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Paper 42
Date: February 26, 2025

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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PERMIAN GLOBAL INC. and MANTICORE FUELS, LLC,
Petitioner,

v.

FUEL AUTOMATION STATION, LLC,
Patent Owner.

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IPR2023-01236
Patent 10,815,118 B2

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Before CARL M. DEFRANCO, RICHARD H. MARSCHALL, and BRENT M. DOUGAL, *Administrative Patent Judges*.

DEFRANCO, *Administrative Patent Judge*.

# JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
*35 U.S.C. § 318(a)*

Fuel Automation Station, LLC ("FAS") is the owner of U.S. Patent No. 10,815,118 B2 (Ex. 1001, "the '118 patent"). Permian Global Inc. and Manticore Fuels, LLC ("Permian") filed a petition for *inter partes* review of claims 1–18 of the '118 patent. Paper 3 ("Pet."). We instituted *inter partes* review of all the claims as challenged in the petition. Paper 11 ("Inst. Dec."). FAS filed a response (Paper 15, "PO Resp."), Permian filed a reply (Paper 27, "Pet. Reply"), and FAS followed with a sur-reply (Paper 30, "PO Sur-Reply"). We held a hearing on December 5, 2024, a transcript of which is in the record. Paper 41 ("Hrg. Tr."). For the reasons below, we determine that Permian demonstrates by a preponderance of the evidence that challenged claims 1–18 are unpatentable as obvious under 35 U.S.C. § 103(a).

## I. BACKGROUND

### *A. Related Matters*

The '118 patent is the subject of a parallel infringement action in *Fuel Automation Station, LLC v. Permian Global, Inc.,* No. 1-22-cv-00801 (W.D. Tex., Aug. 10, 2022). *See* Pet. 1–2. The infringement action is currently stayed pending completion of this proceeding and two related *inter partes* reviews, IPR2023-001237 (US 9,586,805 B1) and IPR2023-001238 (US 10,974,955 B2). *See* Ex. 1038. FAS also informs us of two related patent applications pending before the Office: U.S. Application 17/682,348, filed February 28, 2022, and U.S. Application No. 18/468,342, filed September 15, 2023. *See* Paper 7, 1.

### *B. The Challenged Patent*

The '118 patent is directed to a mobile distribution station that "serve[s] in 'hot-refueling' capacity to distribute fuel to multiple pieces of

equipment while the equipment is running, such as fracking equipment at a well site." Ex. 1001, 1:66–2:4. The distribution station includes a mobile trailer equipped with multiple components, such as pumps, fuel lines, control valves, manifolds, hoses, and hose reels. *See id.* at 2:11–62, Figs. 1, 2. Figure 4, reproduced below, "illustrates an example of a connection between a manifold, a control valve, and a [hose] reel." *Id.* at 1:51–52.

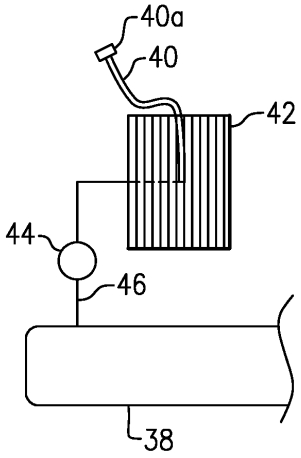



FIG.4

As shown and described, "each hose 40 is *connected to a respective one of the reels 42*." *Id.* at 2:63–64 (emphasis added). Also, "secondary fuel line 46 leads from the manifold 38 *to the reel 42*" and control valve 44 "selectively permit[s] fuel flow from the manifold 38 *to the reel 42* and the hose 40." *Id.* at 2:66–3:3 (emphases added).

*C. The Challenged Claims*

Of the challenged claims, claims 1, 10, and 15 are independent. Claim 1 is illustrative and reproduced below (with Permian's nomenclature added for clarity and emphasis added for limitations in dispute):

1. A distribution station comprising:

[1a] a mobile trailer;

[1b] a pump on the mobile trailer;

> [1c] a manifold on the mobile trailer and connected with the pump;
>
> [1d] a plurality of reels on the mobile trailer;
>
> [1e] a plurality of flow passages, *each said flow passage being connected to the manifold and running through a respective one of the reels*;
>
> [1f] a plurality of hoses, *each said hose being connected with a respective one of the flow passages via a respective one of the reels*;
>
> [1g] a plurality of valves on the mobile trailer, each said valve situated between the manifold and a respective different one of the reels and being operable to control fluid flow through a respective one of the flow passages;
>
> [1h] a plurality of fluid level sensors, each said fluid level sensor being connected or connectable with a respective different one of the hoses; and
>
> [1i] a controller configured to operate the valves responsive to fluid level thresholds to control fluid flow to the hoses.

Ex. 1001, 8:28–48 (emphases and nomenclature added).

Like claim 1, independent claim 10 is directed to a "distribution station" and recites many of the same components, including "a plurality of reels" and "a plurality of hoses," while adding a limitation that "each said hose include[es] a tube and a sleeve that circumscribes the tube" (hereinafter, the "tube and sleeve" limitation) and omitting the limitations of "each said flow passage . . . running through a respective one of the reels" and "each said hose being connected with a respective one of the flow passages via a respective one of the reels" (hereinafter, the "flow passage" limitations). *Id.* at 9:16–24.

Independent claim 15 is also directed to a "distribution station" and appears to combine the limitations of claims 1 and 10 by reciting the "flow

passage" limitations of claim 1 together with the "tube and sleeve" limitation of claim 10. *Id.* at 10:9–15.

*D. The Asserted Challenges*

| Claims Challenged | 35 U.S.C. § | Basis |
|---|---|---|
| 1–3 | 102/103 | Van Vliet[1] |
| 1–3 | 103 | Van Vliet, Coxreels[2] |
| 4–18 | 103 | Van Vliet, Shoap[3] |
| 4–9, 15–18 | 103 | Van Vliet, Coxreels, Shoap |
| 12, 13 | 103 | Van Vliet, Shoap, Hosecraft[4] |

## II. ANALYSIS

*A. Level of Ordinary Skill in the Art*

> Permian submits that one skilled in the art would have had either:
>
> (1) a Bachelor of Science in Mechanical Engineering, Electrical Engineering, Petroleum Engineering or an equivalent field as well as at least 2 years of academic or industry experience in the oil and gas industry, including well drilling, completion, or production, or (2) at least four years of industry experience in the oil and gas industry including well drilling, completion, or production.

Pet. 16–17 (citing Ex. 1003 ¶¶ 75–78). FAS responds that it "does not dispute Petitioner's definition of the level of ordinary skill in the art." PO Resp. 11. Permian's proposed definition appears consistent with the

[1] US 2011/0197988 A1, published Aug. 18, 2011 (Ex. 1004, "Van Vliet").
[2] COXREELS, INC., *Coxreels 1125 Series "Competitor" Hand Crank and Motorized Hose Reels*, https://web.archive.org/web/20140408035634/http://www.coxreels.com/products/hand-crank/1125-series, published Apr. 08, 2014 (Ex. 1005, "Coxreels").
[3] US 7,819,345 B2, issued Oct. 26, 2010 (Ex. 1006, "Shoap").
[4] HOSECRAFT USA, *Clamps Accessories*, https://web.archive.org/web/20130702084457/http:/www.hosecraftusa.com/accessory-category/Hose_Clamps, published July 2, 2013 (Ex. 1007, "Hosecraft").

problems and solutions described in the challenged patent and the prior art of record. As such, we adopt the level of skill in the art as defined by Permian.

*B. Claim Construction*

During the institution phase, the parties disputed the meaning of "*a tube and a sleeve that circumscribes the tube*," as recited in claims 5, 10, and 15. As such, we preliminarily construed the meaning of that claim limitation, agreeing with FAS that it should be construed to mean that "the tube and the sleeve are separate and distinct structures where one 'circumscribes' the other." *See* Inst. Dec. 5–8. In its reply, Permian does not dispute that construction. *See* Pet. Reply 2 ("Petitioners do not dispute the Board's preliminary finding that 'claims 5, 10, and 15 assume physically separate structures for the claimed tube and sleeve.'").

There being no dispute, we maintain the construction set forth in our Institution Decision, which explains that, because the challenged claims recite the tube and sleeve separately, there is a presumption that they are separate and distinct structures absent the specification indicating otherwise. *See Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254–55 (Fed. Cir. 2010) ("Where a claim lists elements separately, the clear implication of the claim language is that those elements are distinct components of the patented invention" where "nothing in the specification" suggests otherwise (internal quotations and brackets omitted)); *HTC Corp. v. Cellular Comms. Equipment, LLC*, 701 Fed. Appx. 978, 982 (Fed. Cir. 2017) ("The separate naming of two structures in the claim strongly implies that the named entities are not one and the same structure," especially where "[t]he specification reinforces the inference."); *Kyocera Senco Indus. Tools*

*Inc. v. Int'l Trade Comm'n*, 22 F.4th 1369, 1382 (Fed. Cir. 2022) ("Nor is there any language in the written description that overcomes that presumption [that the claimed components are distinct]." (citation omitted)).

Here, the specification of the '118 patent does not suggest that the tube and sleeve are anything but physically separate and distinct structures—

> [T]he tube 62 may be a flexible elastomeric tube and the sleeve 64 may be a flexible fabric sleeve. The sleeve 64 is generally loosely arranged around the tube 62, although the sleeve 64 may closely fit on the tube 62 to prevent substantial slipping of the sleeve 64 relative to the tube 62 during use and handling.
>
> * * *
>
> In this example, the [sensor communication] line 66 is routed 40 through the hose 40 between (radially) the tube 62 and the sleeve 64. The sleeve 64 thus serves to secure and protect the line 66, and the sleeve 64 may limit spill and spewing if there is a hose 40 rupture.

Ex. 1001, 5:21–44.

Those descriptions in the specification—(1) that the tube and sleeve are made of different materials, one being "elastomeric" and the other "fabric," (2) that the sleeve is "arranged around" the tube, (3) that a sensor line is routed "between" the tube and sleeve, and (4) that the sleeve "limit[s]" spillage in the event a rupture in the tube—clearly support that the tube and sleeve are physically separate structures such that the sleeve serves as a protective cover for the tube. Nowhere do we discern, nor does Permian explain, where the specification indicates that the tube and sleeve might also be one and the same structure. Thus, in light of the specification, we maintain that the only reasonable construction is that the tube and sleeve, as recited in claims 5, 10, and 15, are separate and distinct structures.

*C. The Challenge of Claims 1–3 Based on Van Vliet Alone*

Permian challenges claims 1–3 as anticipated and/or rendered obvious by Van Vliet. *See* Pet. 23–35. Central to this challenge is whether Permian demonstrates that Van Vliet discloses or otherwise suggests claim elements 1(e) and 1(f), which require that each flow passage "run[s] through" a respective one of the reels and that each hose be connected with the flow passage "via a respective one of the reels." *See* PO Resp. 15–18. For teaching those claim elements, Permian relies on Figure 1 of Van Vliet, as annotated and reproduced below. *See* Pet. 26–28; Pet. Reply 3–4.

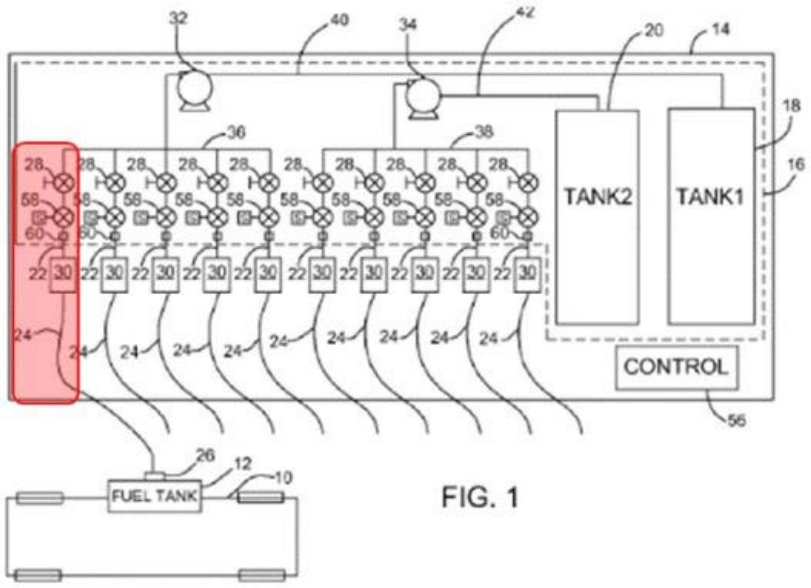



FIG. 1

Annotated Figure 1 is a schematic of Van Vliet's fuel delivery system. According to Permian, annotated Figure 1 "shows that the reel 30 is part of a *single fluid stream* [in red] that includes manifold 36/38, fluid outlet 22, and hose 24" and that one skilled in the art "would have understood that fluid stream to be a 'flow passage' that runs through reel 30." Pet. Reply 3–4; *see also* Pet. 28–29 ("[A] POSITA would have understood that the reel 30 is part of the fluid stream, and, therefore, the flow passage passes through the reel.").

FAS responds that Van Vliet merely indicates the flow passage of the hose as "wrapping around a reel, rather than 'running through' the reel, as claimed." PO Resp. 16. In support, FAS points to Van Vliet's disclosure that hoses 24 are "preferably stored on reels 30" and that each end of the hose is "connected to a fuel outlet 22 by a dry connection 60 and to a cap 26 by a dry connection 62." *Id.* (quoting Ex. 1004 ¶¶ 15, 22). And, as FAS explains, because the ends of the hose "are connected to dry connections 60 and 62, which are not part of the reel," the flow passage of the hose "cannot be connected to the reel," and, thus, "not capable of 'running through' the reel, as required by claim 1." *Id.*

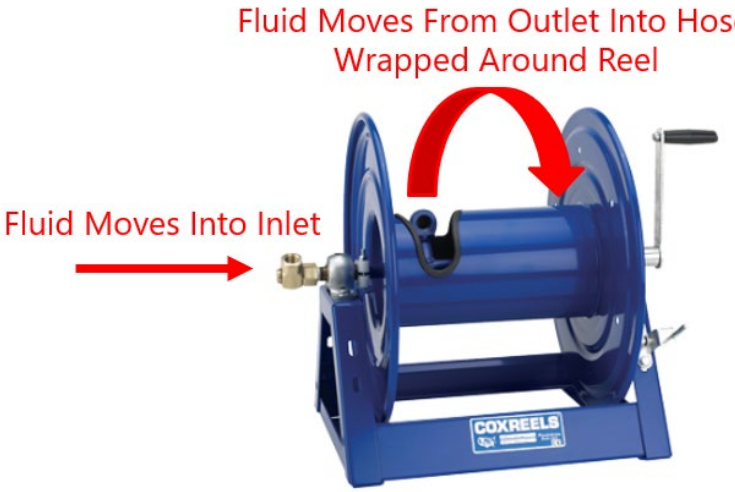
We agree with FAS. Although indisputably the schematic of Van Vliet's fuel delivery system shows the flow passage running through manifolds 36, 38 and hoses 24, nowhere do we discern that Van Vliet definitively discloses or otherwise suggests that the flow passage runs through reels 30, as required by claim 1. Indeed, even Permian's expert acknowledges that Van Vliet's schematic "is a high-level representation and is not intended to depict the physical appearance or form" of the various components. Ex. 1003 ¶ 112 n.146. At best, Van Vliet discloses that "hoses 24 are preferably *stored on reels 30*," but is otherwise silent insofar as any flow stream or passage running through the reels. Ex. 1004 ¶ 15 (emphasis added). Indeed, in order for the reel to be a part of the system's fluid stream, there would need to be some disclosure or suggestion in Van Vliet that hose 24 is actually connected to the reel as opposed to being merely stored on the reel. But there is no such disclosure. To the contrary, Van Vliet explains that "each hose 24 is connected to a fuel outlet 22 *by a dry connection 60* and to a cap 26 *by a dry connection 62*." *Id.* ¶ 22 (emphases added). In

other words, the flow stream through Van Vliet's hose 24 cannot be connected to reel 30 if the ends of the hose are connected to dry connections 60 and 62, which indisputably are not part of the reel. Thus, we reject the notion that Van Vliet's reel 30 is "part of a single fluid stream that includes manifolds 36/38, fluid outlet 22, and hose 24," as Permian surmises from simply looking at Van Vliet's schematic. *See* Pet. Reply 3–4. As such, we find that Permian fails to demonstrate that Van Vliet's discloses or otherwise suggests a flow passage "running through a respective one of the reels" or being connected "via a respective one of the reels," as required by claim elements 1(e) and 1(f).

*D. The Challenge of Claims 1–3 as Obvious Over Van Vliet and Coxreels*

*1. Permian's Evidence of Obviousness*

Anticipating Van Vliet's shortfall, Permian points to Coxreels for teaching claim elements 1(e) and 1(f). *See* Pet. 37–39 (citing Ex. 1005). As annotated by Permian below, Coxreels teaches "a reel for storing hoses that has a built-in 'fluid path.'" *Id.* at 37.




As shown above, Coxreels's reel includes an "open drum slot design" having a "solid brass . . . swivel inlet" projecting into one end of the reel's

drum and a "low profile outlet" projecting out from a slot in the reel's drum. Ex. 1005, 1. According to Permian, "[Coxreels] was a common and well-known design and operation of hose reels at the time of the '118 Patent." *Id.* at 39 (citing Ex. 1003 ¶ 159). With that in mind, Permian asserts that one skilled in the art "would have deemed it obvious to use a hose reel as disclosed in *Coxreels* for the reels in *Van Vliet*, and fluidly connect a manifold 36, 38 of *Van Vliet* via the fluid outlet 22 upstream of the reel body to a hose 24 of *Van Vliet* downstream of the reel body through a flow passage in the reel body of *Coxreels*." *Id.* at 39–40 (citing Ex. 1003 ¶ 160). The reason one skilled in the art would have done so, Permian contends, is two-fold: *first*, "*Coxreels* is in the same field of endeavor as *Van Vliet* (as well as the '118 Patent) and is directed to solving the same problem—using reels to support hoses for use in distributing hydrocarbon liquids," and, *second*, "[one skilled in the art] designing a system of *Van Vliet* would have looked to commercially-available reel components like those described in *Coxreels* . . . as a cost-effective and readily-available option." *Id.* at 35–36.

In response, FAS does not dispute that Van Vliet teaches a plurality of hose reels for a fuel delivery trailer, nor does FAS dispute that Coxreels teaches a hose reel having a built-in flow passage "running through" the reel, as recited by claim 1. *See* PO Resp. 18–27. Instead, FAS disputes only Permian's reason for why one skilled in the art would have combined the teachings of Coxreels with Van Vliet, offering several arguments for why one skilled in the art would not have undertaken to do so. *See id.* We address each of FAS's arguments in turn.

First, FAS argues that Permian's reasoning is deficient because Coxreels's reels were "marketed for the oil industry" and are "not directed in

particular to automated fuel delivery, let alone fuel delivery in fracking." PO Resp. 18. That Coxreels "does not explicitly list automated fuel delivery," as FAS also complains, is of little importance. *Id.* It is error to assume that one skilled in the art "attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem." *KSR Int'l Co. v. Teleflex Inc*., 550 U.S. 398, 420 (2007). Instead, "[c]ommon sense teaches . . . that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* Such is the case with Coxreels—one skilled in the art would have found Coxreels' teachings particularly helpful when viewing the general representation of the hose reel in Van Vliet's fuel delivery system.

More specifically, the express purpose of Coxreels was to address "hose reels hav[ing] the features demanded by industry professionals." Ex. 1005, at 1. Coxreels provides an obvious example of a hose reel having "industry preferred design features" such as a "low-profile outlet riser and open drum slot design [that] provides a non-crimping, flat smooth hose wrap." *Id.* Indeed, as identified in Coxreels, the possible fields of application for hose reels having those features are "[f]arming" and "[a]gricultural [s]praying." *Id.* And, importantly, FAS's expert concedes on cross-examination that one skilled in the art would have considered hose reels from those fields for use in Van Vliet's fuel delivery system. For instance, when asked about "Exhibit 4," a patent that clearly discloses a hose reel for "farm use," in particular, the "storage and transport of heavy-duty agricultural irrigation hoses," FAS's expert admits it is "one example of a patent that a person of skill in the art *who is designing a fueling system*

*would have – at [least] could have become aware of*." Ex. 1049, 36:6–22 (emphasis added); Ex. 1050, at 255 ("Exhibit 4" as considered by FAS's expert on cross-examination). That admission confirms that one skilled in the art viewing Van Vliet's schematic of an industrial hose reel for a refueling system would have been led to apply Coxreels's teachings of a built-in flow passage running through the reel to Van Vliet's refueling system, especially given that Coxreels's reel is expressly designed for use in industrial applications that include farming and agriculture.

Even more persuasive is the fact that Coxreels's reel is expressly designed for use with "OIL" products, which falls squarely within Van Vliet's field of endeavor—"[f]uel delivery." *Compare* Ex. 1035, at 1, *with* Ex. 1004 ¶ 1. Indeed, FAS's expert acknowledges that the fuel contemplated for delivery by Van Vliet's system is "diesel fuel." Ex. 1049, 124:15–21. And, indisputably, oil is a type of diesel fuel. *See* Ex. 2024 ("Standard Specification for *Diesel Fuel Oils*" (emphasis added)). That oil is a diesel fuel would have informed one skilled in the art that Coxreels's reel is particularly suited for a diesel fuel delivery system such as Van Vliet's. Thus, we reject the notion that Coxreels's explicit teaching of using its reel for the transfer and delivery of oil "is too broad to be of practical guidance," as FAS contends. PO Resp. 18.

To the extent FAS argues that one skilled in the art would have found Coxreels's teachings to be "unsuited" or "unacceptable" for use in a fuel delivery system such as Van Vliet's, we are not persuaded. *See* PO Resp. 19–22. According to FAS, one skilled in the art would have found Coxreels's "brass swivel inlets" to be "unsuited" for Van Vliet's fueling system because "copper-containing alloys, i.e., brass (a copper-zinc alloy),

should not be used with fuel" as it "can promote fuel degradation and can produce mercaptide gels" that "could interfere with operation of downstream equipment." *Id.* at 20–21 (citing Ex. 2011 ¶¶ 112, 123–125). Similarly, FAS argues that one skilled in the art would have found Coxreels's "swivel seals . . . made with AFLAS material" to be "unacceptable" because their use "in extreme conditions, such as North Dakota in the winter where well-site temperature can fall below -30 °F (-34 °C) . . . would have been lower than the minimum service temperature and glass transition temperature of the AFLAS material, which suggests that the seal would likely fail." *Id.* at 21–22 (citing Ex. 2011 ¶¶ 127–131).

We disagree that one skilled in the art would have deemed Coxreels's teachings to be unsuitable or unacceptable for Van Vliet's fuel delivery system. In our view, FAS's unsuitability argument focuses improperly on the physical incorporation into Van Vliet's system of every component and material described in Coxreels. But the test for obviousness is whether "a skilled artisan would have been motivated to combine the *teachings* of the prior art references to achieve the claimed invention," not whether the physical features of one reference may be bodily incorporated into the structure of another reference. *See Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016). Indeed, whether one reference can be incorporated in another is "basically irrelevant" since the test for obviousness asks only "whether the claimed inventions are rendered obvious by the teachings of the prior art as a whole." *In re Etter*, 756 F.2d 852, 859 (Fed. Cir. 1985) (en banc).

Here, rather than relying on every feature of Coxreels, Permian makes clear that it is relying on Coxreels's teaching of "a reel for storing hoses that

has a built-in 'fluid path.'" Pet. 36–38 (citing Ex. 1003 ¶¶ 149–152). More specifically, according to Permian, one skilled in the art "would have recognized advantages of the flow passage in *Coxreels'* reels (e.g., 'a non-crimping, flat smooth hose wrap') to facilitate connection to the manifolds and hoses of *Van Vliet's* system." Pet. Reply 7. Thus, FAS's argument of physical incorporation of an ancillary feature of Coxreels's reel is irrelevant to Permian's reliance on incorporating Coxreels's *teaching* of a built-in flow passage running through a hose reel with Van Vliet's system that already includes flow path connections suitable for diesel fuel.

Moreover, "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton" and "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." *KSR*, 550 U.S. at 421. Here, one skilled in the art would have understood the need to avoid brass connections when incorporating Coxreels's teaching of a built-in flow passage into the hose reels of Van Vliet's diesel fuel system. FAS's expert confirms as much by testifying it was common knowledge that neither brass nor other copper-containing alloys are suitable for diesel fuel systems such as Van Vliet's—

> Q. [by Permian's counsel] In a mobile refueling system like what's in Van Vliet, is it your understanding that the diesel fuel is actually stored on the truck -- on the trailer? . . .
> A. [by FAS's expert] It is my understanding that the fuel remains in the system. The system is filled with diesel fuel between jobs.
> . . .
> Q. Okay. That would be typical?
> A. . . . You want to use that fuel as best you can, *so you want to store it in a safe manner. You wouldn't want to create a risk by*

> *adding copper to a system that has no need to have copper in it. Zero reason to have copper in that system. You would never do it. . . . Why would you make the system more complex, more costly to operate, when you can simply not put brass in in the first place because brass is not suitable for use with diesel.*

Ex. 1049, 124:15–125:19 (emphasis added).

In other words, as FAS's expert acknowledges, it was well-known that brass and copper present predictable risks and concerns in systems using diesel fuel. So, in choosing to incorporate Coxreels's teaching of a built-in flow passage for a hose reel into the reel of Van Vliet's fuel delivery system, one skilled in the art would have known to make precautionary trade-offs that avoid the risks of wholesale substitution of Coxreels's various components, such as its "brass" inlets. *See Intel Corp. v. Qualcomm Inc.*, 21 F.4th 784, 795 (Fed. Cir. 2021) ("[S]imultaneous advantages and disadvantages . . . do[] not necessarily obviate motivation to combine"); *see also Corephotonics, Ltd. v. Apple Inc.*, No. 2020-1961, 2021 WL 4944471, *6 (Fed. Cir. Oct. 25, 2021) ("[I]t is a commonplace fact that design decisions entail making tradeoffs among multiple objectives").

Similarly, we reject the notion that Coxreels's disclosure of so-called "AFLAS" seals would have made its teachings "unacceptable" for the extreme temperature conditions of Van Vliet's fuel delivery system. *See* PO Resp. 21–22. At most, FAS's evidence indicates that hose reels with AFLAS seals might be less than optimal for certain extreme temperature conditions without further modifications. As discussed above, however, that is not enough to refute a motivation to combine where design considerations necessarily entail tradeoffs. Indeed, Van Vliet recognizes that "extreme operating temperatures and pressures" are inherent to equipment at

fracturing well sites. Ex. 1004 ¶ 2. Presumably, then, one skilled in the art would have known to account for such conditions in modifying Van Vliet's fuel delivery with Coxreels's reels. As support, Permian's expert credibly testifies—

> If a POSITA was designing a refueling system of *Van Vliet* to dispense diesel at such cold temperatures, they would already expect to have to take measures to keep the temperatures . . . sufficiently high so that the temperature stays above the cloud point [of diesel] to enable filtration and pumping. Those same measures would preserve the integrity of the AFLAS seal. Taking such measures to prevent degradation or freezing of fluids would have been a normal precaution when performing fracturing operations in freezing temperatures. . . .
>
> Finally, even if a POSITA had to design the *Van Vliet* system to withstand temperatures below -3°C inside the trailer where the reels are located, it would have been well within the skill of a POSITA to replace the AFLAS seal with a commercially-available alternative seal made of a material that could withstand those temperatures.

*See* Ex. 1055 ¶¶ 18–19.

Like Permian's expert, FAS's expert confirms that one skilled in the art would have understood the extreme operating conditions of a fuel delivery system such as Van Vliet's—

> Q. [by Permian's counsel] So you've assumed that the POSITA is going to design the system to operate in the full range of temperatures? You've assumed that?
> A. [by FAS's expert] Well, that's what I've stated in my opinions. There are reasons that you don't want to use AFLAS in cold temperatures because it's not suitable, and there's reasons you don't want to use copper at all with fuel.
> Q. Okay. So just to kind of close the loop, you've assumed -- that is -- that statement that a POSITA would be having to accommodate those cold temperatures, you've assumed that the

> POSITA would be designing the fuel delivery system for the entire range of possible temperatures? . . .
> A. It seems like it would be pretty silly to eliminate such a large portion of the market if you're trying to sell a product. If you're developing a product for the oil industry in the United States, you're going to want to develop it to work anywhere in the United States any time of the year. Otherwise, you're losing a lot of business. So a POSITA is going to want to design for the full range. It doesn't have to even just be North Dakota. It could be Colorado, where you could see temperatures that would exceed the capabilities of AFLAS or even west Texas. So you have to be careful.

Ex. 1049, 115:2–116:3. Thus, based on the testimony of both parties' experts, we find that one skilled in the art would have known to take the necessary precautions when incorporating Coxreels's teaching of built-in flow passages into the hose reels of Van Vliet's fuel delivery system, including the use of seals that could withstand the extreme operating conditions in which the system is used.

FAS's argument that modifying Van Vliet's system with Coxreels's reel would have resulted in an "undesirable operating configuration" is no more persuasive than its other arguments. *See* PO Resp. 22–24. That is because FAS's argument is premised on an unreasonably complicated hypothetical from its expert that *certain* models of Coxreels's reel for *certain* hose lengths and diameters would have required unsuitably high pressures in Van Vliet's system to meet the fuel demands of *certain* fracturing operations. *See id.* at 23–27 (citing Ex. 2011 ¶¶ 137–150). Not only does FAS's hypothetical assume an improper bodily incorporation of certain models of Coxreels's reels into Van Vliet's fuel delivery system, but it also assumes certain requirements and parameters for Van Vliet's fuel delivery system that are nowhere disclosed in Van Vliet. *See id.* (making

"an assumption of a 'duty cycle,'" assuming various numbers of "open hoses," assigning flow rates in the range of 7,500–24,000 gallons in a 12-hour period, and limiting pump pressure "to approximately 60 psi"). Thus, FAS's hypothetical does not dissuade us that one skilled in the art would have found it obvious to modify Van Vliet's fuel delivery system to include a built-in flow passage for the hose reel, as taught by Coxreels.

Aside from contesting Permian's reason for combining Van Vliet and Coxreels, FAS does not further contest Permian's showing with respect to the asserted combination's disclosure of each element of claims 1–3. *See* PO Resp. 18–27. As for those uncontested claim elements, we find that the record fully supports Permian's showing that the asserted combination of Van Vliet and Coxreels discloses each of them. *See* Pet. 37–43; Ex. 1003 ¶¶ 155–168. And, as discussed above, we also find that Permian sufficiently shows that one skilled in the art would have had sufficient reason to combine the respective teachings of Van Vliet and Coxreels. But, before ultimately deciding the fate of claims 1–3, we must first evaluate FAS's evidence of non-obviousness.

*2. FAS's Evidence of Non-Obviousness*

FAS argues that non-obviousness of the challenged claims is "strongly supported" by secondary considerations, including commercial success, industry praise, copying, and licensing. PO Resp. 34. We address each in turn.

Regarding commercial success, FAS contends that the claimed invention has achieved "significant" commercial success because "more

than 60 FAS units[5] have been used to deliver over 800,000,000 gallons of fuel on well sites" in various states and countries. *Id.* at 39–40 (citing Ex. 2045 ¶ 6). But, aside from the declaration testimony of its general counsel,[6] FAS provides no further discussion, let alone evidence, of these commercial activities to corroborate the numbers that its general counsel espouses, such as sales invoices. Moreover, FAS provides no information about the relevant market or its major competitors in which to compare these alleged sales. In the absence of such evidence, we cannot determine the size of the market or FAS's share of that market. As such, we give no significant weight to FAS's evidence of commercial success. *See In re Applied Materials, Inc.*, 692 F.3d 1289, 1300 (Fed. Cir. 2012) ("An important component of the commercial success inquiry in the present case is determining whether [patent owner] had a significant market share relative to *all* competing [products] based on the merits of the claimed invention."); *In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996) (noting that "evidence related solely to the number of units sold provides a very weak showing of commercial success, if any").

Regarding industry praise, FAS submits a press release reporting that the inventor of the '118 patent "was named an Industry Leader at the Texas Oil & Gas Awards for the FAS Unit's *improvements in safety*." PO Resp. 35 (citing Ex. 2045 ¶ 5) (emphasis added). Indeed, the press release explains that "[t]hese FAS units drastically *improve the safety* of frac site

[5] FAS contends that "each FAS Unit embodies the claim elements of the '118 [patent]." PO Resp. 40.

[6] Exhibit 2045 is a declaration from the "Assistant General Counsel" overseeing the legal affairs of FAS. *See* Ex. 2045 ¶ 1.

workers by taking them out of the 'hot zone.'" Ex. 2045, at 4–5 (emphasis added). But, at most, the press release indicates that the award was given for safety improvements. No further reasons are given for the award, and FAS makes no effort to tie the award to the claimed features of the '118 patent, which say nothing about safety. So, while the honor of the award is to be commended, we are constrained by FAS's lack of information and evidence tying the award to the claimed invention. As such, we give FAS's evidence of industry praise little, if, any weight.

Next, FAS alleges that Permian and another entity "copied the claimed configuration" of the '118 patent. PO Resp. 35. In support, FAS submits pictures of products it accuses of infringement in two parallel district court cases, as well as pleadings from those cases. *See id.* at 36–39 (citing Exs. 2043, 2045). FAS also notes that Permian had "knowledge" of a related patent via prosecution of one its own patents. *Id.* at 35 (citing Ex. 2046). We find this evidence insufficient to establish copying. As correctly noted by Permian, even if its products were found to infringe the '118 patent, infringement is not the same as copying. *See* Pet. Reply 25 (citing *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1325 (Fed. Cir. 2004) ("Not every competing product that arguably fails within the scope of a patent is evidence of copying. Otherwise, every infringement suit would automatically confirm the nonobviousness of the patent. Rather, copying requires the replication of a specific product.")). And though FAS asserts that Permian was aware of a related patent, FAS never explains how that patent relates to the '118 patent or even that Permian copied a product covered by that patent. In the end, we give no weight to FAS's evidence of copying.

Relying again on the declaration of its general counsel, FAS states it has "granted licenses under the '118 . . . patent" to another entity that "pays [FAS] a royalty for the use of automated fracking fuel delivery systems." PO Resp. 39 (citing Ex. 2045 ¶ 4). In particular, FAS's general counsel testifies that he "was personally involved with the negotiation of that [entity's] settlement agreement" and that the entity "took a license of [the '118 patent]." Ex. 2045 ¶ 3. FAS, however, fails to introduce a copy of the settlement agreement into the record, thereby preventing us from verifying its terms and assessing if it resulted from the merits of the claimed invention. This failure by FAS constrains the amount of weight we can give to its evidence of licensing. *See In re Cree, Inc.,* 818 F.3d 694, 703 (Fed. Cir. 2016) (mere affidavit is insufficient to show if "the licensing program was successful either because of the merits of the claimed invention or because they were entered into as business decisions to avoid litigation, because of prior business relationships, or for other economic reasons").

Finally, FAS fails to submit sufficient evidence of nexus. Instead, FAS simply asserts that "[t]he FAS Unit is covered by the challenged claims, creating a presumption that [its] secondary consideration[s] of nonobviousness should apply." PO Resp. 35 (citing Ex. 2011 ¶ 179). But, rather than map the challenged claims to the FAS unit, FAS's expert simply submits three screenshots from a video purporting to show that "the FAS Unit includes each and every limitation of at least the independent claims (1, 10, 15) of the '118 Patent." Ex. 2011 ¶ 179. From our review, nowhere does FAS's expert explain, nor do we discern, where the screenshots depict two key limitations of the challenged claims, most significantly, the disputed claim limitation of "each said flow passage . . . running through a respective

one of the reels" (claim 1), as well the disputed limitation of "a tube and a sleeve that circumscribes the tube" (claims 5, 10, and 15) that is discussed elsewhere in this decision. Thus, we find FAS's expert testimony and screenshots insufficient to confirm whether a nexus exists.

*3. Conclusion*

In the end, FAS's limited evidence of secondary considerations—one award, a single license, and commercial sales with no context of market share—lack much of the underlying documentary evidence needed to support the secondary considerations FAS is seeking. Thus, we find that FAS's evidence of non-obviousness is insufficient to outweigh the strong evidence of obviousness shown by the asserted combination of Van Vliet and Coxreels. As such, we determine that Permian demonstrates by a preponderance of the evidence that claims 1–3 are unpatentable as obvious over the combined teachings of Van Vliet and Coxreels.

*E. The Challenge of Claims 4–18 as Obvious Over Van Vliet and Shoap*

*1. Claims 4–9 and 15–18*

For this challenge, we treat claims 4–9 and 15–18 differently from claims 10–14. That is because claims 4–9 and 15–18 recite the previously-addressed limitation of "each said flow passage . . . running through a respective one of the reels," whereas claims 10–14 omit that limitation. But, in challenging claims 4–9 and 15–18, Permian relies solely on Van Vliet for teaching the limitation of flow passages running through the reels. *See* Pet. 26–29, 60. As discussed above (Section II.C), we find that Van Vliet is deficient in that regard. Thus, for the reasons discussed above, we likewise determine that Permian fails to demonstrate that claims 4–9 and 15–18 are rendered obvious by the combination of Van Vliet and Shoap.

*2. Claims 10–14*

Permian challenges claims 10–14 as rendered obvious by Van Vliet and Shoap. *See* Pet. 5, 43–45, 52–59. Central to the parties' dispute for this challenge is the limitation in claim 10 that each hose comprises "a tube and a sleeve that circumscribes the tube," hereinafter, "the tube and sleeve limitation." Ex. 1001, 9:23–24. FAS does not dispute Permian's reason for combining the teachings of Van Vliet and Shoap, nor does FAS dispute the asserted combination's disclosure of the remaining limitations of claims 10 and 12–14. *Compare* Pet. 43–45 *with* PO Resp. 27–30. There is a dispute over dependent claim 11, however, which we address after our discussion of the tube and sleeve limitation of claim 10.

*a. Independent Claim 10 and Dependent Claims 12–14*

As explained above, we construe the tube and sleeve limitation of claim 10 to mean that "the tube and the sleeve are separate and distinct structures where one 'circumscribes' the other." For this limitation, Permian submits annotated Figure 1A of Shoap, reproduced below. *See* Pet. 47–48.

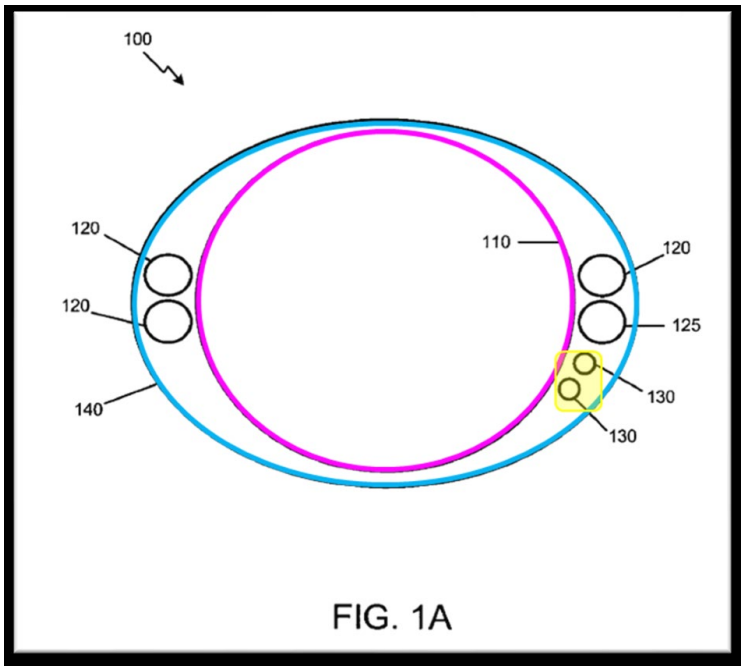



FIG. 1A

According to Permian, annotated Figure 1A depicts "a hose tube (inner conduit surface 110, in purple) and sleeve (outer conduit surface, in light blue)." *Id.* at 47, 53. To the extent Shoap's inner and outer surfaces are viewed as surfaces of a single structure as opposed to separate structures, Permian relies on the testimony of its expert to argue that one skilled in the art would have been led to form a hose tube such as Shoap's "using two thinner concentric conduits instead of a single thicker conduit having an inner surface and an outer surface" because such an arrangement "would be merely an obvious matter of design choice." *See id.* at 48–49 (citing Ex. 1003 ¶ 183). In support, Permian relies on the testimony of its expert, who points to specific evidence showing that the use of concentric tubes in oil-transferring hoses was "well known" and "commercially available" in the relevant time frame—

> [A]s discussed in Section VIII.C above, the use of protective sleeves to surround tubes was well known at the time of the '118 Patent. Commercially available products such as RhinoSleeve marketed by SRM Industries, were commercially available and easily accessible.

Ex. 1003 ¶ 183 (cross-referencing Ex. 1003 ¶¶ 71–72; Exs. 1032–1034 ("the Rhino Sleeve™ references")).

In response, FAS disputes Permian's assertion that it would have been an obvious design choice to form the inner and outer surfaces of Shoap's tube into two concentric conduits. *See* PO Resp. 28 (citing Pet. 48–49). According to FAS, Permian's assertion "provides no basis in the prior art," "amounts to a conclusory statement," and "does not articulate any reason that would prompt a POSITA to use its proposed hypothetical two thinner concentric conduits." *Id.* at 28–29.

We disagree with FAS. As discussed above, Permian provides ample support in the form of expert testimony and contemporaneous art for its position that it would have been an obvious design choice to modify Shoap's tube to have two thinner concentric conduits. *See* Pet. 47–49 (citing Ex. 1003 ¶ 183), 53 (cross-referencing same); *see also* Pet. Reply 18 (citing Ex. 1003 ¶¶ 71–72, 183). In particular, Permian's expert testifies that the use of concentric conduits for an oil-transferring hose to protect against "abrasion" and "pin-hole leaks" on the hose's outer surface "was well known at the time of the '118 patent." Ex. 1003 ¶¶ 72, 183. Bolstering his testimony, Permian's expert cites specific examples of contemporaneous hoses having that very structure and function, namely, "Rhino Sleeve™." *See id.* ¶ 183 (cross-referencing *id.* ¶¶ 71–72 (citing Exs. 1032–1034)).

We see no reason to question the credibility of Permian's expert that modifying Shoap's tube into two thinner concentric conduits would have been an obvious matter of design choice given the level of knowledge in the art, as indicated by the Rhino Sleeve™ references. Indeed, FAS never disputes that the Rhino Sleeve™ references—Exhibits 1032, 1033, and 1034—teach such a modification or that such a modification was well-known in the relevant time frame. *See* PO Resp. 27–30 (lacking any discussion of the Rhino Sleeve™ references); *see also* PO Sur-Reply (arguing only that Permian fails to explain such evidence "with particularity"). Nor does FAS's expert ever rebut the explanation of Permian's expert as to what one skilled in the art would have understood from the Rhino Sleeve™ references. *See* Ex. 2011 ¶¶ 153–168.

Instead, FAS and its expert contend that modifying Shoap's tube to have two thinner concentric conduits would have been "highly undesirable"

because one skilled in the art "would have recognized that *if* a leak were to develop in the inner conduit, the presence and location of the leak would not be readily identifiable" as "the outer conduit would block visibility of the inner conduit and the leak." PO Resp. 29 (citing Ex. 2011 ¶¶ 158–160) (emphasis added). But FAS's expert provides no factual support for this assertion aside from alleging, incorrectly so, that Permian "hypothesized the two inner concentric conduits, and did not glean it from the prior art." Ex. 2011 ¶ 161.

To the contrary, and as discussed above, Permian provides ample evidentiary support in the form of credible expert testimony and prior art citations for its position that it would have been an obvious matter of design choice to modify Shoap's tube into two thinner concentric conduits. Neither FAS nor its expert ever addresses that evidence. Thus, we find persuasive Permian's assertion that one skilled in the art would have considered the modification of Shoap's single tube into two concentric conduits to be an obvious matter of design choice. As such, we find that Shoap satisfies the tube and sleeve limitation of independent claim 10.

One last thing—FAS generally asserts, in the context of another claim, that the Rhino Sleeve™ references (Exs. 1032–1034) neither qualify as prior art nor are representative of the knowledge in the art because one of the Rhino Sleeve™ references "has a date of October 25, 2016," whereas "the priority date of the '118 Patent is October 11, 2016." PO Resp. 34. But, even if the Rhino Sleeve™ references do not qualify as statutory prior art, they are still sufficiently contemporaneous to reflect what would have been within the knowledge of one skilled in the art as of the priority date. *See Yeda Rsch. v. Mylan Pharms. Inc.*, 906 F.3d 1031, 1041 (Fed. Cir.

2018) (confirming "the Board may consider non-prior art evidence" in evaluating the "knowledge [and] motivations" of one skilled in the art "regarding the prior art"); *Plant Genetic Sys., N.V. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1344 (Fed. Cir. 2003) ("[T]he district court properly used later reports as evidence of the state of the art existing [on the filing date of the application]."); *In re Farrenkopf*, 713 F.2d 714, 719–720 (Fed. Cir. 1983) (non-prior art evidence "has been held to be competent to the extent it refers to matters . . . *contemporaneous with* [the critical date of the patent], where it was offered as evidence of the level of knowledge in the art" (citation omitted)). Here, there is only a slight difference between the October 11, 2016 priority date of the '118 patent and the October 25, 2016 publication date of the Rhino Sleeve™ references. Thus, we find that the Rhino Sleeve™ references serve as competent evidence to support the unrebutted testimony of Permian's expert as to what one skilled in the art would have known as of the priority date of the '118 patent. *See* Ex. 1003 ¶¶ 71–72, 183. As such, we reject FAS's contention that we should disregard Exhibits 1032–1034 in our analysis of obviousness.

*b. Dependent Claim 11*

FAS separately disputes Permian's challenge of claim 11, which depends from independent claim 10 and recites that "the sleeve is a fabric sleeve." *See* PO Resp. 32–34. In challenging claim 11, Permian argues that one skilled in the art would have deemed it an obvious design choice to make the outer surface of Shoap's hose from fabric because fabric covered hoses and fabric hose sleeves were well-known, commercially available, and "part of a finite set of known options for protecting hoses from damage." *See* Pet. 55–56 (citing Ex. 1003 ¶¶ 70–72, 208; Exs. 1030–1034). Indeed,

Permian's expert points to the Rhino-Sleeve™ references as describing just such an example of a fabric-protected hose. *See* Ex. 1003 ¶¶ 71–72 (citing Exs. 1032–1034). As such, Permian argues, one skilled in the art obviously would have known to use a fabric protection, such as a fabric protective sleeve or fabric covered hose, in the design and implementation of Van Vliet's fuel delivery systems as modified by Shoap's teachings. *See* Pet. 56.

FAS responds that Permian's reliance on the Rhino Sleeve™ references is misplaced because "neither Ex. 1032 nor Ex. 1033 qualify as prior art." *See* PO Resp. 33–34; *see also* PO Sur-Reply 21 ("Rhino Sleeve does not even qualify as prior art."). But, as discussed above in the context of independent claim 10, we find that the Rhino Sleeve™ references are relevant evidence of the contemporaneous knowledge in the art. Moreover, aside from an unhelpful "I disagree with this assertion," FAS's expert never rebuts the opinion of Permian's expert that the Rhino Sleeve™ exemplify the level of knowledge in the art or that such knowledge would have made it an obvious design choice to use a fabric sleeve with Shoap's hose as incorporated into Van Vliet's fuel delivery system. *See* Ex. 2011 ¶¶ 174–178 (rebutting a different reference while conspicuously omitting any discussion of the Rhino Sleeve™ references). Based on the credible and reasonable testimony of Permian's expert, and the lack of any rebuttal from FAS's expert, we find that the asserted combination of Van Vliet and Shoap teaches the "fabric sleeve" limitation of claim 11 as an obvious matter of design choice.

*c. Conclusion*

There is no dispute that the asserted combination of Van Vliet and Shoap discloses the remaining limitations of claims 10–14 and that one

skilled in the art would have had sufficient reason to combine their respective teachings. *See* PO Resp. 27–30, 32–34 (arguing only that Shoap lacks teaching claim 10's limitation of "a tube and a sleeve that circumscribe the tube" and claim 11's limitation of "a fabric sleeve"). And, as discussed above, FAS fails to submit sufficient evidence of non-obviousness. Thus, after considering the parties' argument and the record evidence, we determine that Permian demonstrates by a preponderance of the evidence that claims 10–14 are unpatentable as obvious over Van Vliet and Shoap.

*F. The Challenge of Claims 4–9 and 15–18 as Obvious Over Van Vliet, Coxreels, and Shoap*

To begin, we note that challenged claims 4–9 and 15–18 recite a combination of limitations that we previously address separately in the context of independent claims 1 and 10, namely, "each said flow passage . . . running through a respective one of the reels" (claim 1) and "a tube and a sleeve that circumscribes the tube" (claim 10). As discussed above, Permian demonstrates that claim 1 is unpatentable as obvious over the combination of Van Vliet and Coxreels (Section II.D) and that claim 10 is unpatentable as obvious over the combination of Van Vliet and Shoap (Section II.E).

For this challenge, Permian argues that claims 4–9 and 15–18 are unpatentable as obvious over the combination of Van Vliet, Coxreels, and Shoap. *See* Pet. 62–70. In response, FAS relies on the same arguments it made with respect to Permian's challenge of independent claims 1 and 10—that one skilled in the art would not have combined the teachings of Van Vliet with Coxreels and the combination of Van Vliet and Shoap does not disclose a physically separate tube and sleeve configuration. *See* PO Resp. 18 (arguing Ground 2A together with Ground 1A); *id.* at 27 (arguing Ground 2A together with Ground 2). Those arguments, however, are no more

persuasive for this challenge based on the combination of Van Vliet, Coxreels, and Shoap than they were for the separately-discussed challenges based on Van Vliet and Coxreels and on Van Vliet and Shoap. Thus, for the same reasons discussed above, we find that Permian shows by a preponderance of the evidence that claims 4–6, 8, 9, and 15–18 are unpatentable as obvious over the combined teachings of Van Vliet, Coxreels, and Shoap.

FAS argues separately dependent claim 7, which recites "[t]he distribution station as recited in claim 6, further comprising a plurality of connectors, each of the connectors being mounted on a respective different one of the reels and each of the connectors receiving a respective different one of the sensor communication lines." *See* PO Resp. 30–32. For meeting this claim, Permian relies on the combined teachings of Van Vliet, Coxreels, and Shoap. *See* Pet. 64–65. More specifically, and as discussed above in the context of Permian's other challenges, Permian relies on Van Vliet for a fuel distribution station having a hose stored on a reel, Coxreels for a reel having a built-in flow passage running through the reel *with connection ports at opposite ends*, and Shoap for a hose having a communication line routed within the body of the hose. *Id.* at 64 (citing Ex. 1004, Fig. 1; Ex. 1005, at 1; Ex. 1006, 4:50–5:3, Figs. 1A, 2A). Importantly, both Van Vliet and Shoap share the common goal of allowing communication between devices at opposite ends of their hose—sensor 54 in Van Vliet and sensor 1370 in Shoap. *See* Ex. 1004 ¶¶ 17–18, Fig. 1; Ex. 1006, 15:16–26. In order to achieve that goal, Permian argues, one skilled in the art would have understood it to be an obvious design choice to route the communication line in the asserted combination through the reel's built-in flow passage and also

provide the appropriate connectors for the communication line to be routed in that manner. *See* Pet. 64–65 (citing Ex. 1003 ¶¶ 231, 236).

FAS does not directly address Permian's reasoning. Instead, it contends that one skilled in the art would have been discouraged from using Shoap's so-called "slip ring assembly 1372" in Van Vliet's refueling system because it "may create small sparks that would act as an incendiary in a volatile fuel-vapor environment" and "would have been dangerous." PO Resp. 31–32. But Permian's expert relies on the use of Shoap's "slip ring assembly" merely as *one example* of how a connector might be mounted to the reel. *See* Ex. 1003 ¶¶ 232–233. By no means does he limit it to that particular type of connector. Moreover, as FAS admits, one skilled in the art "would have understood that generating sparks in the fuel vapor environment of Van Vliet would have been problematic." PO Resp. 31. As such, one skilled in the art logically would have taken all the necessary precautions to prevent the chosen connector from posing a safety risk. *See In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1382 (Fed. Cir. 2007) ("we do not ignore the modifications that [one skilled in the art] would make" to a prior art device). Thus, we find that Permian's sufficiently shows that one skilled in the art would have understood, as an obvious design choice, that the hose reels in the asserted combination of Van Vliet, Coxreels, and Shoap would have connectors mounted thereon for receiving the hose's communication lines, as required by dependent claim 7.

Having already determined that the asserted combination of Van Vliet, Coxreels, and Shoap teaches or suggests the limitations of the base claims from which claim 7 depends and that FAS's evidence of non-obviousness falls well short of the mark needed to overcome Permian's

evidence of obviousness, we determine that Permian demonstrates by a preponderance of the evidence that claim 7 is unpatentable as obvious over the combined teachings of Van Vliet, Coxreels, and Shoap.

*G. The Challenge of Claims 12 and 13 as Obvious Over Van Vliet, Shoap, and Hosecraft*

In addition to challenging claims 12 and 13 as obvious over Van Vliet and Shoap, as discussed above, Permian challenges these same claims on the basis of the same combination plus Hosecraft. *See* Pet. 70–73. Having already determined that a preponderance of the evidence shows that claims 12 and 13 are unpatentable as obvious over Van Vliet and Shoap, we need not reach this alternative challenge. *See Bos. Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App'x 984, 990 (Fed. Cir. 2020) (non-precedential) (recognizing that the "Board need not address issues that are not necessary to the resolution of the proceeding" and has "discretion to decline to decide additional instituted grounds once the petitioner has prevailed on all its challenged claims").

## III. MOTION TO EXCLUDE

FAS moves to exclude portions of Exhibits 2029 and 2044. Mot. 1. We do not rely on either of those exhibits, nor do we rely on the noted portions of the re-direct testimony in those exhibits that FAS seeks to exclude. *See id.* n.1. (citing Ex. 2029, 128:13–134:20; Ex. 2047, 90:25–96:20). Thus, we deny FAS's motion to exclude as moot.

## IV. CONCLUSION[7]

For the foregoing reasons, we conclude that Permian has satisfied its burden of demonstrating, by a preponderance of the evidence, that the challenged claims of the '118 patent are unpatentable, and resolve the asserted grounds of unpatentability as follows:

| Claims | 35 U.S.C. § | Basis | Claims Shown Unpatentable | Claims Not Shown Unpatentable |
|---|---|---|---|---|
| 1–3 | 102/103 | Van Vliet | | 1–3 |
| 1–3 | 103 | Van Vliet, Coxreels | 1–3 | |
| 4–18 | 103 | Van Vliet, Shoap | 10–14 | 4–9, 15–18 |
| 6–10, 14–20 | 103 | Van Vliet, Coxreels, Shoap | 4–9, 15–18 | |
| 12, 13 | 103 | Van Vliet, Shoap, Hosecraft[8] | | |
| **Overall Outcome** | | | 1–18 | |

[7] Should FAS wish to pursue amendment of the claims in a reissue or reexamination, we note the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If a reissue or reexamination is pursued, we remind FAS of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

[8] As explained above (Section II.G), we do not reach this ground because all the challenged claims are addressed by the previous grounds of unpatentability.

## V. ORDER

Accordingly, it is:

ORDERED that claims 1–18 of U.S. Patent 10,815,118 B2 have been shown to be *unpatentable*;

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2; and

FURTHER ORDERED that FAS's motion to exclude is denied.

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