UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TRANE U.S. INC.,
Petitioner

v.

SEMCO, LLC,
Patent Owner.

Case IPR2018-00514
Patent 6,199,388 B1

PATENT OWNER
SEMCO, LLC'S SUR-REPLY TO PETITION

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I. INTRODUCTION

The Institution Decision (Paper 12, p. 7) contains fundamental claim construction errors regarding the term "exhaust air stream." If not corrected, these errors will lead to reversal by the Federal Circuit.

SEMCO urges the Board to adopt the Western District of Missouri's ("WDMO") claim construction ("*Markman* Order", Exh. 2003), which presents the correct District Court-type construction for all the Challenged Claims terms - **except for "exhaust air stream".** SEMCO's Response (pp. 10 *et seq*.) shows that the construction of "exhaust air stream" is now in dispute and requires further construction by the Board to resolve this dispute. Yet, page 1 of TRANE's Reply states, "SEMCO should be estopped from changing its construction." This ignores that a dispute has arisen that was not before the WDMO, namely - construction of the flow path of the "exhaust air stream". Case law is clear that if such a dispute arises, it must be resolved by the court or, here, by the Board. This obviates TRANE's "estoppel" argument.

TRANE argues, "The 'flowpath' dispute is not new: it was at issue in the WDMO Litigation." (Reply, p. 3). However, the only issue before the WDMO concerning the "exhaust air stream" was its **source**. Now, because of TRANE's footnote 3 on page 54 of the Petition, there is a clear dispute as its **flowpath**. Footnote 3 asserts: "The Challenged Claims also do not require that the exhaust air

stream **go through the wheels in any particular order**, only that the TER device be 'in contact with' and the dehumidification wheel be 'positioned to rotate through' the exhaust air stream." (emph. added). Because TRANE's construction is broader than the Specification, it improperly broadens "exhaust air stream" so that the claims read on prior art.

The proper construction of "exhaust air stream", in view of the Specification (*see* the '388 Patent, Exhs. 1001–0018-0019 at 17:62-64; 1834–38; 196–10, and Figs. 3A–3E) should be no broader than "***an unbroken flow of unheated air drawn from the controlled space and may additionally include air drawn from a variety of other sources that flows serially through a portion of the dehumidification wheel and then through a portion of the total energy recovery device***".

TRANE argues that "Meckler has an exhaust air stream". (Reply, p. 14). However, in order to succeed in this IPR, TRANE must broaden the meaning of "exhaust air stream" to follow TRANE's footnote 3, which states that the "exhaust air stream" need not go through the wheels in any particular order. Yet, the '388 Patent Specification clearly states that, "After passing through the dehumidification wheel 16, the exhaust air 20b is cooled and humidified to approximately 71°F and 80 grains, ***and is then*** introduced to the exhaust air side of the total energy recovery device 12." (emph. added.) As shown by the bold type

words, the "exhaust air stream" passes first through the dehumidification wheel and then through the total energy recovery ("TER") device. TRANE's construction is therefore impermissibly overbroad.

If "exhaust air stream" is properly construed to be no broader than the '388 Patent Specification and drawings, none of the Challenged Claims are anticipated or rendered obvious by the prior art.

II. TRANE Only Argues That The WDMO Construction Of "exhaust air stream" Is Correct, But TRANE Does Not Acknowledge Or Rebut That There Is Now A Dispute Concerning Construction Of " exhaust air stream" Such That The Term Must Now Be Construed.

The WDMO construction dispute regarding "exhaust air stream" is succinctly shown in the summary on page 10 of the Court's *Markman* Order (Exh. 2003-10):

F. "exhaust air stream"(all asserted claims)

SEMCO's Proposed Claim Construction	Huntair's Proposed Claim Construction
The term "exhaust air stream" would be understood by one of ordinary skill in the art in the context of the Fischer Patent to mean air drawn from the controlled space or from a variety or other sources	should be construed as used in the patent to mean *a stream of air comprising air exhausted from the controlled space*

(*See* Exh. 2003–10).

As can be seen, the dispute in the prior WDMO ("Huntair") litigation regarding the "exhaust air stream" only involved the **source**, not the **flowpath**, of the "exhaust air stream". This contradicts TRANE's assertion on page 3 of its

Reply that "[t]he flowpath dispute is not new". The dispute in the Huntair litigation referred to on pages 4 and 5 of TRANE's Reply concerned the phrase "system for controlling" in the preambles of various Claims - not the flowpath of the "exhaust air stream". (*See* Exh. 2003-006). In other words, Huntair argued that the claims should be construed so that if an accused unit lacked "controls", it would not infringe. This did not concern the "flowpath".

Moreover, to overcome the clear disclosure as to how the claim term "exhaust air stream" was construed by the WDMO in the prior Huntair litigation, TRANE relies on statements made in the Huntair litigation by Huntair's expert and by Mr. Fischer. (Reply pp. 3-5). Such statements are "extrinsic" evidence. Further, the "preferred embodiment" dispute in the Huntair *Markman* proceeding was directed to the issue of the specification describing controls for adjusting the rotational speed of the dehumidification wheel and controls for controlling the output of the cooler. The WDMO stated that Huntair's proposed construction was contrary to the "claim differentiation" doctrine that prohibited "importing limitations from dependent claims into an independent claim." (*See* Exh. 2003–006, -007). The WDMO further stated: "if the Court adopted defendant's instruction, many of the patent's dependent claims (such as claims 16–20, and 26–30, which had control limitations) would be superfluous." (*Id.* at –007). So, TRANE's arguments as to reference to the preferred embodiment's being

incorporated into the claims with regard to the claim term "exhaust air stream" are misdirected and misleading.

However, TRANE's arguments regarding statements made in the Huntair case are based on extrinsic evidence. As the Federal Circuit has stated" "We have viewed extrinsic evidence in general as less reliable than the patent and its prosecution history in determining how to read claim terms, for several reasons." *Phillips v. AWH Corp.,* 415 F.3d 1303, 1318 (Fed. Cir. 2005).

TRANE contends that SEMCO's claim construction runs afoul of the doctrine of judicial estoppel, citing *SanDisk Corp. v. Memorex Prods.,* 415F.3d 1278, 1290 (Fed. Cir. 2005.) (Reply at 4-5). However, *SanDisk* does not support TRANE's proposition. Indeed, the *SanDisk* Court affirmed the trial court's refusal to apply that doctrine, for reasons that equally apply here.

Notably, TRANE's quotation from *SanDisk* (Reply p. 4) omits pertinent language (highlighted as follows), i.e., "—or at a later phase of the same proceeding—***against one who relied upon the earlier position***." *SanDisk* 415 F.3d at 1290 (emph. added). Of course, Trane did not rely upon SEMCO's earlier position. Moreover, in *SanDisk,* the Court, at 1290-1290, noted that the accused infringer's estoppel argument "loses force" under a proper analysis of the factors set forth by the Supreme Court, namely: "(1) the party's later position must be 'clearly inconsistent' with the earlier position; (2) the party must have succeeded in

persuading a court to adopt the earlier position in the earlier proceeding; and (3) the courts consider 'whether the party seeking to assert an inconsistent position would derive an unfair advantage or impose an unfair detriment on the opposing party if not estopped.'" *New Hampshire v. Maine,* 532 U.S. 742, 751 (2001).

Under this proper review, the *SanDisk* Court concluded that SanDisk "never advanced a claim construction that was 'clearly inconsistent' with the partitioning analysis discussed above." *SanDisk* 415 F.3d at 1290. As noted earlier, the arguments concerning "preferred embodiment" in the Huntair litigation involved whether or not the claims require the presence of controls for the speed of the dehumidification wheel and cooler. Thus the only issue of construction before the Huntair Court regarding the "exhaust air stream" concerned the source of the exhaust air, and not its flow path. Thus, just as in *SanDisk*, SEMCO's position in the Huntair litigation is not "clearly inconsistent" with SEMCO's position here.

Further, the *SanDisk* Court found that, "the equities do not favor applying judicial estoppel to prevent claim construction arguments after preliminary injunction." *Id.* at 1291. The *SanDisk* Court noted: "the law provides, for example, that the trial court is free to revisit an initial claim construction adopted for preliminary injunction, recognizing that a preliminary construction made without full development of the record or issues should be open to revision." *Id.* (citing with approval, *Gillette v. Energizer Holdings, Inc.* 405 F.3d 1367, 1375 (Fed. Cir.

2005)). "After discovery the Court expects the parties to refine the disputed issues and learn more about the claim terms and technology, at which point a more accurate claim construction can be attempted." *Id.* The *SanDisk* Court concluded that: "Applying judicial estoppel here would subvert the useful function of pre-trial discovery and motion practice in focusing issues for trial." *Id*. These same considerations apply here, which preclude Trane's asserted estoppel against SEMCO's accurate claim construction.

In the Huntair litigation, the proceeding had only advanced to the initial *Markman* hearing - i.e., before any depositions were taken in the case. Hence, SEMCO has every right to present its refined claim construction in this proceeding[1]. It was therefore not only understandable and allowable for SEMCO to now refine its claim construction, it was "expect[ed]".

TRANE's reference to Huntair related documents are of a general nature rather than to the specific claim language in issue here. For example, reference to and introductory part of SEMCO's Initial Pre-Markman Brief in Huntair, Exhibit 1022, is unsound (*See* Reply at p. 6). Exhibit 1022, pp. 19–23 shows that the discussion was related to whether to adopt Huntair's claim that required the presence of controls for controlling the speed of the dehumidification wheel and

[1] Trane falsely asserts that SEMCO's refined claim construction is presented "*solely because [SEMCO's] interests have changed*." (Reply, p. 5). Such hyperbole is undermined by the facts and law, and should be ignored.

output of the cooler, and whether the preferred embodiment described in the specification as having such controls, should be read into the independent claims. With regard to construction of the term "exhaust air stream," the discussion was directed to the source of air drawn into the "exhaust air stream", not its flow path. *Id.* at 1022, p. 25. Similarly, Huntair's expert's Markman testimony was not directed to the exhaust flow path, but to the "TER device" and "cooler", and the controls issue. Exhibit 1026, 123 – 127.

"When the parties raise an actual dispute regarding the proper scope of these claims, the court [here, the Board], not the jury, must resolve that dispute." *O2 Micro Intern. Ltd. v. Beyond Innovation Technology Co., Ltd.,* 521 F.3d 1351, 1360 (Fed. Cir. 2008). "District courts may engage in a rolling claim construction, in which the court revisits and alters its interpretation of the claim terms as its understanding of the technology evolves." *Jack Gutman, Inc. v. Kopykake Inters.,* 302 F.3d 1352, 1361 (Fed. Cir. 2002). Now, because of the construction proffered by TRANE in footnote 3, the Board must construe the **flowpath** of the "exhaust air stream".

TRANE's reliance on the "recirculation damper" 21 depicted in Fig. 3A of the '388 Patent is misplaced and does not undermine SEMCO's "unbroken flow" construction for "exhaust air stream". Challenging this construction, TRANE points to an undefined, undescribed and unclaimed component depicted in just one

of the numerous patent drawings, and then argues that this feature somehow proves the "exhaust air stream" is not "unbroken." (Reply pp. 7-8). TRANE's argument is strained at best. This "recirculation damper" (No. 21 in Fig. 3A) is positioned in the partition between the supply and exhaust air streams. Yet, the '388 Patent Specification does not describe, or even mention in passing, the element labeled "21" in Fig. 3A, or refer to any such damper.

Inventor John Fischer did state during his deposition that a recirculation damper such as "21" in Fig. 3A *when added to the claimed system and when open* would allow the exhaust and supply air to mix. However, TRANE then jumps on this statement - calling it "key" - and conflates this "recirculation damper" (21, Fig. 3A) into an ever-open component that perpetually mixes the two air streams, and rolls that into an argument that the '388 Patent somehow shows the claimed "exhaust air stream" can be "broken". (Reply, pp. 7-8). This is simply not the case. Rather, Mr. Fischer explains that if a recirculation damper is present in a system, it is nearly always closed and only opened very infrequently:

> 20 So for some very small percentage of the
> 21 overall operating times, in some cases, it might be
> 22 beneficial to recirculate a small amount of the return
> 23 back into the unit and reduce the amount of outside
> 24 air and make the system hypothetically more efficient,
> 25 as one example. There are other examples. You build
>
> 1 a new building, and you get ready to occupy it, and
> 2 the building doesn't have any heating in it, you want

> 3 to warm the building up, you don't care about
> 4 ventilation, you can just simply recirculate the air
> 5 and heat it up.

(Exh. 1027, 60:20-61:5). Hence, the '388 Claims cover the conditions in which there is no recirculation damper or if present, is closed.

Similarly, TRANE points to the Specification language stating the "exhaust air stream" may comprise air "from a variety of other sources", for the proposition that such air could enter the "exhaust air steam" anywhere. (Reply, p. 7). TRANE argues that, "The patent does not state where these should enter the exhaust air steam." (*Id.*). This is no more than a "bootstrap." TRANE fails to mention that the Specification does not describe air added to the "exhaust air stream" other than at its source. Hence, a PHOSITA would reasonably conclude that for the patent claims, any air in the "exhaust air stream" other than controlled space air would be added before reaching the dehumidification device (wheel). Thus, again, SEMCO's construction of an "unbroken" air flow is accurate and appropriate.

III. TRANE's Argument That SEMCO Is Attempting To "Read-In" Limitations From the Spec Into the Claims Is Incorrect - It Is TRANE's Footnote 3 Construction That Improperly Expands The Scope Of The Claims Beyond The Specification.

The *TF3* case is controlling here. "Above all, the broadest reasonable interpretation must be reasonable ***in light of the claims and specification.***" *TF3 Limited v. TRE Milano, LLC,* 894 F.3d 1366, 1371 (Fed. Cir. 2018) (emph. added);

"A construction that is unreasonably broad and ***which does not reasonably reflect the plain language and disclosure will not pass muster***", *Id.* (emph. added); and "***it is not reasonable to read the claims more broadly than the description in the Specification, thereby broadening the claims to read on the prior art over which the patentee asserts improvement***." *Id.* at 1373-74 (emph. added). Yet, that is exactly what TRANE's footnote 3 construction does – it broadens the claims beyond what is disclosed in the Specification.

Page 3 of TRANE's Reply states that in the Huntair litigation "SEMCO argued that [the WDMO]construction was correct." But, the WDMO construction of the "exhaust air stream" only addressed the **source** of the "exhaust air stream", not its **flowpath**. Here, TRANE must broaden the construction of the flowpath of the "exhaust air stream" beyond what is disclosed in the Specification in order to make the prior art relevant to the Challenged Claims. Contrary to TRANE's assertions, SEMCO is not attempting to add limitations from the Specification into the claims.

The Board's assertion in the Institution Decision (page 7) that "Neither the claim language nor the specification supports SEMCO's belated attempt to introduce a particular order or sequence for the flow path of the exhaust air through the two wheels" is factually wrong. It is TRANE's overly broad construction of the flowpath for the "exhaust air stream" that is not described in the '388 Patent.

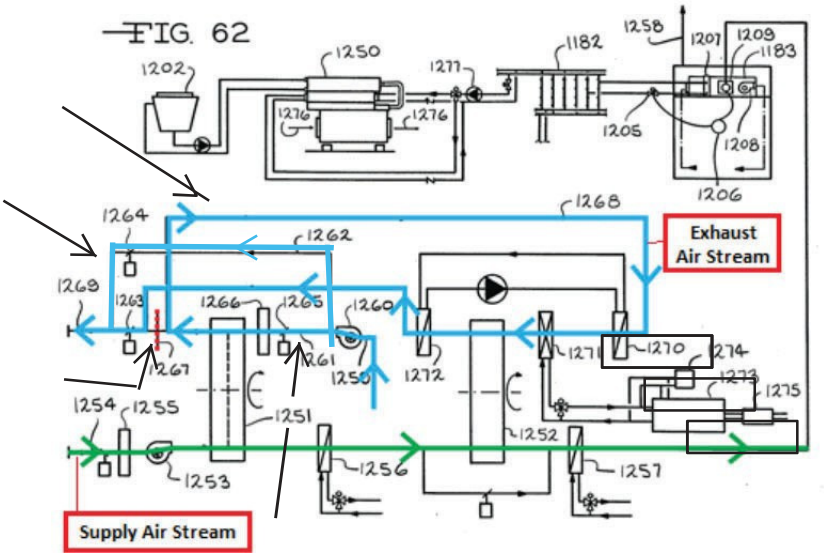
The only drawings of the '388 Patent (Exh. 1001) that show the flowpath of the "exhaust air stream" are Figs. 3A–3E, and the only description in the Specification is at Columns 16–19 where the flowpaths of Figs. 3C–3E are described. There, in regard to the flowpath of Fig. 3C, it is explicitly stated that "***After passing through the dehumidification wheel 16***, the exhaust air 20b is cooled and humidified to approximately 71° F. and 80 grains, ***and is then introduced to the exhaust air side of the total energy recovery device 12***." (Exh. 1001, 17:61 - 64) (emph. added). Similar descriptions are provided describing the flowpaths of Figs. 3D and 3E at Exh. 1001, 18:34–38 and 19:6-8. This agrees with the flowpath of the "exhaust air stream" shown in Figs. 3A–3E. There is no statement or teaching in the Specification that describes a different flowpath for the "exhaust air stream" or that supports TRANE's construction that "The Challenged Claims also do not require that the exhaust air stream **go through the wheels in any particular order**, …".

Contrary to TRANE's assertion on page 8 of its Reply that "SEMCO has not explained why the Board should not start with the *Markman* order", SEMCO has explained in detail why the WDMO's construction of "exhaust air stream" is deficient – it is because the WDMO only construed the **source** of the "exhaust air stream", not its **flowpath**, which is here in dispute.

Accordingly, in accord with *TF3*, the proper construction of the flowpath of the "exhaust air stream" is air "… ***drawn from the controlled space and may additionally include air drawn from a variety of other sources that flows serially through a portion of the dehumidification wheel and then through a portion of the total energy recovery device***". The proper proposed term "***an unbroken flow of unheated air"*** will be discussed below.

IV. In Order for TRANE's Claim Construction Of The "Exhaust Air Stream" To Read On Meckler, It Must Be Sufficiently Broad That It Can Be Broken Apart Such That Only A Portion Of The Exhaust Airstream That Passes Through the TER Device Passes Through the DH Wheel And Such That None Of The Heated Air Passing Through the DH Wheel Passes Through the TER Device.

As shown in Fig. 62 of Meckler (Exh. 1003-0055), below, the flow path of the exhaust air (blue) is both "broken" and is "heated" - thus describing a exhaust air flowpath that is quite different from the '388 Patent.



The blue exhaust air in Meckler is broken or bifurcated at least twice such that only Portion 4 loops back to the dehumidification wheel 1252, where it is heated to an elevated temperature and passed through the wheel. However, the heated exhaust air from the dehumidification wheel is vented to the atmosphere without passing through the TER device 1251. Moreover, the exhaust air in Meckler does not flow serially from the dehumidification wheel and then through the TER device.

As stated on page 30 of SEMCO's Response: "If this elevated temperature and high humidity exhaust air stream discharged from the dehumidification wheel 1252 of the Meckler system flowed serially from the dehumidification wheel 1252 to the desiccant TER device 1251 of the Meckler system [as required by a properly construed Claim 1 of the '388 Patent], it **would be rendered effectively inoperable because**, due to the elevated temperature and humidity of the exhaust air stream, the device 1251, the Meckler system would not be able to effectively transfer heat and moisture between the supply and exhaust air streams, as required by Claim 1." (Exh. 2001, ¶ 84; *see also id. at* ¶¶ 64-69, 101-106). TRANE has offered no argument to rebut the fact that such an exhaust air stream would render the claimed system effectively inoperable. *U.S. v. Adams*, 383 U.S. 39, 50 (1966) (prior art reference must be operable in order to anticipate).

Thus, in order for TRANE to read the exhaust flowpath of Meckler Fig. 62 on the Challenged Claims, "exhaust air steam" must be construed broad enough to be both broken and heated. However, there is no disclosure in the Specification that teaches or discloses such an "exhaust air stream".

Thus, it is respectfully submitted that the proper construction of "exhaust air stream", which is now in dispute, must be: "***an unbroken flow of unheated air drawn from the controlled space and may additionally include air drawn from a variety of other sources that flows serially through a portion of the dehumidification wheel and then through a portion of the total energy recovery device***".

V. Meckler Does Not Anticipate or Render Obvious Any Of The Challenged Claims.

If the Board adopts SEMCO's proffered construction of "exhaust air stream", Meckler, TWDS (Exh. 1005), TDDS (Exh. 1006) and the common knowledge of a PHOSITA do not anticipate or render obvious any Challenged Claims.

Meckler Fig. 62 does not anticipate because the elements of Meckler are not "arranged as in" the Challenged Claims, as required by *Net MoneyIn v. Verisign, Inc.,* 545 F.3d 1359, 1369 (Fed. Cir. 2008). TRANE offers no argument that

Meckler anticipates or renders obvious the Challenged Claims if "exhaust air stream" is construed to be no broader than the Specification.

TRANE argues that "using a passive dehumidification wheel would have been obvious". (Reply, p. 16). However, none of the prior art references disclose or teach a passive dehumidification wheel. As attested to by Mr. Fischer, if heated air would be passed through the '388 Patent's dehumidification wheel 16 and then through the TER device 12, the system described by the claims would be rendered effectively inoperable. (Exh. 2001, ¶ 84; see also *id.* at ¶¶ 64-69, 101-106).

VI. TRANE's Obviousness Ground 2 (Meckler Fig. 62 In View Of The "Common Knowledge" Of A PHOSITA) Does Not Render The Challenged Claims Obvious Because TRANE Has Not Shown The Requisite "factual foundation" To Establish Motivation Combine.

Again, TRANE's obviousness argument is predicated on an overly broad construction of "exhaust air stream" that includes heated exhaust air. At page 16 of its Reply, TRANE argues that the WDMO *Markman* order (Exh. 2003-0012) stated that a dehumidification wheel is one "that removes latent energy (moisture) from one air stream and transfers this latent energy to another airstream". TRANE further argues that the WDMO found that a TER device was "any device that removes sensible energy (temperature) and latent energy (moisture) from one air stream and transfers this sensible and latent energy to another stream." (*Id.)* However, TRANE fails to recognize that the WDMO was relying on the flow path

of the "exhaust air stream" shown in Figs. 3A–3E and described in the '388 Patent Specification. As pointed out above, the system described by the Challenged Claims would be effectively inoperable if the "exhaust air stream" were heated before it passed through the dehumidification wheel and then through the TER device. The prior art lacks any disclosure or teaching of an effectively operable dehumidification wheel that uses only room temperature exhaust air to regenerate, or of a TER device that is effectively operable if heated exhaust air is passed therethrough.

TRANE's statement on page 17 of its Reply is most telling. This statement reads "***With proper constructions***, Meckler teaches the use of a passive dehumidification wheel." (emph. added). This statement clearly shows that TRANE's arguments are based on the construction of footnote 3, because the prior art does not teach a passive dehumidification wheel. As shown above, such a construction is not supported by the Specification and thus is improper because it is overbroad.

Page 18 of TRANE's Reply further states that, "Accordingly, a desiccant-based wheel used with the addition of heat may be the same wheel as one that is used without." However, TRANE fails to mention that if an active dehumidification wheel is used that requires heated air for regeneration, then the post-operative cooling coil 1257 in the supply air stream downstream of the

dehumidification wheel - as shown in Fig. 62 of Meckler - must be used in order to sufficiently cool the heated air so that when discharged into the controlled space, a desired temperature is achieved. The prior art does not teach any system for controlling the temperature and humidity of a controlled space that does not require the use of such a post-operative cooling coil. Moreover, the prior art fails to teach any such system where both the dehumidification wheel and the TER device are regenerated by room temperature exhaust air, all as in the '388 Patent.

At page 20 of its Reply, TRANE attempts to bootstrap comments from Mr. Fischer's deposition concerning his motivation for developing the claimed invention into some motivation for a PHOSITA to modify Meckler to result in the claimed invention. Mr. Fischer's testimony does not support this. As he explained:

> 18 So they [referring to a building designer using the patented system] optimize the product that at
> 19 50 percent relative humidity, air flow passing through
> 20 the passive dehumidification wheel, going
> 21 countercurrent to the air leaving the cooling coil,
> 22 the pre-cooling coil, provides the effective
> 23 dehumidification necessary. That's the **magic sauce**,
> 24 if you will, is understanding the overall system and
> 25 **the motivation that I had for the system**. …
> 5 **The motivation for the '388 patent was**
> **6 finding a way to bring high percentages of outside air**
> **7 in and provide low dew points, lower than what you get**
> **8 off of the cooling coil, without using post-cooling,**
> **9 without using regeneration heat**. That's the
> 10 motivation.

(*See* Exh. 1027, p. 37-38).

Still further, Mr. Fischer testified that:

> 25 Q Okay. So I think you said once you have
> 1 these motivations of not using the heat, the
> 2 cost/expense motivation, and I guess removing the
> 3 coils, then you testified it was obvious what you need
> 4 is a wheel that can regenerate using just what's
> 5 coming out of the controlled space; right?
> 6 A To myself, yes. This is what my
> 7 objective would be, **if** I could find a way to do this.
> (Exh. 1027, p. 39, emph. added)

So what Mr. Fischer actually testified to was what motivated him to conceive his invention, not to modify Meckler. Still further page 20 of TRANE's Reply asserts that Mr. Fischer "intentionally kept the wheel design a 'trade secret'". However, Mr. Fischer further testified that:

> 5 A **All of the details, but what's**
> **6 strategically in the '388 patent is I provide, as we**
> **7 went over earlier, a mode and then a best mode.** And
> 8 the best mode is to use adsorbents from a class that
> 9 would lend themselves to be regenerated with the
> 10 specific design points that I identified.
> (Exh. 1027, p. 144, emph. added.)

The details disclosed in the '388 Patent regarding the desiccants and the construction of the passive dehumidification wheel 16 are fully disclosed in the Specification. (*See* Exh. 1001, 0014–0015; 10:33–11:24). Thus, the details of the

desiccants and other details for the passive dehumidification wheel 16 were fully disclosed in the Specification.

Moreover, page 20 of TRANE's Reply argues that, "it would have been obvious to modify Meckler to meet the additional limitations". As raised in SEMCO's Response (pp. 34–35), Meckler does not disclose all of the elements of Claim 1 because it does not describe an "exhaust air stream" that is unheated, unbroken, and flows serially from the dehumidification wheel and then through the TER device.

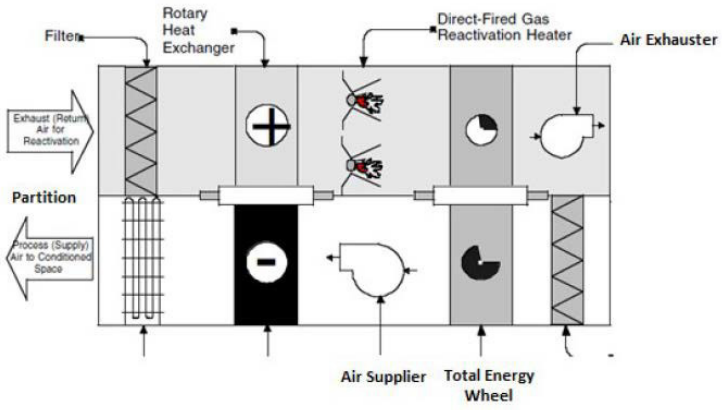
Page 37 of SEMCO's Response points out that, "TRANE's Ground 2 is fatally flawed because it relies only on generalized, conclusory assertions without the requisite showing of a "factual foundation" based upon "explicit and clear reasoning". *See In re Van Os*, 844 F.3d at 1361. TRANE's Petition and Reply fail to provide a sufficient "factual foundation" to support motivation.

VII. TRANE's Ground 3 Fails Because TWDS (Exh. 1005) Does Not Disclose The Elements Of The Challenged Claims Missing From Meckler, Fig. 62.

As pointed out on pages 47 and 48 of SEMCO's Response, "TRANE makes a significant misrepresentation as to the identity of a key component of TWDS (Exh. 1005). Specifically, at page 63 of the Petition and at page 133 of Mr. Acorn's Declaration (Exh. 1002, ¶¶ 260–262), TRANE and Mr. Acorn mislabel the lower-right component in the Figure from Exh. 1005-007 of TWDS as a "Total

Energy Wheel", when it is in fact an *active dehumidification wheel*. (Exh. 2001, ¶ 146, Exh. 2035, ¶ 30)." Now, at pages 22 and 23 of TRANE's Reply, TRANE argues that "Petitioner does not rely upon TWDS for the 'missing' components, as SEMCO implies, but upon the particular configuration of TWDS – particularly the dual wheel, counterflow 'unbroken' air streams." Yet, again, on page 23, TRANE reinserts the diagram from TWDS that mislabels the active dehumidification wheel (as is apparent because upstream of this wheel the exhaust air is heated by "Direct-Fired Gas Reactivation Heaters"). It is only with TRANE's overbroad construction that this active dehumidification wheel can be viewed as a "Total Energy Wheel", as in the diagram below.

Additionally, the other wheel of TWDS is shown to be a Rotary Heat Exchanger, which in TWDS is referred to as "a sensible heat wheel." (*See* Exh. 1005–007). A PHOSITA would know that a sensible heat wheel had no desiccant because it only transfers temperature and not moisture between the two air streams.



There is no disclosure in TWDS (Exh. 1005) that would teach a PHOSITA to replace or reposition these components. Still further, the cooling coil in the TWDS supply air stream is a post-operative cooling coil that the '388 Patent eliminates.

Accordingly, Ground 3 does not render the Challenged Claims obvious.

VIII. TRANE's Ground 4: TWDS (Exh. 1005) in View of TSDD (Exh. 1006) Does Not Render The Challenged Claims Obvious.

While TSDD discloses an "enthalpy wheel" and a "cooler", as shown in Fig. 2, a system combining TWDS and TSDD would still lack an unheated "exhaust air stream" that passes serially first through a dehumidification wheel and then through a TER wheel, as required by the properly construed claims. Without TRANE's overbroad construction, this combination fails to render the Challenged Claims obvious.

IX. Definition of PHOSITA And Objective Evidence Of Non-Obviousness.

TRANE objects to SEMCO's incorporation by reference of SEMCO's PHOSITA definition, and secondary consideration arguments that were presented in the POPR. SEMCO now includes these arguments based upon the previously presented evidence.

TRANE cites no authority that SEMCO's definition of a PHOSITA and secondary consideration evidence were waived. Because this evidence was part of

the POPR and supported by the testimony of Mr. Fischer (*See* Exhs. 2001, 2002), this does not constitute new evidence and there is no waiver.

1. Definition of PHOSITA.

As stated in ¶30 of the Fischer Declaration (Exh. 2001), "It is my opinion that a person of ordinary skill in the art in the field pertaining to my invention (a "PHOSITA") described in the '388 Patent in 1999 at the time of filing the application for the '388 Patent would have a B.S. degree in Mechanical Engineering and some years of experience in the design and manufacture of HVAC products and components including, but not limited to, TER devices and dehumidification wheels. Alternatively, a PHOSITA could have no college education but several years of mechanical experience in the design and manufacture of such products."

2. "Secondary considerations" are part of the *Graham* factors that must be considered for obviousness.

"Secondary considerations" regarding the '388 Patent constitutes substantial, objective evidence of non-obviousness and must be considered. *See Stratoflex v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983) ("[E]vidence rising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness."). *See also ClassCo, Inc. v. Apple, Inc*., 838 F.3d 1214, 1220 (Fed. Cir. 2016).

3. "Nexus".

A *prima facie* case of "nexus" between "secondary consideration" factors exists when SEMCO's commercial HVAC systems and the systems copied by TRANE and others "embod[y] the claimed features." *ClassCo, Inc. v. Apple, Inc*., 838 F.3d 1214, 1222 (Fed. Cir. 2016). "A *prima facie* case of nexus is generally made out when the patentee shows both that there is commercial success, and that the thing (product or method) that is commercially successful is the invention disclosed and claimed in the patent." *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.,* 851 F.3d 1387, 1392 (Fed. Cir. 1988).

As established by the Claim Charts of the Fischer and Isacson Declarations, SEMCO's *Pinnacle* air handling systems have over the past eighteen or so years been covered by the '388 Patent Claims. (Exh. 2001, pp. 95–98 and ¶ 186). Exh. 2010 points out their advantages that create demand and shows a nexus between the Claims and these advantages. (*See* also Exh. 2001, ¶¶ 185–197).

There has been nearly $100 million in sales of SEMCO's *Pinnacle* systems. (Exh. 2001, ¶¶ 228–230; *see also* Exh. 2001, pp. 103–134; and Exhs. 2011–2033) (establishing that the patented *Pinnacle* systems have "superior and unexpected" results, have solved longstanding problems and satisfied long-felt needs, obtained industry recognition and awards, met initial skepticism, and have been copied by

the TRANE and others). Mr. Fischer also establishes a nexus with the patented systems.

X. CONCLUSION

If TRANE's overbroad construction of the "exhaust air stream" is rejected, the prior art does not anticipate or render obvious any of the Challenged Claims.

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Dated: February 22, 2019 Respectfully Submitted,

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CERTIFICATION UNDER 37 CFR § 42.24(D)

Pursuant to 37 C.F.R. § 42.24(d), I certify that this sur-reply complies with the type-volume limits of 37 C.F.R. § 42.24(b)(1) because it contains 5575 words, excluding the parts of this petition that are exempted by 37 C.F.R. § 42.24(a), according to the word-processing system used to prepare this sur-reply.

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.105, the undersigned certifies that on February 22, 2019, a copy of the foregoing **PATENT OWNER'S SUR-REPLY TO PETITION** was served in its entirety by e-mail to Trane at:

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