10:46 The Guntner coolers -- which he
10:46 acknowledges are outside the building -- the
10:46 temperature sensors there sense the temperature -- I'm
10:46 quoting from their brief -- sense the temperature of
10:46 the dielectric fluid flowing out of the evaporative
10:46 cooler.
10:46 The job of that cooler is to cool. So
10:46 it's obviously not the same as the temperature of the
10:46 liquid when it's in the tank with the miners. And
10:46 their expert concedes as much, and they have completely
10:46 abandoned any effort to explain how it's
10:46 insubstantially different or how, under the doctrine of
10:46 equivalents, this theory could survive.
10:46 And the second thing about Guntner, all
10:46 they say at that page of their brief is that the sensor
10:46 there in that Guntner cooler is adapted to adjust the
10:46 cooler's fan speed. Okay. So they have evidence to

10:47 get to the jury on one of the two circulation facilities that they need.

But we didn't even hear Mr. Kolegraff point to any evidence about coordination of the primary facility, the pumps and the pipes, because Guntner, there is no evidence from which a reasonable juror could conclude that this claim limitation is satisfied.

And finally, on Restful API, I will say, we heard attorney argument, but all they're really saying is that Rhodium can monitor the temperature of the chips. They're not pointing to any evidence that the chip temperature or the PCB board temperature is actually adapted to coordinate the operation of anything that they've pointed to as the primary or secondary circulation facilities.

And to -- just to conclude, at minimum, Your Honor, I hope we have at least made the case narrower on doctrine of equivalents, because they did not -- they can't save that by just saying, Oh, but we attached our expert report.

Well, our brief went through the expert report and explained why what the expert said couldn't count -- wasn't enough to get to a jury on doctrine of equivalents. And they made no attempt to defend that, and they shouldn't get to revive it now.

10:48 MR. KOLEGRAFF: Your Honor?

10:48 THE COURT: Yes, sir.

10:48 MR. KOLEGRAFF: May I address those points or...

10:48 Yes. So you asked if we ever described where we get our plain meaning that the temperature probe does not have to be in the tank. I don't want to repeat myself, but yes. We did have evidence that we've shown the Court today.

10:48 For example, Figure 4 and Figure 12 of the patent shows that the sensors don't have to be in the tank. Figure 13 actually shows that you could have the sensors on the fluid lines and the reservoir. You could have it on the -- on the coolant lines. You could have it in the primary. You could have it in the secondary.

10:48 You can put that -- those temperature probes wherever you want them and still control the primary and secondary circulation of those.

10:48 Something we have to understand when we look at the Rhodium system, because we're talking about primary versus secondary, here the primary is the portion of the system that takes the fluid and flows it through the tank, which extracts heat from the miner. The secondary's what happens out at the coolers, where

10:49 you take that fluid and cool it through the evaporative cooler.

So where do we have to measure? This is our Point No. 2.

So she's saying we haven't talked about where we actually take the measurements. Well, if you're talking about Prime Controls, they take the measurements all over the place.

Their system has no noninfringing functionality. It is adapted to take the temperatures and control the fans.

True. At this exact moment in time the wires haven't been hooked up, but we have evidence, we have the e-mail that says they are planning to hook these things up when they get the chance.

So they are going to use this system at some point. It's just not believable that you're going to have millions of dollars worth of control equipment sitting there, all of these computers, a room full of computers meant to control this facility, and you're not going to turn it on.

So again, the same thing with the Prime Control and the Kelvion. Even though it can't measure today, it certainly is adapted to.

Now, again, Ms. Brannen said that I

10:50 misquoted how the Guntner works. I thought I got that
10:50 right, because I do understand that what's flowing --
10:50 what we are measuring is the output of the Guntner
10:50 cooler. That is true.
10:50 And that -- and I think I pointed out
10:50 that the output of the Guntner cooler is actually the
10:50 input to the tank.
10:50 So we are measuring the fluid temperature
10:50 of the temperature in the tank. It's just we're
10:50 measuring that at the input line rather than the output
10:50 line.
10:50 So she asked: How is that coordinating
10:50 primary and secondary?
10:50 Well, you have the fans on the Guntner
10:50 cooler, which are adjusting to keep that output at a
10:50 certain temperature or temperature range to make sure
10:50 the miners are being cooled. That is affecting the
10:51 temperature of the fluid as it flows through the
10:51 primary system and through the secondary system.
10:51 We are coordinating the control of the
10:51 facilities by using the output temperature from that
10:51 Guntner cooler.
10:51 As far as the Restful API, I think we've
10:51 shown pretty strongly in the expert report that we are
10:51 measuring at a temperature of the fluid using the PCB

10:51 inside the miner itself, and then that is used to reset the miner to either increase power if it can be run warmer or decrease power if you need it to run cooler.

So I think we've shown this in all of it. Again, there's a -- plenty of genuine issues of fact here for denying this motion.

THE COURT: I'll be back in a few seconds.

(Pause in proceedings.)

10:54 THE COURT: The Court is going to grant the motion for summary judgment of noninfringement. I think that fully takes care of the case for the time being.

I'm not going to take up the motions in limine given my ruling on that motion, which I think obviates the need for a trial at this time.

Is there anything else we need to take up today?

MR. KOLEGRAFF: Your Honor, would we be able to readdress this -- after we get Pokharna's report redone, would we be able to readdress this issue on the motion for summary judgment?

THE COURT: Well, you know, you have -- you've had your chance, but obviously, it's a fairly severe ruling. Let me talk to my clerks and see if

they think anything additional that an expert would say might benefit us. And if it is, we'll let you know. As of right now, I don't think it would.

So anything besides that?

MR. SMITH: Your Honor, if I could ask one more question about the Court's ruling.

There's been a fair amount of argument today about how the systems are today versus after how the systems are turned on or wired or whatever.

So I think we'd want to confirm the scope of the Court's ruling so we would know whether a claim against the facilities, once they're put into operation, would be affected by the Court's ruling today, or would that be a different set of facts?

THE COURT: That would be a different set of facts. I don't know --

MR. SMITH: Thank you, Your Honor.

THE COURT: Yeah. I don't know that it would change the ruling ultimately, but, you know, that clearly is an issue in this case.

MR. SMITH: Okay. Thank you, Your Honor.

THE COURT: Okay. Have a good day. Take care.

(Hearing adjourned.)

UNITED STATES DISTRICT COURT)

WESTERN DISTRICT OF TEXAS)

I, Kristie M. Davis, Official Court Reporter for the United States District Court, Western District of Texas, do certify that the foregoing is a correct transcript from the record of proceedings in the above-entitled matter.

I certify that the transcript fees and format comply with those prescribed by the Court and Judicial Conference of the United States.

Certified to by me this 11th day of April 2024.

/s/ Kristie M. Davis

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Official Court Reporter
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10:56

EXHIBIT 10

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

From: Corey Brown <Corey_Brown@txwd.uscourts.gov>
Sent: Thursday, January 30, 2025 3:25 PM
To: becca.skupin@solidcounsel.com; Elizabeth Brannen; gthomas@twtlaw.com; henry.pogorzelski@klgates.com; travis@gillamsmithlaw.com; jthomas@twtlaw.com; Ken Halpern; melissa@gillamsmithlaw.com; michael.smith@solidcounsel.com; Peter Brody; Sarah Rahimi; bkolegraff@twtlaw.com
Subject: Omnibus Order for 6.22.cv.0050

[External Email]
Counsel,

Given the time that has passed, it is necessary that the parties in this case submit a **joint** proposed order reflecting the parties' understandings of Judge Albright's rulings at the 4/9/2024 hearing (if there are disputes, please include proposed language in different colors). Please submit an omnibus order for all of the pretrial motions and a separate single order comprising all of the MILs. The Court will compare with its internal notes and enter the order reflecting those rulings shortly thereafter. Please prepare and submit these orders via response to this email (in Word form) by the end of day on February 7, 2024.

This will help this case begin to progress towards a resolution.

Regards,

Corey W. Brown
Law Clerk for the Honorable Alan D Albright
United States District Court, Western District of Texas
Direct: 254-750-1517
Corey_Brown@txwd.uscourts.gov

EXHIBIT 11

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

Midas Green Technologies, LLC, Plaintiff, - vs. - **Rhodium Enterprises, Inc.;** **Rhodium Technologies LLC;** **Rhodium 10MW LLC;** **Rhodium 2.0 LLC;** **Rhodium 30MW LLC;** **Rhodium Encore LLC;** **Rhodium Renewables LLC;** **Rhodium Renewables Sub LLC; and** **Rhodium Ready Ventures LLC;** Defendants.	Case No. 6:22-cv-00050-ADA **Jury Trial Demanded**

THIRD AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Midas Green Technologies, LLC ("Midas" or "Plaintiff") hereby brings this action for patent infringement against the following: (1) Rhodium Enterprises, Inc., (2) Rhodium Technologies LLC, (3) Rhodium 10MW LLC, (4) Rhodium 2.0 LLC, (5) Rhodium 30MW LLC, (6) Rhodium Encore LLC, (7) Rhodium Renewables LLC, (8) Rhodium Renewables Sub LLC; and (9) Rhodium Ready Ventures LLC. (collectively, "Rhodium" or "Defendants").

Midas alleges infringement of U.S. Patent No 10,405,457, entitled "Appliance Immersion Cooling System" (the "'457 Patent") and U.S. Patent No. 10,820,446, entitled "Appliance Immersion Cooling System" (the "'446 Patent"), at least by reason of Defendants' continued operation of their infringing bitcoin mining facilities in Rockdale, Texas, Temple, Texas and a third location[1] in Texas.

True and correct copies of the '457 and '446 Patents (collectively, the "Asserted Patents") are attached as **Exhibits A and B**, respectively.

I. PARTIES

1. Plaintiff Midas Green Technologies, LLC is a Texas limited liability company with its principal place of business at 7801 N Capital of Texas Hwy # 230, Austin, TX 78731. Midas designs and builds immersion cooling solutions for use in data centers including cryptocurrency mining facilities. Midas has been an innovative pioneer in the application of immersion cooling technology.

2. Defendant Rhodium Enterprises, Inc. is a Delaware corporation formed on April 22, 2021. Rhodium Enterprises, Inc. conducts business in Texas, including in this District, and including in the Waco Division, including by way of its subsidiaries as described herein. According to its most recent SEC filing, Rhodium Enterprises, Inc. is a holding company and the sole managing member of Defendant Rhodium Technologies LLC. *See* SEC Amendment No. 6 to Form S-1 at F-16, Rhodium Enterprises, Inc. (Jan. 18, 2022), *see*

[1] The third location is information learned from Defendants' Further Supplemental Responses, of which is Attached as Exhibit D, page 9. The full text of Defendants' Further Supplemental Responses is not included in the body of the Complaint as they are marked Confidential-Outside Attorneys' Eyes Only and therefore filed under seal.

https://www.sec.gov/Archives/edgar/data/0001874985/000121390022002442/fs12022a6_rhodium.htm.

3. Defendant Rhodium Technologies LLC is a Delaware limited liability company formed on October 23, 2020. Rhodium Technologies LLC was formerly known as Rhodium Enterprises LLC. Rhodium Technologies LLC is a subsidiary of Defendant Rhodium Enterprises, Inc. Rhodium Technologies LLC conducts business in Texas, including in this District, and including in the Waco Division, including by way of its subsidiaries as described herein. According to the foregoing most-recent Amended SEC Form S-1 filing, Defendant Rhodium Technologies LLC is a holding company. In the foregoing most-recent Amended SEC Form S-1 filing, Defendant Rhodium Technologies LLC is known as "Rhodium Holdings."

4. Defendant Rhodium 10MW LLC is a Delaware limited liability company formed on March 12, 2021. Rhodium 10MW LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium 10MW LLC conducts business in Texas, including in this District, and including in the Waco Division.

5. Defendant Rhodium 2.0 LLC is a Delaware limited liability company formed on December 17, 2020. Rhodium 2.0 LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium 2.0 LLC conducts business in Texas, including in this District, and including in the Waco Division.

6. Defendant Rhodium 30MW LLC is a Delaware limited liability company formed on April 1, 2020. Rhodium 30MW LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium 30MW LLC conducts business in Texas, including in this District, and including in the Waco Division.

7. Defendant Rhodium Encore LLC is a Delaware limited liability company formed on January 1, 2021. Rhodium Encore LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium Encore LLC conducts business in Texas, including in this District, and including in the Waco Division.

8. Defendant Rhodium Renewables LLC is a Delaware limited liability company formed on March 17, 2021. Rhodium Renewables LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium Renewables LLC conducts business in Texas, including in this District, and including in the Waco Division.

9. Defendant Rhodium Renewables Sub LLC is a Delaware limited liability company formed on April 25, 2022, with a principal office at 4146 W. US Highway 79, Rockdale, Texas 76567-5278. Rhodium Renewables Sub LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium Renewables Sub LLC conducts business in Texas, including in this District, and including in the Waco Division.

10. Defendant Rhodium Ready Ventures LLC is a Delaware limited liability company formed on August 23, 2022, with a principal office at 4146 W. US Highway 79, Rockdale, Texas 76567-5278. Rhodium Ready Ventures LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium Ready Ventures LLC conducts business in Texas, including in this District, and including in the Waco Division.

11. The foregoing SEC filing describes each of Defendants Rhodium 10MW LLC, Rhodium 2.0 LLC, Rhodium 30MW LLC, Rhodium Encore LLC, Rhodium Industries LLC, and Rhodium Renewables LLC, as operating subsidiaries of Rhodium Technologies LLC. This SEC filing (dated January 18, 2022) also refers to i Ventures Enterprises LLC (then doing business as Energy Tech LLC) as a related party. Accordingly, these defendants will be collectively be referenced herein as "the Rhodium Operating Subsidiaries."

12. After Midas filed this case on January 13, 2022, and after the January 18, 2022 date of the aforementioned SEC filing, Jordan HPC Sub LLC, Rhodium Renewables Sub LLC, and Rhodium Ready Ventures LLC were formed by certain of the other Defendants, ostensibly to be governed by Rhodium Technologies LLC. After the filing of this case and of the aforementioned SEC filing, Rhodium 10MW Sub LLC, Rhodium 30MW Sub LLC, Rhodium Encore Sub LLC, and Rhodium 2.0 Sub LLC were formed by certain of the other Defendants, ostensibly to be governed by Rhodium JV LLC. Accordingly, these companies, whether a

defendant or not, will be collectively referenced herein as "the Rhodium Post-Filing Operating Subsidiaries."

13. Chase Blackmon is a Texas resident, is a co-founder and the Chief Operating Officer of both Rhodium Enterprises, Inc., and Rhodium Technologies LLC. Chase Blackmon is a director nominee for the board of directors of Rhodium Enterprises. Chase Blackmon also owns shares of both Rhodium Enterprises and Rhodium Technologies by way of an entity called Imperium Investment Holdings LLC ("Imperium"). Imperium is the majority and controlling owner of both Rhodium entities. According to the foregoing SEC filing, Chase Blackmon controls 25% of the voting interests in Imperium. Chase Blackmon personally directed, participated in, authorized, and/or ratified the infringing conduct of the Defendants. For example, on information and belief, Chase Blackmon helped design Defendants' infringing immersion cooling systems, and he directs, participates in, and makes decisions regarding the making and use of the infringing immersion cooling systems.

14. Cameron Blackmon is a Texas resident, is a co-founder and the Chief Technology Officer of both Rhodium Enterprises, Inc., and Rhodium Technologies LLC. Cameron Blackmon is a director nominee for the board of directors of Rhodium Enterprises. Cameron Blackmon also owns shares of both Rhodium Enterprises and Rhodium Technologies through Imperium. According to the foregoing SEC filing, Cameron Blackmon controls 25% of the voting interests in Imperium. On information and belief, Cameron Blackmon personally directed, participated in, authorized, and/or ratified the infringing conduct of the Defendants. For example, on information and belief, Cameron Blackmon helped design and develop Defendants' infringing immersion cooling systems, and he directs, participates in, and makes decisions regarding the making and use of the infringing immersion cooling systems.

15. Nathan Nichols is a Texas resident, is a co-founder and the Chief Executive Officer of both Rhodium Enterprises, Inc., and Rhodium Technologies LLC. Nathan Nichols serves on the board of directors for Rhodium Enterprises. Nathan Nichols also owns

shares of both Rhodium Enterprises and Rhodium Technologies through Imperium. According to the foregoing SEC filing, Nathan Nichols controls 25% of the voting interests in Imperium. On information and belief, Nathan Nichols personally directed, participated in, authorized, and/or ratified the infringing conduct of the Defendants. For example, on information and belief, Nathan Nichols helped design and develop Defendants' infringing immersion cooling systems, and he directs, participates in, and makes decisions regarding the making and use of the infringing immersion cooling systems.

16. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, and the Defendant Rhodium Operating Subsidiaries have common stock ownership. Each of Chase Blackmon, Cameron Blackmon, and Nathan Nichols (the "Individuals") owns shares of both Defendant Rhodium Enterprises, Inc., and Defendant Rhodium Technologies LLC through Imperium. See SEC Amendment No. 6 to Form S-1 at 102. Rhodium Technologies LLC in turn directly or indirectly owns all of the outstanding equity interests in the Rhodium Operating Subsidiaries. *Id*. at 103-05. Rhodium Technologies LLC also directly or indirectly owns all of the outstanding equity interests in the Rhodium Post-Filing Operating Subsidiaries.

17. The Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries, share common directors and officers with Defendant Rhodium Enterprises, Inc., and Defendant Rhodium Technologies LLC.

18. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, and the Rhodium Operating Subsidiaries file consolidated financial statements. *Id.* at F-17 ("The condensed consolidated financial statements include the accounts of Rhodium Enterprises Inc. and its respective subsidiaries.")

19. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, the Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries were incorporated by Cameron Blackmon, acting on behalf of Imperium, a third party under the control of the Individuals.

20. The Rhodium Operating Subsidiaries, as well as the Rhodium Post-Filing Operating Subsidiaries, are presently undercapitalized and exist for the purposes of illegitimately shielding Defendant Rhodium Enterprises, Inc., and Rhodium Technologies LLC, and in turn the Individuals, from liability. On information and belief, the Rhodium Operating Subsidiaries, as well as the Rhodium Post-Filing Operating Subsidiaries, would be unable to satisfy any money judgement levied against them because of their undercapitalization and because their revenues flow directly to Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC.

21. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC finance the Rhodium Operating Subsidiaries, as well as the Rhodium Post-Filing Operating Subsidiaries.

22. Rhodium Shared Services LLC directly pays the salaries of all Rhodium officers and employees, with the exception that Rhodium Shared Services LLC indirectly pays the salary of Rhodium Chief Financial Officer Nicholas Cerasuolo by way of its subsidiary, Rhodium Shared Services PR Inc.

23. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, the Defendant Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries, use each other's properties as their own. For example, on information and belief, some or all of them operate out of the same Rockdale, Texas bitcoin mining facility, among other facilities.

24. The daily operations of Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, the Defendant Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries are not kept separate. For example, they collectively operate the same bitcoin mining operation. *Id.* At F-16 ("The Company, together with its subsidiaries, operates a digital mining operation"). As discussed above, on information and belief, some or all of them operate out of the same Rockdale, Texas bitcoin mining facility, among other facilities. On information and belief, they also have common

business departments.

25. The Rhodium Operating Subsidiaries, as well as the Rhodium Post-Filing Operating Subsidiaries, receive no business except through that allocated and arranged by Defendant Rhodium Enterprises, Inc. and/or Defendant Rhodium Technologies LLC. For example, Defendant Rhodium Enterprises, Inc. and/or Defendant Rhodium Technologies LLC negotiate contracts on behalf of the Defendant Rhodium Operating Subsidiaries and the Rhodium Post-Filing Operating Subsidiaries, or vice versa.

26. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, and the Defendant Rhodium Operating Subsidiaries do not observe corporate formalities, including keeping separate books. See *Id*. at F-17 ("The condensed financial statements include the accounts of Rhodium Enterprises Inc. and its respective subsidiaries. All inter-company accounts, balances, and transactions have been eliminated.") (emphasis added). On information and belief, the same is true with respect to the Rhodium Post-Filing Operating Subsidiaries.

27. Each Rhodium Operating Subsidiary and Rhodium Post-Filing Operating Subsidiary is an agent of Defendants Rhodium Enterprises, Inc., and Defendant Rhodium Technologies LLC (aka Rhodium Holdings) and their owners and operators, Chase Blackmon, Cameron Blackmon, and Nathan Nichols. Defendant Rhodium Enterprises, Inc. Defendant Rhodium Technologies LLC, the Defendant Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries therefore act as a common enterprise, their actions ultimately being directed by the Individuals. Specifically, the Individuals direct and control the activities of Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC, and those Defendants in turn direct and control the activities of the operating subsidiaries. The operating subsidiaries do not function as separate entities, but rather as controlled agents of the parent entities and the operating subsidiaries act on behalf of the parent entities. See, e.g., SEC Amendment No. 6 to Form S-1 at F-17 (referring to the operating subsidiaries as "the subsidiaries through which the Company operates its assets").

II. JURISDICTION

28. This is a civil action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 101 et seq. The Court therefore has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

29. Defendants are subject to this Court's specific and general personal jurisdiction, pursuant to constitutional due process and the Texas Long-Arm Statute, due at least to their extensive business in this District, including by reason of their infringement alleged herein. Specifically, and for example, Defendants own and operate an infringing bitcoin mining facility in Rockdale, Texas. See SEC Amendment No. 6 to Form S-1 at l (referring to Defendants' Rockdale location as the "initial Texas site"). Rockdale, Texas is located in Milam County, which is within the Western District of Texas. In addition, Defendants' second Texas site is in Temple, Texas. Temple, Texas is located in Bell County, which is also within the Western District of Texas. Further, Defendants' third Texas site[2] is within the Northern District of Texas.

30. Jurisdiction is also found as Defendant Rhodium Enterprises, Inc., and Defendant Rhodium Technologies LLC direct and control the infringing activities of the other Defendants. Further, Rhodium Enterprises, Inc. and Rhodium Technologies LLC purchase immersion cooling system tanks and other components, and then provide those infringing tanks for other Defendants to use. *See*, for example, **Exhibit C**, which is a manufacturing and purchase agreement whereby Rhodium Enterprises, Inc. purchases tanks and other immersion cooling products that infringe the Midas Asserted Patents, which Rhodium Enterprises, Inc. then provides either directly or indirectly to other Defendants. The entirety of the purchase agreement is marked Confidential-Outside Attorneys' Eyes Only and therefore filed under seal.

31. In further support of jurisdiction, each of the Defendant subsidiaries infringes

[2] The third location is information learned from Defendants' Further Supplemental Responses, the relevant portion of which is Attached as Exhibit D, page 9. The full text of Defendants' Further Supplemental Responses is not included in the body of the Complaint as they are marked Confidential-Outside Attorneys' Eyes Only and therefore are filed under seal.

the Midas patented immersion cooling system as claimed in the Assert Patents. The use of the tanks is admitted in Defendants' Further Supplemental Responses of which is Attached as **Exhibit D**. The entirety of the Defendants' Further Supplemental Responses is not included below as they are marked Confidential-Outside Attorneys' Eyes Only. Instead, citations are provided to where Rhodium admits use of the tanks.

Defendant Rhodium Operating Subsidiaries

Rhodium 10MW LLC - - page 8, at paragraph labeled "2"

Rhodium 2.0 LLC - - page 8, at paragraph labeled "2"

Rhodium 30MW LLC - - page 7, at paragraph labeled "1"

Rhodium Encore LLC - - page 8, at paragraph labeled "2"

Rhodium Renewables LLC - - page 8, at paragraph labeled "2"

Defendants also Identified as Rhodium Post-Filing Operating Subsidiaries

Rhodium Renewables Sub LLC - - page 9, first indented paragraph

Rhodium Ready Ventures LLC - - page 9, second indented paragraph

III. VENUE

32. Venue is proper in this district under 28 U.S.C. §§ 139l(b) and 1400(b). All Defendants have at least two places of business in this District and in the Waco Division, i.e., in Rockdale, Texas and in Temple, Texas. Defendants have committed acts of infringement, or a portion thereof, at these two locations within this District and within this Division.

IV. THE ASSERTED PATENTS

A. The'457 Patent

33. U.S. Patent No. 10,405,457, entitled "Appliance Immersion Cooling System," was duly and legally issued on September 3, 2019 by the U.S. Patent and Trademark Office. The underlying application, U.S. Patent Application No. 14/355,533, was filed on April 30, 2014. A true and correct copy of the '457 Patent is attached as **Exhibit A** and incorporated by reference.

34. Midas is the assignee of all right, title, and interest in the'457 Patent, including all rights to enforce and prosecute actions for infringement and to collect damages for all relevant times against infringers of the'457 Patent. Accordingly, Midas possesses the exclusive right and has standing to prosecute the present action for infringement of the '457 Patent by Defendants.

B. The'446 Patent

35. U.S. Patent No. 10,820,446 entitled "Appliance Immersion Cooling System," was duly and legally issued on October 27, 2020 by the U.S. Patent and Trademark Office. The underlying application, U.S. Patent Application No. 16/243,732, was filed on January 9, 2019, and is a continuation of the application which issued as the '457 Patent filed on April 30, 2014. A true and correct copy of the '446 Patent is attached as **Exhibit B** and incorporated by reference.

36. Midas is the assignee of all right, title, and interest in the'446 Patent, including all rights to enforce and prosecute actions for infringement and to collect damages for all relevant times against infringers of the'446 Patent. Accordingly, Midas possesses the exclusive right and has standing to prosecute the present action for infringement of the '446 Patent by Defendants.

V. RHODIUM AND ITS INFRINGEMENTS

37. Rhodium Defendants are part of "an industrial-scale digital asset technology company" that "mine[s] bitcoin" with a "fully integrated" liquid cooling system. *See* SEC Amendment No. 6 to Form S-1 at 1.

38. Rhodium's "founders spent the previous four years developing, testing, and collecting field operational data to optimize the application of [their] liquid-cooling technology to mining bitcoin." *Id.* Rhodium designs, builds, and operates data centers, also called "mining farms" consisting of "bitcoin miners" (i.e. high-powered computers) submerged in dielectric cooling fluid within specialized tank modules. *Id.* at 1, 22. The miners mine bitcoin and thus generate revenue. The liquid cooling system permits Rhodium

to "predictably and consistently mine more bitcoin with fewer miners" by "optimize[ing] the hash rate, or processing power" of the miners. *Id.* at 1.

39. According to the foregoing SEC filing, Rhodium does not sell immersion cooling products to third parties, but instead is a fully integrated bitcoin mining operation that designs, builds, and then operates its own allegedly proprietary immersion cooling systems to mine bitcoin and generate revenue. *Id.* at 1. Rhodium and its non-defendant subsidiaries operate as a common enterprise controlled by Rhodium Enterprises and/or by Rhodium Technologies, and/or by their officers and primary shareholders the Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols.

40. Rhodium Defendants own and operate a bitcoin mining facility in Rockdale, Texas. Below are images from Rhodium's Rockdale facility showing the infringing liquid immersion cooling systems and tank modules:

See, e.g., "Investor Presentation 17.02.2020. In connection with proposed acquisition of Distributed Ledger Technologies Ireland, Ltd, Element ASA" (February 17, 2020), downloaded from https://dltx.com/uploads/images/Reports-and-Documents/Presentations-and-Docs/Exemption-Doc/Element_Investor_Presentation_210217.pdf.

41. Accordingly, Defendants have directly infringed at least claims 1, 2, 5-7, 10,

11, 14 and 15 of the ‘457 Patent and at least claims 1, 2, 5-7 and 10 of the '446 Patent. Attached as **Exhibit E** is the claim chart for independent claims 1 and 6 of the ‘457 Patent. Attached as **Exhibit F** is the claim chart for independent claims 1 and 6 of the’446 Patent. These claim charts are excerpts from Midas’ Final Infringement Contentions, which were served on Defendants on November 21, 2022. Midas provided claim charts for all asserted claims in its Final Infringement contentions. Exhibits E and F are designated Confidential-Outside Attorneys’ Eyes Only and therefore filed under seal.

VI. DEFENDANTS' KNOWLEDGE OF THE ASSERTED PATENTS, THEIR INFRINGEMENTS, AND THE PRIOR CLAIM CONSTRUCTION ORDER

42. As detailed below, all Defendants have had actual notice of the Asserted Patents and their own infringements for some time. For example, the Individuals became aware of the ‘457 Patent and their infringements thereof no later than February 2020, when they received a notice letter from Midas addressed to another entity founded by the Individuals, i.e., Immersion Systems LLC. Further, the Individuals became aware of the ‘457 Patent and their infringements thereof, no later than November 24, 2020, when Midas amended its lawsuit against Immersion Systems to assert the '457 Patent.

43. Before founding any of their Rhodium entities, Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols began to commercialize certain liquid immersion cooling systems intended to be used in bitcoin mining operations. To sell those liquid immersion cooling systems to third parties, the Individuals formed an entity called Immersion Systems LLC in 2018. Exemplary YouTube videos show Chase Blackmon and Cameron Blackmon working on such immersion cooling systems. *See* AntMiner S9 - Immersion CoolingTest, Feb. 17, 2018. https://www.youtube.com/watch?v=DRck1Iegf2A (last accessed March 28, 2023); immersion Cooling- Beta Test 1, Feb. 17, 2018, https://www.youtube.com/watch?v=SzUO-PMtda4 (last accessed March 28, 2023); *see also* SEC Amendment No. 6 to F01m S-1 at 1 ("Our founders spent the previous four years developing, testing, and collecting field operational data to optimize the application of our

liquid-cooling technology to mining bitcoin.").

Cameron Blackmon

Chase Blackmon

44. From Immersion Systems' YouTube channel and Twitter feed, numerous images and videos are available of these liquid immersion cooling systems. For example, below is a picture from a November 12, 2019 tweet, depicting a stack of immersion cooling tank modules, from Immersion System's Twitter feed with the caption "Another shipment out! Here was have [sic] 5 Bitmain S9 tanks, fitting 42 miners each." *See* https://twitter.com/ImmersionSystem/status/1194318079758610438 (last accessed on March 28, 2023)

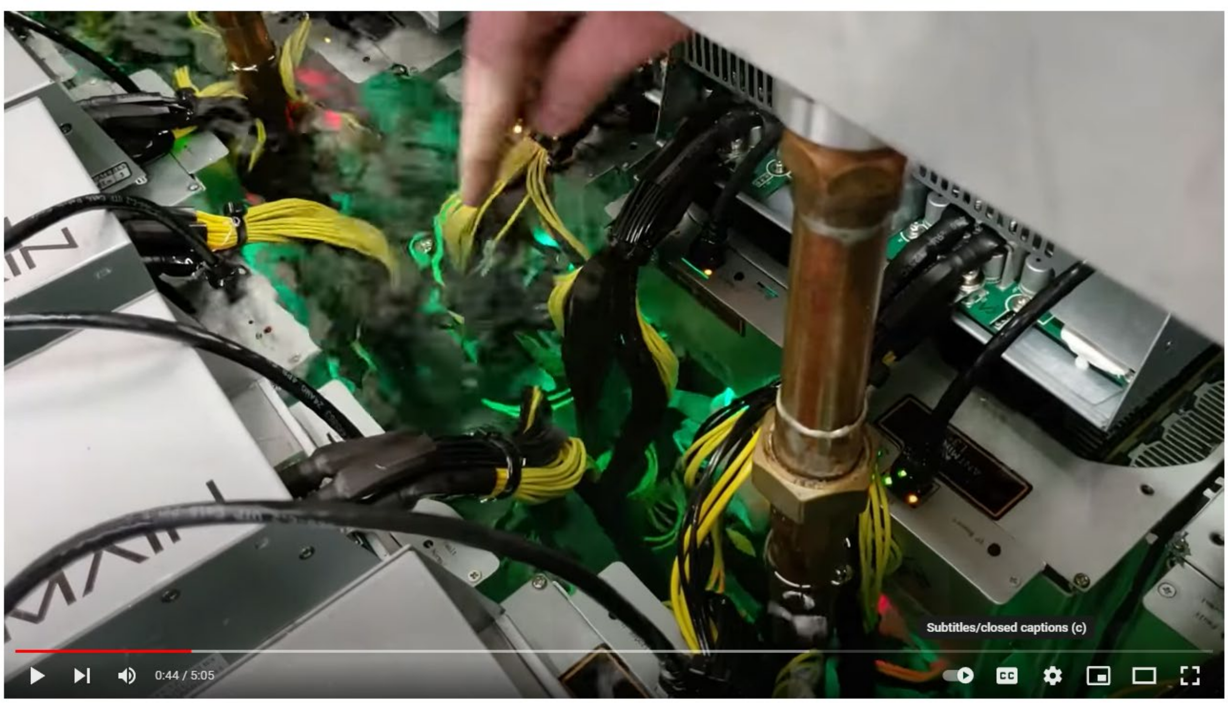
45. In another example, below is a picture from an October 15, 2019 tweet, with the caption "Another shipment ready to go at Immersion Systems! We deploy, at industrial scale, liquid immersion crypto-mining solutions. We provide free fluid extraction and tech replacement if you want to upgrade your miners on site. Contact us at sales@immersionsystems.io for more info."

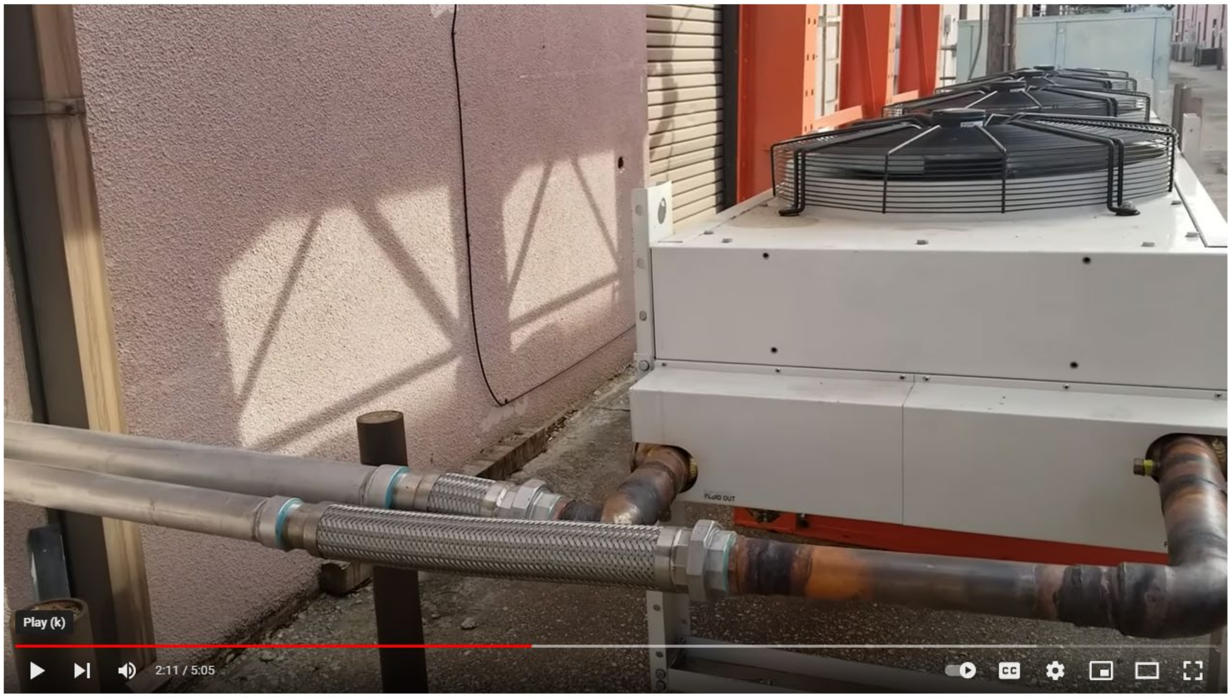
46. In another example, below is a picture from a July 21, 2019 tweet, with the caption "Preparing another order for shipping out this week! All of our systems are thoroughly tested prior to shipping. @ourbcma @MiningDisrupt #immersioncooling #mining #bitcoin."

47. In another example, Immersion System's YouTube channel 1oaded a five-minute video entitled "Introduction" on December 10, 2018. See https://www.youtube.com/watch?v=kQ6cycss5ds (last accessed March 28, 2023). That video features Individual Chase Blackmon and contains detailed explanations and videos clips of Immersion Systems' "flagship" immersion cooling system, designed by Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols.

48. The exemplar video shows the structure of the immersion cooling systems designed by Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols, including its central area with appliance slots, holed weir design, winged fluid recovery chambers on either side of the central area, the dielectric fluid flowing up through the central

area and the appliance slots, and the pump system sending the heated dielectric fluid to a dry cooler and then back. *See id.* at 0:44 ("In here, you can see this is BitCool that we use to pump up through the miners and then it exits the sides in a fluid recovery chamber.").





49. From approximately 2018 to 2020, Immersion Systems promoted infringing immersion cooling systems with this design to third parties for use in bitcoin mining operations.

50. On the basis of these videos and photos, Midas sent a detailed letter and claim chart to Immersion Systems on February 7, 2020, explaining that Immersion Systems' immersion cooling systems infringed the'457 Patent. On information and belief, each of the Individuals received and actually read Midas' February 7, 2020 letter around the time that it was sent. Immersion did not respond to that letter, or a second letter sent shortly thereafter.

51. After Immersion Systems did not respond to the second letter from Midas, Midas filed suit against Immersion Systems on May 29, 2020 in the Northern District of Texas, *Midas Green Technologies, LLC v. Immersion Systems LLC,* No. 4:20-cv-00555-O (hereafter, "the Immersion Systems Litigation."). On November 24, 2020, Midas amended its complaint to include detailed allegations of patent infringement for the'446 Patent.

52. The individuals decided to shut down Immersion Systems in 2020, shortly

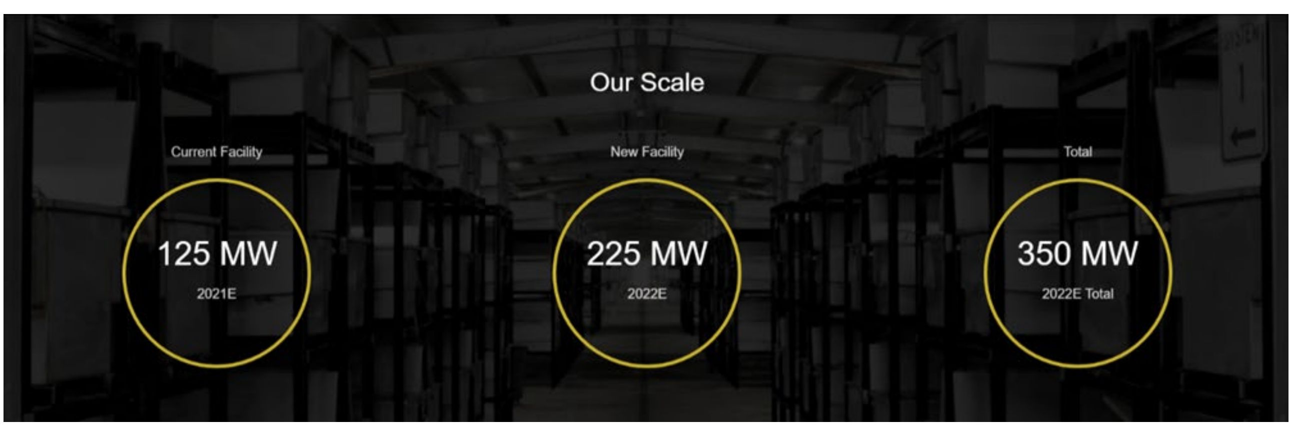
after receiving Midas' first letter on February 7, 2020. On information and belief, the Individuals made this decision to cease conducting business under Immersion Systems because they then knew that their particular immersion cooling systems infringed the'457 Patent.

53. Around this time, as detailed further below, the Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols formed their first Rhodium entity in April 2020, *i.e.,* Defendant Rhodium 30MW LLC. The purpose of this entity (and of the other Defendant Rhodium Operating Subsidiaries and Rhodium Post-Filing Operating Subsidiaries) was not to sell immersion cooling systems to third parties, but rather to use immersion cooling systems to mine bitcoin.

54. During the pendency of the Immersion Systems Litigation, the Individuals caused Immersion Systems to take steps to conceal the existence of the Individuals' new Rhodium businesses.

55. Exemplary photos from Defendants' Rockdale, Texas facility (see above), and as well as photos from Rhodium's website (rhdm.com, see below), appear to suggest that the immersion cooling systems of Rhodium are materially identical to the immersion cooling systems previously promoted by the Individuals by way of Immersion Systems.

56. Because the immersion cooling systems products previously promoted by Immersion Systems and the immersion cooling systems used by Rhodium appear to be materially identical, each of the Individuals had actual notice that the immersion cooling systems



of Rhodium infringed the'457 Patent, as of February 2020. Despite this knowledge, on information and belief, the Individuals acting through one or more of the Defendants, decided to utilize the particular immersion cooling systems that they had previously promoted via Immersion Systems, in the Defendants' new Rhodium-labelled bitcoin mining business ventures.

57. On information and belief, all of the Rhodium Defendants had actual and constructive notice and knowledge of the '457 Patent as of their founding, at least by virtue of the actual notice of the '457 Patent possessed by the Individuals.

58. On information and belief, all of the Rhodium Defendants had actual knowledge that their immersion cooling systems would infringe the '457 Patent as of their founding, at least by virtue of the knowledge of infringement possessed by the Individuals.

59. On information and belief, each of the Defendants gained actual notice of the '446 Patent in November of 2020, by virtue of the filing by Midas of its amended complaint in the Immersion Systems Litigation. Each of the Defendants had actual notice that the immersion cooling systems of Rhodium infringed the'446 Patent, by virtue of the filing by Midas of its amended complaint.

60. During the course of the Immersion Systems Litigation, Midas and Immersion Systems submitted a Joint Claim Construction Chart (Dkt. 82) in which the parties agreed to the

proper construction of two claim terms, i.e., "weir" and "plenum," and in which the parties further agreed that seventeen other claim terms should be afforded their plain and ordinary meaning. A true and correct copy of that filing is attached as **Exhibit G**.

61. On November 22, 2021, the Court in the Immersion Systems Litigation issued its claim construction order, rejecting arguments from Immersion System that the '457 and'446 Patents were invalid as indefinite, and adopting Midas' proposed constructions as plain and ordinary meaning, with regard to two disputed claim terms. A true and correct copy of the Court's claim construction order is attached as **Exhibit H**. In its claim construction order, the Court also adopted the proposed constructions for nineteen agreed-upon terms and phrases as set forth in the parties' Joint Claim Construction Chart (Dkt. 82).

62. As of their receipt of the foregoing claim construction ruling from the Immersion Systems Litigation in late November 2021, the Defendants knew or should have known that the Asserted Patents were valid and infringed by Defendants, to the extent they did not already possess such knowledge.

63. The Amended SEC Form S-1 filed by Defendant Rhodium Enterprises, Inc. on December 14, 2021 discloses the existence of the Immersion Systems Litigation, as well as acknowledging the possibility that Midas might file a patent infringement lawsuit against Rhodium. *See* SEC Amendment No. 4 to Form S-1 at 29, Rhodium Enterprises, Inc. (Dec. 14, 2021), *available at* https://sec.report/Document/0001213900-21-065116/fs12021a4_rhodium.htm. Notably, the Form S-1 does *not* state that the Rhodium systems or tanks are different in any material respect from the accused Immersion systems or tanks, amounting to a tacit admission that they are the same or similar in all material respects. *Id.* Even after Midas filed the Original Complaint in this action, Rhodium filed an amended Form S-1 acknowledging the lawsuit but not containing any statements that the Rhodium systems or tanks differ in any material respect from the infringing Immersion systems or tanks. SEC Amendment No. 6 to Form S-1 at 4. Defendants' disclosure of the Immersion Systems Litigation, and a corresponding litigation risk to the Rhodium entities, in its Form S-1 further demonstrates

its knowledge of the Asserted Patents and of its infringement.

64. As of the filing of this suit on January 13, 2022, each of the Defendants is well aware of the Asserted Patents, and each of the Defendants is well aware of their infringements thereof.

VII. CAUSES OF ACTION

Count 1: Infringement of U.S. Patent No. 10,405,457

65. Midas incorporates by reference the preceding paragraphs, as if set forth herein.

66. The '457 Patent was filed April 30, 2014, and legally issued by the United States Patent and Trademark Office on September 3, 2019. The '457 Patent is valid and enforceable and presumed as such pursuant to 35 U.S.C. § 282.

67. Without a license or permission from Midas, Defendants have directly infringed and continue to directly infringe one or more claims of the '457 Patent by making, having made, using, offering for sale, or selling products and devices that embody the patented invention in violation of 35 U.S.C. § 271.

68. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC directly infringe the '457 Patent under 35 USC §271(a) by (1) providing infringing immersion cooling systems to other Defendants; (2) controlling and directing the direct infringement of one or more of the other Defendants; and (3) benefitting and profiting from the infringement of one or more of the other Defendants. The other Defendants directly infringe the '457 Patent under 35 USC §271(a) by their admitted use of infringing immersion cooling systems.

69. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC further indirectly infringe the '457 Patent by (1) directing other third parties to design, build or install infringing products and devices; and (2) controlling and directing the direct infringement of one or more of the other Defendants.

70. Defendants' infringement has been, and continues to be, knowing, intentional, and willful, at least beginning February 7, 2020, with the delivery of Midas' noticed letter to Immersion Systems, of which the Individuals had contemporaneous notice.

71. Defendants' acts of infringement of the '457 Patent have caused and will continue to cause Midas damages for which Midas is entitled compensation pursuant to 35 U.S.C. § 284. Defendants' acts of infringement of the '457 Patent have caused and will continue to cause Midas immediate and irreparable harm unless such infringing activities are enjoined by this Court pursuant to 35 U.S.C. § 283. Midas has no adequate remedy at law.

A. Direct Infringement

72. Defendants have directly infringed one or more claims of the '457 Patent in the Western District of Texas, the State of Texas, and elsewhere in the United States, by at least making, having made, using, selling, and/or offering for sale appliance immersion cooling systems that satisfy every limitation of at least claims 1 and 6 of the'457 Patent. If any limitation of claim 1 or 6 is not practiced in a literal sense, then that limitation is present under the doctrine of equivalents.

73. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have directly infringed one or more claims of the '457 Patent in the Western District of Texas, the State of Texas, and elsewhere in the United States by way of: (1) directing and controlling the activities of the Defendant Rhodium Operating Entities and the Defendants identified as Rhodium Post-Filing Operating Subsidiaries; and (2) benefiting and profiting from the other Defendants infringing actions. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC also purchase infringing immersion cooling tanks and provided those infringing tanks to one or more of the other Defendants.

74. See **Exhibit E** which is an exemplary claim chart detailing representative infringement of claims 1 and 6 of the'457 Patent.

B. Induced Infringement

75. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have been and are inducing infringement of the '457 Patent by actively and knowingly inducing others, including other Defendants, to make, have made and/or use, the infringing

immersion cooling systems and tank modules that embody the invention claimed in the '457 Patent in violation of 35 U.S.C. § 271(b). Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have also induced infringement by willfully directing and controlling the infringing activities of other third parties, such as manufacturers and installers, to make, have made, or use the infringing immersion cooling systems and tank modules.

76. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have possessed specific intent to induce infringement of the'457 Patent. Specifically, Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have long been aware of the '457 Patent and the specific manner in which their immersion cooling system design infringes the'457 Patent, by virtue of detailed claim charts provided to the Individuals and either shared with all other Defendants or that all other Defendants have knowledge of their infringement through the knowledge of the Individuals, who are officers, directors, and owners of the Rhodium Defendants. Despite this knowledge of the patent and the infringing design, Defendants have induced third parties to take actions that they know will infringe, either directly or contributorily, through the actions described in this section and throughout this complaint. For example, Defendant Rhodium Enterprises, Inc. directed Ameritex Machine and Fabrication, LLC ("Ameritex") to make and sell its infringing immersion tanks. See Exhibit C.

77. Defendants have induced infringement by providing designs and instructions to third party manufacturers, such as Ameritex and contractors to have made infringing immersion cooling systems and tank modules. *Id.*

78. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have induced infringement by willfully providing infringing directions, instructions and designs for immersion cooling systems and tank modules to other Defendants, third party manufacturing companies, such as Ameritex and other contractors, for knowing use in infringing activity to mine bitcoin and generate revenue. *Id.*

Count 2: Infringement of U.S. Patent No. 10,820,446

79. Midas incorporates by reference the preceding paragraphs, as if set forth herein.

80. The ‘446 Patent was filed January 9, 2019, and legally issued by the United States Patent and Trademark Office on October 27, 2020. The ‘446 Patent is valid and enforceable, and presumed as such pursuant to 35 U.S.C. § 282.

81. Without a license or permission from Midas, Defendants have directly infringed and continue to directly infringe one or more claims of the’446 Patent, by making, having made, using, offering for sale, or selling products and devices that embody the patented invention in violation of 35 U.S.C. § 271.

82. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC directly infringe the ‘446 Patent under 35 USC §271(a) by; (1) providing infringing immersion cooling systems to other Defendants; (2) controlling and directing the direct infringement of one or more of the other Defendants; and (3) benefitting and profiting from the infringement of one or more of the other Defendants. The other Defendants directly infringe the ‘446 Patent under 35 USC §271(a) by their admitted use of infringing immersion cooling systems.

83. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC further indirectly infringe the ‘446 Patent by; (1) directing other third parties to design, build or install infringing products and devices; and (2) controlling and directing the direct infringement of one or more of the other Defendants. Defendants' infringement has been, and continues to be, knowing, intentional, and willful, at least beginning November 24, 2020, with the filing of Midas' amended complaint against Immersion Systems, of which the Individuals had contemporaneous notice.

84. Defendants' acts of infringement of the ‘446 Patent have caused and will continue to cause Midas damages for which Midas is entitled compensation pursuant to 35 U.S.C. § 284. Defendants' acts of infringement of the ‘446 Patent have caused and will

continue to cause Midas immediate and irreparable harm unless such infringing activities are enjoined by this Court pursuant to 35 U.S.C. § 283. Midas has no adequate remedy at law.

C. Direct infringement

85. Defendants have directly infringed one or more claims of the '446 Patent in the Western District of Texas, the State of Texas, and elsewhere in the United States, by at least making, having made, using, selling, and/or offering for sale appliance immersion cooling systems that satisfy every limitation of at least claims 1 and 6 of the'446 Patent. If any limitation of claims 1 or 6 is not practiced in a literal sense, then that limitation is present under the doctrine of equivalents.

86. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have directly infringed one or more claims of the '446 Patent in the Western District of Texas, the State of Texas, and elsewhere in the United States by way of (1) directing and controlling the activities of the Defendant Rhodium Operating Entities and the Defendants identified as Rhodium Post-Filing Operating Subsidiaries and (2) benefiting and profiting from the other Defendants infringing actions. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC also purchase infringing immersion cooling tanks and provided those infringing tanks to one or more of the other Defendants.

87. See **Exhibit F** which is an exemplary claim chart detailing representative infringement of claims 1 and 6 of the'446 Patent.

D. Induced Infringement

88. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have been and are inducing infringement of the '446 Patent by actively and knowingly inducing others, including other Defendants, to make, have made, and/or use, the infringing immersion cooling systems and tank modules that embody the invention claimed in the '446 Patent in violation of 35 U.S.C. § 27l(b). Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have also induced infringement by willfully

directing and controlling the infringing activities of other third parties, such as manufacturers and installers, to make, have made, or use the infringing immersion cooling systems and tank modules.

89. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have possessed specific intent to induce infringement of the'446 Patent. Specifically, Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have long been aware of the '446 Patent and the specific manner in which their immersion cooling system design infringes the'446 Patent, by virtue of detailed claim charts provided to the Individuals and either shared with all other Defendants or that all other Defendants have knowledge of their infringement through the knowledge of the Individuals, who are officers, directors, and owners of the Rhodium Defendants.

90. Despite this knowledge of the patent and the infringing design, Defendants have induced third parties to take actions that they know will infringe, either directly or contributorily, through the actions described in this section and throughout this complaint. For example, Defendant Rhodium Enterprises, Inc. directed Ameritex Machine and Fabrication, LLC ("Ameritex") to make and sell it infringing immersion tanks.

91. Defendants have induced infringement by providing designs and instructions to third party manufacturers, such as Ameritex, and contractors to have made infringing immersion cooling systems and tank modules.

92. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have induced infringement by willfully providing infringing directions, instructions and designs for immersion cooling systems and tank modules to other Defendants, third party manufacturing companies, such as Ameritex and other contractors, for knowing use in infringing activity to mine bitcoin and generate revenue.

Count 3: Willfulness and Egregiousness

93. Midas incorporates by reference the preceding paragraphs, as if set forth herein.

94. Defendants have willfully and maliciously infringed the '457 and'446 Patents at least since the date of their actual notice of the patents and their infringement. Specifically, despite receiving detailed claim charts both in letters and having received such information through the Immersion Systems litigation showing that their immersion cooling systems designs infringes Midas' patents, Defendants have continued to operate their infringing immersion cooling systems. Indeed, Defendants have aggressively sought to expand their operations and add additional immersion cooling systems, knowing throughout their existence that they infringe Midas' patents.

95. The Individuals (by way of Immersion Systems) actively sought to conceal the existence of their Rhodium business and did not reveal its existence during the course of the Immersion Systems litigation, despite clear discovery obligations to do so. The Individuals also actively sought to conceal that Immersion Systems had ceased business operations, continuing in the Northern District of Texas litigation for the true benefit of the Defendants.

96. At the same time, on information and belief, the Individuals, and/or Rhodium directly or indirectly bankrolled the filing and prosecution, nominally in the name of Immersion Systems, of an *Inter parties* review proceeding directed to attempt to invalidate the'457 Patent, as well as a Post-Grant review proceeding directed to attempt to invalidate the'446 Patent.

97. Defendants' infringement has been egregious, wanton, malicious, and in bad faith.

98. The Individuals, who are the officers, directors, and owners of the Defendants, possessed full knowledge that their immersion cooling systems design infringed the '457 and'446 Patents, knew these patents were valid, did not attempt to procure a license to these valid patents, and instead proceeded to start a new business using the same or substantially the same infringing design. As Rhodium advertises, this immersion cooling system design is critical to their business and a primary driver of their profitability, and yet Defendants have knowingly and maliciously stolen Midas' patented and innovative technology for their own profit without compensating the inventors of the technology.

Additional Allegations Relating to the Asserted Patents

99. The '457 Patent is directed to an improved appliance immersion cooling system and method of operation. Specifically, the '457 Patent seeks to solve at least two problems in the prior art of appliance immersion cooling systems: (1) the difficulty of maintenance and access to the electrical equipment in prior art vertical-stack-type systems, which necessitate draining the cooling fluid to gain access to the equipment; and (2) non-uniform flow patterns of the dielectric fluid within the tank and constricted dielectric fluid supply and return ports, resulting in uneven cooling and unnecessarily high fluid flow velocities. The invention of the '457 Patent is an improvement over the prior art and provides greater efficiency and effectiveness through ease of access to the electrical appliances in an open horizontal tank, substantially uniform fluid flow patterns through all appliance slots leading to substantially uniform cooling, and lower fluid flow velocities. The '457 Patent accomplishes these improvements through a unique, innovative design, as described below, that achieves substantially uniform flow of dielectric fluid upwardly through the tank, beginning from a plenum that substantially uniformly distributes the dielectric fluid across the bottom of the tank and then a weir that is adapted to facilitate substantially uniform recovery of the dielectric fluid that has cooled the appliances, where the fluid flows over the weir into fluid recovery reservoirs, to then be cycled and re-cooled, for recirculation into the tank. The '457 Patent therefore does not claim an abstract idea, law of nature, or natural phenomenon, but instead to a tangible, patent-eligible invention.

100. The '457 Patent claims, among other things, an appliance immersion cooling system that includes a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank. The tank includes a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, having an overflow lip adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot, and a dielectric fluid recovery reservoir positioned vertically beneath the

overflow lip of the weir and adapted to receive the dielectric fluid as it flows over the weir. The appliance immersion cooling system also includes a primary circulation facility adapted to circulate the dielectric fluid through the tank. The primary circulation facility includes a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot. The appliance immersion cooling system also, in some embodiments, includes a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted. The appliance immersion cooling system also includes a control facility adapted to coordinate the operation of the primary and, if included, the secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

101. The '457 Patent also claims, among other things, a tank module adapted for use in an appliance immersion cooling system. The tank module includes a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank. The tank includes a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, having an overflow lip adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot, and a dielectric fluid recovery reservoir positioned vertically beneath the overflow lip of the weir and adapted to receive the dielectric fluid as it flows over the weir. The tank module also includes a primary circulation facility adapted to circulate the dielectric fluid through the tank, including a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot, and a control facility adapted to control the operation of the primary fluid circulation facility as a function of the temperature of the dielectric fluid in the tank.

102. The '446 Patent is directed to an improved appliance immersion cooling system and method of operation. Specifically, the '446 Patent seeks to solve at least two

problems in the prior art of appliance immersion cooling systems: (1) the difficulty of maintenance and access to the electrical equipment in prior art vertical-stack-type systems, which necessitate draining the cooling fluid to gain access to the equipment; and (2) non-uniform flow patterns of the dielectric fluid within the tank and constricted dielectric fluid supply and return ports, resulting in uneven cooling and unnecessarily high fluid flow velocities. The invention of the '446 Patent is an improvement over the prior art and provides greater efficiency and effectiveness through ease of access to the electrical appliances in an open horizontal tank, substantially uniform fluid flow patterns through all appliance slots leading to substantially uniform cooling, and lower fluid flow velocities. The '446 Patent accomplishes these improvements through a unique, innovative design, as described below, that achieves substantially uniform flow of dielectric fluid upwardly through the tank, beginning from a plenum that substantially uniformly distributes the dielectric fluid across the bottom of the tank and then a weir that is adapted to facilitate substantially uniform recovery of the dielectric fluid that has cooled the appliances, where the fluid flows over the weir into fluid recovery reservoirs, to then be cycled and re-cooled, for recirculation into the tank. The '446 Patent therefore does not claim an abstract idea, law of nature, or natural phenomenon, but instead to a tangible, patent-eligible invention.

103. The '446 Patent claims, among other things, an appliance immersion cooling system that includes a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank. The tank includes a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot. The appliance immersion cooling system also includes a primary circulation facility adapted to circulate the dielectric fluid through the tank. The primary circulation facility includes a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot. The appliance immersion cooling system also includes, in at least

one embodiment, a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulation in the primary circulation facility, and to dissipate to the environment the heat so extracted, and a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

104. The ‘446 Patent also claims, among other things, a tank module adapted for use in an appliance immersion cooling system. The tank module includes a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically long, and extending transverse to, a long wall of the tank. The tank includes a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot. The tank module also includes a primary circulation facility adapted to circulate the dielectric fluid through the tank, including a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot, and a control facility adapted to control the operation of the primary fluid circulation facility as a function of the temperature of the dielectric fluid in the tank.

VIII. JURY DEMAND

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Midas respectfully requests a trial by jury of any issues so triable by right.

PRAYER FOR RELIEF

Wherefore, Midas requests judgment against Defendants as follows:

A. Adjudging that all Defendants have directly infringed, the’457 Patent, in violation of 35 U.S.C. § 271(a);

B. Adjudging that Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have actively induced infringement of the’457 Patent, in violation of 35 U.S.C. § 271(b);

C. Adjudging that all Defendants have directly infringed the’446 Patent, in

violation of 35 U.S.C. § 27l(a);

D. Adjudging that Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have actively induced infringement of the’446 Patent, in violation of 35 U.S.C. § 271(b);

E. Permanently enjoining Defendants, their employees, agents, officers, directors, attorneys, successors, affiliates, subsidiaries, and assigns, and all of those in active concert and participation with any of the foregoing persons or entities from infringing, contributing to the infringement of, or inducing infringement of, the ‘457 Patent and of the’446 Patent;

F. Ordering Defendants to account for and pay damages adequate to compensate Midas for Defendants' infringement of, and inducement to infringe, the ‘457 Patent and the’446 Patent, including pre-judgment and post-judgment interest and costs, pursuant to 35 U.S.C. § 284;

G. Ordering an accounting by Defendants for any infringing activity not presented at trial and an award by the court of additional damages for any such infringing activity to Midas;

H. Ordering that the damages award by increased up to three times the actual amount assessed, pursuant to 35 U.S.C. § 284;

I. Declaring this case exceptional and ordering Defendants to pay the cost of this action, including all disbursements, and attorneys' fees as provided by 35 U.S.C. § 285, together with prejudgment interest; and

J. Awarding such other and further relief as this Court deems just and proper.

DATED: March 29, 2023

Respectfully submitted,

/s/ Joseph E. Thomas

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Counsel for Plaintiff
Midas Green Technologies, LLC

CERTIFICATE OF SERVICE

I hereby certify that counsel of record who have appeared electronically in this case are being served on March 29, 2023 via the email address that counsel provided to Court's ECF system.

/s/ Tierra Mendiola
Tierra Mendiola

EXHIBIT 12

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

Midas Green Technologies, LLC,	)	
	)	
Plaintiff,	)	Civil Action No. 6:22-CV-00050-ADA
	)	
v.	)	**JURY TRIAL DEMANDED**
	)	
Rhodium Enterprises, Inc.;	)	
Rhodium Technologies LLC;	)	
Rhodium 10MW LLC;	)	
Rhodium 2.0 LLC;	)	
Rhodium 30MW LLC;	)	
Rhodium Encore LLC;	)	
Rhodium Renewables LLC;	)	
Rhodium Renewables Sub LLC; and	)	
Rhodium Ready Ventures LLC.	)	
	)	
Defendants.	)	

DEFENDANTS' ANSWER TO PLAINTIFF'S THIRD AMENDED COMPLAINT AND COUNTERCLAIMS

Defendants Rhodium Enterprises, Inc., Rhodium Technologies LLC, Rhodium 10MW LLC, Rhodium 2.0 LLC, Rhodium 30MW LLC, Rhodium Encore LLC, Rhodium Renewables LLC, Rhodium Renewables Sub LLC; and Rhodium Ready Ventures LLC. (collectively, "Rhodium" or "Defendants") hereby file their Answer to Midas Green Technologies, LLC ("Midas" or "Plaintiff")'s Third Amended Complaint for Patent Infringement.

I. PARTIES

Complaint Paragraph 1:

1. Plaintiff Midas Green Technologies, LLC is a Texas limited liability company with its principal place of business at 7801 N Capital of Texas Hwy # 230, Austin, TX 78731. Midas designs and builds immersion cooling solutions for use in data centers including cryptocurrency

mining facilities. Midas has been an innovative pioneer in the application of immersion cooling technology.

Response: Defendants admit, on information and belief, that Plaintiff is a Texas limited liability company with its principal place of business in Austin, Texas, that has offered immersion cooling solutions for sale. Defendants lack knowledge or information sufficient to form a belief about the business of Plaintiff's customers, and deny the remaining allegations of Paragraph 1.

Complaint Paragraph 2:

2. Defendant Rhodium Enterprises, Inc. is a Delaware corporation formed on April 22, 2021. Rhodium Enterprises, Inc. conducts business in Texas, including in this District, and including in the Waco Division, including by way of its subsidiaries as described herein. According to its most recent SEC filing, Rhodium Enterprises, Inc. is a holding company and the sole managing member of Defendant Rhodium Technologies LLC. *See* SEC Amendment No. 6 to Form S-1 *see* https://www.sec.gov/Archives/edgar/data/0001874985/000121390022002442/fs12022a6_rhodium.htm.

Response: Defendants admit that Rhodium Enterprises, Inc. is a Delaware corporation formed on April 22, 2021 and that it conducts business in Texas, including in the Waco Division of this District. Defendants admit that Rhodium Enterprises, Inc. is a holding company and the manager and a member of Rhodium Technologies LLC. To the extent that there are other allegations in this paragraph that require a response, Defendants deny those remaining allegations.

Complaint Paragraph 3:

3. Defendant Rhodium Technologies LLC is a Delaware limited liability company formed on October 23, 2020. Rhodium Technologies LLC was formerly known as Rhodium Enterprises LLC. Rhodium Technologies LLC is a subsidiary of Defendant Rhodium Enterprises,

Inc. Rhodium Technologies LLC conducts business in Texas, including in this District, and including in the Waco Division, including by way of its subsidiaries as described herein. According to the foregoing most-recent Amended SEC Form S-1 filing, Defendant Rhodium Technologies LLC is a holding company. In the foregoing most-recent Amended SEC Form S-1 filing, Defendant Rhodium Technologies LLC is known as "Rhodium Holdings."

Response: Defendants admit that Rhodium Technologies LLC is a limited liability company formed on October 23, 2020, and was formerly known as Rhodium Enterprises LLC. Defendants admit that Rhodium Technologies LLC is a subsidiary of Rhodium Enterprises, Inc. and that it conducts business in Texas, including in the Waco Division of this District. Defendants admit that Rhodium Technologies LLC is a holding company and is referenced as "Rhodium Holdings" in the referenced Amended SEC Form S-1 filing. To the extent that there are other allegations in this paragraph that require a response, Defendants deny those remaining allegations.

Complaint Paragraph 4:

4. Defendant Rhodium 10MW LLC is a Delaware limited liability company formed on March 12, 2021. Rhodium 10MW LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium 10MW LLC conducts business in Texas, including in this District, and including in the Waco Division.

Response: Admitted.

Complaint Paragraph 5:

5. Defendant Rhodium 2.0 LLC is a Delaware limited liability company formed on December 17, 2020. Rhodium 2.0 LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium 2.0 LLC conducts business in Texas, including in this District, and including in the Waco Division.

Response: Admitted.

Complaint Paragraph 6:

6. Defendant Rhodium 30MW LLC is a Delaware limited liability company formed on April 1, 2020. Rhodium 30MW LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium 30MW LLC conducts business in Texas, including in this District, and including in the Waco Division.

Response: Admitted.

Complaint Paragraph 7:

7. Defendant Rhodium Encore LLC is a Delaware limited liability company formed on January 1, 2021. Rhodium Encore LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium Encore LLC conducts business in Texas, including in this District, and including in the Waco Division.

Response: Defendants admit that Rhodium Encore LLC was formed in January 2021 (on January 8, 2021). Defendants admit the remaining allegations of Paragraph 7.

Complaint Paragraph 8:

8. Defendant Rhodium Renewables LLC is a Delaware limited liability company formed on March 17, 2021. Rhodium Renewables LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium Renewables LLC conducts business in Texas, including in this District, and including in the Waco Division.

Response: Admitted.

Complaint Paragraph 9:

9. Defendant Rhodium Renewables Sub LLC is a Delaware limited liability company formed on April 25, 2022, with a principal office at 4146 W. US Highway 79, Rockdale, Texas

76567-5278. Rhodium Renewables Sub LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium Renewables Sub LLC conducts business in Texas, including in this District, and including in the Waco Division.

Response: Admitted.

Complaint Paragraph 10:

10. Defendant Rhodium Ready Ventures LLC is a Delaware limited liability company formed on August 23, 2022, with a principal office at 4146 W. US Highway 79, Rockdale, Texas 76567-5278. Rhodium Ready Ventures LLC is an operating company and a subsidiary of Defendant Rhodium Technologies LLC. Rhodium Ready Ventures LLC conducts business in Texas, including in this District, and including in the Waco Division.

Response: Admitted.

Complaint Paragraph 11:

11. The foregoing SEC filing describes each of Defendants Rhodium 10MW LLC, Rhodium 2.0 LLC, Rhodium 30MW LLC, Rhodium Encore LLC, Rhodium Industries LLC, and Rhodium Renewables LLC, as operating subsidiaries of Rhodium Technologies LLC. This SEC filing (dated January 18, 2022) also refers to i Ventures Enterprises LLC (then doing business as Energy Tech LLC) as a related party. Accordingly, these defendants will be collectively be referenced herein as "the Rhodium Operating Subsidiaries."

Response: Defendants admit that the referenced SEC filing is dated Januay 18, 2022. The SEC filing speaks for itself.

Complaint Paragraph 12:

12. After Midas filed this case on January 13, 2022, and after the January 18, 2022 date of the aforementioned SEC filing, Jordan HPC Sub LLC, Rhodium Renewables Sub LLC, and

Rhodium Ready Ventures LLC were formed by certain of the other Defendants, ostensibly to be governed by Rhodium Technologies LLC. After the filing of this case and of the aforementioned SEC filing, Rhodium 10MW Sub LLC, Rhodium 30MW Sub LLC, Rhodium Encore Sub LLC, and Rhodium 2.0 Sub LLC were formed by certain of the other Defendants, ostensibly to be governed by Rhodium JV LLC. Accordingly, these companies, whether a defendant or not, will be collectively referenced herein as “the Rhodium Post-Filing Operating Subsidiaries.”

Response: Defendants admit that Jordan HPC Sub LLC, Rhodium Renewables Sub LLC, and Rhodium Ready Ventures LLC were formed after January 13, 2022, that Jordan HPC Sub LLC is governed by Rhodium Technologies, LLC, and that Rhodium 10MW Sub LLC, and Rhodium 30MW Sub LLC are governed by Rhodium JV LLC. The remaining allegations are vague as to “certain of the other Defendants,” “ostensibly to be governed,” and the companies intended to be included in “these companies,” and Defendants thus lack information sufficient to admit or deny them. On that basis, Defendants deny the remaining allegations of Paragraph 12.

Complaint Paragraph 13:

13. Chase Blackmon is a Texas resident, is a co-founder and the Chief Operating Officer of both Rhodium Enterprises, Inc., and Rhodium Technologies LLC. Chase Blackmon is a director nominee for the board of directors of Rhodium Enterprises. Chase Blackmon also owns shares of both Rhodium Enterprises and Rhodium Technologies by way of an entity called Imperium Investment Holdings LLC (“Imperium”). Imperium is the majority and controlling owner of both Rhodium entities. According to the foregoing SEC filing, Chase Blackmon controls 25% of the voting interests in Imperium. Chase Blackmon personally directed, participated in, authorized, and/or ratified the infringing conduct of the Defendants. For example, on information and belief, Chase Blackmon helped design Defendants’ infringing immersion cooling systems, and

he directs, participates in, and makes decisions regarding the making and use of the infringing immersion cooling systems.

Response: Defendants admit Chase Blackmon is a Texas resident, deny that he is a nominee and admit that he is a current member of the board of directors of Rhodium Enterprises, Inc. Defendants admit that the SEC filing referenced in this paragraph states that Chase Blackmon controls 25% of the voting interests in Imperium. Defendants deny that they or Chase Blackmon have engaged in any infringing conduct, including that they have not designed, made, or used any systems that infringe any valid and enforceable claim of any asserted patent. To the extent that there are other allegations in this paragraph that require a response, Defendants deny those remaining allegations.

Complaint Paragraph 14:

14. Cameron Blackmon is a Texas resident, is a co-founder and the Chief Technology Officer of both Rhodium Enterprises, Inc., and Rhodium Technologies LLC. Cameron Blackmon is a director nominee for the board of directors of Rhodium Enterprises. Cameron Blackmon also owns shares of both Rhodium Enterprises and Rhodium Technologies through Imperium. According to the foregoing SEC filing, Cameron Blackmon controls 25% of the voting interests in Imperium. On information and belief, Cameron Blackmon personally directed, participated in, authorized, and/or ratified the infringing conduct of the Defendants. For example, on information and belief, Cameron Blackmon helped design and develop Defendants' infringing immersion cooling systems, and he directs, participates in, and makes decisions regarding the making and use of the infringing immersion cooling systems.

Response: Defendants admit Cameron Blackmon is a Texas resident and is a co-founder and the Chief Technology Officer of Rhodium Enterprises, Inc. Defendants admit that the SEC filing

referenced in this paragraph states that Cameron Blackmon controls 25% of the voting interests in Imperium. Defendants deny that they or Cameron Blackmon have engaged in any infringing conduct, including that they have not designed, made, or used any systems that infringe any valid and enforceable claim of any asserted patent. To the extent that there are other allegations in this paragraph that require a response, Defendants deny those remaining allegations.

Complaint Paragraph 15:

15. Nathan Nichols is a Texas resident, is a co-founder and the Chief Executive Officer of both Rhodium Enterprises, Inc., and Rhodium Technologies LLC. Nathan Nichols serves on the board of directors for Rhodium Enterprises. Nathan Nichols also owns shares of both Rhodium Enterprises and Rhodium Technologies through Imperium. According to the foregoing SEC filing, Nathan Nichols controls 25% of the voting interests in Imperium. On information and belief, Nathan Nichols personally directed, participated in, authorized, and/or ratified the infringing conduct of the Defendants. For example, on information and belief, Nathan Nichols helped design and develop Defendants' infringing immersion cooling systems, and he directs, participates in, and makes decisions regarding the making and use of the infringing immersion cooling systems.

Response: Defendants admit on information and belief that Nathan Nichols is a Texas resident and admit that he is a co-founder of Rhodium Enterprises, Inc. Defendants admit that the SEC filing referenced in this paragraph states that Nathan Nichols controls 25% of the voting interests in Imperium. Defendants deny that they or Nathan Nicols have engaged in any infringing conduct, including that they have not designed, made, or used any systems that infringe any valid and enforceable claim of any asserted patent. To the extent that there are other allegations in this paragraph that require a response, Defendants deny those remaining allegations.

Complaint Paragraph 16:

16. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, and the Defendant Rhodium Operating Subsidiaries have common stock ownership. Each of Chase Blackmon, Cameron Blackmon, and Nathan Nichols (the "Individuals") owns shares of both Defendant Rhodium Enterprises, Inc., and Defendant Rhodium Technologies LLC through Imperium. *See* SEC Amendment No. 6 to Form S-1 at 102. Rhodium Technologies LLC in turn directly or indirectly owns all of the outstanding equity interests in the Rhodium Operating Subsidiaries. *Id*. at 103-05. Rhodium Technologies LLC also directly or indirectly owns all of the outstanding equity interests in the Rhodium Post-Filing Operating Subsidiaries.

Response: Defendants admit that Rhodium Technologies LLC directly or indirectly owns all of the outstanding equity interests in the Rhodium Operating Subsidiaries. Otherwise denied.

Complaint Paragraph 17:

17. The Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries, share common directors and officers with Defendant Rhodium Enterprises, Inc., and Defendant Rhodium Technologies LLC.

Response: Denied.

Complaint Paragraph 18:

18. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, and the Rhodium Operating Subsidiaries file consolidated financial statements. *Id.* at F-17 ("The condensed consolidated financial statements include the accounts of Rhodium Enterprises Inc. and its respective subsidiaries.")

Response: Admitted with respect to the SEC filing referenced in this paragraph.

Complaint Paragraph 19:

19. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, the

Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries were incorporated by Cameron Blackmon, acting on behalf of Imperium, a third party under the control of the Individuals.

Response: Defendants admit that Cameron Blackmon signed the incorporation documents for Rhodium Technologies LLC, the Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries. Defendants deny the remaining allegations of this paragraph.

Complaint Paragraph 20:

20. The Rhodium Operating Subsidiaries, as well as the Rhodium Post-Filing Operating Subsidiaries, are presently undercapitalized and exist for the purposes of illegitimately shielding Defendant Rhodium Enterprises, Inc., and Rhodium Technologies LLC, and in turn the Individuals, from liability. On information and belief, the Rhodium Operating Subsidiaries, as well as the Rhodium Post-Filing Operating Subsidiaries, would be unable to satisfy any money judgement levied against them because of their undercapitalization and because their revenues flow directly to Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC.

Response: Denied.

Complaint Paragraph 21:

21. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC finance the Rhodium Operating Subsidiaries, as well as the Rhodium Post-Filing Operating Subsidiaries.

Response: Denied.

Complaint Paragraph 22:

22. Rhodium Shared Services LLC directly pays the salaries of all Rhodium officers and employees, with the exception that Rhodium Shared Services LLC indirectly pays the salary

of Rhodium Chief Financial Officer Nicholas Cerasuolo by way of its subsidiary, Rhodium Shared Services PR Inc.

Response: Admitted that Rhodium Shared Services LLC directly pays the salaries of all Rhodium employees. Otherwise denied.

Complaint Paragraph 23:

23. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, the Defendant Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries, use each other's properties as their own. For example, on information and belief, some or all of them operate out of the same Rockdale, Texas bitcoin mining facility, among other facilities.

Response: Defendants admit that Rhodium 10MW LLC, Rhodium 2.0 LLC, Rhodium 30MW LLC, and Rhodium Encore LLC operate out of the same Rockdale, Texas bitcoin mining facility. Otherwise denied.

Complaint Paragraph 24:

24. The daily operations of Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, the Defendant Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries are not kept separate. For example, they collectively operate the same bitcoin mining operation. *Id.* At F-16 ("The Company, together with its subsidiaries, operates a digital mining operation"). As discussed above, on information and belief, some or all of them operate out of the same Rockdale, Texas bitcoin mining facility, among other facilities. On information and belief, they also have common business departments.

Response: Denied.

Complaint Paragraph 25:

25. The Rhodium Operating Subsidiaries, as well as the Rhodium Post-Filing

Operating Subsidiaries, receive no business except through that allocated and arranged by Defendant Rhodium Enterprises, Inc. and/or Defendant Rhodium Technologies LLC. For example, Defendant Rhodium Enterprises, Inc. and/or Defendant Rhodium Technologies LLC negotiate contracts on behalf of the Defendant Rhodium Operating Subsidiaries and the Rhodium Post-Filing Operating Subsidiaries, or vice versa.

Response: Denied.

Complaint Paragraph 26:

26. Defendant Rhodium Enterprises, Inc., Defendant Rhodium Technologies LLC, and the Defendant Rhodium Operating Subsidiaries do not observe corporate formalities, including keeping separate books. See *Id*. at F-17 ("The condensed financial statements include the accounts of Rhodium Enterprises Inc. and its respective subsidiaries. All inter-company accounts, balances, and transactions have been eliminated.") (emphasis added). On information and belief, the same is true with respect to the Rhodium Post-Filing Operating Subsidiaries.

Response: Denied.

Complaint Paragraph 27:

27. Each Rhodium Operating Subsidiary and Rhodium Post-Filing Operating Subsidiary is an agent of Defendants Rhodium Enterprises, Inc., and Defendant Rhodium Technologies LLC (aka Rhodium Holdings) and their owners and operators, Chase Blackmon, Cameron Blackmon, and Nathan Nichols. Defendant Rhodium Enterprises, Inc. Defendant Rhodium Technologies LLC, the Defendant Rhodium Operating Subsidiaries, and the Rhodium Post-Filing Operating Subsidiaries therefore act as a common enterprise, their actions ultimately being directed by the Individuals. Specifically, the Individuals direct and control the activities of Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC, and those

Defendants in turn direct and control the activities of the operating subsidiaries. The operating subsidiaries do not function as separate entities, but rather as controlled agents of the parent entities and the operating subsidiaries act on behalf of the parent entities. *See, e.g.*, SEC Amendment No. 6 to Form S-1 at F-17 (referring to the operating subsidiaries as "the subsidiaries through which the Company operates its assets").

Response: Denied.

II. JURISDICTION

Complaint Paragraph 28:

28. This is a civil action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 101 et seq. The Court therefore has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a).

Response: Defendants admit that this is a civil action for patent infringement arising under the patent laws of the United States and admit that the Court has subject matter jurisdiction, but deny that Defendants have committed any act of infringement and deny the legal sufficiency of Plaintiff's complaint.

Complaint Paragraph 29:

29. Defendants are subject to this Court's specific and general personal jurisdiction, pursuant to constitutional due process and the Texas Long-Arm Statute, due at least to their extensive business in this District, including by reason of their infringement alleged herein. Specifically, and for example, Defendants own and operate an infringing bitcoin mining facility in Rockdale, Texas. *See* SEC Amendment No. 6 to Form S-1 at l (referring to Defendants' Rockdale location as the "initial Texas site"). Rockdale, Texas is located in Milam County, which is within the Western District of Texas. In addition, Defendants' second Texas site is in Temple, Texas.

Temple, Texas is located in Bell County, which is also within the Western District of Texas. Further, Defendants' third Texas site[1] is within the Northern District of Texas.

Response: Defendants do not contest the exercise of personal jurisdiction and admit that there are Rhodium sites in Texas, including in Rockdale and Temple, but deny having committed any act of infringement.

Complaint Paragraph 30:

30. Jurisdiction is also found as Defendant Rhodium Enterprises, Inc., and Defendant Rhodium Technologies LLC direct and control the infringing activities of the other Defendants. Further, Rhodium Enterprises, Inc. and Rhodium Technologies LLC purchase immersion cooling system tanks and other components, and then provide those infringing tanks for other Defendants to use. *See*, for example, **Exhibit C**, which is a manufacturing and purchase agreement whereby Rhodium Enterprises, Inc. purchases tanks and other immersion cooling products that infringe the Midas Asserted Patents, which Rhodium Enterprises, Inc. then provides either directly or indirectly to other Defendants. The entirety of the purchase agreement is marked Confidential-Outside Attorneys' Eyes Only and therefore filed under seal.

Response: Defendants do not contest the exercise of personal jurisdiction and admit that Exhibit C to the Third Amended Complaint appears to be a copy of a Manufacturing Services Agreement between Rhodium Industries LLC and Ameritex Machine and Fabrication, LLC. Defendants admit that Exhibit C is marked "Confidential – Outside Attorneys' Eyes Only" and therefore was filed under seal. Defendants deny the remaining allegations of Paragraph 30.

[1] The third location is information learned from Defendants' Further Supplemental Responses, the relevant portion of which is Attached as Exhibit D, page 9. The full text of Defendants' Further Supplemental Responses is not included in the body of the Complaint as they are marked Confidential-Outside Attorneys' Eyes Only and therefore are filed under seal.

Complaint Paragraph 31:

31. In further support of jurisdiction, each of the Defendant subsidiaries infringes the Midas patented immersion cooling system as claimed in the Assert Patents. The use of the tanks is admitted in Defendants' Further Supplemental Responses of which is Attached as **Exhibit D**. The entirety of the Defendants' Further Supplemental Responses is not included below as they are marked Confidential-Outside Attorneys' Eyes Only. Instead, citations are provided to where Rhodium admits use of the tanks.

Defendant Rhodium Operating Subsidiaries

Rhodium 10MW LLC - - page 8, at paragraph labeled "2"

Rhodium 2.0 LLC - - page 8, at paragraph labeled "2"

Rhodium 30MW LLC - - page 7, at paragraph labeled "1"

Rhodium Encore LLC - - page 8, at paragraph labeled "2"

Rhodium Renewables LLC - - page 8, at paragraph labeled "2"

Defendants also Identified as Rhodium Post-Filing Operating Subsidiaries

Rhodium Renewables Sub LLC - - page 9, first indented paragraph

Rhodium Ready Ventures LLC - - page 9, second indented paragraph

Response: Defendants do not contest the exercise of personal jurisdiction and admit that Exhibit D to the Third Amended Complaint appears to be a copy of Defendants' Further Supplemental Interrogatory Responses to Plaintiff's First Set of Interrogatories, but deny having committed any act of infringement.

III. VENUE

Complaint Paragraph 32:

32. Venue is proper in this district under 28 U.S.C. §§ 139l(b) and 1400(b). All

Defendants have at least two places of business in this District and in the Waco Division, *i.e.*, in Rockdale, Texas and in Temple, Texas. Defendants have committed acts of infringement, or a portion thereof, at these two locations within this District and within this Division.

Response: Defendants do not contest the propriety of venue but deny having committed any act of infringement.

IV. THE ASSERTED PATENTS

A. The '457 Patent

Complaint Paragraph 33:

33. U.S. Patent No. 10,405,457, entitled "Appliance Immersion Cooling System," was duly and legally issued on September 3, 2019 by the U.S. Patent and Trademark Office. The underlying application, U.S. Patent Application No. 14/355,533, was filed on April 30, 2014. A true and correct copy of the '457 Patent is attached as **Exhibit A** and incorporated by reference.

Response: Defendants admit that what purports, on its face, to be U.S. Patent No. 10,405,457, entitled "Appliance Immersion Cooling System," and issued on September 3, 2019 claiming priority to an underlying application, U.S. Patent Application No. 14/355,533, filed on April 30, 2014, is attached to the Third Amended Complaint as Exhibit A. On information and belief, Defendants deny that the patent was duly and legally issued.

Complaint Paragraph 34:

34. Midas is the assignee of all right, title, and interest in the '457 Patent, including all rights to enforce and prosecute actions for infringement and to collect damages for all relevant times against infringers of the '457 Patent. Accordingly, Midas possesses the exclusive right and has standing to prosecute the present action for infringement of the '457 Patent by Defendants.

Response: Defendants lack knowledge or information sufficient to form a belief about the truth

of the allegations of paragraph 34 and therefore deny them.

B. The '446 Patent

Complaint Paragraph 35:

35. U.S. Patent No. 10,820,446 entitled "Appliance Immersion Cooling System," was duly and legally issued on October 27, 2020 by the U.S. Patent and Trademark Office. The underlying application, U.S. Patent Application No. 16/243,732, was filed on January 9, 2019, and is a continuation of the application which issued as the '457 Patent filed on April 30, 2014. A true and correct copy of the '446 Patent is attached as **Exhibit B** and incorporated by reference.

Response: Defendants admit that what purports, on its face, to be U.S. Patent No. 10,820,446 entitled "Appliance Immersion Cooling System," issued on October 27, 2020, and claiming priority to an underlying application, U.S. Patent Application No. 16/243,732, filed on January 9, 2019, is attached to the Third Amended Complaint as Exhibit B. Defendants admit that what purports, on its face, to be U.S. Patent No. 10,820,446 indicates that U.S. Patent Application No. 16/243,732 was a continuation of the application which issued as the '457 Patent. On information and belief, Defendants deny that the patent was duly and legally issued.

Complaint Paragraph 36:

36. Midas is the assignee of all right, title, and interest in the '446 Patent, including all rights to enforce and prosecute actions for infringement and to collect damages for all relevant times against infringers of the '446 Patent. Accordingly, Midas possesses the exclusive right and has standing to prosecute the present action for infringement of the '446 Patent by Defendants.

Response: Defendants lack knowledge or information sufficient to form a belief about the truth of the allegations of Paragraph 36 and therefore deny them.

V. RHODIUM AND ITS [ALLEGED] INFRINGEMENTS

Complaint Paragraph 37:

37. Rhodium Defendants are part of "an industrial-scale digital asset technology company" that "mine[s] bitcoin" with a "fully integrated" liquid cooling system. *See* SEC Amendment No. 6 to Form S-1 at 1.

Response: Admitted that this paragraph quotes excerpts from the cited SEC document, which speaks for itself.

Complaint Paragraph 38:

38. Rhodium's "founders spent the previous four years developing, testing, and collecting field operational data to optimize the application of [their] liquid-cooling technology to mining bitcoin." *Id.* Rhodium designs, builds, and operates data centers, also called "mining farms" consisting of "bitcoin miners" (i.e. high-powered computers) submerged in dielectric cooling fluid within specialized tank modules. *Id.* at 1, 22. The miners mine bitcoin and thus generate revenue. The liquid cooling system permits Rhodium to "predictably and consistently mine more bitcoin with fewer miners" by "optimize[ing] the hash rate, or processing power" of the miners. *Id.* at 1.

Response: Defendants admit that Paragraph 38 contains excerpts from SEC filings, which speak for themselves. Defendants admit that some of Rhodium's business involves operating and contributing to the design of certain data centers, some of which use tank modules and liquid cooling systems. Defendants deny that all of their bitcoin mining uses liquid cooling systems.

Complaint Paragraph 39:

39. According to the foregoing SEC filing, Rhodium does not sell immersion cooling products to third parties, but instead is a fully integrated bitcoin mining operation that designs,

builds, and then operates its own allegedly proprietary immersion cooling systems to mine bitcoin and generate revenue. *Id.* at 1. Rhodium and its non-defendant subsidiaries operate as a common enterprise controlled by Rhodium Enterprises and/or by Rhodium Technologies, and/or by their officers and primary shareholders the Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols.

Response: Defendants admit that they do not sell immersion cooling products to third parties. Defendants admit that they generate revenue through bitcoin mining operations. The referenced SEC fiing speaks for itself. Defendants otherwise deny the allegations of Paragraph 39.

Complaint Paragraph 40:

40. Rhodium Defendants own and operate a bitcoin mining facility in Rockdale, Texas. Below are images from Rhodium's Rockdale facility showing the infringing liquid immersion cooling systems and tank modules:

See, e.g., "Investor Presentation 17.02.2020. In connection with proposed acquisition of Distributed Ledger Technologies Ireland, Ltd, Element ASA" (February 17, 2020), downloaded from https://dltx.com/uploads/images/Reports-and-Documents/Presentations-and-Docs/Exemption-Doc/Element_Investor_Presentation_210217.pdf.

Response: Defendants admit to operating a bitcoin mining facility in Rockdale, Texas, which Defendants do not own. As of the date of this answer, the link cited in Paragraph 40 is broken. The referenced document speaks for itsef. Defendants deny that any of their systems infringe any valid and enforceable claim of any asserted patent.

Complaint Paragraph 41:

41. Accordingly, Defendants have directly infringed at least claims 1, 2, 5-7, 10, 11, 14 and 15 of the '457 Patent and at least claims 1, 2, 5-7 and 10 of the '446 Patent. Attached as **Exhibit E** is the claim chart for independent claims 1 and 6 of the '457 Patent. Attached as **Exhibit F** is the claim chart for independent claims 1 and 6 of the '446 Patent. These claim charts are excerpts from Midas' Final Infringement Contentions, which were served on Defendants on November 21, 2022. Midas provided claim charts for all asserted claims in its Final Infringement contentions. Exhibits E and F are designated Confidential-Outside Attorneys' Eyes Only and therefore filed under seal.

Response: Defendants admit that excerpts from Midas' Final Infringement Contentions served on or about November 21, 2022 are attached as Exhibits E and F, but deny having infringed any asserted claim of either patent.

VI. DEFENDANTS' [ALLEGED] KNOWLEDGE OF THE ASSERTED PATENTS, THEIR [ALLEGED] INFRINGEMENTS, AND THE PRIOR CLAIM CONSTRUCTION ORDER

Complaint Paragraph 42:

42. As detailed below, all Defendants have had actual notice of the Asserted Patents and their own infringements for some time. For example, the Individuals became aware of the '457 Patent and their infringements thereof no later than February 2020, when they received a notice letter from Midas addressed to another entity founded by the Individuals, *i.e.*, Immersion Systems LLC. Further, the Individuals became aware of the '457 Patent and their infringements thereof, no

later than November 24, 2020, when Midas amended its lawsuit against Immersion Systems to assert the '457 Patent.

Response: Defendants admit that, on information and belief, Immersion Systems received a letter from Plaintiff in February 2020. Defendants deny the remaining allegations of Paragraph 42, including that Defendants deny having committed any act of infringement and deny having actual notice of their own alleged infringement.

Complaint Paragraph 43:

43. Before founding any of their Rhodium entities, Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols began to commercialize certain liquid immersion cooling systems intended to be used in bitcoin mining operations. To sell those liquid immersion cooling systems to third parties, the Individuals formed an entity called Immersion Systems LLC in 2018. Exemplary YouTube videos show Chase Blackmon and Cameron Blackmon working on such immersion cooling systems. *See* AntMiner S9 - Immersion CoolingTest, Feb. 17, 2018. https://www.youtube.com/watch?v=DRck1Iegf2A (last accessed March 28, 2023); immersion Cooling- Beta Test 1, Feb. 17, 2018, https://www.youtube.com/watch?v=SzUO-PMtda4 (last accessed March 28, 2023); *see also* SEC Amendment No. 6 to Form S-1 at 1 ("Our founders spent the previous four years developing, testing, and collecting field operational data to optimize the application of our liquid-cooling technology to mining bitcoin.").

Cameron Blackmon **Chase Blackmon**


Response: Defendants admit that Chase Blackmon and Cameron Blackman formed an entity called Immersion Systems LLC in 2018. Defendants admit that the business of Immersion Systems LLC involved liquid cooling systems and that the images shown are from certain YouTube videos titled “AntMiner S9 - Immersion CoolingTest,” posted on Feb. 17, 2018, accessible at https://www.youtube.com/watch?v=DRck1Iegf2A; and “Immersion Cooling - Beta Test 1,” posted on Feb. 17, 2018, and accessible at https://www.youtube.com/watch?v=SzUO-PMtda4. Defendants admit that Paragraph 43 contains excerpts from SEC filings, which speak for themselves. To the extent there are other allegations in this paragraph that require a response, Defendants deny those remaining allegations.

Complaint Paragraph 44:

44. From Immersion Systems’ YouTube channel and Twitter feed, numerous images

and videos are available of these liquid immersion cooling systems. For example, below is a picture from a November 12, 2019 tweet, depicting a stack of immersion cooling tank modules, from Immersion System's Twitter feed with the caption "Another shipment out! Here was have [sic] 5 Bitmain S9 tanks, fitting 42 miners each." *See* https://twitter.com/ImmersionSystem/status/1194318079758610438 (last accessed on March 28, 2023)

Response: Defendants admit that the image shown appears to be from Immersion Systems' Twitter feed with the caption, "Another shipment out! Here was have [*sic*] 5 Bitmain S9 tanks, fitting 42 miners each." To the extent there are other allegations in this paragraph that require a response, Defendants deny them.

Complaint Paragraph 45:

45. In another example, below is a picture from an October 15, 2019 tweet, with the caption "Another shipment ready to go at Immersion Systems! We deploy, at industrial scale, liquid immersion crypto-mining solutions. We provide free fluid extraction and tech replacement if you want to upgrade your miners on site. Contact us at sales@immersionsystems.io for more info."

Response: Defendants admit that the image shown appears to be from Immersion Systems' Twitter feed with the caption, "Another shipment ready to go at Immersion Systems! We deploy, at industrial scale, liquid immersion crypto-mining solutions. We provide free fluid extraction and tech replacement if you want to upgrade your miners on site. Contact us at sales@immersionsystems.io for more info." To the extent there are other allegations in this paragraph that require a response, Defendants deny them.

Complaint Paragraph 46:

46. In another example, below is a picture from a July 21, 2019 tweet, with the caption "Preparing another order for shipping out this week! All of our systems are thoroughly tested prior to shipping. @ourbcma @MiningDisrupt #immersioncooling #mining #bitcoin."

Response: Defendants admit that the image shown appears to be from Immersion System's Twitter feed with the caption, "Preparing another order for shipping out this week! All of our systems are thoroughly tested prior to shipping. @ourbcma @MiningDisrupt #immersioncooling #mining #bitcoin." To the extent there are other allegations in this paragraph that require a response, Defendants deny them.

Complaint Paragraph 47:

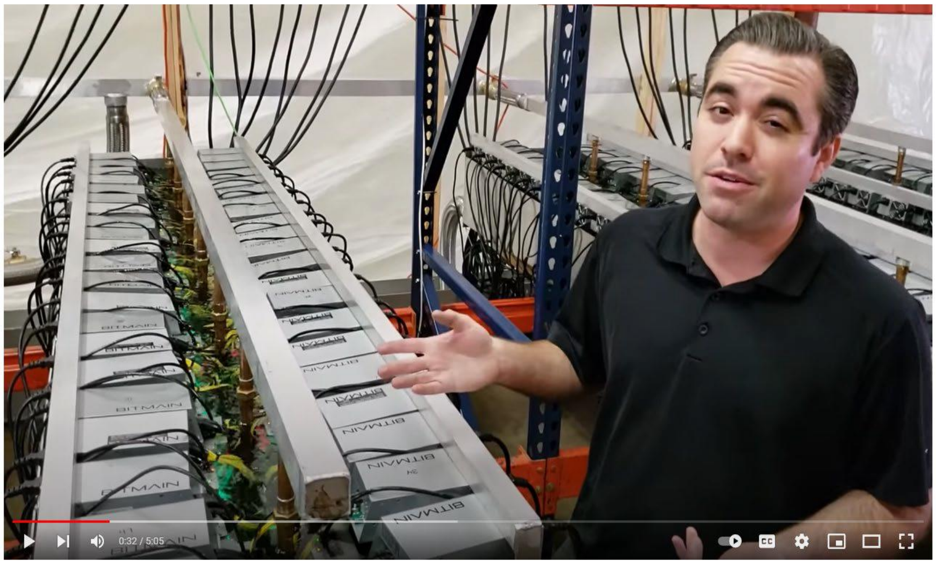
47. In another example, Immersion System's YouTube channel loaded a five- minute video entitled "Introduction" on December 10, 2018. *See*

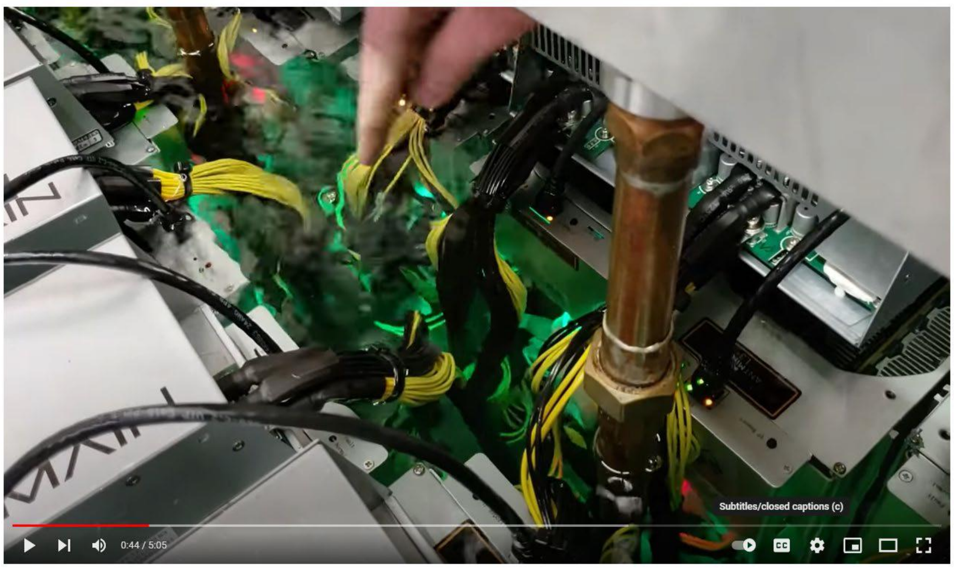
https://www.youtube.com/watch?v=kQ6cycss5ds (last accessed March 28, 2023). That video features Individual Chase Blackmon and contains detailed explanations and videos clips of Immersion Systems' "flagship" immersion cooling system, designed by Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols.

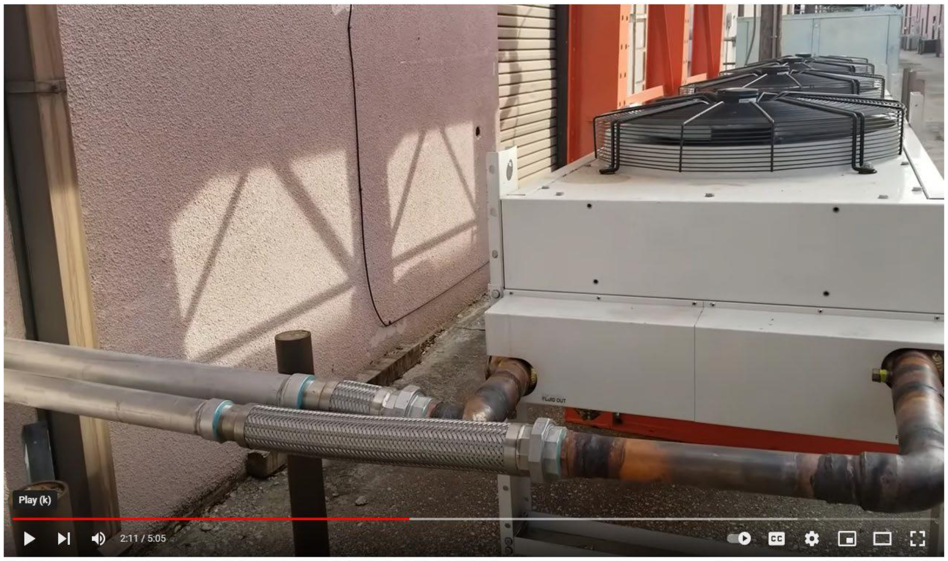
Response: Defendants admit that a video titled "Immersion Systems – Introduction," uploaded by a YouTube channel called "Immersion Systems" on December 10, 2018, is acceesible at https://www.youtube.com/watch?v=kQ6cycss5ds. The video speaks for itself. To the extent there are other allegations in this paragraph that require a response, Defendants deny them.

Complaint Paragraph 48:

48. The exemplar video shows the structure of the immersion cooling systems designed by Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols, including its central area with appliance slots, holed weir design, winged fluid recovery chambers on either side of the central area, the dielectric fluid flowing up through the central area and the appliance slots, and the pump system sending the heated dielectric fluid to a dry cooler and then back. *See id.* at 0:44 ("In here, you can see this is BitCool that we use to pump up through the miners and then it exits the sides in a fluid recovery chamber.").


0:32 / 5:05


Subtitles/closed captions (c)
0:44 / 5:05



Response: Defendants admit that the images shown are from a video titled "Immersion Systems – Introduction," uploaded by a YouTube channel called "Immersion Systems" on December 10, 2018, accessible at https://www.youtube.com/watch?v=kQ6cycss5ds. The video speaks for itself. To the extent there are other allegations in this paragraph that require a response, Defendants deny those remaining allegations.

Complaint Paragraph 49:

49. From approximately 2018 to 2020, Immersion Systems promoted infringing immersion cooling systems with this design to third parties for use in bitcoin mining operations.

Response: Denied.

Complaint Paragraph 50:

50. On the basis of these videos and photos, Midas sent a detailed letter and claim chart to Immersion Systems on February 7, 2020, explaining that Immersion Systems' immersion cooling systems infringed the '457 Patent. On information and belief, each of the Individuals received and actually read Midas' February 7, 2020 letter around the time that it was sent. Immersion did not respond to that letter, or a second letter sent shortly thereafter.

Response: Admitted that, on information and belief, Midas sent a letter on or about February 7, 2020 proposing a license to the ‘457 Patent. Denied as to the remaining allegations.

Complaint Paragraph 51:

51. After Immersion Systems did not respond to the second letter from Midas, Midas filed suit against Immersion Systems on May 29, 2020 in the Northern District of Texas, *Midas Green Technologies, LLC v. Immersion Systems LLC*, No. 4:20-cv-00555-O (hereafter, “the Immersion Systems Litigation.”). On November 24, 2020, Midas amended its complaint to include detailed allegations of patent infringement for the ‘446 Patent.

Response: Defendants admit that Midas filed suit against Immersion Systems on May 29, 2020, in the Northern District of Texas, *Midas Green Technologies, LLC v. Immersion Systems LLC*, No. 4:20-cv-00555-O. Defendants admit that on November 24, 2020, Midas amended its complaint. To the extent there are other allegations in this paragraph that require a response, Defendants deny them.

Complaint Paragraph 52:

52. The individuals decided to shut down Immersion Systems in 2020, shortly after receiving Midas’ first letter on February 7, 2020. On information and belief, the Individuals made this decision to cease conducting business under Immersion Systems because they then knew that their particular immersion cooling systems infringed the ‘457 Patent.

Response: Denied.

Complaint Paragraph 53:

53. Around this time, as detailed further below, the Individuals Chase Blackmon, Cameron Blackmon, and Nathan Nichols formed their first Rhodium entity in April 2020, *i.e.*, Defendant Rhodium 30MW LLC. The purpose of this entity (and of the other Defendant Rhodium

Operating Subsidiaries and Rhodium Post-Filing Operating Subsidiaries) was not to sell immersion cooling systems to third parties, but rather to use immersion cooling systems to mine bitcoin.

Response: Defendants admit that Rhodium 30MW LLC was formed in April 2020 not to sell immersion cooling systems to third parties, but rather to use immersion cooling systems to mine bitcoin. Defendants otherwise deny the allegations of Paragraph 53.

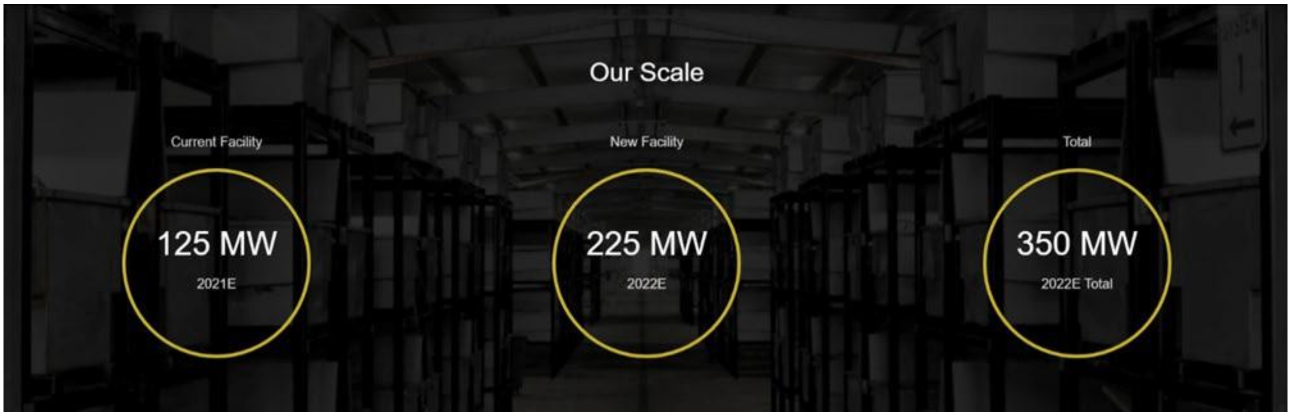
Complaint Paragraph 54:

54. During the pendency of the Immersion Systems Litigation, the Individuals caused Immersion Systems to take steps to conceal the existence of the Individuals' new Rhodium businesses.

Response: Denied.

Complaint Paragraph 55:

55. Exemplary photos from Defendants' Rockdale, Texas facility (see above), and as well as photos from Rhodium's website (rhdm.com, see below), appear to suggest that the immersion cooling systems of Rhodium are materially identical to the immersion cooling systems previously promoted by the Individuals by way of Immersion Systems.



Response: Defendants admit that the photo shown is from the website rhdm.com. Defendants otherwise deny the allegations of Paragraph 55.

Complaint Paragraph 56:

56. Because the immersion cooling systems products previously promoted by Immersion Systems and the immersion cooling systems used by Rhodium appear to be materially identical, each of the Individuals had actual notice that the immersion cooling systems of Rhodium infringed the ‘457 Patent, as of February 2020. Despite this knowledge, on information and belief, the Individuals acting through one or more of the Defendants, decided to utilize the particular immersion cooling systems that they had previously promoted via Immersion Systems, in the Defendants’ new Rhodium-labelled bitcoin mining business ventures.

Response: Denied.

Complaint Paragraph 57:

57. On information and belief, all of the Rhodium Defendants had actual and constructive notice and knowledge of the ‘457 Patent as of their founding, at least by virtue of the actual notice of the ‘457 Patent possessed by the Individuals.

Response: Denied.

Complaint Paragraph 58:

58. On information and belief, all of the Rhodium Defendants had actual knowledge that their immersion cooling systems would infringe the ‘457 Patent as of their founding, at least

by virtue of the knowledge of infringement possessed by the Individuals.

Response: Denied.

Complaint Paragraph 59:

59. On information and belief, each of the Defendants gained actual notice of the '446 Patent in November of 2020, by virtue of the filing by Midas of its amended complaint in the Immersion Systems Litigation. Each of the Defendants had actual notice that the immersion cooling systems of Rhodium infringed the '446 Patent, by virtue of the filing by Midas of its amended complaint.

Response: Denied.

Complaint Paragraph 60:

60. During the course of the Immersion Systems Litigation, Midas and Immersion Systems submitted a Joint Claim Construction Chart (Dkt. 82) in which the parties agreed to the proper construction of two claim terms, *i.e.*, "weir" and "plenum," and in which the parties further agreed that seventeen other claim terms should be afforded their plain and ordinary meaning. A true and correct copy of that filing is attached as **Exhibit G**.

Response: Admitted.

Complaint Paragraph 61:

61. On November 22, 2021, the Court in the Immersion Systems Litigation issued its claim construction order, rejecting arguments from Immersion System that the '457 and '446 Patents were invalid as indefinite, and adopting Midas' proposed constructions as plain and ordinary meaning, with regard to two disputed claim terms. A true and correct copy of the Court's claim construction order is attached as **Exhibit H**. In its claim construction order, the Court also adopted the proposed constructions for nineteen agreed-upon terms and phrases as set forth in the

parties' Joint Claim Construction Chart (Dkt. 82).

Response: Defedants admit that the Court in the Immersion Systems Litigation issued an order On November 22, 2021 and that it is attached to the complaint as Exhibit H. The order speaks for itself. Defendants deny the complaint's characterization that the order "rejected arguments from Immersion Systems that the '457 and '446 Patents were invalid as indefinite." Defendants otherwise admit the allegations of Paragraph 61.

Complaint Paragraph 62:

62. As of their receipt of the foregoing claim construction ruling from the Immersion Systems Litigation in late November 2021, the Defendants knew or should have known that the Asserted Patents were valid and infringed by Defendants, to the extent they did not already possess such knowledge.

Response: Denied.

Complaint Paragraph 63:

63. The Amended SEC Form S-1 filed by Defendant Rhodium Enterprises, Inc. on December 14, 2021 discloses the existence of the Immersion Systems Litigation, as well as acknowledging the possibility that Midas might file a patent infringement lawsuit against Rhodium. *See* SEC Amendment No. 4 to Form S-1 at 29, Rhodium Enterprises, Inc. (Dec. 14, 2021), *available at* https://sec.report/Document/0001213900-21-065116/fs12021a4_rhodium.htm. Notably, the Form S-1 does *not* state that the Rhodium systems or tanks are different in any material respect from the accused Immersion systems or tanks, amounting to a tacit admission that they are the same or similar in all material respects. *Id.* Even after Midas filed the Original Complaint in this action, Rhodium filed an amended Form S-1 acknowledging the lawsuit but not containing any statements that the Rhodium systems or tanks

differ in any material respect from the infringing Immersion systems or tanks. SEC Amendment No. 6 to Form S-1 at 4. Defendants' disclosure of the Immersion Systems Litigation, and a corresponding litigation risk to the Rhodium entities, in its Form S-1 further demonstrate its knowledge of the Asserted Patents and of its infringement.

Response: Defendants admit that the referenced SEC filing discloses the existence of the Immersion Systems Litigation. The filing speaks for itself. Defendants otherwise deny the allegations of Paragraph 63.

Complaint Paragraph 64:

64. As of the filing of this suit on January 13, 2022, each of the Defendants is well aware of the Asserted Patents, and each of the Defendants is well aware of their infringements thereof.

Response: Denied.

VII. CAUSES OF ACTION

Count 1: [Alleged] Infringement of U.S. Patent No. 10,405,457

Complaint Paragraph 65:

65. Midas incorporates by reference the preceding paragraphs, as if set forth herein.

Response: To the extent that a response is required, Defendants repeat and reallege their responses to ¶¶ 1–64 of the Third Amended Complaint as if fully set forth therein.

Complaint Paragraph 66:

66. The '457 Patent was filed April 30, 2014, and legally issued by the United States Patent and Trademark Office on September 3, 2019. The '457 Patent is valid and enforceable and presumed as such pursuant to 35 U.S.C. § 282.

Response: Defendants do not understand the vague allegation that "[t]he '457 Patent was filed

April 30, 2014," and on that basis deny it. Defendants otherwise deny the allegations of Paragraph 66.

Complaint Paragraph 67:

67. Without a license or permission from Midas, Defendants have directly infringed and continue to directly infringe one or more claims of the '457 Patent by making, having made, using, offering for sale, or selling products and devices that embody the patented invention in violation of 35 U.S.C. § 271.

Response: Denied.

Complaint Paragraph 68:

68. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC directly infringe the '457 Patent under 35 USC §271(a) by (1) providing infringing immersion cooling systems to other Defendants; (2) controlling and directing the direct infringement of one or more of the other Defendants; and (3) benefitting and profiting from the infringement of one or more of the other Defendants. The other Defendants directly infringe the '457 Patent under 35 USC §271(a) by their admitted use of infringing immersion cooling systems.

Response: Denied.

Complaint Paragraph 69:

69. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC further indirectly infringe the '457 Patent by (1) directing other third parties to design, build or install infringing products and devices; and (2) controlling and directing the direct infringement of one or more of the other Defendants.

Response: Denied.

Complaint Paragraph 70:

70. Defendants' infringement has been, and continues to be, knowing, intentional, and willful, at least beginning February 7, 2020, with the delivery of Midas' noticed letter to Immersion Systems, of which the Individuals had contemporaneous notice.

Response: Denied.

Complaint Paragraph 71:

71. Defendants' acts of infringement of the '457 Patent have caused and will continue to cause Midas damages for which Midas is entitled compensation pursuant to 35 U.S.C. § 284. Defendants' acts of infringement of the '457 Patent have caused and will continue to cause Midas immediate and irreparable harm unless such infringing activities are enjoined by this Court pursuant to 35 U.S.C. § 283. Midas has no adequate remedy at law.

Response: Denied.

A. [Alleged] Direct Infringement

Complaint Paragraph 72:

72. Defendants have directly infringed one or more claims of the '457 Patent in the Western District of Texas, the State of Texas, and elsewhere in the United States, by at least making, having made, using, selling, and/or offering for sale appliance immersion cooling systems that satisfy every limitation of at least claims 1 and 6 of the '457 Patent. If any limitation of claim 1 or 6 is not practiced in a literal sense, then that limitation is present under the doctrine of equivalents.

Response: Denied.

Complaint Paragraph 73:

73. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC

have directly infringed one or more claims of the '457 Patent in the Western District of Texas, the State of Texas, and elsewhere in the United States by way of: (1) directing and controlling the activities of the Defendant Rhodium Operating Entities and the Defendants identified as Rhodium Post-Filing Operating Subsidiaries; and (2) benefiting and profiting from the other Defendants infringing actions. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC also purchase infringing immersion cooling tanks and provided those infringing tanks to one or more of the other Defendants.

Response: Denied.

Complaint Paragraph 74:

74. *See* **Exhibit E** which is an exemplary claim chart detailing representative infringement of claims 1 and 6 of the '457 Patent.

Response: Defendants admit that Exhibit E appears to be a claim chart. Defendants otherwise deny the allegations of Paragraph 74.

B. [Alleged] Induced Infringement

Complaint Paragraph 75:

75. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have been and are inducing infringement of the '457 Patent by actively and knowingly inducing others, including other Defendants, to make, have made and/or use, the infringing immersion cooling systems and tank modules that embody the invention claimed in the '457 Patent in violation of 35 U.S.C. § 271(b). Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have also induced infringement by willfully directing and controlling the infringing activities of other third parties, such as manufacturers and installers, to make, have made, or use the infringing immersion cooling systems and tank modules.

Response: Denied.

Complaint Paragraph 76:

76. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have possessed specific intent to induce infringement of the ‘457 Patent. Specifically, Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have long been aware of the ‘457 Patent and the specific manner in which their immersion cooling system design infringes the ‘457 Patent, by virtue of detailed claim charts provided to the Individuals and either shared with all other Defendants or that all other Defendants have knowledge of their infringement through the knowledge of the Individuals, who are officers, directors, and owners of the Rhodium Defendants. Despite this knowledge of the patent and the infringing design, Defendants have induced third parties to take actions that they know will infringe, either directly or contributorily, through the actions described in this section and throughout this complaint. For example, Defendant Rhodium Enterprises, Inc. directed Ameritex Machine and Fabrication, LLC (“Ameritex”) to make and sell its infringing immersion tanks. *See* Exhibit C.

Response: Defendants admit that Exhibit C to the Third Amended Complaint, which was marked “Confidential – Outside Attorneys’ Eyes Only” and filed under seal, is a copy of a Manufacturing Services Agreement between Rhodium Industries LLC and Ameritex Machine and Fabrication, LLC. The document speaks for itself. Defendants deny the remaining allegations of Paragraph 76.

Complaint Paragraph 77:

77. Defendants have induced infringement by providing designs and instructions to third party manufacturers, such as Ameritex and contractors to have made infringing immersion cooling systems and tank modules. *Id.*

Response: Denied.

Complaint Paragraph 78:

78. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have induced infringement by willfully providing infringing directions, instructions and designs for immersion cooling systems and tank modules to other Defendants, third party manufacturing companies, such as Ameritex and other contractors, for knowing use in infringing activity to mine bitcoin and generate revenue. *Id.*

Response: Denied.

Count 2: [Alleged] Infringement of U.S. Patent No. 10,820,446

Complaint Paragraph 79:

79. Midas incorporates by reference the preceding paragraphs, as if set forth herein.

Response: To the extent any response is required, Defendants repeat and reallege their responses to ¶¶ 1–78 of the Third Amended Complaint as if fully set forth therein.

Complaint Paragraph 80:

80. The '446 Patent was filed January 9, 2019, and legally issued by the United States Patent and Trademark Office on October 27, 2020. The '446 Patent is valid and enforceable, and presumed as such pursuant to 35 U.S.C. § 282.

Response: Defendants do not understand the vague allegation that "[t]he '446 Patent was filed January 9, 2019," and on that basis deny it. Defendants deny the remaining allegations of Paragraph 80.

Complaint Paragraph 81:

81. Without a license or permission from Midas, Defendants have directly infringed and continue to directly infringe one or more claims of the '446 Patent, by making, having made,

using, offering for sale, or selling products and devices that embody the patented invention in violation of 35 U.S.C. § 271.

Response: Denied.

Complaint Paragraph 82:

82. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC directly infringe the ‘446 Patent under 35 USC §271(a) by; (1) providing infringing immersion cooling systems to other Defendants; (2) controlling and directing the direct infringement of one or more of the other Defendants; and (3) benefitting and profiting from the infringement of one or more of the other Defendants. The other Defendants directly infringe the ‘446 Patent under 35 USC §271(a) by their admitted use of infringing immersion cooling systems.

Response: Denied.

Complaint Paragraph 83:

83. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC further indirectly infringe the ‘446 Patent by; (1) directing other third parties to design, build or install infringing products and devices; and (2) controlling and directing the direct infringement of one or more of the other Defendants. Defendants’ infringement has been, and continues to be, knowing, intentional, and willful, at least beginning November 24, 2020, with the filing of Midas’ amended complaint against Immersion Systems, of which the Individuals had contemporaneous notice.

Response: Denied.

Complaint Paragraph 84:

84. Defendants’ acts of infringement of the ‘446 Patent have caused and will continue to cause Midas damages for which Midas is entitled compensation pursuant to 35 U.S.C. § 284.

Defendants' acts of infringement of the '446 Patent have caused and willcontinue to cause Midas immediate and irreparable harm unless such infringing activities are enjoined by this Court pursuant to 35 U.S.C. § 283. Midas has no adequate remedy at law.

Response: Denied.

C. [Alleged] Direct infringement

Complaint Paragraph 85:

85. Defendants have directly infringed one or more claims of the '446 Patent in the Western District of Texas, the State of Texas, and elsewhere in the United States, by at least making, having made, using, selling, and/or offering for sale appliance immersion cooling systems that satisfy every limitation of at least claims 1 and 6 of the '446 Patent. If any limitation of claims 1 or 6 is not practiced in a literal sense, then that limitation is present under the doctrine of equivalents.

Response: Denied.

Complaint Paragraph 86:

86. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have directly infringed one or more claims of the '446 Patent in the Western District of Texas, the State of Texas, and elsewhere in the United States by way of (1) directing and controlling the activities of the Defendant Rhodium Operating Entities and the Defendants identified as Rhodium Post-Filing Operating Subsidiaries and (2) benefiting and profiting from the other Defendants infringing actions. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC also purchase infringing immersion cooling tanks and provided those infringing tanks to one or more of the other Defendants.

Response: Denied.

Complaint Paragraph 87:

87. *See* **Exhibit F** which is an exemplary claim chart detailing representative infringement of claims 1 and 6 of the '446 Patent.

Response: Defendants admit that Exhibit F appears to be a claim chart. Defendants otherwise deny the allegations of Paragraph 87.

D. [Alleged] Induced Infringement

Complaint Paragraph 88:

88. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have been and are inducing infringement of the '446 Patent by actively and knowingly inducing others, including other Defendants, to make, have made, and/or use, the infringing immersion cooling systems and tank modules that embody the invention claimed in the '446 Patent in violation of 35 U.S.C. § 271(b). Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have also induced infringement by willfully directing and controlling the infringing activities of other third parties, such as manufacturers and installers, to make, have made, or use the infringing immersion cooling systems and tank modules.

Response: Denied.

Complaint Paragraph 89:

89. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have possessed specific intent to induce infringement of the '446 Patent. Specifically, Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have long been aware of the '446 Patent and the specific manner in which their immersion cooling system design infringes the '446 Patent, by virtue of detailed claim charts provided to the Individuals and either shared with all other Defendants or that all other Defendants have knowledge of their infringement

through the knowledge of the Individuals, who are officers, directors, and owners of the Rhodium Defendants.

Response: Denied.

Complaint Paragraph 90:

90. Despite this knowledge of the patent and the infringing design, Defendants have induced third parties to take actions that they know will infringe, either directly or contributorily, through the actions described in this section and throughout this complaint. For example, Defendant Rhodium Enterprises, Inc. directed Ameritex Machine and Fabrication, LLC ("Ameritex") to make and sell it infringing immersion tanks.

Response: Defendants admit that Exhibit C to the Third Amended Complaint is a copy of a Manufacturing Services Agreement between Rhodium Industries LLC and Ameritex Machine and Fabrication, LLC, which was marked "Confidential – Outside Attorneys' Eyes Only" and filed under seal. Defendants deny the remaining allegations of Paragraph 90.

Complaint Paragraph 91:

91. Defendants have induced infringement by providing designs and instructions to third party manufacturers, such as Ameritex, and contractors to have made infringing immersion cooling systems and tank modules.

Response: Denied.

Complaint Paragraph 92:

92. Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have induced infringement by willfully providing infringing directions, instructions and designs for immersion cooling systems and tank modules to other Defendants, third party manufacturing companies, such as Ameritex and other contractors, for knowing use in infringing activity to mine

bitcoin and generate revenue.

Response: Denied.

Count 3: [Alleged] Willfulness and Egregiousness

Complaint Paragraph 93:

93. Midas incorporates by reference the preceding paragraphs, as if set forth herein.

Response: To the extent any response is required, Defendants repeat and reallege their responses to ¶¶ 1–92 of the Third Amended Complaint as if fully set forth therein.

Complaint Paragraph 94:

94. Defendants have willfully and maliciously infringed the '457 and '446 Patents at least since the date of their actual notice of the patents and their infringement. Specifically, despite receiving detailed claim charts both in letters and having received such information through the Immersion Systems litigation showing that their immersion cooling systems designs infringes Midas' patents, Defendants have continued to operate their infringing immersion cooling systems. Indeed, Defendants have aggressively sought to expand their operations and add additional immersion cooling systems, knowing throughout their existence that they infringe Midas' patents.

Response: Denied.

Complaint Paragraph 95:

95. The Individuals (by way of Immersion Systems) actively sought to conceal the existence of their Rhodium business and did not reveal its existence during the course of the Immersion Systems litigation, despite clear discovery obligations to do so. The Individuals also actively sought to conceal that Immersion Systems had ceased business operations, continuing in the Northern District of Texas litigation for the true benefit of the Defendants.

Response: Denied.

Complaint Paragraph 96:

96. At the same time, on information and belief, the Individuals, and/or Rhodium directly or indirectly bankrolled the filing and prosecution, nominally in the name of Immersion Systems, of an *Inter parties* review proceeding directed to attempt to invalidate the '457 Patent, as well as a Post-Grant review proceeding directed to attempt to invalidate the '446 Patent.

Response: Denied.

Complaint Paragraph 97:

97. Defendants' infringement has been egregious, wanton, malicious, and in bad faith.

Response: Denied.

Complaint Paragraph 98:

98. The Individuals, who are the officers, directors, and owners of the Defendants, possessed full knowledge that their immersion cooling systems design infringed the '457 and '446 Patents, knew these patents were valid, did not attempt to procure a license to these valid patents, and instead proceeded to start a new business using the same or substantially the same infringing design. As Rhodium advertises, this immersion cooling system design is critical to their business and a primary driver of their profitability, and yet Defendants have knowingly and maliciously stolen Midas' patented and innovative technology for their own profit without compensating the inventors of the technology.

Response: Denied.

Additional Allegations Relating to the Asserted Patents

Complaint Paragraph 99:

99. The '457 Patent is directed to an improved appliance immersion cooling system and method of operation. Specifically, the '457 Patent seeks to solve at least two problems in the prior art of appliance immersion cooling systems: (1) the difficulty of maintenance and access to

the electrical equipment in prior art vertical-stack-type systems, which necessitate draining the cooling fluid to gain access to the equipment; and (2) non-uniform flow patterns of the dielectric fluid within the tank and constricted dielectric fluid supply and return ports, resulting in uneven cooling and unnecessarily high fluid flow velocities. The invention of the '457 Patent is an improvement over the prior art and provides greater efficiency and effectiveness through ease of access to the electrical appliances in an open horizontal tank, substantially uniform fluid flow patterns through all appliance slots leading to substantially uniform cooling, and lower fluid flow velocities. The '457 Patent accomplishes these improvements through a unique, innovative design, as described below, that achieves substantially uniform flow of dielectric fluid upwardly through the tank, beginning from a plenum that substantially uniformly distributes the dielectric fluid across the bottom of the tank and then a weir that is adapted to facilitate substantially uniform recovery of the dielectric fluid that has cooled the appliances, where the fluid flows over the weir into fluid recovery reservoirs, to then be cycled and re-cooled, for recirculation into the tank. The '457 Patent therefore does not claim an abstract idea, law of nature, or natural phenomenon, but instead to a tangible, patent-eligible invention.

Response: Denied.

Complaint Paragraph 100:

100. The '457 Patent claims, among other things, an appliance immersion cooling system that includes a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank. The tank includes a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, having an overflow lip adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot, and a

dielectric fluid recovery reservoir positioned vertically beneath the overflow lip of the weir and adapted to receive the dielectric fluid as it flows over the weir. The appliance immersion cooling system also includes a primary circulation facility adapted to circulate the dielectric fluid through the tank. The primary circulation facility includes a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot. The appliance immersion cooling system also, in some embodiments, includes a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulating in the primary circulation facility, and to dissipate to the environment the heat so extracted. The appliance immersion cooling system also includes a control facility adapted to coordinate the operation of the primary and, if included, the secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

Response: The patent speaks for itself. Defendants deny that the patent claims patent-eligible subject matter or anything sufficiently innovative to be patentable.

Complaint Paragraph 101:

101. The '457 Patent also claims, among other things, a tank module adapted for use in an appliance immersion cooling system. The tank module includes a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank. The tank includes a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, having an overflow lip adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot, and a dielectric fluid recovery reservoir positioned vertically beneath the overflow lip of the weir and adapted to receive the dielectric fluid as it flows over the weir. The tank module also includes a primary circulation facility adapted to circulate the dielectric fluid

through the tank, including a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot, and a control facility adapted to control the operation of the primary fluid circulation facility as a function of the temperature of the dielectric fluid in the tank.

Response: The patent speaks for itself. Defendants deny that the patent claims patent-eligible subject matter or anything sufficiently innovative to be patentable.

Complaint Paragraph 102:

102. The ‘446 Patent is directed to an improved appliance immersion cooling system and method of operation. Specifically, the ‘446 Patent seeks to solve at least two problems in the prior art of appliance immersion cooling systems: (1) the difficulty of maintenance and access to the electrical equipment in prior art vertical-stack-type systems, which necessitate draining the cooling fluid to gain access to the equipment; and (2) non- uniform flow patterns of the dielectric fluid within the tank and constricted dielectric fluid supply and return ports, resulting in uneven cooling and unnecessarily high fluid flow velocities. The invention of the ‘446 Patent is an improvement over the prior art and provides greater efficiency and effectiveness through ease of access to the electrical appliances in an open horizontal tank, substantially uniform fluid flow patterns through all appliance slots leading to substantially uniform cooling, and lower fluid flow velocities. The ‘446 Patent accomplishes these improvements through a unique, innovative design, as described below, that achieves substantially uniform flow of dielectric fluid upwardly through the tank, beginning from a plenum that substantially uniformly distributes the dielectric fluid across the bottom of the tank and then a weir that is adapted to facilitate substantially uniform recovery of the dielectric fluid that has cooled the appliances, where the fluid flows over the weir into fluid recovery reservoirs, to then be cycled and re-cooled, for recirculation into the tank. The

‘446 Patent therefore does not claim an abstract idea, law of nature, or natural phenomenon, but instead to a tangible, patent-eligible invention.

Response: The patent speaks for itself. Defendants deny that the patent claims patent-eligible subject matter or anything sufficiently innovative to be patentable.

Complaint Paragraph 103:

103. The ‘446 Patent claims, among other things, an appliance immersion cooling system that includes a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically along, and extending transverse to, a long wall of the tank. The tank includes a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot. The appliance immersion cooling system also includes a primary circulation facility adapted to circulate the dielectric fluid through the tank. The primary circulation facility includes a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot. The appliance immersion cooling system also includes, in at least one embodiment, a secondary fluid circulation facility adapted to extract heat from the dielectric fluid circulation in the primary circulation facility, and to dissipate to the environment the heat so extracted, and a control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

Response: The patent speaks for itself. Defendants deny that the patent claims patent-eligible subject matter or anything sufficiently innovative to be patentable.

Complaint Paragraph 104:

104. The ‘446 Patent also claims, among other things, a tank module adapted for use in

an appliance immersion cooling system. The tank module includes a tank adapted to immerse in a dielectric fluid a plurality of electrical appliances, each in a respective appliance slot distributed vertically long, and extending transverse to, a long wall of the tank. The tank includes a weir, integrated horizontally into the long wall of the tank adjacent all appliance slots, adapted to facilitate substantially uniform recovery of the dielectric fluid flowing through each appliance slot. The tank module also includes a primary circulation facility adapted to circulate the dielectric fluid through the tank, including a plenum, positioned adjacent the bottom of the tank, adapted to dispense the dielectric fluid substantially uniformly upwardly through each appliance slot, and a control facility adapted to control the operation of the primary fluid circulation facility as a function of the temperature of the dielectric fluid in the tank.

Response: The patent speaks for itself. Defendants deny that the patent claims patent-eligible subject matter or anything sufficiently innovative to be patentable.

Complaint Prayer for Relief:

Wherefore, Midas requests judgment against Defendants as follows:

A. Adjudging that all Defendants have directly infringed, the’457 Patent, in violation of 35 U.S.C. § 271(a);

B. Adjudging that Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have actively induced infringement of the ‘457 Patent, in violation of 35 U.S.C. § 271(b);

C. Adjudging that all Defendants have directly infringed the’446 Patent, in violation of 35 U.S.C. § 27l(a);

D. Adjudging that Defendant Rhodium Enterprises, Inc. and Defendant Rhodium Technologies LLC have actively induced infringement of the ‘446 Patent, in violation of 35 U.S.C.

§ 271(b);

E. Permanently enjoining Defendants, their employees, agents, officers, directors, attorneys, successors, affiliates, subsidiaries, and assigns, and all of those in active concert and participation with any of the foregoing persons or entities from infringing, contributing to the infringement of, or inducing infringement of, the '457 Patent and of the '446 Patent;

F. Ordering Defendants to account for and pay damages adequate to compensate Midas for Defendants' infringement of, and inducement to infringe, the '457 Patent and the '446 Patent, including pre-judgment and post-judgment interest and costs, pursuant to 35 U.S.C. § 284;

G. Ordering an accounting by Defendants for any infringing activity not presented at trial and an award by the court of additional damages for any such infringing activity to Midas;

H. Ordering that the damages award by increased up to three times the actual amount assessed, pursuant to 35 U.S.C. § 284;

I. Declaring this case exceptional and ordering Defendants to pay the cost of this action, including all disbursements, and attorneys' fees as provided by 35 U.S.C. § 285, together with prejudgment interest; and

J. Awarding such other and further relief as this Court deems just and proper.

Response to Prayer for Relief: Defendants deny that Plaintiff is entitled to any of the relief it requests in its Prayer for Relief.

GENERAL DENIAL

Defendants further deny each and every allegation contained in Midas's Third Amended Complaint to which Defendants have not specifically admitted, denied, or otherwise responded to herein.

DEFENDANTS' AFFIRMATIVE DEFENSES

Subject to their responses above, and upon information and belief, Defendants allege and assert the following defenses in response to the allegations of the Third Amended Complaint, undertaking the burden of proof only as to those defenses deemed affirmative defenses by law, regardless of how such defenses are denominated herein. In addition to affirmative defenses described below, subject to their responses above, Defendants specifically reserve all right to allege additional affirmative defenses pursuant to any scheduling order or that may otherwise be lawfully asserted in this action for any reason, including because those that become known through the course of discovery or further investigation.

FIRST AFFIRMATIVE DEFENSE

(Failure to State a Claim)

Midas has failed to state a claim upon which relief may be granted.

SECOND AFFIRMATIVE DEFENSE

(Invalidity of '457 Patent)

The claims of U.S. Patent No. 10,405,457 (the "'457 Patent") are invalid for failure to comply with the requirements of Title 35, United States Code, including at least §§ 101, 102, 103, and/or 112.

THIRD AFFIRMATIVE DEFENSE

(Invalidity of '446 Patent)

The claims of U.S. Patent No. 10,820,446 (the "'446 Patent") are invalid for failure to comply with the requirements of Title 35, United States Code, including at least §§ 101, 102, 103, and/or 112.

FOURTH AFFIRMATIVE DEFENSE

(Non-Infringement of ‘457 Patent)

Defendants have not infringed and do not infringe any valid and enforceable claim of the ‘457 Patent.

FIFTH AFFIRMATIVE DEFENSE

(Non-Infringement of ‘446 Patent)

Defendants have not infringed and do not infringe any valid and enforceable claim of the ‘446 Patent.

SIXTH AFFIRMATIVE DEFENSE

(Limitation on Damages)

Midas’s claims for monetary damages are limited by the statute of limitations and, pursuant to 35 U.S.C. § 286, K.Mizra is not entitled to any purported damages suffered more than six (6) years prior to the filing of the Complaint.

SEVENTH AFFIRMATIVE DEFENSE

(Failure to Mark)

Midas’ claims for recovery are barred or limited, in whole or in part, prior to the date on which Defendants received actual notice of Midas’ allegations in infringement concerning the ‘457 Patent and the ‘446 Patent, including under 35 U.S.C. § 287.

EIGHTH AFFIRMATIVE DEFENSE

(Equitable Doctrines)

Midas’ claims are barred by one or more of the doctrines of waiver, acquiescence, estoppel (including without limitation equitable estoppel and prosecution history estoppel), unenforceability, and unclean hands.

NINTH AFFIRMATIVE DEFENSE

(No Entitlement to Injunctive Relief)

Midas is not entitled to injunctive relief. Among other things, Midas is not able to meet the standards for such relief as set forth in *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388 (2006).

TENTH AFFIRMATIVE DEFENSE

(Failure to Disclaim)

On information and belief, Midas' claims for recovery are barred or limited, in whole or in part, by 35 U.S.C. § 288 (failure to disclaim invalid claim(s)).

RESERVATION OF RIGHTS

Defendants expressly reserve the right to assert any other legal or equitable defenses to which they are shown to be entitled, including all affirmative defenses under Rule 8(c) of the Federal Rules of Civil Procedure, the Patent Laws of the United States, and any other defenses that may now exist or in the future be available based on discovery or further factual investigation in this case.

I. PRAYER FOR RELIEF

WHEREFORE, Defendants seek the following relief:

A. That the Court enter judgment in Defendants' favor;

B. That Midas take nothing by its Third Amended Complaint and that its claims against Defendants be dismissed with prejudice;

C. That judgment be entered finding that Defendants have not infringed and do not infringe any valid and enforceable claim of either the '457 Patent or the '446 Patent, either literally or under the Doctrine of Equivalents;

D. A judgment that the '457 Patent and the '446 Patent are invalid for failure to meet the conditions of patentability and/or otherwise comply with the requirements of 35 U.S.C. §§ 101, 102, 103, and/or 112;

E. A declaration that the '457 Patent and the '446 Patent are unenforceable;

F. An order declaring that Defendants are the prevailing party and that this is an exceptional case, awarding Defendants their costs, expenses, disbursements, and reasonable attorneys' fees under 35 U.S.C. § 285 and all other applicable statutes, rules, and common law;

G. That Defendants be granted such other and additional relief as this Court deems just and proper.

II. DEMAND FOR A JURY TRIAL

In accordance with Rule 38 of the Federal Rules of Civil Procedure, Defendants respectfully demand a jury of all issues triable to a jury in this action.

DEFENDANTS' COUNTERCLAIMS

Defendants and Counterclaim-Plaintiffs Rhodium Enterprises, Inc., Rhodium Technologies LLC, Rhodium 10MW LLC, Rhodium 2.0 LLC, Rhodium 30MW LLC, Rhodium Encore LLC, Rhodium Renewables LLC, Rhodium Renewables Sub LLC; and Rhodium Ready Ventures LLC. (collectively, "Rhodium" or "Counterclaim-Plaintiffs") repeat and reallege the allegations provided in their Answer as though fully set forth herein. Rhodium further alleges, on knowledge as to its own actions and on information and belief as to all other matters, as follows:

1. This Court has personal jurisdiction over Plaintiff and Counterclaim-Defendant Midas Green Technologies, LLC ("Midas Green"), which, on information and belief, is a Texas limited liability company with its principal place of business in Texas, and has consented to the

exercise of such jurisdiction by filing its original complaint and Third Amended Complaint for Patent Infringement against Rhodium.

2. This Court has subject matter jurisdiction over these counterclaims because they arise under the Federal Declaratory Judgements Act, Title 28 U.S.C. §§ 2201 and 2202, and the laws of the United States relating to patents, Title 28 U.S.C. § 1338(a).

3. By filing its claims for patent infringement against Rhodium in this Court, Midas Green has consented to the propriety of venue over these counterclaims.

4. In its complaint, Midas Green accuses Rhodium of infringement of one or more claims of two United States Patents: U.S. Patent No. 10,405,457 ("the '457 Patent"), and U.S. Patent No. 10,820,446 ("the '446 Patent") (together, "the Asserted Patents").

5. The Asserted Patents are invalid and/or Rhodium has not infringed any valid claim of the Asserted Patents, whether directly, indirectly, contributorily, through the doctrine of equivalents, or otherwise.

6. Consequently, as a result of at least the allegations of Midas Green's Third Amended Complaint, an immediate, real, and justiciable controversy exists between Rhodium and Midas Green as to whether Rhodium infringes the Asserted Patents, and as to whether the Asserted Patents are valid and enforceable.

FIRST COUNTERCLAIM

Declaration of Non-Infringement of U.S. Patent No. 10,405,457

7. Rhodium repeats and realleges the allegations in Paragraphs 1–6 of its Counterclaims as though fully set forth herein.

8. Rhodium has not infringed and does not infringe any valid and enforceable claim of the '457 Patent, either literally or under the Doctrine of Equivalents, because the Accused

Products do not practice or possess the elements of the claims of the ‘457 Patent. At minimum, for example, the Accused Products do not have the required “control facility adapted to coordinate the operation of the primary [and secondary] fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.”

9. Every claim of the ‘457 Patent, by virtue of independent claims 1, 6, and 11, requires an appliance immersion cooling system with a “control facility adapted to coordinate the operation of the primary [and secondary] fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.”

10. The Accused Products do not contain the claimed “control facility,” and Midas has presented no evidence that they do. In fact, Midas does not even contend that the Accused Products contain this limitation. Rather, Midas alleges only that the Accused Products may be altered such that they would satisfy the limitation. *See, e.g.*, Plaintiff’s Supp. Resp. to Interrog. No. 10 (asserting that Accused Products *can*, for example, have sensors installed). This is insufficient to show infringement. The Asserted Claims require an appliance immersion cooling system to have the claimed “control facility”—not the mere ability to be altered to have one.

11. Additionally, the Accused Products do not contain the alleged “control” features as described by Midas. They do not, and without modification cannot even allegedly, coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

12. Absent a declaration of non-infringement, Midas Green will continue wrongfully to assert the ‘457 Patent against Rhodium, thereby causing Rhodium irreparable injury and damage. A judicial declaration is also reasonably calculated to prevent needless litigation, and is

necessary to resolve the actual controversy that exists between Rhodium and Midas Green and to determine the parties' respective rights regarding the '457 Patent.

13. Rhodium thus seeks a judgment declaring that Rhodium does not infringe, either literally or under the Doctrine of Equivalents, any claims of the '457 Patent.

SECOND COUNTERCLAIM

(Declaration of Non-Infringement of U.S. Patent No. 10,820,446)

14. Rhodium repeats and realleges the allegations in Paragraphs 1–13 of its Counterclaims as though fully set forth herein.

15. Defendants have not infringed and do not infringe any valid and enforceable claim of the '446 Patent, either literally or under the Doctrine of Equivalents, because the Accused Products do not practice the elements of the claims of the asserted patent. At minimum, for example, the Accused Products do not have a "control facility adapted to coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank."

16. Every claim of the '446 Patent, by virtue of independent claims 1 and 6, requires an appliance immersion cooling system, or a tank module for use in such a system, with a "control facility adapted to [coordinate]/[control] the operation of the primary and secondary fluid circulation [facility]/[facilities] as a function of the temperature of the dielectric fluid in the tank."

17. The Accused Products do not contain the claimed "control facility," and Midas has presented no evidence that they do. In fact, Midas does not even contend that the Accused Products contain this limitation. Rather, Midas alleges only that the Accused Products may be altered such that they would satisfy the limitation. *See*, *e.g.*, Plaintiff's Supp. Resp. to Interrog. No. 10 (asserting that Accused Products *can*, for example, have sensors installed). This is insufficient to

show infringement. The Asserted Claims require an appliance immersion cooling system or tank to have the claimed "control facility"—not the mere ability to be altered to have one.

18. Additionally, the Accused Products do not contain the alleged "control" features as described by Midas. They do not, and without modification cannot even allegedly, coordinate the operation of the primary and secondary fluid circulation facilities as a function of the temperature of the dielectric fluid in the tank.

19. Absent a declaration of non-infringement, Midas Green will continue wrongfully to assert the '446 Patent against Rhodium, thereby causing Rhodium irreparable injury and damage. A judicial declaration is also reasonably calculated to prevent needless litigation, and is necessary to resolve the actual controversy that exists between Rhodium and Midas Green and to determine the parties' respective rights regarding the '446 Patent.

20. Rhodium thus seeks a judgment declaring that Rhodium does not infringe, either literally or under the Doctrine of Equivalents, any claims of the '446 Patent.

THIRD COUNTERCLAIM

(Declaration of Invalidity of U.S. Patent No. 10,405,457)

21. Rhodium repeats and realleges the allegations in Paragraphs 1–20 of its Counterclaims as though fully set forth herein.

22. The '457 Patent is invalid for failure to meet the conditions of patentability and/or otherwise comply with one or more of 35 U.S.C. §§ 102, 103, and 112.

23. For example, the claims of the '457 Patent are invalid under 35 U.S.C. §§ 102 and/or 103 because prior art, such as The Green Revolution Cooling tank invented by Christiaan Best (the "Best Tank"), U.S. Patent Application Publication No. 2014/0211412A1 (the "Best Publication"), U.S. Patent No. 10,123,462B2 ("Best '463 Patent"), U.S. Patent No. 5,167,511

(“Krajewski ‘511”), U.S. Patent Application Publication No. 2006/0126292A1 (the “Pfahnl Publication”), Russian Federation Patent No. 2,500,013 (“Gryzhin ‘013”), U.S. Patent No. 3,406,244 (“Oktay ‘244”), Japanese Patent No. JPH04116758 U (“JP ‘758”), and U.S. Patent No. 9,992,914B2 (“Best ‘914 Patent”), discloses or renders obvious the limitations of the claims of the ‘457 Patent—at least as Midas asserts them.

24. As another example, as Midas is well aware, the ‘457 Patent is invalid for improper inventorship under 35 U.S.C. § 101 and pre-AIA 35 U.S.C. §§ 101 and 102(f) for naming incorrect inventors and/or omitting at least one inventor (Christiaan Best) who should have been named.

25. The claims of the ‘457 Patent are also invalid under 35 U.S.C. § 112 at least because they are indefinite and/or because the specification of the ‘457 Patent does not contain sufficient written description and/or enabling disclosure to support the claims as asserted by Midas.

26. Absent a declaration of invalidity, Midas Green will continue wrongfully to assert the ‘457 Patent against Rhodium, thereby causing Rhodium irreparable injury and damage. A judicial declaration is also reasonably calculated to prevent needless litigation, and is necessary to resolve the actual controversy that exists between Rhodium and Midas Green and to determine the parties’ respective rights regarding the ‘457 Patent.

27. Rhodium thus seeks a judgment declaring that the claims of the ‘457 Patent are invalid.

FOURTH COUNTERCLAIM

(Declaration of Invalidity of U.S. Patent No. 10,820,446)

28. Rhodium repeats and realleges the allegations in Paragraphs 1–27 of its Counterclaims as though fully set forth herein.

29. The ‘446 Patent is invalid for failure to meet the conditions of patentability and/or otherwise comply with one or more of 35 U.S.C. §§ 102, 103, and 112.

30. For example, the claims of the ‘446 Patent are invalid under 35 U.S.C. §§ 102 and/or 103 because prior art, such as The Green Revolution Cooling tank invented by Christiaan Best (the “Best Tank”), U.S. Patent Application Publication No. 2014/0211412A1 (the “Best Publication”), U.S. Patent No. 10,123,462B2 (“Best ‘463 Patent”), U.S. Patent No. 5,167,511 (“Krajewski ‘511”), U.S. Patent Application Publication No. 2006/0126292A1 (the “Pfahnl Publication”), Russian Federation Patent No. 2,500,013 (“Gryzhin ‘013”), U.S. Patent No. 3,406,244 (“Oktay ‘244”), Japanese Patent No. JPH04116758 U (“JP ‘758”), and U.S. Patent No. 9,992,914B2 (“Best ‘914 Patent”), discloses or renders obvious the limitations of the claims of the ‘446 Patent—at least as Midas asserts them.

31. As another example, as Midas is well aware, the ‘446 Patent is invalid for improper inventorship under 35 U.S.C. § 101 and pre-AIA 35 U.S.C. §§ 101 and 102(f) for naming incorrect inventors and/or omitting at least one inventor (Christiaan Best) who should have been named.

32. The claims of the ‘446 Patent are also invalid under 35 U.S.C. § 112 at least because they are indefinite and/or because the specification of the ‘446 Patent does not contain sufficient written description and/or enabling disclosure to support the claims as asserted by Midas.

33. Absent a declaration of invalidity, Midas Green will continue wrongfully to assert the ‘446 Patent against Rhodium, thereby causing Rhodium irreparable injury and damage. A judicial declaration is also reasonably calculated to prevent needless litigation, and is necessary to resolve the actual controversy that exists between Rhodium and Midas Green and to determine the parties’ respective rights regarding the ‘446 Patent.

34. Rhodium thus seeks a judgment declaring that the claims of the ‘446 Patent are invalid.

FIFTH COUNTERCLAIM

(Declaration of Unenforceability of U.S. Patent No. 10,405,457)

35. Rhodium repeats and realleges the allegations in Paragraphs 1–34 of its Counterclaims as though fully set forth herein.

36. The ‘457 Patent is unenforceable based on inequitable conduct by at least Chris Boyd and Jim Koen. Each of Mr. Boyd and Mr. Koen owed a duty of candor to the USPTO, which included a duty to disclose to the USPTO all information known to them to be material to patentability. This included not only prior art, but also possible prior public uses, sales, offers to sell, derived knowledge, prior invention by another, and inventorship conflicts.

37. For example, despite knowing that the Best Tank was previously on sale, sold, publicly used, and in fact possessed by Midas Green, Mr. Boyd and Mr. Koen did not tell the USPTO about the existence of the Best Tank or the Best Publication, which are both material prior art to the ‘457 Patent and were known and available to Mr. Boyd and Mr. Koen during their prosecution of the ‘457 Patent.

38. Midas has admitted “that at least one individual associated with Midas was aware of the Best Tank prior to issuance of the Notice of Allowance for ‘457 Patent on September 14, 2018,” Plaintiff’s Resp. to Def’s. 1st Set of RFAs at 3, and also “that it did not disclose the Best Tank to the U.S.P.T.O. at any point prior to issuance of the Notice of Allowance for the ‘457 Patent on September 14, 2018,” *id.* at 6.

39. Mr. Boyd and Mr. Koen also failed to tell the USPTO that Christiaan Best was a coinventor as alleged above.

40. On information and belief, the single most reasonable inference that can be drawn is that Jim Koen and Chris Boyd intended to deceive the USPTO.

41. Absent a declaration of unenforceability, Midas Green will continue wrongfully to assert the ‘457 Patent against Rhodium, thereby causing Rhodium irreparable injury and damage. A judicial declaration is also reasonably calculated to prevent needless litigation, and is necessary to resolve the actual controversy that exists between Rhodium and Midas Green and to determine the parties’ respective rights regarding the ‘457 Patent.

42. Rhodium thus seeks a judgment declaring that the claims of the ‘457 Patent are unenforceable.

SIXTH COUNTERCLAIM

(Declaration of Unenforceability of U.S. Patent No. 10,405,446)

43. Rhodium repeats and realleges the allegations of Paragraphs 1–42 of their Counterclaims as though fully set forth herein.

44. The ‘446 Patent is unenforceable based on inequitable conduct by at least Chris Boyd and Jim Koen. Each of Mr. Boyd and Mr. Koen owed a duty of candor to the USPTO, which included a duty to disclose to the USPTO all information known to them to be material to patentability. This included not only prior art, but also possible prior public uses, sales, offers to sell, derived knowledge, prior invention by another, and inventorship conflicts.

45. For example, despite knowing that the Best Tank was previously on sale, sold, publicly used, and in fact possessed by Midas Green, Mr. Boyd and Mr. Koen did not tell the USPTO about the existence of the Best Tank or the Best Publication, which are both material prior art to the ‘446 Patent and were known and available to Mr. Boyd and Mr. Koen during their prosecution of the ‘446 Patent.

46. Midas has admitted "that at least one individual associated with Midas was aware of the Best Tank prior to issuance of the Notice of Allowance for '446 Patent on April 16, 2020," Plaintiff's Resp. to Def's. 1st Set of RFAs at 4, and also "that it did not disclose the Best Tank to the U.S.P.T.O. at any point prior to issuance of the Notice of Allowance for the '446 Patent on April 16, 2020," *id.* at 7.

47. Mr. Boyd and Mr. Koen also failed to tell the USPTO that Christiaan Best was a coinventor as alleged above.

48. On information and belief, the single most reasonable inference that can be drawn is that Jim Koen and Chris Boyd intended to deceive the USPTO.

49. Absent a declaration of unenforceability, Midas Green will continue wrongfully to assert the '446 Patent against Rhodium, thereby causing Rhodium irreparable injury and damage. A judicial declaration is also reasonably calculated to prevent needless litigation, and is necessary to resolve the actual controversy that exists between Rhodium and Midas Green and to determine the parties' respective rights regarding the '446 Patent.

50. Rhodium thus seeks a judgment declaring that the claims of the '446 Patent are unenforceable.

PRAYER FOR RELIEF ON RHODIUM'S COUNTERCLAIMS

WHEREFORE, Rhodium seeks the following relief:

A. A declaration that Rhodium has not infringed and does not infringe any valid and enforceable claim of either the '457 Patent or the '446 Patent, either literally or under the Doctrine of Equivalents;

B. A declaration that the ‘457 Patent and the ‘446 Patent are invalid for failure to meet the conditions of patentability and/or otherwise comply with the requirements of 35 U.S.C. §§ 101, 102, 103, and/or 112;

C. A declaration that the ‘457 Patent and the ‘446 Patent are unenforceable;

D. That an order be entered enjoining Midas and its officer, agent, servants, employees, attorneys, and those in concert or participation with them from asserting infringement or instituting or continuing any action for infringement of the ‘457 Patent and the ‘446 Patent;

E. That pursuant to 35 U.S.C. § 285, Midas’s conduct in commencing and pursuing this action be found to render this an exceptional case and that Defendants be awarded attorneys’ fees in connection with this action;

F. A judgment in Rhodium’s favor on all of its counterclaims; and

G. For such other and additional relief as this Court deems just and proper.

JURY DEMAND

Rhodium hereby demands a trial by jury on all issue so triable.

Dated: April 26, 2023

Respectfully submitted,

By: */s/ Melissa R. Smith*

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Attorneys for Defendants Rhodium Enterprises, Inc., Rhodium Technologies LLC, Rhodium 10MW LLC, Rhodium 2.0 LLC, Rhodium 30MW LLC, Rhodium Encore LLC, Rhodium Renewables LLC, Rhodium Renewables Sub LLC; and Rhodium Ready Ventures LLC

CERTIFICATE OF SERVICE

The undersigned hereby certifies that counsel of record who are deemed to have consented to electronic service are being served today, April 26, 2023, with a copy of this document via the Court's CM/ECF system.

/s/ Melissa R. Smith

EXHIBIT 13

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

Midas Green Technologies, LLC, Plaintiff, - vs. - **Rhodium Enterprises, Inc.;** **Rhodium Technologies LLC;** **Rhodium 10mw LLC;** **Rhodium 2.0 LLC;** **Rhodium 30mw LLC;** **Rhodium Encore LLC;** **Rhodium Renewables LLC;** **Rhodium Renewables Sub LLC;** **Rhodium Ready Ventures LLC** Defendants.	Civil Action No. 6:22-cv-00050-ADA **Jury Trial Demanded**

PLAINTIFF'S ANSWER TO DEFENDANT'S COUNTERCLAIMS

Plaintiff and Counter-Defendant Midas Green Technologies, LLC, through its undersigned counsel, hereby answer Counter-claimants Rhodium Enterprises, Inc., Rhodium Technologies LLC, Rhodium 10mw LLC, Rhodium 2.0 LLC, Rhodium 30mw LLC, Rhodium Encore LLC, Rhodium Renewables LLC, Rhodium Renewables Sub LLC and Rhodium Ready Ventures LLC's (collectively, "Counter-claimants" or "Rhodium") Counterclaim demand as follows:

RESPONSE TO FIRST COUNTERCLAIM

(Declaration of Non-Infringement of U.S. Patent No. 10,405,457)

Response to Counterclaim Paragraph 1:

Midas Green ADMITS this Court has personal jurisdiction.

Response to Counterclaim Paragraph 2:

Midas Green ADMITS this Court has subject matter jurisdiction.

Response to Counterclaim Paragraph 3:

Midas Green ADMITS that venue is proper in this Court.

Response to Counterclaim Paragraph 4:

ADMITTED.

Response to Counterclaim Paragraph 5:

DENIED.

Response to Counterclaim Paragraph 6:

Midas Green asserts that Rhodium has, and is, willfully infringing the valid Asserted Patents. To the extent this creates a "justiciable controversy", ADMITTED. Otherwise DENIED.

RESPONSE TO SECOND COUNTERCLAIM

(Declaration of Non-Infringement of U.S. Patent No. 10,820,446)

Response to Counterclaim Paragraph 7:

Responses to Counterclaims 1-6 are incorporated by reference as though fully set forth herein.

Response to Counterclaim Paragraph 8:

DENIED.

Response to Counterclaim Paragraph 9:

Midas Green ADMITS that each of claims 1, 6 and 11 of the '457 patent has a limitation directed to a "control facility". Midas Green DENIES that each of claims 1, 6 and 11 are directed to an "appliance immersion cooling system". To the extent not expressly admitted, DENIED.

Response to Counterclaim Paragraph 10:

DENIED.

Response to Counterclaim Paragraph 11:

DENIED.

Response to Counterclaim Paragraph 12:

Midas Green admits it will continue to assert the '457 patent against Rhodium's infringement. Otherwise, DENIED.

Response to Counterclaim Paragraph 13:

To the extent any response is needed, DENIED.

Response to Counterclaim Paragraph 14:

Responses to Counterclaims 1-13 are incorporated by reference as though fully set forth herein.

Response to Counterclaim Paragraph 15:

DENIED.

Response to Counterclaim Paragraph 16:

Midas Green ADMITS that each of claims 1 and 6 of the '446 patent has a limitation directed to a "control facility". Midas Green DENIES that each of claims, 1 and 6 are directed to an "appliance immersion cooling system". To the extent not expressly admitted, DENIED.

Response to Counterclaim Paragraph 17:

DENIED.

Response to Counterclaim Paragraph 18:

DENIED.

Response to Counterclaim Paragraph 19:

Midas Green admits it will continue to assert the '446 patent against Rhodium's infringement. Otherwise, DENIED.

Response to Counterclaim Paragraph 20:

To the extent any response is needed, DENIED.

RESPONSE TO THIRD COUNTERCLAIM

(Declaration of Invalidity of U.S. Patent No. 10,405,457)

Response to Counterclaim Paragraph 21:

Responses to Counterclaims 1-20 are incorporated by reference as though fully set forth herein.

Response to Counterclaim Paragraph 22:

DENIED.

Response to Counterclaim Paragraph 23:

DENIED.

Response to Counterclaim Paragraph 24:

DENIED.

Response to Counterclaim Paragraph 25:

DENIED.

Response to Counterclaim Paragraph 26:

Midas Green admits it will continue to assert the '457 patent against Rhodium's infringement. Otherwise, DENIED.

Response to Counterclaim Paragraph 27:

To the extent any response is needed, DENIED.

RESPONSE TO FOURTH COUNTERCLAIM

(Declaration of Invalidity of U.S. Patent No. 10,820,446)

Response to Counterclaim Paragraph 28:

Responses to Counterclaims 1-27 are incorporated by reference as though fully set forth herein.

Response to Counterclaim Paragraph 29:

DENIED.

Response to Counterclaim Paragraph 30:

DENIED.

Response to Counterclaim Paragraph 31:

DENIED.

Response to Counterclaim Paragraph 32:

DENIED.

Response to Counterclaim Paragraph 33:

Midas Green admits it will continue to assert the '446 patent against Rhodium's infringement. Otherwise, DENIED.

Response to Counterclaim Paragraph 34:

To the extent any response is needed, DENIED.

RESPONSE TO FIFTH COUNTERCLAIM

(Declaration of Unenforceability of U.S. Patent No. 10,405,457)

Response to Counterclaim Paragraph 35:

Responses to Counterclaims 1-34 are incorporated by reference as though fully set forth herein.

Response to Counterclaim Paragraph 36:

To the extent that Mr. Boyd and Mr. Koen owed a duty of candor to the USPTO, ADMITTED. Otherwise DENIED.

Response to Counterclaim Paragraph 37:

To the extent that Midas Green was in possession of a first generation GRN tank during prosecution of the '457 patent, ADMITTED. Otherwise DENIED.

Response to Counterclaim Paragraph 38:

Midas Green ADMITS these are two partial statements extracted from Plaintiff's Response to Defendants' RFAs. These two extracted statements must be read in the entirety of their context, and in light of other discovery responses. To the extent Rhodium attempts to use these partial statements to infer any inequitable conduct as to the '457 patent by Mr. Boyd or Mr. Koen, DENIED.

Response to Counterclaim Paragraph 39:

Mr. Best is not a coinventor of the '457 patent, so Midas Green ADMITS it never made such an assertion to the USPTO.

Response to Counterclaim Paragraph 40:

DENIED.

Response to Counterclaim Paragraph 41:

Midas Green admits it will continue to assert the '457 patent against Rhodium's infringement. Otherwise, DENIED.

Response to Counterclaim Paragraph 42:

To the extent any response is needed, DENIED.

RESPONSE TO SIXTH COUNTERCLAIM

(Declaration of Unenforceability of U.S. Patent No. 10,405,446)

Response to Counterclaim Paragraph 43:

Responses to Counterclaims 1-42 are incorporated by reference as though fully set forth herein.

Response to Counterclaim Paragraph 44:

To the extent that Mr. Boyd and Mr. Koen owed a duty of candor to the USPTO, ADMITTED. Otherwise DENIED.

Response to Counterclaim Paragraph 45:

To the extent that Midas Green was in possession of a first generation GRN tank during prosecution of the '446 patent, ADMITTED. Otherwise DENIED.

Response to Counterclaim Paragraph 46:

Midas Green ADMITS these are two partial statements extracted from Plaintiff's Response to Defendants' RFAs. These two extracted statements must be read in the entirety of their context, and in light of other discovery responses. To the extent Rhodium attempts to use these partial statements to infer any inequitable conduct as to the '446 patent by Mr. Boyd or Mr. Koen, DENIED.

Response to Counterclaim Paragraph 47:

Mr. Best is not a co-inventor of the '446 patent, so Midas Green ADMITS it never made such an assertion to the USPTO.

Response to Counterclaim Paragraph 48:

DENIED.

Response to Counterclaim Paragraph 49:

Midas Green admits it will continue to assert the '446 patent against Rhodium's infringement. Otherwise, DENIED.

Response to Counterclaim Paragraph 50:

To the extent any response is needed, DENIED.

PLAINTIFF AND CROSS DEFENDANT'S AFFIRMATIVE DEFENSES

FIRST AFFIRMATIVE DEFENSE

(Lack of Declaratory Judgment Jurisdiction)

1. The court lacks jurisdiction under the Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202, because there is currently no case or controversy between the parties.

SECOND AFFIRMATIVE DEFENSE

(Failure to State a Claim for Declaratory Judgment of Non-Infringement U.S. Patent No. 10,504,457)

2. The Cross-Complaint fails to state a claim for a declaratory judgment of non-infringement upon which relief may be granted. In particular, the Cross-Complaint fails to compare any claim of the patent-in-suit to any product of Plaintiff and fails to identify any claim limitations that are not present in the product with the exception of the allegation that the asserted claims do not have a "control facility".

3. The Cross-Complaint, therefore, fails to comply with the pleading requirements of Fed. R. Civ. P. 8, and should be dismissed under Fed. R. Civ. P. 12(b)(6).

THIRD AFFIRMATIVE DEFENSE

(Failure to State a Claim for Declaratory Judgment of Non-Infringement For U.S. Patent No. 10,820,446)

4. The Cross-Complaint fails to state a claim for a declaratory judgment of non-infringement upon which relief may be granted. In particular, the Cross-Complaint fails to

compare any claim of the patent-in-suit to any product of Plaintiff and fails to identify any claim limitations that are not present in the product, with the exception of the allegation that the asserted claims do not have a "control facility".

5. The Cross-Complaint, therefore, fails to comply with the pleading requirements of Fed. R. Civ. P. 8, and should be dismissed under Fed. R. Civ. P. 12(b)(6).

FOURTH AFFIRMATIVE DEFENSE

(Failure to State a Claim for Declaratory Judgment of Invalidity under 35 U.S.C. § 102 or § 103 For U.S. Patent No. 10,504,457)

6. The Cross-Complaint fails to state a claim for a declaratory judgment of invalidity under either 35 U.S.C. § 102, 35 U.S.C. § 103 or under 35 U.S.C. § 112 upon which relief may be granted. In particular, the Cross-Complaint fails to identify any prior art that allegedly renders any claim of the patent-in-suit anticipated under 35 U.S.C. § 102 or obvious under 35 U.S.C. § 103. Furthermore, the Cross-Complaint fails to compare any claim of the patent-in-suit to any prior art and fails to state where or how the limitations of any claim of the patent-in-suit are found in the prior art.

7. The Cross-Complaint, therefore, fails to comply with the pleading requirements of Fed. R. Civ. P. 8, and should be dismissed under Fed. R. Civ. P. 12(b)(6).

FIFTH AFFIRMATIVE DEFENSE

(Failure to State a Claim for Declaratory Judgment of Invalidity under 35 U.S.C. § 102 or § 103 For U.S. Patent No. 10,820,446)

8. The Cross-Complaint fails to state a claim for a declaratory judgment of invalidity under either 35 U.S.C. § 102, 35 U.S.C. § 103 or under 35 U.S.C. § 112 upon which relief may be granted. In particular, the Cross-Complaint fails to identify any prior art that allegedly renders any claim of the patent-in-suit anticipated under 35 U.S.C. § 102 or obvious under 35 U.S.C. § 103. Furthermore, the Cross-Complaint fails to compare any claim of the patent-in-suit to any

prior art and fails to state where or how the limitations of any claim of the patent-in-suit are found in the prior art.

9. The Cross-Complaint, therefore, fails to comply with the pleading requirements of Fed. R. Civ. P. 8, and should be dismissed under Fed. R. Civ. P. 12(b)(6).

SIXTH AFFIRMATIVE DEFENSE

(Failure to State a Claim for Declaratory Judgment of Invalidity under 35 U.S.C. § 112 For U.S. Patent No. 10,405,457 & U.S. Patent No. 10,820,446)

10. The Cross-Complaint fails to state a claim for a declaratory judgment of invalidity under 35 U.S.C. § 112 upon which relief may be granted. In particular, the Cross-Complaint fails to identify which requirement of Section 112 is being invoked and fails to state a basis for the asserted failure to comply with Section 112, with the exception of the allegation that the asserted claims do not have a "control facility".

11. The Cross-Complaint, therefore, fails to comply with the pleading requirements of Fed. R. Civ. P. 8, and should be dismissed under Fed. R. Civ. P. 12(b)(6).

SEVENTH AFFIRMATIVE DEFENSE

(Estoppel under 35 U.S C. § 315)

12. Plaintiff was the petitioner or real party in interest in an inter partes review before the Patent Trial and Appeal Board instituted on June 23, 2021 under No. IPR 2021-01176 that resulted in a final written decision dated January 6, 2022.

13. The grounds for invalidity of the patent-in-suit under 35 U.S.C. § 102, § 103 and § 112 asserted in the Cross-Complaint constitute grounds that were raised or reasonably could have raised during the inter partes review.

14. Defendant and Cross-Complainant should also be barred by estoppel from raising any claims for invalidity of the patent-in-suit under 35 U.S.C. § 102, § 103 and § 112 raised, or which could have been raised, during the prosecution history.

15. Defendant and Cross-Complainant is, therefore, estopped from asserting such grounds for invalidity in this action under 35 U.S C. § 315(e)(2).

EIGHTH AFFIRMATIVE DEFENSE

(Unclean Hands)

16. By virtue of Defendant and Cross-Complainant's own careless, negligent, and other wrongful conduct, Defendant and Cross-Complainant should be barred from recovering against Defendant by the equitable doctrine of unclean hands.

NINTH AFFIRMATIVE DEFENSE

(Laches)

17. Defendant and Cross-Complainant's waited an unreasonable period of time before asserting its claims, if any, against Plaintiff and Cross-Defendant, and therefore is barred from asserting such claims under the doctrine of laches.

PRAYER FOR RELIEF

Accordingly, Midas respectfully requests that this Court rule on Rhodium's Counterclaims as follows:

1. Declare that Rhodium's Counterclaims fail, and that Midas is not liable to Rhodium;
2. Order that Rhodium take nothing on its counterclaims;
3. Order that Rhodium pay Midas' reasonable attorneys' fees and costs; and
4. Order such other and further relief to Midas as this Court deems just and equitable.

DATED: June 8, 2023

Respectfully submitted,
/s/ Joseph E. Thomas

Joseph E. Thomas (*admitted p.h.v.*)
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CERTIFICATE OF SERVICE

I hereby certify that counsel of record who have appeared electronically in this case are being served with this document on June 8, 2023 by way of the primary email address that said counsel supplied to the Court's CM/ECF system.

/s/ Joseph E. Thomas
Joseph E. Thomas

EXHIBIT 14

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

Midas Green Technologies, LLC, Plaintiff, - vs. - **Rhodium Enterprises, Inc.**; **Rhodium Technologies LLC**; **Rhodium 10mw LLC**; **Rhodium 2.0 LLC**; **Rhodium 30mw LLC**; **Rhodium Encore LLC**; **Rhodium Renewables LLC**; **Rhodium Encore Sub LLC;** **Rhodium Renewables Sub LLC; and** **Rhodium Ready Ventures LLC** Defendants.	Civil Action No. 6:22-cv-00050-ADA **Jury Trial Demanded**

JOINT STATUS REPORT

Plaintiff Midas Green Technologies, LLC and Defendant Rhodium Enterprises, Inc., Rhodium Technologies, LLC, Rhodium 10MW LLC, Rhodium 2.0 LLC, Rhodium 30MW LLC, Rhodium Encore LLC and Rhodium Renewables LLC (collectively, "Rhodium") hereby provide the following status report.

RECITALS

1. According to the Scheduling Order, the parties are to conduct two meet and confers to discuss narrowing the number of claims asserted and prior art references at issue to triable limits.
2. The Court further ordered the parties to file a joint report on or before February 20, 2024 on the results of the meet and confer.
3. On or about December 20, 2023 and February 19. 2024, the parties met and conferred and hereby stipulate as follows:

NUMBER OF ASSERTED PATENTS AND CLAIMS

Plaintiff will be alleging infringement of 1 Patent and a total of 2 claims at trial. The asserted patent is U.S. Patent Number No. 10,405,457 (the '457 Patent"). Plaintiff will be alleging infringement of claims 1 and 5 of the '457 Patent.

1. Patents

Plaintiff will dismiss infringement allegations surrounding U.S. Patent No. 10,820,446 patent. The only patent at issue is the '457 Patent.

2. Claims

Plaintiff will dismiss claim 6 from the '457 Patent; The only Claims at issue are 1 and 5 of the '457 Patent.

3. Invalidity

Rhodium has agreed to drop previously asserted prior art references from their defense. Specifically, Rhodium has dropped the following prior art references: U.S. Patent 2,500,013 (Gryzhin); and U.S. Patent No. 5,167,511 (Krajewski). Rhodium has also withdrawn U.S. Patent 4,590,538 (Cray) as a charted reference but continues to rely on Cray for background/evidence of the state of the art.

4. Defendants

Midas has agreed to dismiss without prejudice the following defendants named in the Complaint from allegations of infringement of the '457 Patent:

Rhodium Encore Sub LLC; Rhodium Renewables Sub LLC; and Rhodium Ready Ventures LLC.

CERTIFICATE OF CONFERENCE

I certify that counsel for all Parties have conferred in good faith and this motion is joint.

/s/ Joseph E. Thomas

DATED: February 20, 2024

Respectfully submitted,
/s/ Michael C. Smith

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Attorneys for Defendants Rhodium Enterprises, Inc., Rhodium Technologies, LLC, Rhodium 10MW LLC, Rhodium 2.0 LLC, Rhodium 30MW LLC, Rhodium Encore LLC and Rhodium Renewables LLC

CERTIFICATE OF SERVICE

I hereby certify that counsel of record who have appeared electronically in this case are being served with this document on February 20, 2024 by way of the primary email address that said counsel supplied to the Court's CM/ECF system.

/s/ Michael C. Smith

EXHIBIT 15

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

From: Joe Thomas <jthomas@twtlaw.com>
Sent: Friday, February 7, 2025 5:36 PM
To: Corey Brown
Cc: Ken Halpern; Elizabeth Brannen; Bridget Asay; travis@gillamsmithlaw.com; melissa@gillamsmithlaw.com; Sarah Rahimi; William Kolegraff; Grant Thomas; Tierra Mendiola; henry.pogorzelski@klgates.com; michael.smith@solidcounsel.com; Peter Brody
Subject: Proposed Omnibus Orders
Attachments: 2025-02-07 Midas v. Rhodium - Joint Pre-Trial Motions Ruling - Midas @ 1600 CST(508986917.1).docx; 2025-02-07 Midas v. Rhodium - Joint MIL Rulings.docx

[External Email]
To the Honorable Clerk of Judge Alan D. Albright:

As requested, attached are the joint proposed rulings on the Motions in Limine and Pre-Trial Rulings submitted jointly by Plaintiff Midas Green Technologies, LLC ("Midas") and Defendant Rhodium Enterprises Inc., et al. ("Rhodium"). As directed by Corey Brown, the disputed language proposed by Midas is in red and the disputed language proposed by Rhodium is in blue.

Please let the Parties know if you have any questions.

Document Break

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

Midas Green Technologies, LLC, Plaintiff, - vs. - **Rhodium Enterprises, Inc.**; **Rhodium Technologies LLC**; **Rhodium 10mw LLC**; **Rhodium 2.0 LLC**; **Rhodium 30mw LLC**; **Rhodium Encore LLC**; **Rhodium Renewables LLC**; Defendants.	CIVIL ACTION NO. 6:22-CV-00050-ADA **Jury Trial Demanded**

OMNIBUS ORDER ON PRE-TRIAL MOTIONS

This is a patent infringement case filed by the Plaintiff, Midas Green Technologies ("Midas"), against Defendants Rhodium Enterprises, Inc., Rhodium Technologies LLC; Rhodium 10MW LLC; Rhodium 2.0 LLC; Rhodium 30MW LLC; Rhodium Encore LLC; and Rhodium Renewables LLC (each a "Rhodium Entity" and collectively "Rhodium"). Although the Third Amended Claim for Patent Infringement that Midas filed on March 29, 2023 (Dkt. 106) asserted infringement of 2 patents, in a Joint Status Report filed on February 20, 2024 (Dkt. 144), the parties confirmed to the Court that all infringement claims relating to U.S. Patent No. 10,820,446 were dismissed, and that Midas would allege infringement at trial only of claims 1 and 5 of the sole remaining asserted patent, U.S. Patent No. 10,405,457 (*id.* at 2).

On April 9, 2024, after the parties submitted appropriate briefing, the Court held a pretrial conference to rule on the then-pending pretrial motions filed by the parties. The Court indicated from the bench how it intended to rule on these five motions. The Court ruled from the bench on five of those motions. No written orders were entered at that time.

Subsequently, on August 24, 2024 and August 29, 2024, the Rhodium Entities each filed a voluntary petition for relief under Chapter 11 of the United States Bankruptcy Code, 11 U.S.C. §§ 101-1330, as amended (the "Bankruptcy Code"), in the United States Bankruptcy Court for the Southern District of Texas (the "Bankruptcy Court"), *In re Rhodium Encore LLC et al.*, Case No. 24-90448 (Jointly Administered). On August 30, 2024, Rhodium filed a Suggestion of Bankruptcy in this Court [ECF 188], acknowledging this matter as stayed. On September 18, 2024 and November 20, 2024, Midas submitted proofs of claim against Rhodium, attaching its Third Amended Claim for Patent Infringement (Dkt. 106). On January 30, 2025, the Bankruptcy Court issued a limited relief from stay to allow "the District Court presiding over the patent infringement claim," i.e., this Court, "to enter a written order and judgment memorializing [its] April 9, 2024

bench ruling." *In re Rhodium Encore LLC et al.*, Case No. 24-90448, Dkt. 737. Notice of this Order was filed with this Court on February 3, 2025. [ECF 189]. This Court directed the parties to prepare a joint a joint omnibus proposed order on the pretrial motions. After review of the parties' joint submission the Court enters the following written order:

Midas' Motion for Summary Judgment to Remove Inventors Pursuant to 35 U.S.C. § 256

Midas' motion to correct inventorship pursuant to 35 U.S.C. 256. [ECF 149] is GRANTED. The Court hereby orders the United States Patent and Trademark Office to remove the following inventors as improperly listed: Kenneth D. Swinden; Mario Conti Garcia; John Charles Tribou; Thomas R. Turner; James P. Koen; and David Christopher Laguna. (Dkt. 187, 6:25-7:1.) The Court orders the date of the removal of these inventors shall be April 9, 2024.

Midas' Daubert Motion to Exclude the Rebuttal Report of Dr. Alfonso Ortega

Plaintiff Midas' Motion to exclude the Rebuttal Report and Testimony of Dr. Alphonso Ortega. [ECF 151] is GRANTED IN PART..

The Court grants Midas' Daubert Motion to Exclude the Rebuttal Report of Dr. Alfonso Ortega with reference to Computational Fluid Analysis, and hereby orders the following paragraphs excluded from evidence: 91, 92, 133-146, 178, 184, 189-190, 213, 222, 239, 277. (Dkt. 187, 7:22-8:4; 13:6-7.)

Rhodium's Daubert Motion to Exclude Portions of Dr. Himanshu Pokharna's Expert Report

Defendant Rhodium's Motion to Strike and Exclude the Testimony of Dr. Himanshu Pokharna. [ECF 152] is GRANTED IN PART.

The Court orders specifically that Dr. Pokharna's testimony regarding the "Prime Control's" Control System be excluded for failure to identify the System in Midas' Final Infringement Contentions. April 9, 2024 Pretrial Hearing Transcript 18:6. The Court grants leave to amend Dr. Pokharna's report to address any of the issues that Midas' believes would make Dr. Pokharna's opinion survive a future challenge. (Dkt. 187, 20:12-23.)

Defendant Rhodium's Motion to Strike and Exclude the Testimony of Dr. Himanshu Pokharna. [ECF 152] is GRANTED. (Dkt. 187, 18:6). Prior to reaching Defendants' summary judgment motion, the Court ruled that the motion was granted without prejudice so that Dr. Pokharna could amend his report to try to address any of the issues that Midas believed would make his opinion survive a future challenge (id. at 20:9-23); however, the subsequent summary judgment ruling mooted the need for any such attempt.

Rhodium's Daubert Motion to Exclude Portions of Dr. Jim Lee's Rebuttal Expert Report

Defendant Rhodium's Motion to Strike and Exclude the Testimony of Dr. James Lee. [ECF 153] is DENIED with leave to re-depose the witness.

The Court orders the parties to meet and confer regarding Rhodium's deposition of Dr. Jim Lee to the extent that a deposition is sought. (Dkt. 187, 20:6-8.)

Prior to reaching Defendants' summary judgment motion, the Court ruled that it would deny the motion and allow Defendants to depose Dr. Lee again (Dkt. 19:17-20:8); however, the subsequent summary judgment ruling rendered any such further deposition moot.

Rhodium's Daubert Motion to Exclude Duross O'Bryan's Expert Report

Defendant Rhodium's Motion to Strike and Exclude the Testimony of Duross O'Bryan. [ECF 154] is GRANTED IN PART.

The Court grants Rhodium's Daubert Motion to exclude Mr. O'Bryan's analysis of lost profits. April 9, 2024 Pretrial Hearing Transcript 26:24-27:1. The Court finds that the lost profits opinion is too unreliable to reach a jury. However, the Court grants Midas leave to amend the expert report. (Dkt. 187, 27:1-5.) The Court denies the Daubert Motion to exclude Mr. O'Bryan's analysis of reasonable royalties. (Dkt. 187, 27:6-7.) However, to the extent Midas seeks future, post-trial reasonable royalties, Midas must seek those separately based upon actual infringement, if any, rather than pre-trial projections. *Id.* 27:12-31:7.

Prior to reaching Defendants' summary judgment motion, the Court ruled that it would allow Midas leave to re-do the excluded portions of Mr. O'Bryan's damages expert report (Dkt. 27:1-5); however, the subsequent summary judgment ruling rendered any such amendment moot.

Rhodium's Motion for Summary Judgment

Defendant Rhodium's filed a Motion for Summary Judgment of Noninfringement. [ECF 155] is DENIED WITHOUT PREJUDICE.

The Court denies the Motion for Summary Judgment without prejudice to refiling following the previously referenced amendment of the expert report of Dr. Himanshu Pokharna. April 9, 2024 Pretrial Hearing Transcript 54:19-55:3.

Defendants' Motion for Summary Judgment of Noninfringement is **GRANTED**. For the reasons explained in Rhodium's briefing (Dkt. Nos. 155, 169) and discussed at the final pretrial conference (Dkt. No. 187 at 32:7-55:20), Rhodium's accused liquid immersion cooling systems do not infringe asserted claims 1 or 5 of U.S. Patent 10,405,457.

There is no evidence from which a reasonable juror could conclude that Rhodium's systems meet, literally or under the doctrine of equivalents, the plain meaning of the limitation requiring "a control facility adapted to coordinate the operation of the primary and secondary fluid

circulation facilities as a function of the temperature of the dielectric fluid in the tank."[1]

It is further **ORDERED** that the Clerk of Court is **DIRECTED** to enter Federal Rule of Civil Procedure 58 judgment in favor of Defendants in this matter.

SIGNED this ___ day of February, 2025

ALAN D ALBRIGHT

UNITED STATES DISTRICT COURT JUDGE

[1] If the Court were to adopt Rhodium's proposed text, Midas would respectfully request that the Court add the following text immediately following Rhodium's proposed text: "The Court's ruling is applicable to the Rhodium accused instrumentalities as they existed at the close of fact discovery." Rhodium does not agree to the foregoing additional text.

Document Break

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION

Midas Green Technologies, LLC, Plaintiff, - vs. - **Rhodium Enterprises, Inc.**; **Rhodium Technologies LLC**; **Rhodium 10mw LLC**; **Rhodium 2.0 LLC**; **Rhodium 30mw LLC**; **Rhodium Encore LLC**; **Rhodium Renewables LLC**; Defendants.	CIVIL ACTION NO. 6:22-CV-00050-ADA **Jury Trial Demanded**

OMNIBUS ORDER ON MOTIONS IN LIMINE

This is a patent infringement case filed by the Plaintiff, Midas Green Technologies ("Midas"), against Defendants Rhodium Enterprises, Inc., Rhodium Technologies LLC; Rhodium 10MW LLC; Rhodium 2.0 LLC; Rhodium 30MW LLC; Rhodium Encore LLC; and Rhodium Renewables LLC (each a "Rhodium Entity" and collectively "Rhodium"). Although the Third Amended Claim for Patent Infringement that Midas filed on March 29, 2023 (Dkt. 106) asserted infringement of 2 patents, in a Joint Status Report filed on February 20, 2024 (Dkt. 144), the parties confirmed to the Court that all infringement claims relating to U.S. Patent No. 10,820,446 were dismissed, and that Midas would allege infringement at trial only of claims 1 and 5 of the sole remaining asserted patent, U.S. Patent No. 10,405,457 (*id.* at 2).

On April 9, 2024, the Court held a pretrial conference to rule on five separate pretrial motions filed by the parties, as well as a number of motions *in limine*. The Court declined to take up the motions *in limine* after hearing oral argument and ruling from the bench on the pretrial motions. No written orders were entered at that time.

Subsequently, on August 24, 2024 and August 29, 2024, the Rhodium Entities each filed a voluntary petition for relief under Chapter 11 of the United States Bankruptcy Code, 11 U.S.C. §§ 101-1330, as amended (the "Bankruptcy Code"), in the United States Bankruptcy Court for the Southern District of Texas (the "Bankruptcy Court"), *In re Rhodium Encore LLC et al.*, Case No. 24-90448 (Jointly Administered). On August 30, 2024, Rhodium filed a Suggestion of Bankruptcy in this Court [ECF 188], acknowledging this matter as stayed. On September 18, 2024 and November 20, 2024, Midas submitted proofs of claim against Rhodium, attaching its Third Amended Claim for Patent Infringement (Dkt. 106). On January 30, 2025, the Bankruptcy Court issued a limited relief from stay to allow "the District Court presiding over the patent infringement

claim," i.e., this Court, "to enter a written order and judgment memorializing [its] April 9, 2024 bench ruling." *In re Rhodium Encore LLC et al.*, Case No. 24-90448, Dkt. 737. This Court subsequently directed the parties to file a joint omnibus proposed order on the pretrial motions and a separate omnibus order on the motions in limine.

The following motions are DENIED WITHOUT PREJUDICE:

Plaintiff's Motion in Limine No. 1 [ECF 180]

Plaintiff's Motion in Limine No. 4 [ECF 173]

Plaintiff's Motion in Limine No. 23 [ECF 174]

Plaintiff's Motion in Limine No. [ECF 175]

Plaintiff's Motion in Limine No. [ECF 176]

Plaintiff's Motion in Limine No. [ECF 177]

Defendant's Motion in Limine No. 1 [ECF 172]

The Court declined to take up the pending motions *in limine* on April 9, 2024 (Dkt.Nos. 180, 172-77) given its ruling granting Defendants' summary judgment motion (Dkt. 187 at 54:10-16), and those motions are DENIED as moot.

SIGNED this ___ day of February, 2025

ALAN D ALBRIGHT

UNITED STATES DISTRICT COURT JUDGE

EXHIBIT 16

DEBTORS' SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

US012317450B1

(12) **United States Patent**
Blackmon et al.

(10) **Patent No.: US 12,317,450 B1**
(45) **Date of Patent: May 27, 2025**

(54) **FLUID CIRCULATION SYSTEMS AND METHODS FOR COOLING HAVING A COLLECTOR**

(71) Applicant: **Rhodium Technologies LLC**, Rockdale, TX (US)

(72) Inventors: **Chase Blackmon**, Rockdale, TX (US); **William Boardman**, Rockdale, TX (US)

(73) Assignee: **Rhodium Technologies LLC**, Rockdale, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 269 days.

(21) Appl. No.: **17/982,333**

(22) Filed: **Nov. 7, 2022**

Related U.S. Application Data

(60) Provisional application No. 63/277,160, filed on Nov. 8, 2021.

(51) **Int. Cl.**
H05K 7/20 (2006.01)
G06F 1/20 (2006.01)

(52) **U.S. Cl.**
CPC ***H05K 7/20272*** (2013.01); ***G06F 1/206*** (2013.01); ***H05K 7/20236*** (2013.01); ***H05K 7/20263*** (2013.01)

(58) **Field of Classification Search**
CPC .. H05K 7/20; H05K 7/20236; H05K 7/20263; H05K 7/20272; H05K 7/203;
(Continued)

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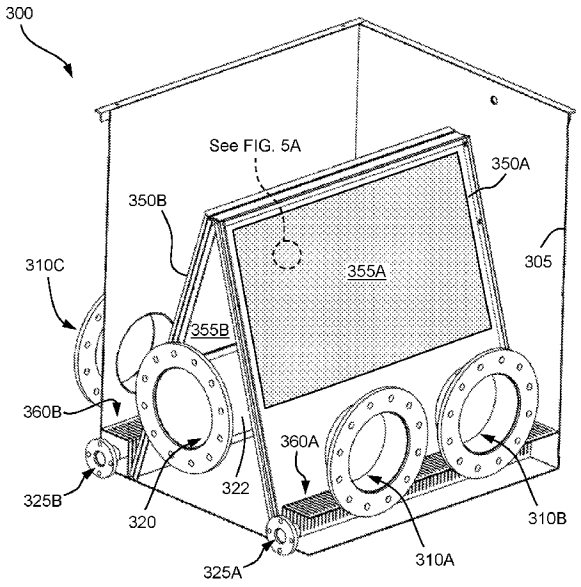
(Continued)

Primary Examiner — Amir A Jalali
(74) *Attorney, Agent, or Firm* — McDonnell Boehnen Hulbert & Berghoff LLP

(57) **ABSTRACT**

A fluid circulation system for cooling a plurality of computing devices with a dielectric fluid includes a fluid tank, a cooler, and a collector. The fluid tank includes a bottom having a plurality of apertures for receiving the dielectric fluid. The fluid tank is configured to hold the plurality of computing devices with a first computing device of the plurality of computing devices disposed over a first group of the apertures of the plurality of apertures. The cooler is configured to receive the dielectric fluid and remove thermal energy from the dielectric fluid. The collector includes a first cavity, a second cavity, a plate separating the first cavity from the second cavity, a collector inlet that opens into the first cavity and is configured to supply dielectric fluid into the collector, and a collector outlet. The fluid tank, cooler, and collector are fluidly connected in a fluid circuit.

20 Claims, 9 Drawing Sheets



(58) **Field of Classification Search**
CPC H05K 7/20318; H05K 7/20327; H05K 7/20772; H05K 7/208; H05K 7/20809; H05K 7/20818; G06F 1/20; G06F 1/206; B01D 18/0031; B01D 35/18; F25D 3/005; F28D 15/00; F28F 13/00; F01P 11/028
See application file for complete search history.

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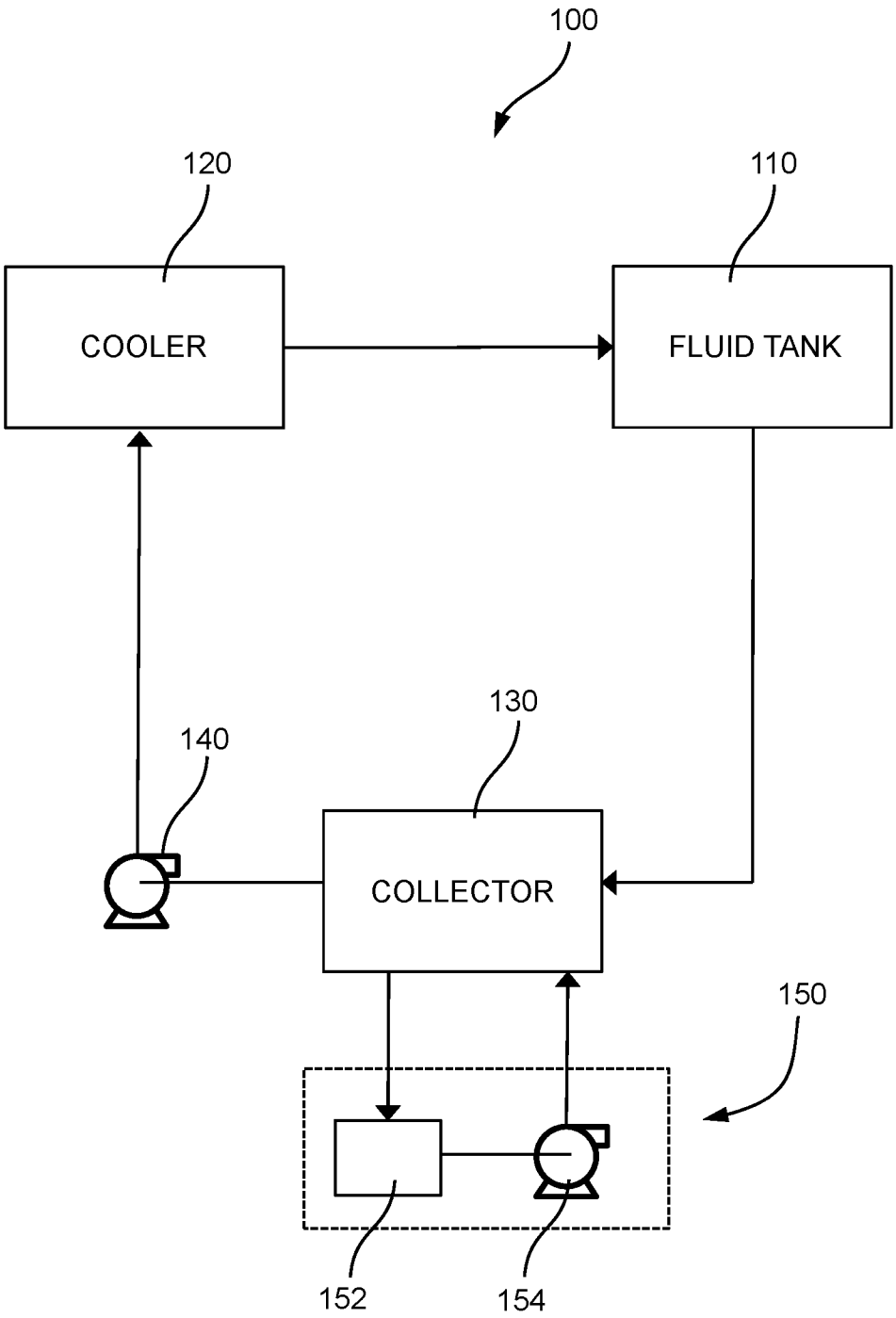

FIG. 1

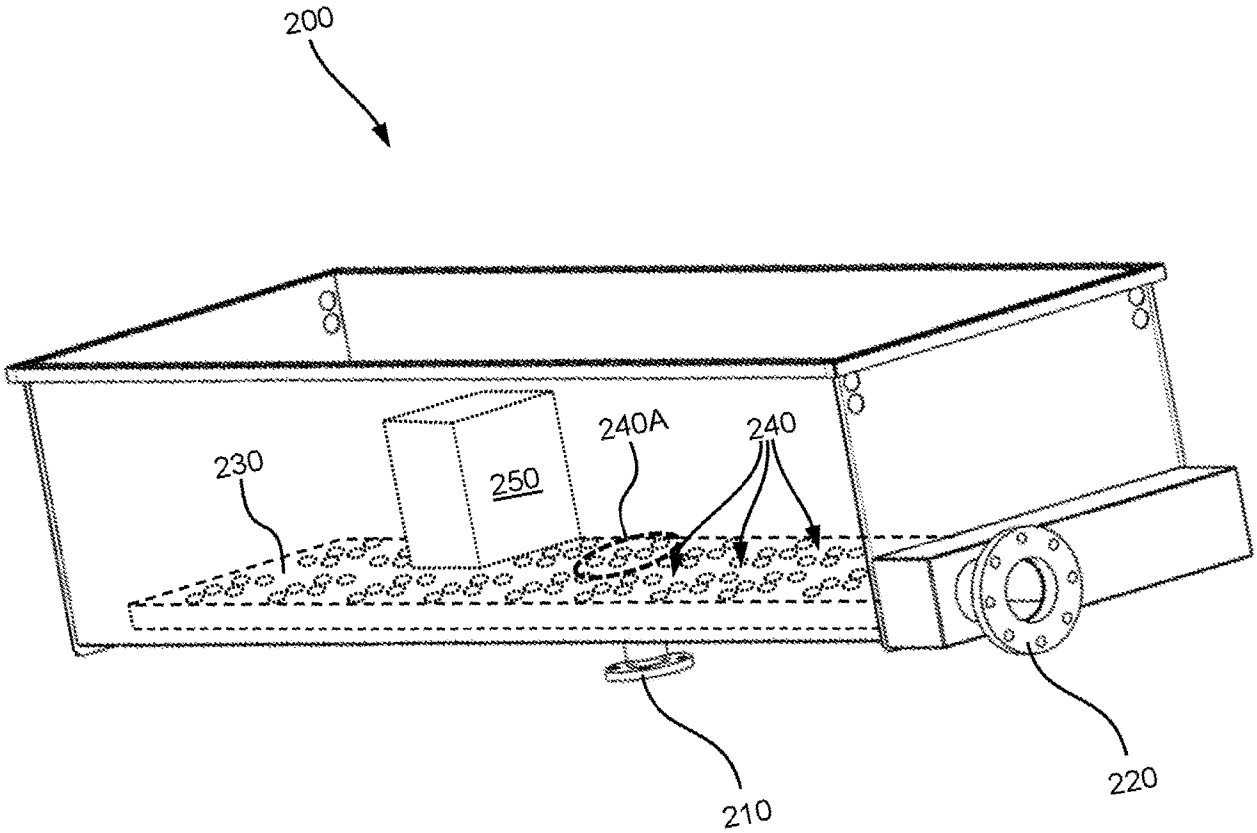

FIG. 2

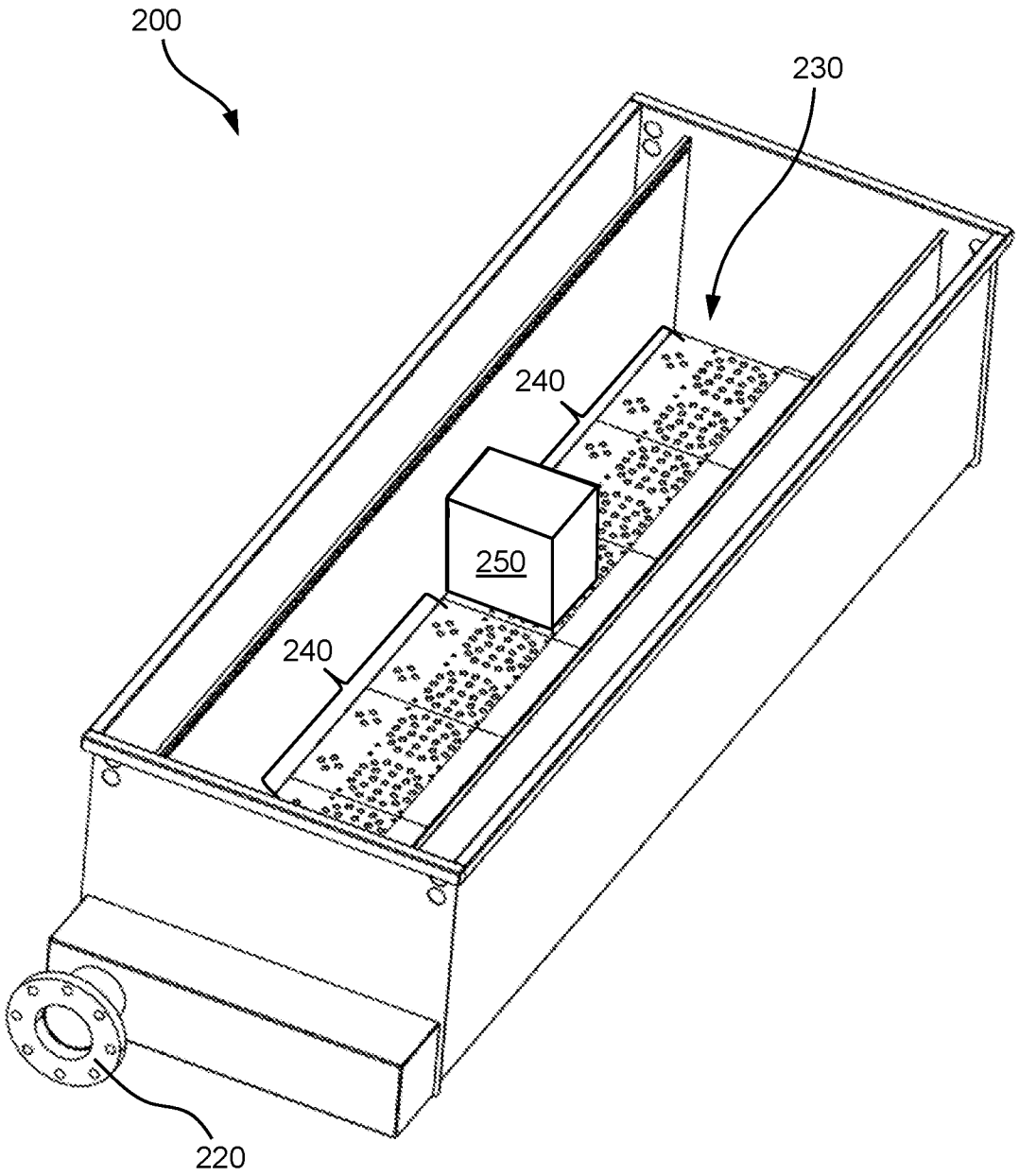

FIG. 2A

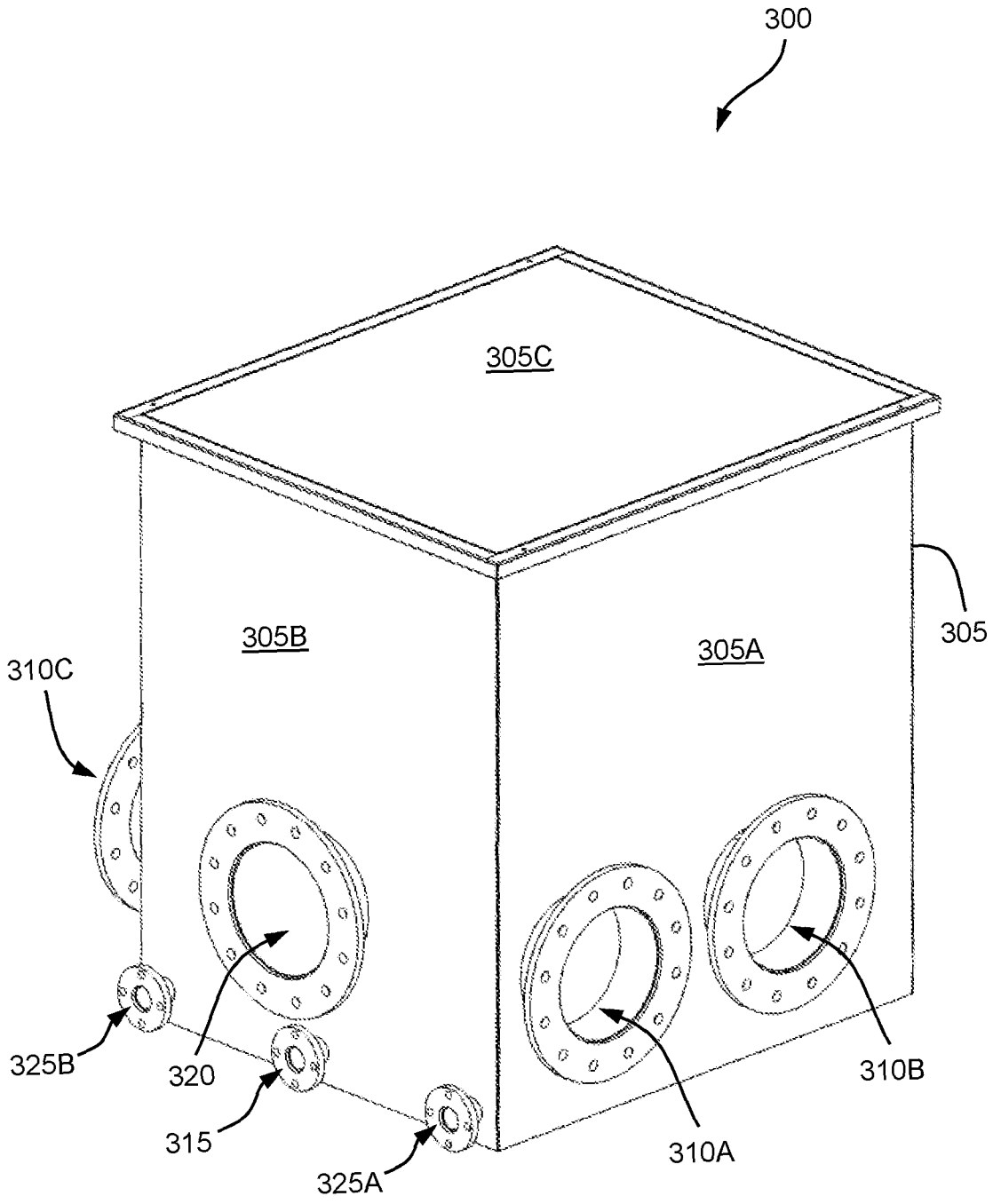

FIG. 3

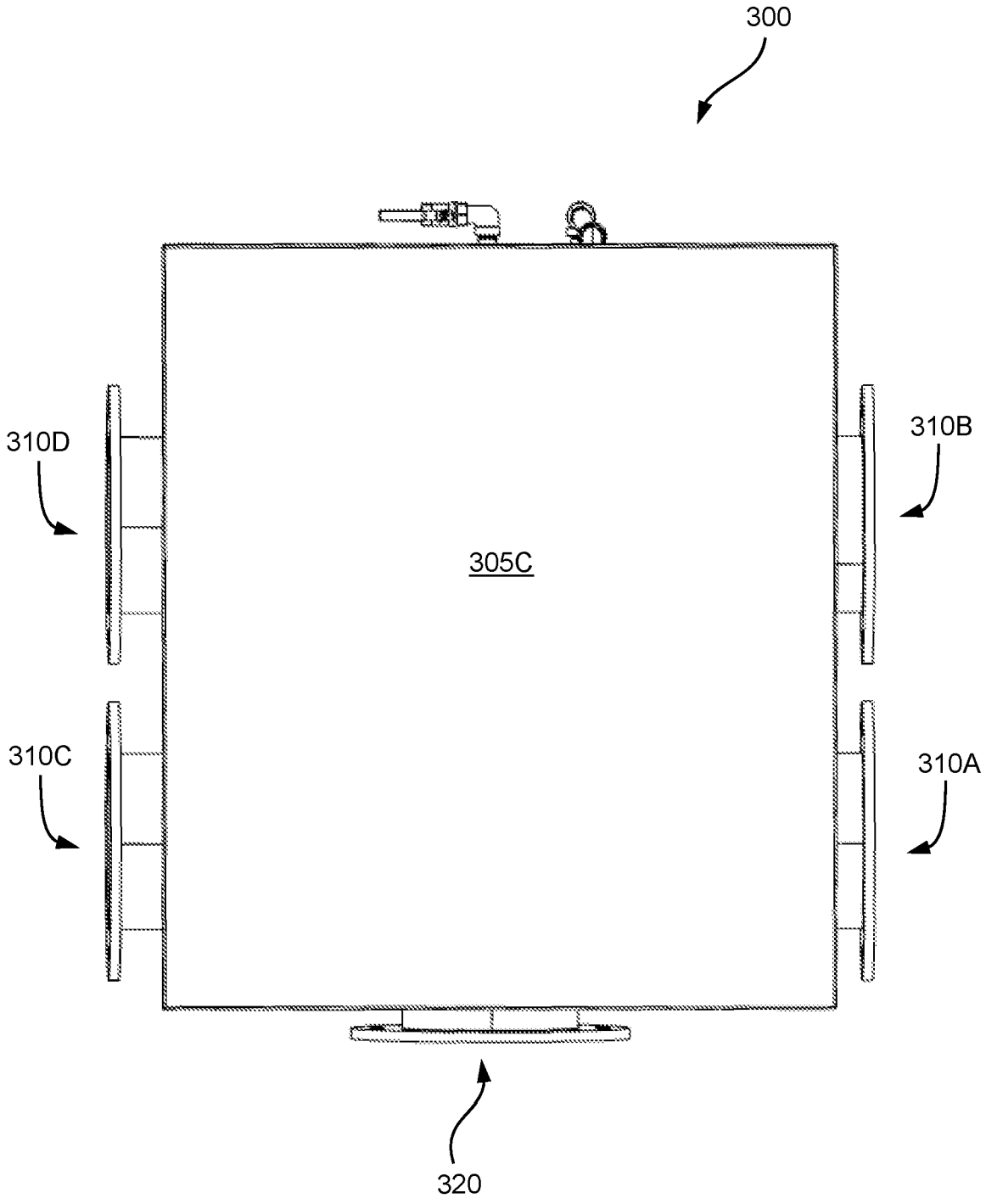

FIG. 4

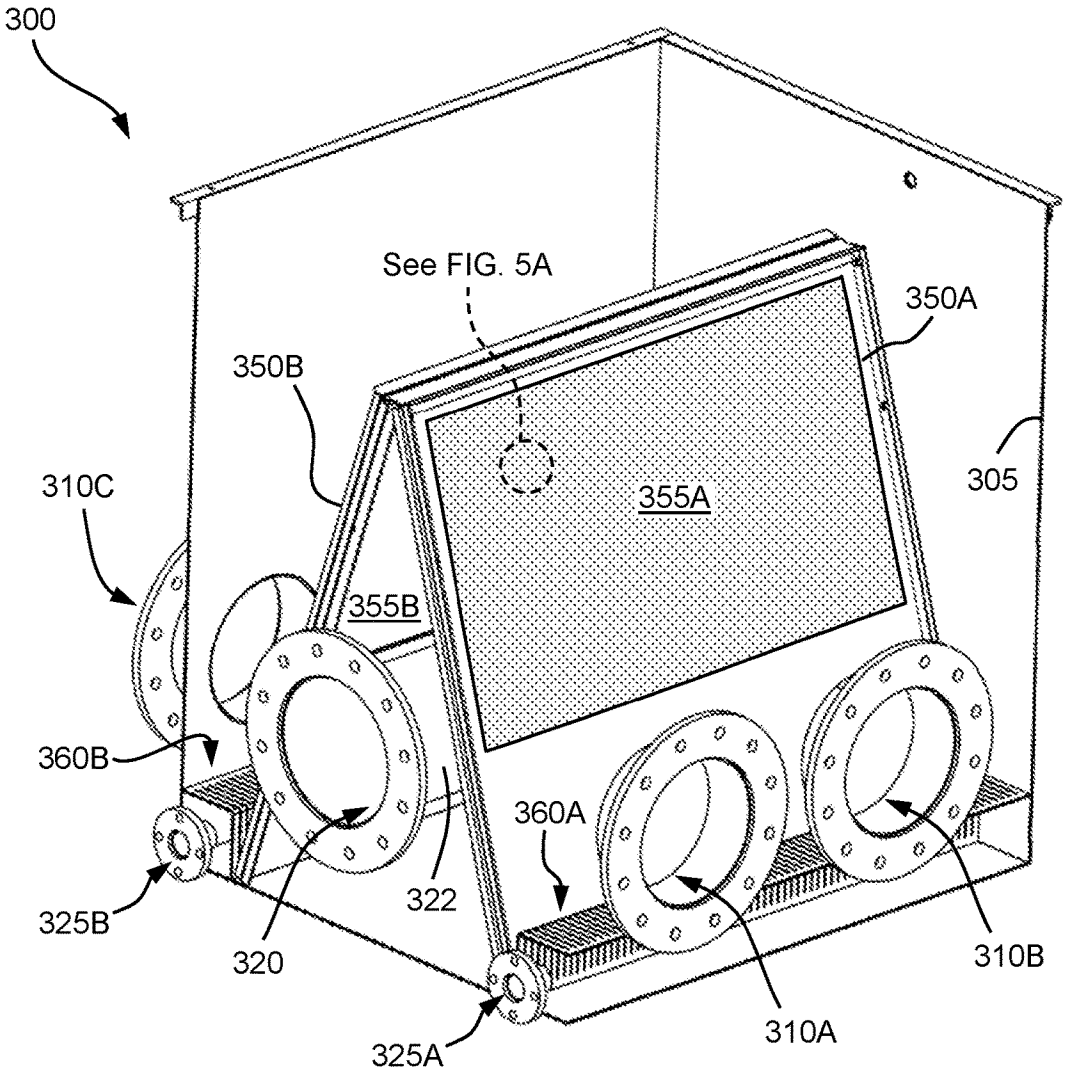
300
See FIG. 5A
350A
350B
305
310C
355A
355B
360B
360A
322
325B
320
310B
310A
325A

FIG. 5

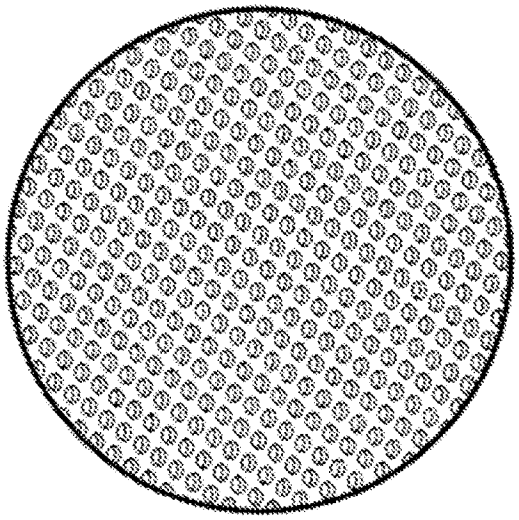

FIG. 5A

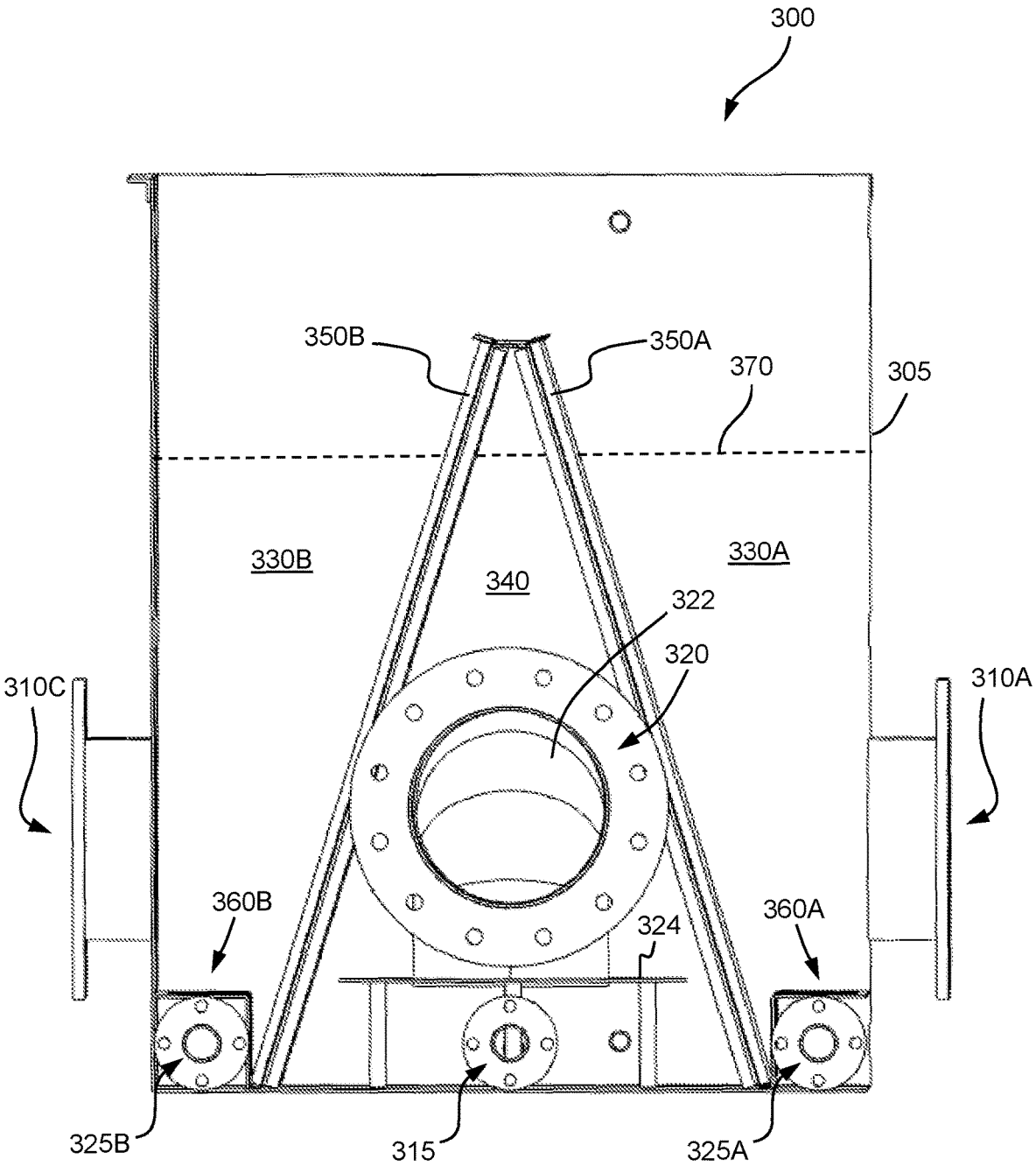
300
350B
350A
370
305
330B
340
330A
322
320
310C
310A
360B
360A
324
325B
315
325A

FIG. 6

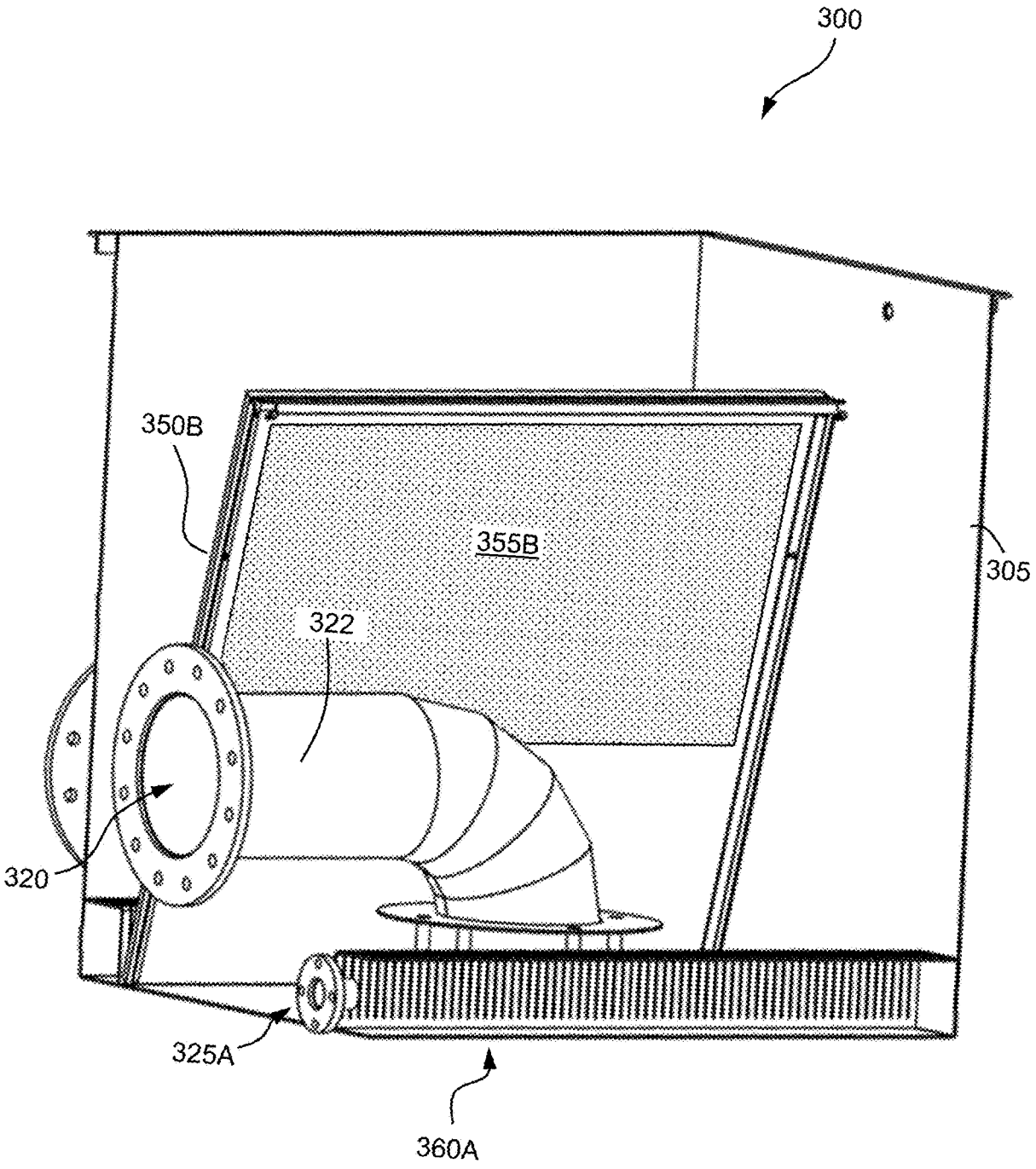

FIG. 7

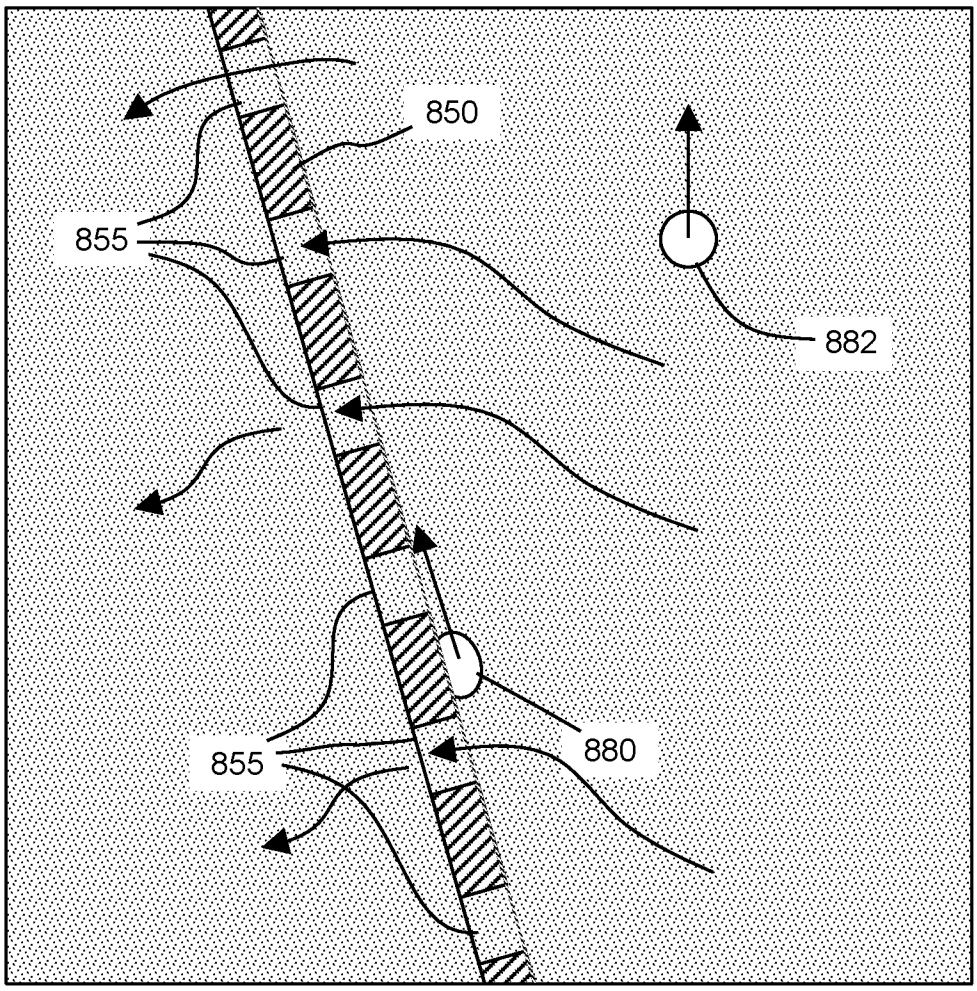

FIG. 8

FLUID CIRCULATION SYSTEMS AND METHODS FOR COOLING HAVING A COLLECTOR

CROSS-REFERENCE TO RELATED APPLICATION

The present application claims priority to U.S. Provisional Application No. 63/277,160, filed Nov. 8, 2021, which is hereby incorporated by reference.

BACKGROUND

Computing devices generate heat during operation. Thermal management systems may be used to dissipate heat that is generated by the computing devices.

SUMMARY

Embodiments described herein relate to fluid circulation systems and methods for cooling a plurality of computing devices with a dielectric fluid. Example fluid circulation systems described herein have a collector including cavities and a plate. The plate includes perforations that provide fluid access for moving the fluid from one cavity to another cavity. Beneficially, embodiments described herein may improve the heat transfer performance of the fluid circulation system.

In a first aspect, a fluid circulation system for cooling a plurality of computing devices with a dielectric fluid is disclosed. The fluid circulation system includes a fluid tank, a cooler, and a collector. The fluid tank includes a bottom having a plurality of apertures for receiving the dielectric fluid. The fluid tank is configured to hold the plurality of computing devices with a first computing device of the plurality of computing devices disposed over a first group of the apertures of the plurality of apertures. The cooler is configured to receive the dielectric fluid and remove thermal energy from the dielectric fluid. The collector includes a first cavity, a second cavity, a plate separating the first cavity from the second cavity, a collector inlet that opens into the first cavity and is configured to supply dielectric fluid into the collector, and a collector outlet. The plate is disposed at an angle such that a portion of the first cavity is positioned above a portion of the second cavity. The plate includes a plurality of perforations that provide fluid access for moving the dielectric fluid from the first cavity to the second cavity. The fluid tank, cooler, and collector are fluidly connected in a fluid circuit.

In an embodiment of the fluid circulation system, a first fluid path through the collector extends from the collector inlet, through the first cavity, through the plurality of perforations of the plate, through the second cavity, and to the collector outlet.

In another embodiment of the fluid circulation system, a cross-sectional area of the first cavity at an opening of the collector inlet is substantially greater than a cross-sectional area of the collector inlet so as to reduce a velocity of dielectric fluid entering the collector.

In another embodiment the fluid circulation system, the collector further includes a filtering chamber disposed under at least a portion of the first cavity and below the collector inlet.

In another embodiment of the fluid circulation system, a second fluid path through the collector extends from the collector inlet, through the first cavity, through the filtering chamber, and to a filter outlet.

In another embodiment of the fluid circulation system, the filter outlet is coupled to a filter, and the filter is coupled to a return configured to return dielectric fluid to the second cavity of the collector.

In another embodiment of the fluid circulation system, a majority of the plurality of perforations of the plate are disposed above the collector inlet so as to direct dielectric fluid in the first cavity upward and promote bubble dissipation in the first cavity.

In another embodiment of the fluid circulation system, one perforation of the plurality of perforations of the plate is smaller than one aperture of the plurality of apertures of the bottom of the fluid tank.

In another embodiment of the fluid circulation system, the system includes a pump configured to circulate the dielectric fluid through the fluid circuit.

In another embodiment of the fluid circulation system, the pump is disposed between the collector and the cooler.

In another embodiment of the fluid circulation system, the collector further includes a third cavity, a second plate separating the third cavity from the second cavity, and a second collector inlet that opens into the third cavity. The second plate is disposed at an angle such that a portion of the third cavity is positioned above a portion of the second cavity, and the second plate includes a plurality of perforations that provide fluid access for moving the dielectric from the first cavity to the second cavity.

In another embodiment of the fluid circulation system, the fluid tank is one of a plurality of fluid tanks including a second fluid tank, and a circulation path through the fluid circulation system comprises, in sequence, the plurality of fluid tanks, the collector, and the cooler.

In another embodiment of the fluid circulation system, the second collector inlet is opposite the collector inlet.

In another embodiment of the fluid circulation system, the plate and the second plate are oriented at opposite angles over the second cavity, and an upper end of the second plate contacts an upper end of the plate.

In another embodiment of the fluid circulation system, the fluid tank has an open volume.

In another aspect, a method of cooling a plurality of computing devices in a fluid circulation system is disclosed. The method includes pumping a dielectric fluid through a fluid circulation system such that the dielectric fluid flows along a plurality of paths through portions of the fluid circulation system. The plurality of paths includes a cooling path flowing through a fluid tank holding a plurality of computing devices, a restoring path flowing through a collector, and a heat exchange path flowing through a cooler so as to remove thermal energy from the dielectric fluid. The cooling path extends into the fluid tank through a plurality of apertures in a bottom of the fluid tank and upward past the plurality of computing devices so as to receive thermal energy from the plurality of computing devices. The restoring path extends through a collector inlet into a first cavity of the collector, from the first cavity of the collector through a plurality of perforations in a plate into a second cavity of the collector, and from the second cavity of the collector to a collector outlet.

In an embodiment of the method, the dielectric fluid is pumped through the fluid circulation system in a circuit including, in sequence, the cooling path, the restoring path, and the heat exchange path.

In another embodiment of the method, the plurality of computing devices are submerged in the fluid tank.

In another embodiment of the method, bubbles in the dielectric fluid rise in the first cavity and flow out of the restoring path.

In another embodiment of the method, a cross-sectional area of the first cavity at an opening of the collector inlet is substantially greater than a cross-sectional area of the collector inlet so as to reduce a velocity of dielectric fluid entering the collector thereby causing solids in the dielectric fluid to fall in the first cavity and flow out of the restoring path.

These as well as other aspects, advantages, and alternatives will become apparent to those of ordinary skill in the art by reading the following detailed description with reference where appropriate to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings are included to provide a further understanding of the systems and methods of the disclosure, and are incorporated in and constitute a part of this specification. The drawings are not necessarily to scale, and sizes of various elements may be changed for clarity. The drawings illustrate one or more embodiment(s) of the disclosure, and together with the description serve to explain the principles and operation of the disclosure. In the drawings, similar symbols typically identify similar components, unless context dictates otherwise.

FIG. **1** is a schematic depiction of a fluid circulation system, according to an example embodiment.

FIG. **2** is a perspective view of a fluid tank, according to an example embodiment.

FIG. **2**A is another perspective view of a fluid tank, according to an example embodiment.

FIG. **3** is a perspective view of a collector, according to an example embodiment.

FIG. **4** is a top view of a collector shown in FIG. **3**, according to an example embodiment.

FIG. **5** is a perspective view of aspects of the collector shown in FIG. **3**, according to an example embodiment.

FIG. **5**A is a detailed view of a portion of FIG. **5**.

FIG. **6** is a front view of aspects of the collector shown in FIG. **3**, according to an example embodiment.

FIG. **7** is a perspective view of aspects of the collector shown in FIG. **3**, according to an example embodiment.

FIG. **8** is a schematic depiction of fluid flow on a plate, according to an example embodiment.

DETAILED DESCRIPTION

The following detailed description describes various features and functions of the disclosed apparatus, system, and methods with reference to the accompanying figures. The illustrative apparatus, system, and method embodiments described herein are not meant to be limiting. It will be readily understood that certain aspects of the disclosed apparatus, system, and methods can be arranged and combined in a wide variety of different configurations, all of which are contemplated herein.

I. Introduction

An example fluid circulation system for cooling a plurality of computing devices with a dielectric fluid includes a fluid tank, a cooler, and a collector. The collector includes a first cavity, a second cavity, a plate separating the first cavity from the second cavity, a collector inlet that opens into the first cavity and is configured to supply dielectric fluid into the collector, and a collector outlet. The plate is positioned above a portion of the second cavity, and the plate includes a plurality of perforations that provide fluid access for moving the dielectric fluid from the first cavity to the second cavity. Beneficially, flowing dielectric fluid through the collector may reduce dissolved gases and the presence of bubbles in the dielectric fluid and/or reduce solids in fluid paths of the fluid circulation system.

An example method of cooling the plurality of computing device includes pumping dielectric fluid through a restoring path flowing through the collector. The restoring path extends through the collector inlet into the first cavity, from the first cavity through the plurality of perforations into the second cavity, and from the second cavity to the collector outlet.

II. Example Systems

FIG. **1** is a schematic depiction of a fluid circulation system **100**, according to an example embodiment. The fluid circulation system **100** includes a fluid tank **110**, a cooler **120**, and a collector **130** fluidly connected in a fluid circuit. In the fluid circulation system **100**, a dielectric fluid flows through at least the fluid tank **110**, collector **130**, and cooler **120**. Fluid paths are as indicated in FIG. **1** and flow direction of a fluid in a given fluid path is indicated by one or more arrows. FIG. **1** is illustrative only and other fluids, components (e.g., piping, valves, seals, sensors), and/or fluid paths may be included in embodiments of a fluid circulation system.

The fluid tank **110** is configured to hold a plurality of computing devices. Dielectric fluid may flow through the fluid tank **110** to receive thermal energy from the plurality of computing devices. By receiving thermal energy from the plurality of computing devices, the dielectric fluid may cool the plurality of computing devices.

The cooler **120** is configured to receive dielectric fluid and remove thermal energy from the dielectric fluid. The dielectric fluid may flow through the cooler **120** so as to remove thermal energy from the dielectric fluid. In some embodiments, the cooler **120** includes a cooling tower configured to receive air to absorb thermal energy from the dielectric fluid. The cooling tower may transfer thermal energy from the dielectric fluid to atmospheric air. The cooler **120** may take the form of other components that serve a similar thermal purpose as well, including a heat exchanger. The heat exchanger, such as a shell-and-tube heat exchanger, may be configured to receive water or another liquid coolant to absorb thermal energy from the dielectric fluid.

The collector **130** is configured to receive dielectric fluid. As described herein, the collector **130** may restore the dielectric fluid so as to improve the heat transfer performance of the fluid circulation system **100**. The collector **130** may be coupled downstream of the fluid tank **110** and upstream of the cooler **120**. However, in other embodiments, the collector **130** may be arranged in different positions in the fluid circulation system **100**, including downstream of the cooler **120** and upstream of the fluid tank **110**.

The fluid circulation system **100** may also include a pump **140** configured to circulate dielectric fluid through at least the fluid tank **110**, the cooler **120**, and the collector **130**. The pump **140** is fluidly connected to the fluid circuit. The pump **140** may be coupled downstream of the collector **130** and upstream of the cooler **120**. However, in other embodiments, the pump **140** may be arranged in different positions in the fluid circulation system **100**, including downstream of the cooler **120** and upstream of the fluid tank **110**. The pump **140**

may be formed by any actuator or mechanism that moves fluid, such as a rotary, piston, or other pumps. In some embodiments, the pump **140** may pump dielectric fluid through the fluid circulation system **100** at a constant speed or at variable speeds.

The fluid circulation system **100** may also include a filtering system **150** configured to filter dielectric fluid. The filtering system **150** is fluidly connected to the collector **130**. The filtering system **150** includes a filter **152** and a pump **154**. The filter **152** is configured to receive dielectric fluid and filter the dielectric fluid. The pump **154** is configured to circulate dielectric fluid through the collector **130** and the filter **152**. The pump **154** may take the form of or be similar in form to the pump **140**.

Although the fluid circulation system **100** is described above with respect to fluid tank **110**, in some embodiments, fluid tank **110** is one of a plurality of fluid tanks. In some embodiments, the plurality of fluid tanks may include 6 fluid tanks, 12 fluid tanks, 18 fluid tanks, or 24 fluid tanks. Dielectric fluid may flow through at least the plurality of fluid tanks, collector **120**, and collector **130**. In some embodiments, a circulation path through the fluid circulation system **100** includes, in sequence, the plurality of fluid tanks, the collector, and the cooler. The term dielectric fluid, as used herein, includes various dielectric fluids that are known in the art and can suitably be used in the systems and methods described herein. For example, the dielectric fluids may be an oil-based dielectric, such as a hydrocarbon-based oil dielectric or silicone oil dielectric, and may have a dielectric strength above 40 kV at 2 mm.

FIG. **2** is a perspective view of a fluid tank **200**, according to an example embodiment. The fluid tanks described herein may take the form of the fluid tank **200**. The fluid tank **200** includes an inlet **210**, an outlet **220**, and a bottom **230**. In some embodiments, the inlet **210** is coupled downstream of the cooler **120**, and the outlet **220** is coupled upstream of the collector **130**. However, in other embodiments, the inlet **210** and outlet **220** may be coupled to other components in the fluid circulation **100**. In FIG. **2**, a sidewall of the fluid tank **200** is removed for illustration. FIG. **2**A is another perspective view of the fluid tank **200**, according to an example embodiment.

The bottom **230** of the fluid tank **200** includes a plurality of apertures **240**. The fluid tank **200** is configured to hold a plurality of computing devices. Groups of apertures of the plurality of apertures **240** may be associated with a particular computing device of the plurality of computing devices. In FIG. **2**, a first computing device **250** of the plurality of computing devices is disposed over a first group of apertures of the plurality of apertures **240**. A second group apertures **240**A is shown in FIG. **2**. The term computing device, as used herein, includes devices configured to execute software, including servers and desktop computers. Computing devices may include one or more processors, memory, and input/output connections.

In the fluid circulation system **100**, dielectric fluid flows through the inlet **210** through the plurality of apertures **240** upward past the first computing device **250** and the other computing devices of the plurality of computing devices so as to receive thermal energy from the first computing device **250** and the other computer devices of the plurality of computing devices. The dielectric fluid, having received thermal energy from the plurality of computing devices, then flows through outlet **220**.

The fluid tank **200** may have an open volume, and the plurality of computing devices may be submerged in the dielectric fluid. For example, in some embodiments, the plurality of computing devices may be fully submerged in the fluid tank **200**. In other embodiments, at least one computing device of the plurality of computing devices, such as the first computing device **250**, may be partially submerged in dielectric fluid. For example, the first computing device **250** may be partially submerged within the fluid tank **200**.

In some embodiments, the plurality of apertures **240** may include between 5 to 10, 10 to 15, 15 to 20, 20 to 25, 25 to 30, or 30 to 35 groups of apertures. Other numbers of groups of apertures of the plurality of apertures are possible as well.

In some embodiments, the plurality of computing devices may include between 5 to 10, 10 to 15, 15 to 20, 20 to 25, 25 to 30, and 30 to 35 computing devices. Other numbers of computing devices in the plurality of computing devices are possible as well.

FIG. **3** is a perspective view of a collector **300**, according to an example embodiment. The collectors described herein may take the form of the collector **300**. The collector **300** includes a housing **305**, a collector inlet **310**A, and a collector outlet **320**. In some embodiments, the inlet **310**A is coupled to the outlet **220** of the fluid tank **200**, and the outlet **320** is coupled to the cooler **120**. The inlet **310**A may be configured to receive dielectric fluid with thermal energy from the plurality of computing devices. However, in other embodiments, the inlet **310**A and outlet **320** may be coupled to other components of the fluid circulation system **100**. The housing **305** may be a container having four sidewalls and a top. The first sidewall **305**A, second sidewall **305**B, and top **305**C are shown in FIG. **3**. FIG. **4** shows a top view of the collector **300**, according to an example embodiment.

The collector **300** may also include a filter outlet **325**A and a filter inlet **315**. In some embodiments, the filter outlet **325**A is coupled downstream of the inlet **310**A and upstream of the filter system **150**. The filter system **150** is configured to receive a portion of dielectric fluid via the filter outlet **325**A and filter the portion of dielectric fluid. In some embodiments, the filter inlet **315** is coupled downstream of the filter system **150** and coupled to the outlet **320**. The filter inlet **315** is configured to receive dielectric fluid filtered by the filter system **150** and convey the filtered dielectric electric fluid to the outlet **320**.

FIGS. **5**, **5**A, and **6** show aspects of the collector **300**, according to an example embodiment. FIG. **5** is a perspective view of aspects of the collector **300** in which first sidewall **305**A, second sidewall **305**B, and top **305**C are removed for illustration. FIG. **6** is a front view of the collector **300** in which the second sidewall **305**B is removed for illustration.

The collector **300** includes a first cavity **330**A, a second cavity **340**, and a plate **350**A separating the first cavity **330**A from the second cavity **340**. The inlet **310**A opens into the first cavity **330**A and is configured to supply dielectric fluid into the collector **300**.

The plate **350**A is disposed at an angle such that a portion of the first cavity **330**A is positioned above a portion of the second cavity **340**. Further, the plate **350**A includes a plurality of perforations **355**A that provide fluid access for moving dielectric fluid from the first cavity **330**A to the second cavity **340**. FIG. **5**A shows aspects of the plate **350**A and the plurality of perforations **355**A.

In some embodiments, a first fluid path through the collector **300** extends from the inlet **310**A, through the first cavity **330**A, through the plurality of perforations **355**A, through the second cavity **340**, and to the outlet **320**. The collector **300** may also include piping **322** configured to convey dielectric fluid from the second cavity **340** to the

outlet **320**. The piping **322** may be referred to as a downspout. In some embodiments, dielectric fluid flowing through the plurality of perforations **355**A and into the second cavity **340** contacts an outer surface of the piping **322**.

Further, the collector **300** may also include a flange **324** at an end of the piping **322**. The flange **324** may reduce formation of vortices as the dielectric fluid flows from the second cavity through the piping **322**.

Moreover, in some embodiments, a cross-sectional area of the first cavity **330**A at an opening of the inlet **310**A is substantially greater than a cross-sectional area of the inlet **310**A. For example, the cross-sectional area of the first cavity **330**A may be at least 50% greater than the cross-sectional area of the opening of the inlet **310**A, sometimes at least 100% greater, at least 200% greater, or more. As a result of this change in the cross-sectional area, the velocity of the dielectric fluid may substantially drop as it flows into the collector. The decrease in velocity helps any bubbles in the dielectric fluid to rise to the fluid surface, where they are dissipated. Likewise, the decrease in velocity also helps any solids that have accumulated in the dielectric fluid to fall out of the first fluid path and move toward the bottom of the first cavity **330**A.

In some embodiments, a majority of the plurality of perforations **355**A are disposed above the inlet **310**A so as to direct dielectric fluid in the first cavity **330**A upward before it passes through the perforations **355**A in the plate **350**A. This upward trajectory of the dielectric fluid may help remove bubbles from the dielectric fluid. For example, the rising fluid may carry the lighter bubbles upward initiating the rise of the bubbles. As the dielectric fluid flows through the first cavity **330**A, the bubbles may continue to rise toward the liquid surface, where they are dissipated. Moreover, the rise of the dielectric fluid in the first cavity **330**A, which results from the elevated position of the perforations **355**A compared to the inlet **310**A, also increases the length of the first fluid path through the first cavity **330**A. Accordingly, any bubbles in the dielectric fluid have a longer opportunity to rise out of the dielectric fluid.

In some embodiments, one perforation of the plurality of perforations **355**A is smaller than one aperture of the plurality of apertures **240**. For example, one perforation of the plurality of perforations **355**A may be 0.25 inch in diameter and one aperture of the plurality of apertures **240** may be 0.5 inch in diameter. Further, in some embodiments, the average size of the perforations **355**A is smaller than the average size of the apertures **240**. Likewise, in some embodiments, the majority of perforations **355**A have a smaller size than the majority of apertures **240**. Beneficially, where some perforations of the plurality of perforations **355**A are smaller than some apertures of the plurality of apertures **240**, the plurality of perforations **355**A may function as a course filter media that does not impede flow of dielectric fluid to the pump **140**. Further, in some embodiments, the plurality of perforations **355**A have a mesh size of 60 wires per inch. In some such embodiments, the plurality of perforations **355**A may increase nucleation of bubbles in the dielectric fluid.

Further, in some embodiments, a level **370** of dielectric fluid may be maintained in the collector **300** during operation of the collector. The level **370** may be between 12 to 24 inches, 24 to 36 inches, and 36 to 48 inches. In some embodiments, the collector **300** may be configured to receive a flow rate of dielectric fluid in a range from 300 GPM to 2000 GPM, such as 300 GPM to 900 GPM, 900 GPM to 1400 GPM, 1400 GPM to 2000 GPM, and 1000 GPM to 2000 GPM.

The collector **300** may also include a filter chamber **360**A disposed under at least a portion of the first cavity **330**A and below the inlet **310**A. The filter chamber **360**A is coupled to the filter outlet **325**A. In some embodiments, a second fluid path through the collector **300** extends from the inlet **310**A, through the first cavity **330**A, through the filtering chamber **360**A and to the filter outlet **325**A. In some embodiments, solids in the dielectric fluid may be carried by the dielectric fluid through the second fluid path.

The collector **300** may also include other inlets, another cavity, another plate, another filter chamber, and another filter outlet. Additional inlets, cavity, plate, filter chamber, and filter outlet may enable the collector **300** to receive dielectric fluid from more fluid tanks. In the illustrated example, the collector **300** includes second collector inlet **310**B, third collector inlet **310**C, and fourth collector inlet **310**D.

The third inlet **310**C is opposite of the inlet **310**A, and the third inlet **310**C opens into a third cavity **330**B and is configured to supply dielectric into the collector **300**. The collector **300** may also include a second plate **350**B that separates the third cavity **330**B from the second cavity **340**.

The second plate **350**B is disposed at an angle such that a portion of the third cavity **330**B is positioned above a portion of the second cavity **340**. Further, the second plate **350**B includes a plurality of perforations **355**B that provide fluid access for moving dielectric fluid from the third cavity **330**B to the second cavity **340**.

In some embodiments, a third fluid path through the collector **300** extends from the third inlet **310**C, through the third cavity **330**B, through the plurality of perforations **355**B, through the second cavity **340**, and to the outlet **320**.

Further, in some embodiments, a cross-sectional area of the third cavity **330**B at an opening of the third inlet **310**C is substantially greater than a cross-sectional area of the third inlet **310**C so as to reduce a velocity of dielectric fluid entering the collector **300**.

Moreover, in some embodiments, a majority of the plurality of perforations **355**B are disposed above the third inlet **310**C so as to direct dielectric fluid in the third cavity **330**B upward and promote bubble dissipation in the third cavity **330**B.

In some embodiments, the third inlet **310**C, the third cavity **330**B, the second plate **350**B, and the plurality of perforations **355**B may be the same as or similar to the inlet **310**A, the first cavity **330**A, the plate **350**A, and the plurality of perforations **355**A, respectively, and function in a similar manner, respectively. For example, the plate **350**A and the second plate **350**B may be oriented at opposite angles over the second cavity **340**, and an upper end of the second plate **350**B may contact an upper end of the plate **350**A.

However, in other embodiments, the third inlet **310**C may have a different size than the inlet **310**A, the third cavity **330**B may have a different size than the first cavity **330**A, the second plate **350**B may have a different size than the plate **350**A, and the plurality of perforations **355**B may have a different size than the plurality of perforations **355**A. For example, the angle of the second plate **355**B between the third cavity **330**B and the second cavity **340** may be different than the angle of the plate **355**A between the first cavity **330**A and the second cavity **340**.

The collector **300** may also include a filter chamber **360**B disposed under at least a portion of the third cavity **330**A and below the third inlet **310**C. The filter chamber **360**B is coupled to a filter outlet **325**B. The filter outlet **325**B in turn is coupled to filter system **150**. In some embodiments, a fourth fluid path through the collector **300** extends from the

third inlet **310**C, through the third cavity **330**B, through the filtering chamber **360**B and to the filter outlet **325**B. Further, in some embodiments, solids in the dielectric fluid may be carried by the dielectric fluid through the fourth fluid path.

In some embodiments, the filter chamber **360**B and the filter outlet **325**B may be the same as or similar to the filter chamber **360**A and filter outlet **325**A, respectively, and function in a similar manner, respectively. However, in other embodiments, the filter chamber **360**B may have a different size than the filter chamber **360**A, and the filter outlet **325**B may have a different size than the filter outlet **325**A.

FIG. **7** shows aspects of the collector **300**, according to an example embodiment. FIG. **7** is a perspective view of aspects of the collector **300** in which the first sidewall **305**A, inlets **310**A and **310**B, top **305**C, and plate **350**A are removed for illustration.

The second inlet **310**B is parallel to the inlet **310**A, and second inlet **310**B opens into the first cavity **330**A and is configured to supply dielectric fluid into the collector **300**. The second inlet **310**B may function the same as or similar to the inlet **310**A. In some embodiments, the second inlet **310**B may have the same size as the inlet **310**A. However, in other embodiments, the second inlet **310**B may have a different size than the inlet **310**A.

In some embodiments, a fifth fluid path through the collector **300** extends from the second inlet **310**B, through the first cavity **330**A, through the plurality of perforations **355**A, through the second cavity **340**, and to the outlet **320**.

In some embodiments, the filter chamber **360**A is disposed below the second inlet **310**B. Further, in some embodiments, a sixth fluid path through the collector **300** extends from the second inlet **310**B, through the first cavity **330**A, through the filtering chamber **360**A and to the filter outlet **325**A.

The fourth inlet **310**D is parallel to the third inlet **310**C, and the fourth inlet **310**D opens into the third cavity **330**B and is configured to supply dielectric fluid into the collector **300**. The fourth inlet **310**D may function the same as or similar to the third inlet **310**C. In some embodiments, the fourth inlet **310**D may have the same size as the third inlet **310**C. However, in other embodiments, the fourth inlet **310**D may have a different size than the third inlet **310**C.

In some embodiments, a seventh fluid path through the collector **300** extends from the fourth inlet **310**D, through the third cavity **330**B, through the plurality of perforations **355**B, through the second cavity **340**, and to the outlet **320**.

In some embodiments, the filter chamber **360**B is disposed below the fourth inlet **310**D. Further, in some embodiments, an eighth fluid path through the collector **300** extends from the fourth inlet **310**D, through the third cavity **330**B, through the filtering chamber **360**B and to the filter outlet **325**B.

In some embodiments, each of inlets **310**A-**310**D is configured to receive dielectric fluid from multiple fluid tanks. For example, each of inlets **310**A-**310**B may be coupled to two, four, six, or eight fluid tanks. Further, in some embodiments, each of inlets **310**A-**310**D is coupled to the same number of fluid tanks. However, in other embodiments, at least one of inlets **310**A-**310**D is coupled to more fluid tanks than the other inlets.

FIG. **8** is a schematic depiction of fluid flow through a plate **850** of a collector, according to an example embodiment. Dielectric fluid flow through plates **350**A and **350**B may take the form of the fluid flow depicted in FIG. **8**. The plate **850** includes a plurality of perforations **855** that extend directly through the plate, i.e., in a direction perpendicular to the surface of the plate **850**. Accordingly, because the plate **850** is disposed at an angle with respect to gravity, the perforations **855** include a downward trajectory through the plate **850**. Thus, while the dielectric fluid easily flows through the perforations **855**, as depicted by the arrows in FIG. **8**, any bubbles in the dielectric fluid may be hindered from passing through the plate **850** as a result of their buoyancy. Specifically, the propensity of the bubbles to rise in the dielectric fluid will hinder the bubbles from flowing through the downward perforations **855**. Rather, as shown by the example bubble **880**, bubbles may tend to slide upward along the surface of the plate **850** until they detach or reach the fluid surface. Any bubbles that detach may be inclined to rise, as shown by example bubble **882**. While the illustrated plates **350**A, **350**B of the example embodiments are disposed at angles in the collector, this phenomenon can also be achieved by angling the path of the perforations through the plate. For example, in some embodiments, the plate may be vertical and include perforations that may have a downward trajectory in the direction from the first cavity to the second cavity.

The reduction of dissolved gases and bubbles in the dielectric fluid resulting from the collector **300** may improve the heat transfer performance of the fluid circulation system **100**. For example, reduction of dissolved gases and bubbles in the dielectric fluid may increase the amount of thermal energy the dielectric fluid may receive from the plurality of computing device. As another example, reduction of dissolved gases and bubbles in the dielectric fluid may reduce oxidation of the dielectric fluid, which may in turn increase the useful life of the dielectric fluid. As yet another example, reduction in dissolved gases and bubbles may in turn reduce turbulent flow through the pump **140** and/or reduce cavitation in the pump **140**, which may improve the performance of the pump **140** and/or the useful life of the pump **140**. The term useful life, as used herein, includes the time to repair or replace all or at least some of one component with a new component. Repairing or replacing a component of the fluid circulation system **100**, including the dielectric fluid and pump **140**, may involve downtime of the fluid circulation system **100**.

The reduction of solids in the first and third fluid paths by the collector **300** may improve the heat transfer performance of the fluid circulation system **100**. As examples, reduction in solids in the first fluid path may improve the useful life of the pump **140**, improve the efficiency of the pump **140**, increase the amount of thermal energy the dielectric fluid may receive from the plurality of computer devices, and/or increase the useful life of the dielectric fluid.

The above-described components of fluid circulation systems may be composed of a variety of different materials. For example, the components of the collector **300** described above may be formed of metal, such as aluminum or steel.

III. Example Methods

Methods for cooling a plurality of computing devices with a dielectric fluid may be carried out in whole or in part by a component or components of a fluid circulation system, such as the fluid circulation system **100**. An example method may involve pumping a dielectric fluid through a fluid circulation system such that the dielectric fluid flows along a plurality of paths through portions of the fluid circulation system. The pump may take the form of the pump **140**.

In an example method, the plurality of paths includes a cooling path, a restoring path, and a heat exchange path. In some embodiments, the dielectric fluid is pumped through

the fluid circulation system in a circuit including, in sequence, the cooling path, the restoring path, and the heat exchange path.

In an example method, the cooling path flows through a fluid tank holding a plurality of computing devices, and the cooling path extends in the fluid tank through a plurality of apertures in a bottom of the fluid tank and upward past the plurality of computing devices so as to receive thermal energy from the plurality of computing devices. In some embodiments, the plurality of computing devices are submerged in the fluid tank. The fluid tank may take the form of the fluid tank **200**, and the plurality of apertures may take the form of the plurality of apertures **240**.

In an example method, the restoring path flows through a collector, and the restoring path extends through a collector inlet into a first cavity of the collector, from the first cavity of the collector through a plurality of perforations in a plate into a second cavity of the collector, and from the second cavity of the collector to a collector outlet. In some embodiments, bubbles in the dielectric fluid rise in the first cavity and flow out of the restoring path. Further, in some embodiments, a cross-sectional area of the first cavity at an opening of the collector inlet is substantially greater than a cross-sectional area of the collector inlet so as to reduce a velocity of dielectric fluid entering the collector thereby causing solids in the dielectric fluid to fall in the first cavity and flow out of the restoring path. The collector may take the form of the collector **300**, the collector inlet may take the form of the inlet **310**A, the inlet **310**B, the inlet **310**C, or the inlet **310**D, the first cavity of the collector may take the form of the first cavity **330**A or the first cavity **330**B, the plurality of perforations in a plate may take the form of the plurality of perforations **355**A in the plate **350**A or the plurality of perforations **355**B in the plate **350**B, the second cavity of the collector may take the form of the second cavity **340**, and the collector outlet may take the form of the outlet **320**.

In an example method, the heat exchange path flows through a cooler so as to remove thermal energy from the dielectric fluid. The cooler may take the form of cooler **120**.

The plurality of paths may also include a filtering path. In an example method, the filtering path extends through the first cavity in the collector to a filter chamber in the collector, from the filter chamber of the collector to a filter outlet of the collector, from the filter outlet of the collector to a filtering system, from the filtering system to a filter inlet of the collector, and from the filter inlet of the collector into the second cavity of the collector. The filter chamber may take the form of the filter chamber **360**A or the filter chamber **360**B, the filter outlet of the collector may take the form of the filter outlet **325**A or the filter outlet **325**B, the filtering system may take the form of filtering system **150**, and the filter inlet of the collector may take the form of filter inlet **315**.

IV. Conclusion

Although the disclosure has been described above in connection with specific embodiments, features of one embodiment may be employed with other embodiments as the skilled artisan would recognize, even if not explicitly stated herein.

Examples given above are merely illustrative and are not meant to be an exhaustive list of all possible embodiments, applications, or modifications of the disclosure. Thus, various modifications and variations of the described apparatus, system, and methods will be apparent to those skilled in the art without departing from the scope and spirit of the disclosure.

Any numerical values recited herein include all values from the lower value to the upper value in increments of one unit provided that there is a separation of at least two units between any lower value and any higher value. As an example, if it is stated that the value of a variable such as, for example, size, length, flow rate and the like, is, for example, from 1 to 90, specifically from 20 to 80, more specifically from 30 to 70, it is intended that values such as 15 to 85, 22 to 68, 43 to 51, 30 to 32, etc. are expressly enumerated in this specification. For values which are less than one, one unit is considered to be 0.0001, 0.001, 0.01 or 0.1 as appropriate. These are only examples of what is specifically intended and all possible combinations of numerical values between the lowest value and the highest value enumerated are to be considered to be expressly stated in this application in a similar manner.

The invention claimed is:

1. A fluid circulation system for cooling a plurality of computing devices with a dielectric fluid, the fluid circulation system comprising:

a fluid tank comprising a bottom having a plurality of apertures for receiving the dielectric fluid, wherein the fluid tank is configured to hold the plurality of computing devices with a first computing device of the plurality of computing devices disposed over a first group of the apertures of the plurality of apertures;

a cooler configured to receive the dielectric fluid and remove thermal energy from the dielectric fluid; and

a collector comprising:

a first cavity,

a second cavity,

a plate separating the first cavity from the second cavity, wherein the plate is disposed at an angle such that a portion of the first cavity is positioned above a portion of the second cavity, and wherein the plate includes a plurality of perforations that provide fluid access for moving the dielectric fluid from the first cavity to the second cavity,

a collector inlet that opens into the first cavity and is configured to supply the dielectric fluid into the collector, and

a collector outlet,

wherein the fluid tank, the cooler, and the collector are fluidly connected in a fluid circuit.

2. The fluid circulation system of claim **1**, wherein a first fluid path through the collector extends from the collector inlet, through the first cavity, through the plurality of perforations of the plate, through the second cavity, and to the collector outlet.

3. The fluid circulation system of claim **2**, wherein a cross-sectional area of the first cavity at an opening of the collector inlet is greater than a cross-sectional area of the collector inlet so as to reduce velocity of the dielectric fluid entering the collector.

4. The fluid circulation system of claim **3**, wherein the collector further comprises a filtering chamber disposed under at least a portion of the first cavity and below the collector inlet.

5. The fluid circulation system of claim **4**, wherein a second fluid path through the collector extends from the collector inlet, through the first cavity, through the filtering chamber, and to a filter outlet.

6. The fluid circulation system of claim **5**, wherein the filter outlet is coupled to a filter, and wherein the filter is

coupled to a return configured to return the dielectric fluid to the second cavity of the collector.

7. The fluid circulation system of claim **2**, wherein a majority of the plurality of perforations of the plate are disposed above the collector inlet so as to direct the dielectric fluid in the first cavity upward and promote bubble dissipation in the first cavity.

8. The fluid circulation system of claim **1**, wherein one perforation of the plurality of perforations of the plate is smaller than one aperture of the plurality of apertures of the bottom of the fluid tank.

9. The fluid circulation system of claim **1**, further comprising a pump configured to circulate the dielectric fluid through the fluid circuit.

10. The fluid circulation system of claim **9**, wherein the pump is disposed between the collector and the cooler.

11. The fluid circulation system of claim **1**, wherein the collector further comprises:

a third cavity,

a second plate separating the third cavity from the second cavity, wherein the second plate is disposed at an angle such that a portion of the third cavity is positioned above a portion of the second cavity, and wherein the second plate includes a plurality of perforations that provide fluid access for moving the dielectric fluid from the first cavity to the second cavity, and

a second collector inlet that opens into the third cavity.

12. The fluid circulation system of claim **11**, wherein the fluid tank is one of a plurality of fluid tanks including a second fluid tank, and wherein a circulation path through the fluid circulation system comprises, in sequence, the plurality of fluid tanks, the collector, and the cooler.

13. The fluid circulation system of claim **11**, wherein the second collector inlet is opposite the collector inlet.

14. The fluid circulation system of claim **11**, wherein the plate and the second plate are oriented at opposite angles over the second cavity, and wherein an upper end of the second plate contacts an upper end of the plate.

15. The fluid circulation system of claim **1**, wherein the fluid tank has an open volume.

16. A method of cooling a plurality of computing devices in a fluid circulation system, the method comprising:

pumping a dielectric fluid through the fluid circulation system such that the dielectric fluid flows along a plurality of paths through portions of the fluid circulation system, the plurality of paths including:

a cooling path flowing through a fluid tank holding the plurality of computing devices, the cooling path extending into the fluid tank through a plurality of apertures in a bottom of the fluid tank and upward past the plurality of computing devices so as to receive thermal energy from the plurality of computing devices;

a restoring path flowing through a collector, the restoring path extending through a collector inlet into a first cavity of the collector, from the first cavity of the collector through a plurality of perforations in a plate into a second cavity of the collector, and from the second cavity of the collector to a collector outlet; and

a heat exchange path flowing through a cooler so as to remove thermal energy from the dielectric fluid.

17. The method of claim **16**, wherein the dielectric fluid is pumped through the fluid circulation system in a circuit including, in sequence, the cooling path, the restoring path, and the heat exchange path.

18. The method of claim **16**, wherein the plurality of computing devices are submerged in the fluid tank.

19. The method of claim **16**, wherein bubbles in the dielectric fluid rise in the first cavity and flow out of the restoring path.

20. The method of claim **16**, wherein a cross-sectional area of the first cavity at an opening of the collector inlet is greater than a cross-sectional area of the collector inlet so as to reduce velocity of the dielectric fluid entering the collector thereby causing solids in the dielectric fluid to fall in the first cavity and flow out of the restoring path.

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IN THE UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

In re:	§	Chapter 11
	§	
RHODIUM ENCORE LLC, *et al.*,[1]	§	Case No. 24-90448 (ARP)
	§	
Debtors.	§	
	§	(Jointly Administered)
	§	

ORDER GRANTING DEBTOR'S SUMMARY JUDGMENT MOTION IN SUPPORT OF AMENDED OMNIBUS OBJECTION TO CLAIM NUMBERS 004, 062, AND 068-072 FILED BY MIDAS GREEN TECHNOLOGIES LLC

Upon the *Debtors' Summary Judgment Motion in Support of Amended Omnibus Objection to Claim Numbers 004, 062, and 068-072 Filed by Midas Green Technologies LLC* filed by Debtors on July 29, 2025, in the above-captioned chapter 11 cases; and the Court having jurisdiction to decide the Motion and the relief requested therein pursuant to 28 U.S.C. § 1334(b); and consideration of the Motion and the requested relief being a core proceeding pursuant to 28 U.S.C. § 157(b); and venue being proper before the Court pursuant to 28 U.S.C. §§ 1408 and 1409; and after due deliberation and sufficient cause appearing therefor,

IT IS HEREBY ORDERED AND DECLARED THAT:

Debtors' Motion for Summary Judgment is GRANTED; Midas' claims are DISMISSED.

Dated:_____, 2025

Alfredo R. Pérez
United States Bankruptcy Judge