

**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION**

SUNOCO PARTNERSHIP MARKETING & TERMINALS L.P.,)	
)	
Plaintiff,)	
)	
v.)	No. 15 C 8178
)	
U.S VENTURE, INC., U.S. OIL, and TECHNICS, INC.)	Judge Rebecca R. Pallmeyer
)	
Defendants.)	

MEMORANDUM OPINION AND ORDER

Plaintiff Sunoco Partners and Marketing Terminals L.P. (“Sunoco”) is the holder of five patents covering a system and method for blending butane into gasoline immediately before the mixture is distributed to the tanker trucks that supply retail gas stations. Sunoco has sued Defendant U.S. Venture, Inc., and its subsidiary, U.S. Oil Co. (together, “Venture”), for infringing four of those patents at seven of Venture’s fuel terminals. In several previous opinions, the court has addressed summary judgment motions and claims construction issues. *See Sunoco Partners Mktg. & Terminals L.P. v. U.S. Venture, Inc.*, No. 15 C 8178, 2017 WL 1550188 (N.D. Ill. Apr. 28, 2017) (“*Sunoco Markman Opinion I*”); *Sunoco Partners Mktg. & Terminals L.P. v. U.S. Venture, Inc.*, No. 15 C 8178, 2017 WL 4283946, (N.D. Ill. Sept. 27, 2017) (“*Sunoco SJ Opinion I*”); *Sunoco Partners Mktg. & Terminals L.P. v. U.S. Venture, Inc.*, 339 F. Supp. 3d 803 (N.D. Ill. 2018) (“*Sunoco SJ Opinion II*”); *Sunoco Partners Mktg. & Terminals L.P. v. U.S. Venture, Inc.*, No. 15 C 8178 (N.D. Ill. Feb. 21, 2019) (“*Sunoco Markman Opinion II*”). Left for a trial were Sunoco’s allegations that Venture infringed several of their patents’ claims and that the infringement was willful, Venture’s arguments that numerous of the patent claims are invalid, and the extent of any damages. The court held a bench trial over several days in April and July 2019 to consider these issues. Both parties have submitted post-trial memoranda and seek judgment in their favor.

Based on the evidence presented at trial, the court concludes that two of the asserted patent claims are invalid for anticipation. The court also finds that Venture willfully infringed the other asserted claims and awards Sunoco damages of \$2 million, trebled to \$6 million, plus prejudgment interest. The court also grants Sunoco's request for a permanent injunction.

BACKGROUND

Sunoco is the holder of five patents on systems that blend butane and gasoline: U.S. Patent No. 6,679,302 (the "302 Patent"); No. 7,032,629 (the "629 Patent"); No. 7,631,671 (the "671 Patent"); No. 9,494,948 (the "948 Patent"); and No. 9,606,548 (the "548 Patent").¹ The court has already described the invention in detail in its previous opinions; the court here presumes the reader's familiarity with those opinions and presents only a brief summary of the background facts.

As previously explained,

[c]ommercial purveyors of gasoline—those that sell gasoline by the tankload to consumer-facing retail gas stations—add butane because it is more volatile than gasoline, allowing cars to start consistently in colder weather. Because adding lower-priced butane to gasoline improves profit margins, commercial sellers are motivated to blend as much butane as possible into gasoline before selling it to retail stations.

That goal, however, is complicated by United States Environmental Protection Agency ("EPA") regulations. As noted, adding butane to gasoline increases the volatility of the blended gasoline, but gasoline with higher volatility contributes to smog, a particular concern in warmer climates and during summer months. *Gasoline Reid Vapor Pressure*, EPA.GOV, <https://www.epa.gov/gasoline-standards/gasoline-reid-vapor-pressure> (last accessed Sept. 20, 2017). The EPA therefore imposes limits on the allowable volatility of gasoline, measured by "Reid Vapor Pressure" or RVP, based on the month and the state where the gasoline is sold. Limits range from an RVP of 7.8 pounds per square inch to 15.²

. . . The patented systems allow the patent holder to blend butane into gasoline at the last point of distribution before the gas is taken by tanker trucks to retail gas stations; called "terminals" or "tank farms," these facilities receive gasoline from refineries and store it in large tanks for distribution. (See '302 Patent col. 4 ll. 38–

¹ Sunoco does not assert any claims in the '671 Patent in this case.

² The EPA describes RVP as "a common measure of and generic term for gasoline volatility." *Gasoline Reid Vapor Pressure*, *supra*. "Volatility" refers to the "property of a liquid fuel that defines its evaporation characteristics." *Id.*

60.) In an exemplary embodiment, the system blends butane into gasoline immediately before it is dispensed into a tanker truck: butane and gasoline are drawn from a tank of each, blended to the desired RVP in a blending unit, and dispensed to the truck. (*E.g.*, '302 Patent col. 3 ll. 14–27.)

...The inventors of the patented system, Larry Mattingly and Steve Vanderbur, filed the application that led to the '302 and '629 patents in February 2001. After the patents were issued, Mattingly and Vanderbur assigned them to Texon Terminals Corporation ("Texon").

Sunoco SJ Opinion I, 2017 WL 4283946, at *1–2 (internal citations to record omitted).

Defendant Venture operates twenty-five gasoline terminals that store and ship gasoline and diesel via barges, trucks, trains, and pipelines. (Trial Tr. 928:21–24.) The company began researching automated butane blending in 2008 and learned of the patents in that year. (*Id.* at 1274:3–23.) Later that year, Texon described its patented systems in a confidential presentation to Venture. (*Id.* at 1276:7–9; PTX 59.) Venture and Texon entered into negotiations for Texon to provide butane and blending services at Venture's Green Bay, Wisconsin facility (see PTX 73), but a deal between the two parties never materialized. (Trial Tr. at 888:13–15.) Venture's interest in automated butane blending did not end, however. The company continued to research the process of butane blending and exploring the possibility that others in the industry could help it construct a blending system. (See, *e.g.*, *id.* at 889:21–25.) In 2010, Venture began to recruit former-Defendant Technics, Inc. to design and install such a system. (*Id.* at 1361:1–13.) Technics is an engineering company that sells butane blenders to gas and liquid processing facilities. (Def. Technics, Inc.'s Answer, Defenses & Countercls. to Pl. Sunoco Partners Mktg. & Terminals L.P. Compl. [29] ¶ 13.)

Though at that time Technics had never built a butane blending system before, it took just two weeks to propose a design for a "blending skid," which holds the blender that combines the butane and gasoline. (Trial Tr. at 1361:10–22.) As a Venture witness acknowledged at trial, the Technics proposal was "very similar" to the Texon system. (*Id.* at 1361:21–22.) Indeed, like Texon, Technics intended to use a Grabner analyzer to measure RVP as well as a large and small Coriolis flow meter arranged in the same configuration. (*Id.* at 1361:23–1362:1, 1290:23–

1291:2; *compare* PTX 59 at 3, *with* PTX 26.) Coriolis meters are a common type of mass flowmeter, but Venture's systems typically used a turbine meter. (Trial Tr. at 1291:16–18.) A Venture witness had difficulty explaining why Coriolis meters were chosen. (See *id.* at 1291:23–1294:22.) Likewise, though Grabner analyzers had been around a long time (*id.* at 1363:13–15), other analyzers that measure gasoline volatility were also available (see DTX 586), and yet Technics's initial design still proposed using the same Grabner model as disclosed in Texon's patents (*id.* 1288:9–13). Notably, Venture was not using any such analyzers at the time. (*Id.* at 1288:22–25.) Technics installed the blending skid at Venture's Green Bay terminal, and similar systems were installed at the Madison and Milwaukee Central facilities soon thereafter. See *Sunoco SJ Opinion I*, 2017 WL 4283946, at *5. Over the next several years, Venture added similar butane blending systems at its Milwaukee West, Bettendorf, Fort Worth, and Houston facilities. *Id.* at *2.

There were some differences between the Texon patented systems and those installed at Venture terminals. For example, the patented systems require that gasoline entering the system come from a gasoline tank. (See, e.g., '302 Patent, col. 13 l. b.) Although Venture's Milwaukee Central and Milwaukee West terminals always blended gasoline from a tank, the facilities in Green Bay, Madison, and Bettendorf sometimes blended from a tank and at other times blended gasoline coming directly from a pipeline. (Proposed Am. J. Pretrial Order, Sch. 2(a) Am. Proposed Findings of Fact & Law § I(A)(1) [453-1] at 4.) Likewise, while in the '302, '629, and '671 patents blended gasoline flows directly to a "rack" where it can be dispensed to trucks (see, e.g., Trial Tr. at 846:10–14), Venture's systems inserted a "rack tank" between the blending unit and the rack (*id.* at 971:7–10). Venture argued previously in the litigation that this rendered its systems non-infringing. However, the '948 and '549 patents do not recite a truck rack. Upon learning about these later patents on March 31, 2017, when Sunoco filed a motion for leave to amend and supplement its complaint [157]; Venture promptly (on April 17, 2017) modified its systems to require a human operator—as opposed to an automated process—to adjust the amount of butane

flowing into the system.³ (See Am. Proposed Findings of Fact & Law [453-1] at 1.) Moreover, in *Sunoco Markman Opinion I*, 2017 WL 1550188, at *6–12, which was issued just weeks after Sunoco included those later patents in its amended complaint [161], the court rejected Venture’s proposed claim construction requiring the blended product to flow “immediately” to the truck rack; that is, the court concluded that the ‘302 and ‘629 patents could cover a system that inserted a rack tank between the blending system and the rack.

Sunoco, which purchased Texon’s butane blending business in 2010, initiated this suit in September 2015 against Venture and Technics, alleging that both parties had willfully infringed the ‘302, ‘629, and ‘671 patents. (See Compl. [1].) Sunoco settled with Technics and dismissed the company from the suit with prejudice in June 2016. (See Pl.’s Mot. to Dismiss Technics, Inc. with Prejudice [60].) In April 2017, Sunoco submitted an amended complaint against Venture that added claims of willful infringement for the ‘948 and ‘549 patents. (See Am. Compl. [161].)

In earlier opinions, the court has already held that Venture has infringed some claims in the ‘302 and ‘629 patents. See *Sunoco SJ Opinion I*, 2017 WL 4293946, at *11. The court has also agreed with Venture that other claims in those patents were either invalid or not infringed. See *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 849–50. The cases then proceeded to a bench trial, held in April and July 2019, to consider the invalidity of the ‘302, ‘629, ‘948, and ‘548 patents; the infringement of various system claims in the ‘302, ‘948, and ‘548 patents as well as method claims in the ‘302 and ‘629 patents; the extent of damages; and willfulness and the appropriateness of enhanced damages. Both parties subsequently submitted post-trial memoranda, arguing for judgment in their favor.

³ Sunoco does not assert that this modified system infringed any of the patents-in-suit. (See Am. Proposed Findings of Fact & Law [453-1] at 1.)

DISCUSSION

Sunoco and Venture have raised a number of issues regarding the patents' validity, infringement, the appropriate remedy if infringement is found, whether any infringement was willful, and the appropriateness of enhanced damages. The court addresses these issues in turn.

I. Invalidity

Venture asserts that a number of the claims in the patents-in-suit are invalid, raising arguments about anticipation, obviousness, and the on-sale bar. Patents are presumed to be valid, see 35 U.S.C. § 282(a), and this presumption can be overcome only by clear and convincing evidence, *Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 962 (Fed. Cir. 2001). For the reasons discussed below, the court concludes that Venture has met this burden with respect to two claims of the '302 patent and has established that those claims are invalid for anticipation. Venture's arguments regarding obviousness and the on-sale bar are rejected.

A. Anticipation

A patent claim is invalid as anticipated if "the invention was patented or described in a printed publication in this or a foreign country . . . more than one year prior to the date of the application for patent in the United States." 35 U.S.C. § 102(b).⁴ To establish anticipation, there must be evidence that a person of ordinary skill in the art would recognize the presence of "each and every claim limitation in a single prior art reference, either explicitly or inherently." *In re Omeprazole Patent Litig.*, 483 F.3d 1364, 1371 (Fed. Cir. 2007). To anticipate, the reference must also "enable one of ordinary skill in the art to make the invention without undue experimentation." *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (quoting *Impax Labs., Inc. v. Aventis Pharms. Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008)). Importantly, "a prior art reference

⁴ All of the patents-in-suit have an original priority date of February 9, 2001, so the pre-America Invents Act ("AIA") version of § 102 applies. See *Solvay S.A. v. Honeywell Int'l, Inc.*, 742 F.3d 998, 1000 n.1 (Fed. Cir. 2014) (noting that the AIA applies only to applications and patents with an effective filing date of March 6, 2013 or later).

must place the inventive compound or composition in the possession of the public.” *Eli Lilly & Co. v. Zenith Goldline Pharm., Inc.*, 471 F.3d 1369, 1375 (Fed. Cir. 2006).

Venture has argued throughout the litigation that numerous claims in the patents-in-suit were anticipated by a butane blending system created by Texon and used by Kerr-McGee in Nashville, Tennessee in the mid-1990s. In a prior order on summary judgment [429], the court held that the Kerr-McGee system anticipated the ‘302 Patent claim 1 and the ‘629 Patent claims 1 and 10 but denied summary judgment for Venture on the ‘302 Patent claims 2–3 and ‘629 Patent claims 2 and 11–12. See *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 824–28. Now, after a bench trial on the remaining claims, Venture argues that the Kerr-McGee system anticipates claims 12–13 of the ‘302 Patent and claim 31 of the ‘629 Patent, as well. (Defs.’ Post-Trial Mem. [472] at 13.)

For its part, Sunoco argues that the Kerr-McGee system does not qualify as prior art at all. The court previously assumed that it did, in part because Sunoco appeared to have conceded that it met the definitions provided in 35 U.S.C. § 102(b) (publicly used or on-sale) or § 102(g) (invented by another without abandonment, suppression, concealment). See *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 822. Sunoco now asks the court to reconsider this, urging that a single paragraph in its Response to Defendants’ Statement of Material Facts [387] did not constitute a concession on this issue. (See Sunoco Post-Trial Mem. on Infringement, Validity, Damages, Willful Infringement, and Exceptional Case [471] at 31.) Sunoco’s concession (or non-concession) aside, however, the court remains satisfied that the Kerr-McGee facility in Nashville qualifies as prior art because it was publicly accessible more than one year before the filing date.⁵ See 35 U.S.C. § 102(b).

An invention can be deemed to be publicly accessible if only one member of the public has been given access to it: “If an inventor, having made his device, gives or sells it to another,

⁵ Ventures also argued that the Kerr-McGee system is prior art because it was subject to a commercial sale; the court need not address this alternative argument.

to be used by the donee or vendee, without limitation or restriction, or injunction of secrecy, and it is so used, such use is public, *even though the use and knowledge of the use may be confined to one person.*” *Egbert v. Lippman*, 104 U.S. 333, 336 (1881) (emphasis added); *see also In re Smith*, 714 F.2d 1127, 1134 (Fed. Cir. 1983) (“‘Public use’ of a claimed invention under section 102(b) has been defined as any use of that invention by a person other than the inventor who is under no limitation, restriction or obligation of secrecy to the inventor.”). What matters is “the amount of control which the discloser retains over the invention during the uses in question.” *Pronova Biopharma Norge AS v. Teva Pharm. USA, Inc.*, 549 Fed. Appx. 934, 940 (Fed. Cir. 2013).

The parties stipulated before trial that “Kerr-McGee was a system for blending gasoline and butane installed in or around 1994 at a tank farm in Nashville” and that “[t]he system was installed by Texon.” (Proposed Am. J. Pretrial Order, Sch. 2(a) Am. Proposed Findings of Fact & Law § I(A)(1) [453-1] at 17.) Texon agreed that after it installed the butane blending equipment, title to all of the equipment would transfer to Kerr-McGee. (Defendant’s Trial Exhibit (“DTX”) 186 at 1.) Under the agreement, Kerr-McGee was “responsible for the daily operation, maintenance and replacement” of the equipment. (*Id.*) Notably, the agreement also lacked any nondisclosure or confidentiality provision. (*See id.* at 1–8.) Ultimately, nothing in the agreement—nor any other evidence Sunoco offered at trial—established that Texon had imposed the kinds of limitations or restrictions on Kerr-McGee associated with private or secret use.

Sunoco did present evidence at trial that Kerr-McGee limited access to the system, including by having a fence around the terminal (Trial Tr. at 1604:21–23), and maintaining confidentiality for certain documents related to the system (*Id.* at 1394:23–1395:06). But Texon’s disclosure to Kerr-McGee without imposing secrecy obligations or other limitations nevertheless rendered the system public; that Kerr-McGee chose not to allow the public unrestricted access to the terminal does not negate that. *See New Railhead Mfg., L.L.C. v. Vermeer Mfg. Co.*, 298 F.3d 1290, 1299 (Fed. Cir. 2002) (determining that a drill had been in public use even though “no one

could view the drill bit or see it in operation” because it was operated underground). Sunoco’s argument that the system cannot be prior art because the inventors did not disclose it to Kerr-McGee is defeated by testimony that one of the inventors—Mr. Vanderbur—participated in the transaction with Kerr-McGee through his employment for Texon. (Vanderbur Dep. at 46:9–47:4; 48:20–24.) A consultant for Texon also spoke to Mr. Vanderbur about the project. (Benavides Dep. at 23:14–16.) The court stands by its conclusion that the Kerr-McGee system is prior art.

As prior art, the court must then determine whether the Kerr-McGee system anticipated claims 12–13 of the ‘302 Patent and claim 31 of the ‘629 Patent. Sunoco has not asserted that Venture infringed the ‘302 Patent claims 12–13 (see Am. Proposed Findings of Fact & Law [453-1] at 2), but the validity of those claims remains relevant; Sunoco has alleged that Venture infringed claims 16 and 17, which are ultimately dependent on 12 and 13.⁶ See *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 838 (citing *Honeywell Int’l, Inc. v. Universal Avionics Sys. Corp.*, 488 F.3d 982, 995–96 (Fed. Cir. 2007)) (explaining that because infringement of a dependent claim necessarily implies infringement of the independent claim, the court retains jurisdiction over the latter even if a party no longer asserts that it has been infringed). In fact, Sunoco has previously recognized that these unasserted claims remain relevant. (See Pl.’s Notice of Currently Asserted Claims [251] at 3.)

Claim 12 of the ‘302 Patent reads as follows:

- 12.** A method of blending gasoline and butane at a tank farm comprising:
- a) drawing a gasoline stream from a tank of gasoline;
 - b) drawing a butane stream from a tank of butane;
 - c) blending the butane and gasoline streams, at the tank farm, to form a blend; and
 - d) dispensing the blend to gasoline transport vehicles using a dispensing unit located at a rack.

(‘302 Patent, col. 14 ll. 3–11.) In *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 825–26, the court held that claim 1 was anticipated by the Kerr-McGee system. Claim 1 describes “[a] system for

⁶ Specifically, claim 17 depends on claim 16, which depends on 14, which depends on 13, which depends on 12, which is an independent claim. (See ‘302 Patent, col. 14 ll. 3–50.)

blending gasoline and butane at a tank farm comprising: a) a tank of gasoline; b) a tank of butane; c) a blending unit, at the tank farm, downstream of and in fluid connection with the tank of gasoline and the tank of butane; d) a dispensing unit downstream of and in fluid connection with the blending unit; and e) a rack, wherein the dispensing unit is located at the rack and is adapted to dispense gasoline to gasoline transport vehicles.” (*Id.* col. 13 ll. 12–23.) Venture argues that this holding means that Kerr-McGee must also anticipate claim 12. The court agrees. The only elements included in claim 12 but not claim 1 concern drawing streams of both gasoline and butane and blending the streams to form a blend. The court has already determined that the Kerr-McGee system sometimes drew gasoline from a tank, see *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 825, and evidence presented at trial established that the system drew butane from a tank, as well (Benavides Dep. at 27:7–8). The trial evidence also showed that the two streams in the Kerr-McGee system combined to form a blend. (*Id.* at 28:14–18). Indeed, while Sunoco argued at trial and in its post-trial memorandum that Kerr-McGee is not prior art, it did not dispute anticipation of claim 12. The court holds that claim 12 of the ‘302 Patent is invalid for anticipation.

Claim 13 recites:

- 13.** The method of claim **12**, further comprising:
- a) determining a blend ratio of butane and gasoline in the butane and gasoline streams that will yield a desired butane vapor pressure; and
 - b) blending the gasoline and butane streams at the blend ratio.

(‘302 Patent, col. 14 ll. 12–17.) The parties agreed that “[i]n the Kerr McGee system, a human operator was responsible for taking samples of unblended gasoline using a portable analyzer, using the vapor pressure reading to look up the appropriate blend ratio in a table of calculations, and then entering that blend ratio into an operator interface.” (Am. Proposed Findings of Fact & Law [453-1] at 17.) That ratio would then be transmitted to a programmable logic controller (“PLC”), “which controlled the valves in the blending unit to mix the correct amount of butane and gasoline.” (*Id.*) In a prior order, the court denied Venture’s motion for summary judgment on ‘302 Patent claims 2–3 because those claims describe a “process control unit” that “generates a ratio

input signal that controls the ratio of butane and gasoline blended by the blending unit” (see ‘302 Patent, col. 13 ll. 24–30), and there were genuine disputes about whether the human operator determining the blend ratio and manually inputting it into the interface meant that the process control unit itself actually “generated” the “ratio input signal.” See *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 826–28. Claim 13 by its terms, however, does not require a process control unit; a human operator determining the blend ratio of butane and gasoline fits squarely within the first element of the claim. The second element is also consistent with how both parties acknowledged Kerr-McGee operated. As with claim 12, although Sunoco disputed that Kerr-McGee was prior art, it did not dispute that Kerr-McGee anticipated claim 13. The court holds that claim 13 is also invalid for anticipation.

Claim 31 of the ‘629 Patent is a different matter, however. Sunoco asserts that Venture has infringed this method claim, which discloses:

31. A computer-implemented method for blending a butane stream and a gasoline stream comprising the steps of:

- receiving a first measurement indicating a vapor pressure of the gasoline stream;
- calculating a blend rate at which the butane stream can be blended with the gasoline stream;
- transmitting an instruction to a programmable logic controller for adjusting the butane stream to the calculated blend rate for blending with the gasoline stream and distributing at a rack;
- receiving a second measurement indicating a vapor pressure of the blended gasoline stream and butane stream.

(‘629 Patent, col. 16 ll. 8–19.) Venture argues that this claim was anticipated by the Kerr-McGee system if the preamble is interpreted as not limiting—that is, if it is interpreted in such a way that a computer is *not* required for all of claim 31’s steps. (See Defs.’ Post-Trial Mem. [472] at 7, 13.) As the Federal Circuit has explained, a preamble is not ordinarily interpreted as limiting a claim. *Georgetown Rail Equip. Co. v. Holland L.P.*, 867 F.3d 1229, 1236 (Fed. Cir. 2017) (citing *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002)). But a preamble may be limiting if it is essential to understanding the claim body. *Id.* (citing *Catalina Mktg. Int’l, Inc. v.*

Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed. Cir. 2002)). The court interprets the preamble here as limiting all of claim 31's steps. The body of the claim does not "define a structurally complete invention" and the preamble does more than just "state a purpose or intended use of the invention." *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997). The preamble is needed to clarify that the steps described in the body are being executed or achieved by means of a computer. Further, this interpretation conforms with that of Sunoco's expert (Trial Tr. at 392:9–21), and Venture also argued in its post-trial brief that this was the better interpretation because "the preamble provides antecedent basis for 'the butane stream' and 'the gasoline stream,' which are both referred to later in the body of the claim" (Defs.' Post-Trial Mem. [472] at 6). Venture has conceded that this claim is not invalid for anticipation if the court interprets the preamble as limiting. The court has so interpreted the preamble, and concludes that the claim is not invalid for this reason

B. Obviousness

Venture also raises obviousness as an invalidity defense. Section 103(a) precludes a patent's issuance when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a). "Obviousness is a question of law based on the underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the prior art and the claimed invention; and (4) the extent of any objective indicia of non-obviousness." *Crocs, Inc. v. Int'l Trade Comm'n*, 598 F.3d 1294, 1308 (Fed. Cir. 2010). Relevant secondary considerations include skepticism, commercial success, and unexpected results. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). Because patents are entitled to a presumption of validity, see 35 U.S.C. § 282(a), Venture must establish obviousness by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 95

(2011). For the reasons discussed below, the court holds that Venture failed to show by clear and convincing evidence that the prior art rendered any of the claims obvious.

1. **Kerr-McGee and Williams**

Venture argues, first, that the Kerr-McGee system, alone or in combination with the Williams Pipeline Company's Des Moines "Phase II" system, renders claims 2–3 of the '302 Patent and claim 2 of the '629 Patent invalid for obviousness. Although the court concluded that the Kerr-McGee system is prior art, it did not reach that conclusion with respect to the Williams system. See *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 837–38. As noted in that earlier opinion, however, the Williams Phase II system could remain relevant for an obviousness analysis even if its automated blending system was never reduced to practice. See *id.* at 839 (citing *I/P Engine, Inc. v. AOL Inc.*, 576 Fed. Appx. 982, 988–89 (Fed. Cir. 2014)). Moreover, the court at trial admitted certain non–prior art documents related to Williams as evidence of the state of the art at the time of invention. (Trial Tr. at 1484:15–16.) See *Thomas & Betts Corp. v. Litton Sys., Inc.*, 720 F.2d 1572, 1580–81 (Fed. Cir. 1983) (reasoning that non–prior art was "properly used as indicators of the level of ordinary skill in the art to which the invention pertained"). The court now concludes that Kerr-McGee and Williams—either separately or in combination—do not prove invalidity of these claims by clear and convincing evidence.

Venture urges that the court has already acknowledged that the only difference between the Kerr-McGee system and these patent claims is that a human operator, rather than a process control unit, determined the blend ratio for Kerr-McGee. And Venture's expert, Richard Rys, testified that automating the human operator's role at Kerr-McGee would have been obvious. (Trial Tr. at 1476:15–1477:19.) But Sunoco correctly notes numerous reasons to discount that expert's credibility. To name a few, Rys admitted in deposition to using improper hindsight reasoning (Rys Dep. at 223:16–224:14), failed to apply the court's claim constructions (see, e.g., Trial Tr. at 1535:10–16; 1536:5–7), and apparently misinterpreted the legal standards for infringement and invalidity (see, e.g., *id.* at 1590:18–21; 1591:16–19). Rys's testimony can hardly

be considered clear and convincing evidence in light of these shortcomings. See *Duncan Park Tech., Inc. v. IPS Grp., Inc.*, 914 F.3d 1347, 1363 (Fed. Cir. 2019) (reasoning that “the district court is not obligated to credit an expert’s testimony” when that expert’s opinion is foreclosed by the court’s claim construction); *i4i*, 598 U.S. at 852 (“disputes about the degree of relevance or accuracy [of an expert’s testimony] . . . may go to the testimony’s weight”); *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1275 (noting that hindsight is not permitted for § 103 analysis).

Venture also points to Williams’s 1990 plan to install “[a]utomatic, on-line analysis equipment” that would “monitor and adjust butane injection rates continuously.” (DTX 22 at 2.) As noted, although these plans were not fairly characterized as prior art, they are nevertheless relevant for establishing the state of the art at the time. Venture argues that Williams was already using an online Grabner analyzer to automatically adjust the blend ratio based on the RVP of the streams, and that this automatic adjustment was the only element missing from the Kerr-McGee system. (See Trial Tr. at 1883:8–12.) This argument is supported by Mattingly’s deposition and trial testimony, in which he confirmed that he was aware of Williams’s automated blending system, and of that system’s use of an online Grabner, at the time he developed the invention underlying the patent in this case. (*Id.* at 98:22–15, 91:15–19.) Vanderbur, similarly, characterized Mattingly’s discovery of the online Grabner as the “breakthrough” they needed. (Vanderbur Dep. at 33:19–24). But Mattingly walked this back on re-direct examination, saying that he did not actually learn about the online Grabner until 1999 or 2000. (*Id.* at 214:12–17.) In fact, Rys, Venture’s expert, acknowledged that he was unaware whether any butane blending system installed at the Williams facility was publicly known before Mattingly and Vanderbur filed the patent application. (*Id.* at 1607:24–1608:2.) Nor was Rys aware of whether Williams had implemented the automated system at all. (*Id.* at 1608:3–14.) Rys even conceded that Williams may not have implemented the system because it lacked the capability to do so. (*Id.* at 1609:7.) Although there is, thus, some evidence suggesting that Mattingly and Vanderbur’s invention was obvious at the

time, the court concludes Venture has not met its burden of proving by clear and convincing evidence that the Williams system rendered the invention obvious.

2. The Feld Patent

Venture also argues for a finding of obviousness on the basis of Patent No. 3,385,680 (the “Feld Patent”). The Feld Patent concerned an “apparatus for automatically blending a motor fuel from a plurality of components.” (DTX 187 at 29.) Butane was among the components to be blended by the apparatus. (*Id.* at 1–2.) Like Sunoco’s patents, the Feld Patent disclosed a blending unit, upstream monitors that measure vapor pressure of the unblended components, downstream monitors that measure the vapor pressure of the blended product, and a computer that calculates the blend ratios and adjusts the valves. (*Id.* at 1, 13.)

There are some key differences, however. The Feld Patent contemplated using this apparatus at a refinery, unlike Sunoco’s patents, which concern blending at a tank farm. (*Id.* at 11.) Rys, Venture’s expert, testified at trial that it would have been obvious to implement the Feld system at a tank farm. (Trial Tr. at 1449:23–1445:1.) Notably, however, Rys did not use the court’s construction of “tank farm” in reaching this conclusion. (*Id.* at 1537:3–1538:4.) While the court had defined tank farm to describe “[a]ny facility that contains a number of large storage tanks for petroleum products received from a refinery and distributed to tanker trucks,” *Sunoco Markman Opinion I*, 2017 WL 1550188, at *20, Rys considered a tank farm to be the same as a retail gas station (Rys Dep. at 149:10–13). Venture nonetheless contends that Sunoco’s patents are obvious because they are directed at the same problem that Feld was trying to solve and are used in the same field of endeavor. (See *id.* at 1450:3–22.) But it is far from clear that this is true. The Feld system’s analyzers measured several different qualities of the blended product in addition to RVP. (*Id.* at 1565:20–23.) Rys acknowledged that the Feld system, unlike Sunoco’s, might not maximize the amount of butane in the blend in order to meet ideal measurements for these other qualities. (*Id.* at 1567:5–8.)

This relates to another key difference: Sunoco's patents involve blending butane into gasoline, which the court previously defined as "[v]arious types of refined petroleum that are used as fuel," *Sunoco Markman Opinion II*, 2017 WL 1550188, at *20, while the Feld Patent concerned only "gasoline components" (Trial Tr. at 1445:14–18). Rys did not apply the court's construction of gasoline in his analysis of whether the Feld Patent rendered Sunoco's patents obvious (*id.* at 1535:10–1536:7), but "gasoline components" is distinct from "various types of refined petroleum that are used as fuel." As Rys testified, because the Feld system blends several different components instead of just gasoline and butane, it might "make a blend from a lower-cost combination of these components that did not meet the Reid vapor pressure maximum allowable." (*id.* at 1566:20–23.) In other words, while the Sunoco's system is aimed at maximizing the amount of butane that is blended into gasoline, the Feld Patent may have had a different goal.

Even if these differences were not significant, the court is unpersuaded by Venture's insistence that transferring the Feld system from a refinery to a tank farm would have been "common sense." See *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010) ("[I]n appropriate cases, the ultimate inference as to the existence of a motivation to combine references may boil down to a question of 'common sense.'"). Although at trial Rys said that doing so would have been easy (Trial Tr. at 1558:15–16), he was far more equivocal in his deposition, stating that it could "not easily" be used at a terminal but it could be done "in print" (Rys Dep. at 81:8–9). The notion that deploying the Feld system at a tank farm would have been obvious or easy is further undercut by the fact that ExxonMobil, the current owner of the Feld Patent, has never actually used this system at a tank farm. Indeed, when asked why ExxonMobil never moved the system from the refinery, Rys suggested that they would have lacked the expertise to do so. (Trial Tr. at 1632:10–15.)

As discussed above,⁷ the court's concerns about aspects of Rys's testimony undermine his conclusions on obviousness. True, expert testimony is not necessary for an obviousness analysis "when the references and the invention are easily understandable." *Wyers*, 616 F.3d at 1242 (citing *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1342 (Fed. Cir. 2009)). The Feld Patent and the invention at issue in this case, however, hardly qualify as "easily understandable." Expert testimony was vital for establishing obviousness by clear and convincing evidence, and Rys's testimony does not meet that standard. (See Trial Tr. at 1901:15–21 (the court discussing Rys's testimony).) Moreover, the differences between the Feld Patent and the patents-in-suit, in combination with the secondary considerations discussed below, are too significant for the court to find that Venture has demonstrated the invalidity of these patents.

3. The Miller Patent

Venture's next argument for obviousness of the '302 Patent claims 2–3 as well as '629 Patent claim 2 relates to the Miller Patent (Patent No. 6,163,738).⁸ The Miller Patent, filed in 1991, discloses an automated system for blending gasoline components at a gas station. (DTX 397 at 3.) Specifically, the patent described blending gasoline components (including a "Reid vapor pressure component"), measuring the vapor pressure downstream, and transmitting the vapor pressure to a computer that would control the blending. (*Id.* at 3–4.) The Miller Patent does not include butane as one of the components to be blended (see *id.*; Trial Tr. at 1612:4–6), but Venture argues that "Reid vapor pressure component" must refer to butane, and Rys made the same assertion at trial. (Trial Tr. at 1611:7–8.) That testimony contradicted Rys's own deposition, in which he stated that he "would agree that the Miller patent does not specifically disclose a tank of butane." (Rys Dep. at 150:9–10.) Thus, unlike the '302 Patent and '629 Patent

⁷ See *supra* Section I.B.1.

⁸ Venture also argued that the Miller Patent invalidates for obviousness claims 12–13 of the '302 Patent. Because the court determined that those claims are invalid for anticipation, the court need not address the issue of obviousness.

claims at issue, the Miller Patent does not generate a ratio input signal that controls the ratio of butane and gasoline blending by the blending unit. (Trial Tr. at 1613:12–23.) The system described in the Miller Patent also does not dispense the blended compound at a truck rack, instead blending right before the point of sale. (*Id.* at 1610:8–13.)

Such differences are immaterial, Venture insists. It was obvious to implement the Miller system at a tank farm, according to Venture, because that system was directed towards blending a Reid vapor pressure component like butane into gasoline to achieve a desired vapor pressure. But as with the Feld Patent, it is unclear whether simply transferring the Miller system to a terminal was feasible. Such doubts are compounded by Rys’s testimony that he is unaware of whether the Miller system has ever been implemented successfully at a gas station. (Trial Tr. at 1613:2–6.) Finally, although the court will discuss secondary considerations of validity more below, it is worth noting that the Miller Patent is assigned to Marathon, which has licensed Sunoco’s system. (*Id.* at 1615:18–1618:25.) Venture has not established obviousness by clear and convincing evidence.

4. The Stanton and Chin Patents

Finally, Venture points to Patent No. 3,484,590 (the “Stanton Patent”) and Patent No. 4,543,819 (the “Chin Patent”) as prior art that render the ‘948 Patent claim 7 and all ‘548 Patent claims obvious. Importantly, the Stanton and Chin patents were listed on the face of the ‘948 and ‘548 patents. (See PTX 4 at 2; PTX 5 at 2.) Consequently, “the [patent] examiner is presumed to have considered” the Stanton Patent and the Chin Patent. *Shire LLC v. Amneal Pharms., LLC*, 802 F.3d 1301, 1307 (Fed. Cir. 2015). Venture has “the added burden of overcoming the deference that is due to a qualified government agency presumed to have properly done its job, which includes one or more examiners who are assumed to have some expertise in interpreting the references and to be familiar from their work with the level of skill in the art and whose duty it is to issue only valid patents.” *Id.* (quoting *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1304 (Fed. Cir. 2008)). Venture has not overcome the deference due the PTO.

There are key differences between this prior art and the patents-in-suit. First, the Chin Patent concerns a “vapor-liquid analyzer” and not a butane blending system, as even Rys acknowledged.⁹ (Rys Dep. at 174:17–22.) Furthermore, the Chin Patent does not use vapor pressure as a measurement (Trial Tr. at 1626:3–12); in fact, it specifically rejects using Reid vapor pressure because “[e]rrors in the measurement . . . can be large and hard to evaluate with particularity” (DTX 189 at 5). Such differences shed doubt on the contention that Chin renders obvious a butane blending system that utilizes vapor pressure. Second, the Stanton system does not blend at a terminal or disclose where blending would occur at all. (See DTX 189.) The Stanton and Chin systems also used older, analog circuits to run their calculations as opposed to the digital processor or PLC used by Sunoco’s patents. (Trial Tr. at 1503:7–11; 1514:24–1515:1.) According to Venture, by the late 1990s, use of a digital computer rather than analog circuits would have been obvious to a person of ordinary skill in the art. (*Id.* at 1503:14–17.) But neither Venture nor its expert clearly identified the other reference that could be combined with the Stanton or Chin patents to make using a computer obvious or the suggestion or motivation for doing so at a tank farm. See *Shire*, 802 F.3d at 1306 (quoting *Innogenetics, N.V. v. AbbotT Labs.*, 512 F.3d 1363, 1373 (2008)) (“For a patent to be obvious, ‘some kind of motivation must be shown . . . so that the jury can understand why a person of ordinary skill would have thought of either combining two or more references or modifying one to achieve the patented method.’”). Finally, as with the Miller Patent, both the Stanton Patent and the Chin Patent have been assigned to oil companies that have licensed the system disclosed in the patents-in-suit. (Trial Tr. at 1627:9–1628:10; 1629:21–1631:23.) The court concludes that Venture has not met its high burden of establishing that the Stanton and Chin patents render the ‘948 Patent claim 7 and all ‘548 Patent claims invalid for obviousness.

⁹ Although Rys tried to backtrack from this at trial, he still acknowledged that “the essential part of this (Chin) patent is the vapor/liquid analyzer.” (Trial Tr. at 1625:8–9.)

5. Secondary Considerations

The court's finding that Sunoco's patents are not invalid for obviousness is underscored by secondary considerations. Those considerations include "commercial success enjoyed by devices practicing the patented invention, industry praise for the patented invention, copying by others, and the existence of a long-felt but unsatisfied need for the invention." *Apple Inc. v. Samsung Elec. Co., Ltd.*, 839 F.3d 1034, 1052 (Fed. Cir. 2016). Sunoco presented evidence of its commercial success and acceptance by the industry. As already noted, many of the largest oil companies—including those owning the rights to prior art—have licensed Sunoco's system. (Trial Tr. at 468:22–483:10.) The patented system has enabled Sunoco to "improve its profitability with butane blending." (*Id.* at 465:17–20.) The number of sites employing this system grew significantly from 2010 to 2015, confirming that the invention filled a need. (*Compare* PTX 266, *with* PTX 268.) As discussed in more detail below, Sunoco also presented evidence of copying by Venture. For instance, Venture initially asked Technics to design a blending skid that had the same configuration and used the same blend meters as Texon. (Trial Tr. at 1290:23–1291:2.) A Venture employee acknowledged that one of the first schematics Technics designed was "very similar" to a system that Texon had proposed. (*Id.* at 1361:18–22.)

Venture discounts this evidence, arguing that Sunoco did not demonstrate that the commercial success is due to the asserted patent claims as opposed to the unasserted claims. The court disagrees. The asserted claims all concern the PLC and its operation for taking measurements and utilizing those measurements in the blending process.¹⁰ These characteristics of Sunoco's system are related to its commercial success because they permit Sunoco's customers to operate 24/7 without any human involvement and, by continuously sampling the gasoline stream, to ensure compliance with EPA volatility requirements. (*Id.* at

¹⁰ The asserted system claims are claims 2–3 of the '302 Patent, claim 2 of the '629 Patent, claim 7 of the '948 Patent, and claims 2–3 and 6 of the '548 Patent. The asserted method claims are claims 16–17 of the '302 Patent and claim 31 of the '629 Patent.

464:9–12; 465:15–16.) The secondary factors favor Sunoco, confirming the court’s conclusion that Venture has failed to show by clear and convincing evidence that any of the disputed claims are invalid for obviousness.

C. On-Sale Bar

MCE Blending, which was formed by Texon and Mid-Continent Energy, a company founded and owned by Mattingly (see Trial Tr. at 44:9–11, 61:19–62:1), entered into a contract to sell and install an automated butane blending system at Equilon’s Detroit facility on February 7, 2000, see *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 816. Venture argues that this transaction invalidates the ‘302 Patent, claims 2–3, 12-14, and 16; the ‘629 Patent, claim 2; and the ‘548 Patent, claims 1–3 and 6. Under 35 U.S.C. § 102(b), a patent is invalid if the invention was on sale more than one year prior to the patent’s application date. The date for the application underlying all of the patents-in-suit was February 9, 2001, which means that February 9, 2000—two days *after* the date of the MCE Blending–Equilon agreement—is the critical date for § 102(b) purposes. (See Statement of Material Facts in Supp. of Venture’s SJ Mot. [371], ¶ 3.) This “on-sale” bar applies when the invention is both “subject of a commercial offer for sale” and “ready for patenting” before that critical date. *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 67 (1998). But excluded from the § 102(b) bar are sales made “primarily for the purposes of experimentation.” *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1352 (Fed. Cir. 2002). Venture argued previously that the Equilon sale invalidates Sunoco’s patents, but the court denied summary judgment on that issue, reasoning that Sunoco “demonstrated the requisite experimental intent to defeat application of the on-sale bar.” *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 817. Venture has asked the court to reconsider its analysis. But the court declines to do so and concludes that Venture has not established that the Equilon sale was not experimental.

Venture continues to urge that the testing and verification requirements put forth in the Equilon contract are the same as those in Sunoco’s 2014 agreement with JP Energy. (See DTX 178A; PTX 284.) But there are key differences between these agreements. For example, as the

court noted in its earlier opinion, the Equilon agreement provided that MCE had to bear all of the expected costs (up to \$450,000) of the system's design and installation and that MCE had to obtain insurance for the project. *Sunoco SJ Opinion II*, 399 F. Supp. 3d at 818. In contrast, the 2014 agreement required JP Energy to pay for all of the project's costs and also required that JP Energy obtain some insurance for the project as well. (PTX 284 at 3, 8–9.) Venture is therefore incorrect to suggest that Sunoco was still using the same requirements in deals that post-dated the Equilon agreement.

Venture next insists that contrary to the court's analysis in its summary judgment opinion, there was no nexus between the sale and the experimentation because the Grabner analyzer was tested in Kansas by Wheatland Systems, an engineering firm that designed the PLC and wrote the systems' code. (See Trial Tr. at 72:1–4). But the purpose for the testing in Kansas was to ensure that a critical component of the system installed at Equilon would work. (See *id.* at 152:7–8.) Moreover, there was additional evidence that what was built for Equilon was a prototype and that the system was being tested at the Equilon site. (See *id.* at 212:3–9; 67:19–68:3.)

Venture reasserts its earlier argument that the Equilon contract was commercial in nature because it also provided for the sale of 500,000 barrels of butane. But as the court previously reasoned, butane is not the invention. *Sunoco SJ Opinion II*, 399 F. Supp. 3d at 820. And the Federal Circuit has made clear that it is the invention itself (in this case, the blending system) that must have been placed on sale. See, e.g., *Helsinn Healthcare S.A. v. Teva Pharm. USA, Inc.*, 855 F.3d 1356, 1366 (Fed. Cir. 2017) (“ . . . the offer or contract for sale must unambiguously place *the invention* on sale”). Venture cites *Plumtree Software, Inc v. Datamize, LLC*, 473 F.3d 1152 (Fed. Cir. 2006), to argue otherwise. But the relevant portion of *Plumtree*, 473 F.3d at 1162–63, concerned whether a waived tradeshow sponsor fee constituted valid consideration—not whether the invention itself had been put on sale. Finally, Venture's argument that a contract with a condition precedent can give rise to a validating sale is beside the point. In this case, the Equilon

agreement—as the court has already held—demonstrated the requisite experimental intent to defeat the application of the on-sale bar. The court adheres to its previous analysis, *see Sunoco SJ Opinion II*, 339 F. Supp. 3d at 815–822, and concludes that none of the new arguments that Venture put forth establish by clear and convincing evidence that the on-sale bar should be applied.

II. Infringement

The court now considers whether Venture infringed the claims of Sunoco’s patents that survive the validity challenge. Any person or entity who “makes, uses, offers to sell, or sells any patented invention, within the United States” infringes the patent. 35 U.S.C. § 271(a). The patentee bears the burden of demonstrating infringement by a preponderance of the evidence. *Ajinomoto Co., Inc. v. Int’l Trade Comm’n*, 932 F.3d 1342, 1352 (Fed. Cir. 2019). As analyzed below, the court finds that Sunoco has met this burden and established that certain of Venture’s facilities infringed all of the asserted claims.

A. System Claims

Sunoco alleges that Venture has infringed claims 2–3 of the ‘302 Patent, claim 2 of the ‘629 Patent, claim 7 of the ‘948 Patent, and claims 1–3 and 6 of the ‘548 Patent. These claims all disclose systems, and the Federal Circuit has held that to infringe such system claims “a party must put the invention into service, *i.e.*, control the system as a whole and obtain a benefit from it.” *Centillion Data Sys., LLC v. Qwest Comm’cns Int’l, Inc.*, 631 F.3d 1279, 1284 (Fed. Cir. 2011). The court will discuss each of the claims in turn.

1. ‘302 Patent, Claims 2–3; ‘629 Patent, Claim 2

The court previously held that these claims were infringed by Venture’s Green Bay and Madison systems. *Sunoco SJ Opinion I*, 2017 WL 4283946, at *11. Venture conceded before trial that its Milwaukee Central, Milwaukee West, and Bettendorf systems also infringe these claims. (See Am. Proposed Findings of Fact & Law [453-1] at 3.) Sunoco does not accuse Venture’s Houston or Fort Worth systems of infringing these claims.

2. '948 Patent, Claim 7

This claim discloses:

7. A system for blending butane with gasoline in a pipe to form a blend of butane and gasoline, wherein the gasoline and the blend of gasoline and butane each have a vapor pressure, comprising:

- a) a butane reservoir in fluid connection with said gasoline;
- b) an injector valve for discharging butane into said gasoline;
- c) a vapor pressure analyzer connected to said pipe, said analyzer configured to determine the vapor pressure of the blend of gasoline and butane, and to transmit said vapor pressure to a processor;
- d) a programmable logic controller governing the flow of butane through said injector valve; and
- e) a processor programmed to receive the vapor pressure from the analyzer, calculate an amount of butane to inject into the gasoline based on a maximum preprogrammed volatility limit, and provide a control signal to said programmable logic controller according to said maximum preprogrammed volatility limit;

wherein the programmable logic controller is configured to adjust the injector valve to govern the flow of butane through said injector valve into said gasoline based on the signal from the processor.

('948 Patent, col. 18 ll. 12–35.) Venture has conceded, based on the court's claim construction, that all elements of this claim are present in the seven accused systems, with a single exception: (e) the processor programmed to receive vapor pressure reading, calculate the appropriate butane injection, and provide a control signal to the programmable logic controller. (See Am. Proposed Findings of Fact & Law [453-1] at 8.) Venture argues, as it did in an earlier motion for summary judgment of noninfringement, that element (e) requires two separate computer components—(1) a processor that receives the vapor pressure and calculates the amount of butane to inject and (2) a PLC that adjusts the blend percentage—while Venture's systems have just one computer that both calculates the blend percentage and adjusts the blending. But the court denied summary judgment because under Federal Circuit precedent, such as *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005), *abrogated on other grounds, Iris Corp. v. Japan Airlines Corp.*, 769 F.3d 1359, 1361 n.1 (Fed. Cir. 2014), nothing in the claim required that “signals or instructions [] transmitted from a processor to a programmable logic controller

originate ‘outside’ the programmable logic controller.” *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 829. Thus, “[a] reasonable jury could find that signals or instructions originating from a processor ‘within’ a programmable logic controller are ‘transmitted to’ that controller.” *Id.*

At trial, Venture presented evidence confirming that its systems used only one computer component. (Trial Tr. at 285:4–10, 290:20–24, 291:4–6, 343:2–6, 967:12–23.) The court also acknowledged that the patent’s specification describes the processor and PLC as separate components. (*Id.* at 173:1–5.) Patent language also describes the processor as “coupled” with a PLC, however (‘948 Patent, col. 17 ll. 4–5), and Venture’s systems do all have a processor housed in the PLC. (Trial Tr. at 290:23–24.) Venture’s own expert testified that he did not interpret the claim as requiring separate computer components. (*Id.* at 1556:14–1557:14.) Norman Goddard—Sunoco’s expert—likewise recognized in his testimony that simply combining two computer components into one is not sufficient to avoid infringement. (*Id.* at 291:23, 293:1–294:4.) In light of this expert testimony, the court’s previous analysis, and evidence establishing that Venture’s systems had a processor and a PLC that, although combined, performed all of the functions described in element (e), the court finds that all seven systems infringed this claim.

3. ‘548 Patent, Claims 1 and 6

Sunoco accuses all seven of Venture’s systems of infringing claims 1 and 6 of the ‘548 Patent. These system claims are essentially identical, and Venture disputes only two elements of both claims. First, Venture argues that its systems do not use “a volatility measurement device in communication with the gasoline stream.” (Am. Proposed Findings of Fact & Law [453-1] at 10–11.) Before trial, however, Venture conceded that its systems include the last element of claim 6, which is the only element of claim 6 that does not appear in claim 1: “wherein the volatility measurement device is in communication with the gasoline stream at a location downstream of the injection device.” (*Id.* at 11.) As Goddard testified for Sunoco, it is contradictory for Venture to concede that its systems have a “volatility measurement device [] in communication with the gasoline stream at a location downstream of the injection device” and yet dispute that its systems

have “a volatility measurement device in communication with the gasoline stream.” (Trial Tr. at 295:12–296:3.) Despite this concession, Venture noted earlier in the litigation that its Green Bay, Madison, Milwaukee West, Milwaukee Central, Bettendorf, and Fort Worth systems all “measure and use the downstream volatility measurements.” (Defs.’ Statements of Material Facts [197] ¶ 9.) And the piping and instrumentation diagram for the Houston system, like the other six systems, also show a “downstream” volatility measurement device. (*Compare, e.g.,* PTX 17, *with* PTX 179.; *see also* Trial Tr. at 296:9–297:12.) Venture argues that its systems therefore do not include this disputed element because, by measuring volatility downstream of the blend point, they measure only the blended stream and not solely the gasoline stream. But the court has previously rejected an interpretation requiring that measurement occur upstream. *See Sunoco Markman Opinion II*, slip op. at 7–10 (“The court . . . declines to impose the limitation that all relevant vapor pressure measurements can be made only ‘upstream.’”). Furthermore, the last element of claim 6 (which Venture does not dispute) describes the volatility measurement device as being both “in communication with the gasoline stream” and “downstream of the injection device.” (‘548 Patent, col. 18 ll. 1–3.) This suggests that the volatility measuring device in the patented system can be both downstream and still in communication with the gasoline stream.

Venture’s systems also include the other disputed element of claims 1 and 6: a processor configured to “determine an adjustment to the butane flow rate based on the volatility measurement and the target volatility value.” (Am. Proposed Findings of Fact & Law [453-1] at 10–11.) Venture has conceded that its systems include “a processor in connection with the injection device and the volatility measurement device” and that the processor receives both “the volatility measurement” and “a target volatility value.” (Am. Proposed Findings of Fact & Law [453-1] at 11.) The question then is whether the processor “determine[d] an adjustment to the butane flow rate” based on those two values. The court concludes that the processors in Venture’s systems did so. As Venture has described each system, an “analyzer measures the volatility of the blended gasoline/butane downstream of the blending point; the measurement is

transmitted to a programmable logic controller; and the programmable logic controller compares the measurement to a target value.” (Defs.’ Statements of Material Facts [197] ¶ 10.) “[I]f the measurement is less than the target value, the programmable logic controller sends signals to the equipment to increase the amount of butane that is blended with gasoline.” (*Id.*) Likewise, Goddard testified that Venture’s operating instructions confirm that this is how Venture’s systems function. (See Trial Tr. at 299:3–300:1; PTX 164 at 2.) Thus, Venture’s systems included a processor that is configured to “determine an adjustment to the butane flow rate based on the volatility measurement and the target volatility value.” Because Venture’s systems used both disputed elements of these claims, the court finds that Venture infringed claims 1 and 6 of the ‘548 Patent.

4. ‘548 Patent, Claims 2–3

Claim 2 discloses “[t]he system of claim 1, wherein the target volatility value is based on at least one of seasonable and regional data.” (‘548 Patent, col. 17 ll. 29–31.) Venture has disputed only whether it uses the system of claim 1 and has conceded that its systems include the claim’s other elements. Because the court found above that Venture does infringe claim 1, the court can conclude that Venture also infringes claim 2.

Claim 3 describes, “The system of claim 1, further comprising a plurality of gasoline streams each associated with a different type of gasoline, at least one gasoline stream being selectable for blending with butane.” (‘548 Patent, col. 17 ll. 32–35.) Venture argues that its systems do not include the claim’s second element because they do not blend different types of gasoline “in parallel.” (Defs.’ Post-Trial Mem. [472] at 10). And according to Venture, “the ‘548 Patent shows a system that can blend different types of gasoline in parallel using a ‘plurality of streams.’” (*Id.*) But the language of claim 3 plainly does not require blending “in parallel;” in fact, the phrase “at least one gasoline stream being selectable for blending with butane” implies that in some iterations, the patented system will be used to blend just one type of gasoline at a time. The court agrees with Goddard that a system can include a plurality of streams even if it has only

one blending system. (Trial Tr. at 441:15–18.) Sunoco presented sufficient evidence to demonstrate that all Venture’s systems (except Bettendorf) blend different grades of gasoline. (See *id.* at 304:1–9, 1049:7–17; PTX 193.) The court therefore finds that the six systems other than Bettendorf had the “plurality of gasoline streams” called for by this element. And because the court has already found that these systems infringe claim 1, the Green Bay, Madison, Milwaukee West, Milwaukee Central, Fort Worth, and Houston systems also infringe dependent claim 3.

B. Method Claims

“The invention recited in a method claim is the performance of the recited steps.” *NTP*, 418 F.3d at 1322. A method claim is infringed only if all of its steps are actually utilized. *Id.* at 1318. Sunoco has alleged that three different versions of software—Technics’ Version 1 (“V1”), Technics’ Version 2 in First Pass Only mode (“V2 FPO”), and U.S. Venture’s software—used at various times by Venture infringed certain of its method claims. As discussed below, the court finds that these software versions did infringe the asserted method claims.

1. ‘302 Patent, Claims 16–17

Sunoco accuses the Technics V1 and V2 FPO software of infringing these two method claims.¹¹ The former software was used at Venture’s Green Bay and Madison facilities, while the latter was used at Green Bay, Madison, and Milwaukee Central. As noted (*see supra* note 6), Claim 16 depends on claim 14, which depends on claim 13, which depends on independent claim 12. Starting with claim 12, Venture acknowledged before trial that Milwaukee Central always infringed because it drew “a gasoline stream from a tank of gasoline” and that Green Bay and Madison sometimes blended from a tank. (Am. Proposed Findings of Fact & Law [453-1] at 4.)

¹¹ Under Technics Version 1, unblended gasoline would be piped through the system and the analyzer would measure its vapor pressure. Then butane would be added to the system, with the analyzer then sampling blended gasoline and adjusting the blend percentage. (See Trial Tr. at 313:12–24.) Technics Version 2—when in First Pass Only mode—worked the same way. (See *id.* at 314:11–18, 315:2–5.)

Venture nevertheless now argues that Sunoco failed to offer sufficient proof of infringement. (See Defs.' Post-Trial Mem. [472] at 4–5.) First, Venture contends that Sunoco did not demonstrate that either the Madison or Green Bay facilities blended from a tank when using Technics V1 or V2 FPO. But Daniel Morrill, Venture's director of terminal operations, testified that Madison and Green Bay blend from tanks "the majority of the time." (Trial Tr. at 1042:3–6.) It is reasonable to infer then that some tank blending occurred when those facilities used Technics V1 or V2 FPO. Second, Venture asserts that there is no evidence that Milwaukee Central (which always blended from a tank) ever used Technics V2 in the First Pass Only mode. But Technics V2 FPO was installed at Milwaukee Central. (*Id.* at 308:8–9.) And Morrill testified that though he had a preference for the non-FPO mode, Venture lacked policies, procedures, or even suggestions about which mode was to be used, leaving the choice of mode entirely within the discretion of the terminal manager. (*Id.* at 958:10–17, 959:12–13.) In such a circumstance, despite Morrill's assertion at trial that Venture lacked any records about which mode was used at any given time (*Id.* at 959:14–16), it is reasonable to conclude that the Milwaukee Central facility used Technics V2 FPO on at least some occasions.

Venture does not dispute infringement of any elements of claim 13. (See Am. Proposed Findings of Fact & Law [453-1] at 5.)

With respect to claim 14, Venture disputes that its systems determined the blend ratio "from a vapor pressure of the gasoline stream and a vapor pressure of the butane stream." (*Id.*) The court finds that Venture infringed this claim when using Technics V1 and V2 FPO. Both of those software programs worked by sampling the vapor pressure of unblended gasoline before adding butane to the system. (Trial Tr. at 313:12–314:18.) Likewise, both programs used a value for butane vapor pressure—either determined from a sampling of the butane stream or through the use of an assumed value. (See *id.* at 320:6–8.) The programs then used those values to calculate the blend ratio. (See *id.* at 322:6–7, 329:2–10, 330:18–331:25.) Venture had previously argued that its systems did not infringe if they used only a butane vapor pressure value that was

assumed or added to the programs by a human operator. The plain language of claim 14 does not require that butane vapor pressure be determined by sampling the butane stream, as Venture's own invalidity expert interpreted the claim. (*Id.* at 1589:21–25.) Moreover, as the court previously noted, such an interpretation would render other claims superfluous. See *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 832.

As for claim 16, Venture contends that its systems do not “transmit[] the gasoline vapor pressure . . . to the processing unit,” “transmit[] . . . the butane vapor pressure to the processing unit,” or “calculat[e] the blend ratio from the gasoline vapor pressure, the butane vapor pressure, and the predetermined value for the vapor pressure of the blend.” (Am. Proposed Findings of Fact & Law [453-1] at 6.) Specifically, as with claim 7 of the '948 Patent, Venture argues that these elements show that the claim requires two separate computer components: a processor to calculate the blend ratio and a PLC to adjust the blend percentage. But the court rejected such an interpretation of Sunoco's patents above and in a prior summary judgment opinion. See *Sunoco SJ Opinion II*, 339 F. Supp. 3d at 829. Moreover, no language in claim 16 concerns adjusting the blend percentage; the method relates only to calculating the blend ratio. (See '302 Patent, col. 14 ll. 30–40.) That is, even if the court accepted Venture's two-computer-components argument (which it does not), it would not apply to claim 16, which does not describe adjusting the flow of butane.

Venture raises the same argument about separate computer components with respect to claim 17. Although claim 17, unlike claim 16, does concern both calculating the blend percentage and adjusting the flow of butane, the court stands by its earlier conclusion that Venture cannot avoid infringement merely by housing a processor and PLC together. Therefore, the court finds that Venture's Green Bay, Madison, and Milwaukee Central facilities infringed claims 16 and 17 of the '302 Patent.

2. '629 Patent, Claim 31

Sunoco accuses all of Venture's terminals (except Milwaukee Central) of infringing claim 31 of the '629 Patent when using U.S. Venture-developed software. As discussed above,¹² this claim discloses:

- 31.** A computer-implemented method for blending a butane stream and a gasoline stream comprising the steps of:
- receiving a first measurement indicating a vapor pressure of the gasoline stream;
 - calculating a blend rate at which the butane stream can be blended with the gasoline stream;
 - transmitting an instruction to a programmable logic controller for adjusting the butane stream to the calculated blend rate for blending with the gasoline stream and distributing at a rack;
 - receiving a second measurement indicating a vapor pressure of the blended gasoline stream and butane stream.

('629 Patent, col. 16 ll. 8–9.) The court determined above that the preamble should be interpreted as limiting the claim's elements.

Venture's first argument for non-infringement of this claim is a familiar one: Venture insists that this claim requires two separate computer components. The court rejected this argument elsewhere and does so here as well.

In a second argument, Venture maintains that its operations in Bettendorf, Milwaukee West, Houston, and Forth Worth do not infringe this claim because they collected the vapor pressure of unblended gasoline only for recordkeeping purposes. (See Trial Tr. at 339:22–23.) The records would allow Venture "to track the RVP of the unblended gasoline" so that it can "analyze that data over time to predict this RVP of the unblended gasoline by season." (*Id.* at 964:24–965:10.) But Morrill testified that Venture has never actually used that data. (*Id.* at 965:11–12.) In any event, the court agrees with Sunoco and its expert Goddard that claim 31 does not require that the measurement actually be used to calculate the ratio. (See *id.* at 340:10–

¹² See *supra* Section I.A.

11.) Venture insists that interpreting the preamble as limiting requires the court to conclude that the measurement must be used as part of the blending. As the court reads that preamble, merely using the value for recordkeeping purposes is consistent with it. Indeed, claims 32 and 33—which are dependent on claim 31—describe the “computer-implemented method” as also generating a report that includes the “first measurement.” (‘629 Patent, col. 16 ll. 20–24.) The recordkeeping performed at Bettendorf, Milwaukee West, Houston, and Fort Worth infringed claim 31 even though the preamble limits the claim.

Venture’s third argument is more compelling: Venture contends that neither Madison nor Green Bay has infringed this claim because when using Venture’s software, those systems are not capable of measuring the vapor pressure of unblended gasoline. The court agrees. Morrill testified that regardless of which direction gasoline flows through those systems, only blended gasoline is sampled. (See Trial Tr. at 937:6–9, 939:20–22.) In response, Sunoco points out that Morrill admitted that the drawings of the Green Bay and Madison systems are inaccurate. (*Id.* at 1015:6–12.) Sunoco also points to an email exchange among Venture employees in which it was noted that Green Bay was “set up to analyze the incoming gasoline upstream of the blending.” (*Id.* at 1055:20–22; see also PTX 464.) Morrill denied that the email was accurate (Trial Tr. at 1055:23–24)—a denial that may, of course, be self-serving—but Sunoco’s other evidence regarding the Green Bay and Madison systems was unconvincing. For instance, Sunoco’s expert could not identify how the source code accounted for sampling unblended gasoline (Trial Tr. at 408:18–409:5), nor could he explain how the systems’ three-way valves would work such that the unblended stream could be sampled (*Id.* at 427:15–428:13). Hence, the court finds that Sunoco failed to demonstrate by a preponderance of evidence that the Green Bay and Madison systems infringed claim 31.

III. Remedy

Because its patents were infringed, Sunoco is entitled to “adequate compensation for the infringement.” 35 U.S.C. § 284. Sunoco asserts that it is entitled to lost profit damages of \$31.585

million or, in the alternative, a reasonable royalty of \$17.1 to \$25.7 million. Venture contends that Sunoco is entitled to no lost profit damages at all and, at most, a reasonable royalty of \$2 million. The court agrees with Venture that lost profit damages are not appropriate in this case. In addition, the court concurs with Venture's reasonable royalty analysis and awards Sunoco \$2 million, plus prejudgment interest. The court also concludes that enhanced damages are appropriate and awards Sunoco treble damages but declines Sunoco's request for attorney fees.

A. Panduit Analysis

"The goal of lost profit damages is to place the patentee in the same position it would have occupied had there been no infringement." *Mentor Graphics*, 851 F.3d at 1285. Under the test from *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152 (6th Cir. 1978), Sunoco is entitled to lost profit damages if it can establish: "(1) demand for the patented product," (2) an "absence of acceptable non-infringing alternatives," (3) "manufacturing and marketing capability to exploit the demand," and (4) "the amount of profit it would have made." *Mentor Graphics Corp. v. EVE-USA, Inc.*, 851 F.3d 1275, 1285 (Fed. Cir. 2017). In their post-trial memoranda, both parties primarily focus on the second *Panduit* factor and contest only whether Venture's modified system—which requires a human operator to manually enter the blend percentage (Trial Tr. at 1043:10–13)—was an available and acceptable non-infringing alternative. The Federal Circuit has said that "[d]amages under *Panduit* are not easy to prove," and this second factor "often proves the most difficult for patent holders." *Mentor Graphics*, 851 F.3d at 1285–86. Still, because the parties' dispute concerns only the modified system, Sunoco can prevail on this factor by showing that the modified system was either not acceptable to Venture or not available at the time. *Presidio Components, Inc. v. Am. Tech. Ceramics Corp.*, 875 F.3d 1369, 1380 (Fed. Cir. 2017) ("To prove the absence of acceptable, non-infringing alternatives, the patentee may prove either that the potential alternative was not acceptable to potential customers or was not available at the time.").

The court finds that Sunoco has demonstrated that the modified system is not “acceptable.” Evidence admitted at trial showed that Venture began researching an automated butane blending process in 2008. (Trial Tr. at 1273:4–6, 1274:3–6.) After learning about the Texon system, and not reaching an agreement to use their services, Venture spent years “invest[ing] significant effort researching alternatives.” (PTX 116 at 4.) As Chris Lamirande, a Venture employee, testified, Venture was specifically looking for an *automated* way of blending butane into gasoline. (Trial Tr. at 1288:17–18.) The designs for Venture’s first two automated blending systems are dated July 2010. (See PTX 17; PTX 24.) And Venture constructed five more automated systems over the next seven years. (See, e.g., PDX 2 at 111.) Venture now insists that the modified system—which it adopted only after learning about the ‘948 and ‘548 patents (Defs.’ Post-Trial Mem. [472] at 33)—is an acceptable substitute for the automated system it engaged in a years-long effort to create and expand. The argument is not a compelling one. As the Federal Circuit has explained, “if purchasers are motivated to purchase because of particular features available only from the patented product, products without such features . . . would not be acceptable noninfringing substitutes.” *Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1373 (Fed. Cir. 1991). Automation is the key feature of Sunoco’s patented system and the feature that Venture spent years replicating in its own infringing systems. The advantages of Sunoco’s system and Venture’s own earlier system derive directly from automation: First, the modified system, as Venture’s own damages expert testified, costs the company 10 percent more than the old automated system did. (Trial Tr. at 1697:11–13.) Second, the modified system requires a human operator, which increases the risk of over-blending and other consequences of human error. (*Id.* at 87:9–89:11.) It is no surprise then that, according to Rys, Venture’s human operators preferred that the modified system be scrapped for the automated one. (*Id.* at 1635:3–17.) While other Venture witnesses testified that the company has been satisfied with the modified system’s results (see, e.g., *id.* at 861:21–862:2, 985:24–

986:5), automation was the “particular feature[] available only from the patented product” and so the modified system is not “acceptable.” See *Standard Havens*, 953 F.2d at 1373.

Although Sunoco has, thus, met its burden on *Panduit’s* second factor, the court has concerns about the evidence Sunoco offered on the fourth—that is, the amount of profit Sunoco would have made, had Venture not infringed. Based on the testimony of its expert, Dr. Keith Ugone, Sunoco asserts that it is entitled to \$31.585 million in lost profit damages. (Pl.’s Post-Trial Mem. [473] at 20.) According to Ugone, that figure is the amount that Sunoco would have received, had Venture signed a butane supply agreement with Sunoco and the two parties split the resulting profits fifty-fifty. (Trial Tr. at 677:4–8.) These profits derive from the sale of gasoline that has been blended with butane. (*Id.* at 537:10–12.) Specifically, the profit margin is the difference between (1) the price of the extra gasoline that can be sold because it was blended with butane and (2) the cost to purchase, transport, and blend the butane. (*Id.* at 494:23–495:6.) But the problem with this analysis is that neither butane nor blended gasoline is the patented invention. And neither butane nor blended gasoline constitute a “functional unit” with the patented invention. *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1539, 1549–50 (Fed. Cir. 1995) (explaining that in cases in which “the entire market value” of the patented and unpatented components are considered for a damages calculation, “the unpatented and patented components together were considered to be components of a single assembly or parts of a completed machine, or they constituted a functional unit”). After all, Sunoco does not even require their blending partners to use Sunoco-supplied butane. (Trial Tr. at 536:13–16.) That \$31.585 million figure represents more than just the damage Sunoco incurred from Venture’s infringement. As Venture’s expert, Dr. James Malackowski testified, Sunoco’s butane supply agreements do not translate into the value of the patent. (See *id.* at 1747:15–1748:1.) This court is not the first to identify such problems with Ugone’s analysis. In a different patent suit brought by Sunoco, the magistrate judge granted defendant’s motion to exclude Ugone’s damages opinions because Ugone failed to apportion the value of the patented system in comparison to the value of the butane supply

agreements. See *Sunoco Partners Mktg. & Terminals L.P. v. Powder Springs Logistics & Magellan Midstream Partners, L.P.*, No. 17-cv-1390, at *15 (D. Del. Jan. 3, 2020) (order granting the defendant's *Daubert* motion without prejudice to submission of a supplemental damages report).

Importantly, because Sunoco did not provide any other figure for its lost profits, the court concludes that it did not satisfy *Panduit's* fourth factor. Sunoco is therefore not entitled to recover lost profits, and the court will instead consider the reasonable royalty Venture owes to Sunoco. See 35 U.S.C. § 284 ("Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but *in no event less than a reasonable royalty* . . .") (emphasis added); *Panduit*, 575 F.2d at 1157 ("When actual damages, e.g., lost profits, cannot be proved, the patent owner is entitled to a reasonable royalty.").

B. Reasonable Royalty

A reasonable royalty is commonly determined by using the "hypothetical negotiation" approach, which "ascertain[s] the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before the infringement began." *Lucent Techs., Inc. v. Gateway Inc.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009). In other words, "[t]he hypothetical negotiation tries, as best as possible, to recreate the *ex ante* licensing negotiation scenario and to describe the resulting agreement." *Id.* at 1324; see also *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970) (listing factors that have been considered when calculating a reasonable royalty).

Sunoco argues that it is entitled to reasonable royalty damages of \$17.1 to \$25.7 million, a range based on Ugone's analysis. At the time infringement began, Ugone estimated that Venture could expect to recover profits of \$0.40 to \$0.60 per gallon of butane blended. (Trial Tr. at 695:13–15.) Ugone divides those numbers in half because Sunoco typically negotiated a fifty-fifty profit share agreement with its customers. (*Id.* at 696:2–5.) Ugone then multiplied those numbers by the 85.7 million gallons of butane that Venture blended during the infringement period

(from April 2012 to April 2017), which equals about \$17.1 million to \$25.7 million. (*Id.* at 696:9–11.) But Ugone’s royalty analysis suffers from the same flaw as his lost profits analysis: it relies in large part on a comparison with Sunoco’s butane supply agreements, which cover services beyond simply the value of the patents. (See *id.* at 1779:12–16.)

Meanwhile, Malackowski testified for Venture that \$2 million is the proper amount of royalty damages. (*Id.* at 1729:9–11.) Malackowski reached this number by first determining that Venture’s modified system can blend about 10 percent less butane than Sunoco’s patented system and, because it requires a human operator, might require Venture to spend an extra \$200,000 on salary annually. (*Id.* at 1710:12–14.) Blending 10 percent less butane would have cost Venture about \$4.6 million over the five-year infringement period, and the total salary for an extra operator over that same period would equal \$1 million. (*Id.* at 1714:23–1715:1.) \$5.6 million then is the most that Venture would pay to use Sunoco’s patented system (*id.* at 1715:19–25), and, in Malackowski’s judgment, the parties would both have hypothetically agreed to license the system for \$2 million (*id.* at 1728:3–4).

Sunoco disputes this much lower figure, arguing that the patents were valued at \$140 million only two years before the period of infringement began. This figure is the amount that Sunoco paid for Texon’s butane blending business in 2010. (*Id.* at 85:15–16.) Sunoco has not established, however, that the entire sum it paid Texon was for the patents-in-suit. Although one of Sunoco’s witnesses, Joseph Collela, so testified (*id.* at 507:24–508:1), another (Mattingly) testified that Sunoco’s purchase included both the patents and Texon’s butane blending contracts (*id.* at 85:17–19). As the court has already noted, the butane supply agreements cover far more than just patent licenses, rendering it difficult to identify how much of that \$140 million actually concerned the patents as opposed to Texon’s profit sharing agreements.¹³

¹³ Both parties spent much time at trial and in their post-trial memoranda contesting the significance of an additional \$785,000 payment that Mattingly’s company, Mid-Continent Energy, received from Sunoco as part of this transaction. (See Trial Tr. at 86:9–13.) Venture argues that this amount was actually all that Sunoco paid for the patents. (See Defs.’ Post-Trial

Another component of the Texon-Sunoco transaction supports Malackowski's more modest calculation: Although Texon sold the rest of its blending business to Sunoco, it retained its contracts with Buckeye Terminals. (See DTX 92 at 9.) As part of the sale, Sunoco granted back to Texon a license for the "Blending Patents" to be used at the Buckeye facilities. (*Id.* at 11.) In consideration, Texon agreed to pay Sunoco \$0.02 for each gallon it blended for Buckeye. (*Id.*) If Venture owed Sunoco \$0.02 per gallon for the 85.7 million gallons of butane it blended during the infringing period, it would have paid \$1.714 million.

Ultimately, the court was more persuaded by the analysis provided by Venture's expert than that provided by Sunoco's. Therefore, the court finds that Sunoco is entitled to a reasonable royalty of \$2 million.

C. Prejudgment Interest

The Federal Circuit has held that courts ought to award prejudgment interest under § 284 "absent some justification for withholding such an award." *Comcast IP Holdings I LLC v. Spring Commc'ns Co., L.P.*, 850 F.3d 1302, 1313 (Fed. Cir. 2017) (quoting *Gen. Motors Corp. v. Devex Corp.*, 461 U.S. 648, 657 (1983)). The court sees no justification for withholding prejudgment interest, and Venture has not offered a reason for doing so either. Therefore, Sunoco is entitled to prejudgment interest based on its damages from April 2012 to April 2017. See *id.* at 1315 ("Prejudgment interest runs from the earliest date of infringement for any patent issued at the time of the hypothetical negotiation."). Neither party established which rate should be applied in this case, so the prejudgment interest will be based on the prime rate. See *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 939 F.2d 1540, 1545 (Fed. Cir. 1991) ("[I]t is not necessary that a patentee demonstrate that it borrowed at the prime rate in order to be entitled to prejudgment interest at that rate. A trial court is afforded wide latitude in the selection of interest rates.") (citation omitted).

Mem. [472] at 26.). But even if that payment was for made for tax purposes as Sunoco contends and Mattingly testified (*id.* at 86:16–17), Sunoco still did not establish that the larger \$140 million payment was exclusively for Texon's patents or how much of that figure was for the patents versus Texon's butane supply agreements.

The parties shall file a joint statement on the calculation of prejudgment interest that Venture owed to Sunoco by February 21, 2020.

D. Permanent Injunction

Finally, Sunoco has requested that the court issue a permanent injunction to prevent Venture from infringing in the future. A permanent injunction is appropriate when (1) the plaintiff “has suffered irreparable injury,” (2) “remedies available at law, such as monetary damages, are inadequate to compensate for that injury,” (3) “considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted,” and (4) “the public interest would not be disserved by a permanent injunction.” *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388, 391 (2006). With respect to the first two parts of the test, Venture will always be capable of undoing the modifications it made to its systems in April 2017, so there remains a risk of future infringement. Also, because Sunoco and Venture continue to operate in similar markets, future infringement could risk Sunoco’s current market share. *See i4i Ltd. P’ship v. Microsoft Corp.*, 598 F.3d 831, 862 (Fed. Cir. 2010) (stating that “loss of market share,” among other factors, “may frequently defy attempts at valuations”). Moreover, that the court was able to determine a reasonable royalty for infringement this time is no guarantee that remedies at law will be available or appropriate again. *See Acumed LLC v. Stryker Corp.*, 551 F.3d 1323, 1328 (Fed. Cir. 2008) (“While the fact that a patentee has previously chosen to license the patent may indicate that a reasonable royalty does compensate for infringement, that is but one factor for the district court to consider.”).

The balance of hardships also favors Sunoco. Venture has maintained that it actually prefers using the manual, modified system rather than an automated one like Sunoco’s. (See, e.g., Trial Tr. at 985:7–987:4.) The record thus undermines any contention Venture could make about being burdened by a permanent injunction. Finally, Federal Circuit precedent is clear that “the public is best served by enforcing patents that are likely valid and infringed.” *Abbott Labs. v. Andrx Pharm., Inc.*, 452 F.3d 1331, 1348 (Fed. Cir. 2006); see also *eBay*, 547 U.S. at 1841

(Roberts, C.J., concurring) (“From at least the early 19th century, courts have granted injunctive relief upon a finding of infringement in the vast majority of patent cases.”). Almost all of the asserted claims are valid and have been infringed. For the above reasons, the court will enter a permanent injunction

E. Willfulness and Enhanced Damages

Upon a finding of patent infringement, a court “may increase the damages up to three times the amount found or assessed.” 35 U.S.C. § 284. Increased damages, however, “are not to be meted out in a typical infringement case, but are instead designed as a ‘punitive’ or ‘vindictive’ sanction for egregious infringement behavior.” *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923, 1932 (2016). Though the Supreme Court has “eschew[ed] any rigid formula for awarding enhanced damages under § 284,” they are appropriately awarded in “egregious cases of misconduct beyond typical infringement.” *Id.* at 1934–35. The Federal Circuit has outlined various factors that district courts may consider when determining whether enhanced damages are appropriate.¹⁴ To determine whether infringement is “egregious,” the court is ultimately required only “to consider the particular circumstances of the case.” *Presidio Components*, 875 F.3d at 1382.

The Supreme Court has said that the willfulness or bad faith entitling a patent-holder to enhanced damages needs to be shown only by a preponderance of the evidence. *Halo Elecs.*,

¹⁴ Among the nonexclusive factors that a district court may consider are

- (1) “whether the infringer deliberately copied the ideas of another”;
- (2) “whether the infringer . . . formed a good-faith belief that [the patent] was invalid or that it was not infringed”;
- (3) “the infringer’s behavior as a party to the litigation”;
- (4) the “[d]efendant’s size and financial condition”;
- (5) the “[c]loseness of the case”;
- (6) the “[d]uration of the defendant’s misconduct”;
- (7) “[r]emedial action by the defendant”;
- (8) the “[d]efendant’s motivation for harm”;
- and (9) “[w]hether the defendant attempted to conceal its misconduct.”

Read Corp. v. Portect Inc., 970 F.2d 816, 827 (Fed. Cir. 1992), *abrogated in part on other grounds*, *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996); *see also Georgetown Ry. Equip.*, 867 F.3d at 1244 (noting that the *Read* factors are nonexclusive).

136 S. Ct. at 1934. Venture argues that Sunoco has not met that burden, and correctly points out that several of the factors identified in *Read Corp.*, 970 F.2d at 827, weigh in Venture’s favor on this issue. For instance, Sunoco did not establish that Venture’s size and financial condition made enhanced damages necessary to deter future misconduct. See, e.g., *LIQWD, Inc. v. L’OREAL USA, Inc.*, No. 17-14-JFB-SRF, 2019 WL 6840353, at *7 (D. Del. Dec. 16, 2019) (reasoning that this factor favored enhanced damages because the “[p]laintiffs were substantially smaller than defendant” and therefore “[t]he defendants are not likely to be deterred from similar behavior in the future, absent enhancements”). Venture had some arguable defenses to a claim of willful infringement, as the court acknowledged at the end of the trial. (Trial Tr. at 1901:23–1902:10.) See also, e.g., *Kolcraft Enters., Inc. v. Chicco USA, Inc.*, No. 09-CV-0339, 2019 WL 4242482, at *20 (N.D. Ill. Sept. 6, 2019) (finding that, even though the jury determined the infringement was willful, enhanced damages were not appropriate because “the issue was highly contested and a rational jury could have gone the other way”), *appeal docketed*, No. 20-1102 (Fed. Cir. Oct. 31, 2019). A sarcastic email message from 2012¹⁵ could be interpreted as an expression of a desire to harm Sunoco’s business, but it can also be understood as reflecting Venture’s hope to compete with Sunoco and profit from butane blending. See, e.g., *id.* (reasoning that this factor did not favor enhanced damages because the defendant, though a direct competitor of the plaintiff, “was motivated by a general desire to increase sales and profits”). Nor does the court agree that a July 2011 email message from Lamirande evidences an effort to conceal infringement.¹⁶ While

¹⁵ After a former Texon and Sunoco employee reached out to Venture to offer his expertise on butane blending and noted that the gasoline-butane spread is \$1.50, one Venture employee wrote to his colleagues: “What he doesn’t say is, I’m going to give you ten cents of that \$1.50, charge you \$50 cents [sic] to get it there, take the next ten cents and if you are lucky, I’ll split the balance with you. Did I mention we hold a patent on butane blending. Sorry for the sarcasm, but texon delayed us in blending by two years.” (PTX 390.)

¹⁶ In that email, Lamirande explained to coworkers that “Texon LLC developed a butane blending system whereby the[y] blend butane into gasoline in line to the truck rack” and that “they are very proud and protective of” that patented system. (PTX 350 at 3.) Lamirande noted that Manion had concluded that Venture did not violate Sunoco’s patents, but he cautioned

Lamirande could have chosen his words more carefully, other emails in the thread suggest that Venture was contemplating a request that Sunoco provide advice about butane blending. (*Id.* at 4 (“We should check out ILTA contacts at Sunoco Logistics (Monica) to see what programs they added when installing butane blenders.”).) Indeed, Don Johnston, a Venture employee, did reveal Venture’s activities to a Sunoco employee in 2014. (See Myers Dep. at 258:5–259:3.)

There is nevertheless substantial evidence in support of an award of enhanced damages. As described above,¹⁷ it appears that Venture effectively copied the Texon system. Venture first began researching automated butane blending in 2008 and learned from Dan Myers, a Texon employee, that Texon already owned a number of patents on the subject matter. (Trial Tr. at 1273:7–9, 1274:21–22.) Texon gave a presentation to Venture on its systems in December 2008. (*Id.* at 1276:7–9; PTX 59.) The presentation’s slides were marked “Confidential Information” and discussed the advantages of blending at the rack as well as the tests Texon’s systems performed. (PTX 59.) After that meeting, Venture began to research Texon’s patents. (Trial Tr. at 848:14–15, 1020:16–18, 1278:2–5.) Although Venture tried to reach an agreement with Texon to blend butane at the Green Bay facility, negotiations between the two parties broke down. (*Id.* at 888:13–15.) Venture spent “two years . . . invest[ing] significant effort researching alternatives” (PTX 116 at 4), and finally reached an agreement with Technics to install a tank-only blending system at some of its facilities (Trial Tr. at 857:12–18). Technics, like Venture, had never designed a butane blending system before. (*Id.* at 1361:10–13.) Yet Technics came up with a design in just two weeks. (*Id.*) And that design was, as even a Venture employee acknowledged, “very similar” to Texon’s. (*Id.* at 1361:18–21.) Specifically, Technics proposed to configure the Grabner analyzer in the exact same way as Texon’s system. (*Id.* at 1295:15–23.) The same two Coriolis meters were also included in the proposal. (*Id.* at 1361:25–1362:1.)

his colleagues about telling Sunoco that Venture also had a butane blending system: “I would not bring it to their attention as I don’t think anything good would come from it.” (*Id.*)

¹⁷ See *supra* Section I.B.5.

Venture responds that the similarity between the Technics-designed system and Texon's patented system is a red herring because the use of a Grabner analyzer or Coriolis meters would be necessary for any butane blending system. But emails from Venture at the time recognized that other analyzers were available. (See DTX 586.) And the Technics proposal used the very same two Coriolis meters, one large and one small, arranged in the same configuration. (Trial Tr. at 1290:23–1291:2; 1361:18–20.) Such similarities support an inference of copying. Venture tries to distinguish its design from Texon's systems by noting that it does not blend directly to the truck rack. (See *id.* at 846:10–14, 857:16–18.) In fact, two Venture witnesses testified that the company specifically chose not to blend at the truck rack. (See *id.* at 846:15–848:9, 1232:1–10.) But Venture merely added a tank in between the blending unit and the rack. (*Id.* at 1317:15–16, 1340:23–1341:1.) The blended product flowed from these rack tanks to the rack. (*Id.* at 992:12–15.) The mere addition of the tanks to the very end of the blending process is insufficient to defeat the inference, based on the evidence discussed above, that Venture copied the Texon system.

The court also agrees with Sunoco that the opinion letter provided to Venture by attorney John Manion does not show that Venture had a good-faith belief that it was not infringing the patents. Technics had warned Venture that two patents covered the system and suggested that Venture consult a patent attorney. (*Id.* at 1202:13–14.) Manion testified that it was his understanding that Venture contacted him because of this suggestion from Technics. (*Id.* at 1144:7–11.) Although Manion's letter concluded that Venture's plans would not infringe the '302 Patent or '629 Patent (see DTX 39), Sunoco correctly established that critical premises of the letter were flawed.

First, Manion incorrectly stated that in Venture's system, "the blend rate is adjusted manually." (*Id.* at 6.) In fact, Venture's system adjusted the flow of butane automatically. Second, Manion wrote, "The proposed system is distinguishable because it does not involve gas in a tank nor a dispensing unit located at a rack for dispensing of the gasoline/butane blend." (*Id.*) But

both of these descriptions were wrong, as well. As previously discussed,¹⁸ Venture’s Milwaukee Central facility always drew gasoline from a tank, and Green Bay and Madison did so as well a majority of the time. Furthermore, while technically true that Venture did not blend directly to a rack, Venture simply added a tank between the blending unit and the rack. At trial, Manion testified that he was unaware of Venture’s design for the blend to flow immediately from a tank to a truck rack. (Trial Tr. at 1168:3–6.) Venture responds by pointing to Manion’s notes from his first conversation about the proposal in which he wrote that a benefit of the system would be the “opportunity to correct before loading into truck.” (DTX 40 at 2.) Contrary to Venture’s contentions, however, this note does not establish that Manion knew that the blend would be immediately distributed from the rack tank to the rack. Likewise, Manion’s testimony that he knew the product would be flowing out of the tank (even simultaneously) is undermined by his testimony that he had never heard of the type of tank that Venture used between the blending instrument and rack. (Trial Tr. at 1176:6–7.)

Sunoco argues with some force that this evidence shows that Venture withheld critical information from Manion when he drafted his opinion letter. Indeed, neither Venture nor Technics provided Manion with any detailed technical proposal for the system, despite his requests. (*Id.* at 1149:11, 1308:3–7.) And Morrill—the Venture employee most knowledgeable about butane blending systems—did not speak with Manion about the proposed system and did not review Manion’s opinion letter to determine whether it accurately captured the proposal. (*Id.* at 1031:12–22.) True, Venture asked Manion for his opinion about using a Grabner analyzer (DTX 41), and also put the lawyer in touch with a Technics employee working on the system (DTX 43; DTX 371). But those two instances do not make up for Venture’s failure to provide critical information, such as the proposal’s technical details, or to correct obvious errors like Manion’s belief that the proposed system blended butane manually.

¹⁸ See *supra* Section II.B.1.

An opinion letter has exculpatory value only if “the legal advice contained therein . . . [is] found on the totality of the circumstances to be competent such that the client was reasonable in relying upon it.” *Comark Comm’cns., Inc. v. Harris Corp.*, 156 F.3d 1182, 1191 (Fed. Cir. 1998). Moreover, “[i]n order to provide such a prophylactic defense,” the Federal Circuit has said, “counsel’s opinion must be premised upon the best information known to the defendant.” *Id.* Venture’s failure both to provide Manion with detailed, accurate information or review the letter for accuracy as Venture proceeded in building its systems undermines any legitimate claim for good-faith reliance on the letter. While earlier in the course of litigation Venture offered claim constructions that align with Manion’s opinion, see *Sunoco Markman Opinion I*, 2017 WL 1550188, at *6–12 (the court rejecting Venture’s offered interpretation), consistent reliance on a flawed opinion letter is hardly evidence of good faith. See *Comark Comm’cns.*, 156 F.3d at 1191 (noting that an inaccurate opinion letter “will be ineffective to indicate the defendant’s good faith”).

The court likewise agrees with Sunoco that Venture’s litigation conduct favors enhanced damages. Venture failed to produce certain key documents. For example, Technics designed the blending system based on specifications that Venture provided (Trial Tr. at 990:17-20), but Venture never produced any documentation showing what was provided to Technics. (*Id.* at 990:21–25.) True, it is possible that Morrill’s testimony is correct that the specifications were provided only verbally. (See *id.*) But the failure to produce even internal documentation or notes created by Venture is concerning—especially considering the evidence that suggests that Venture and Technics copied Texon’s systems.

Venture also misrepresented certain facts. The Morrill Declaration, for instance, states that although “the Madison and Green Bay systems have never been set up to blend solely from a gasoline tank,” “the preference and practice at Madison and Green Bay has always been to blend as much gasoline as possible straight from the pipeline.” (Morrill Decl. [194] ¶ 7.) Morrill stated during his deposition that he was unaware of any documents showing how often Venture’s facilities blended from a tank. (Morrill Dep. at 50:2–3.) But Morrill told one of Venture’s experts

that Venture actually blends from the tank the majority of the time. (Trial Tr. at 1041:15–22.) While Morrill testified that he only learned about that fact after conducting more research after his deposition (*id.* at 1042:19–20), it is not clear why such research was not conducted before his deposition or his declaration was submitted. Nor is it clear why Morrill did not correct his misstatements before the trial. Similarly, Venture submitted a declaration from Larry Clynch, the former president and chief operating officer of TransMontaigne, stating that a TransMontaigne system anticipated many claims. (See Clynch Decl. [392].) But Clynch’s trial testimony contradicted key points of his declaration. To illustrate, while Clynch had said in his declaration that for TransMontaigne’s system, “[t]he blend ratio was generated by a [PLC]” (Clynch Decl. [392] ¶ 12), he testified at trial that he did not know whether the PLC generated the blend ratio or a human operator determined it based on a table (Trial Tr. at 625:9–12).

Finally, Venture’s expansion of its butane blending business after this litigation began is troublesome. At the time Sunoco filed this suit in 2015, Venture used an automated butane blending system at only three facilities: Madison, Milwaukee Central, and Green Bay. (*Id.* at 869:1–7.) Then as the case proceeded over the next several years, Venture began automated blending at Bettendorf, Fort Worth, Milwaukee West, and Houston. (*Id.* at 870:22–871:21.) Venture insists that this doubling down on infringement does not indicate it acted willfully or in bad faith. After all, the Bettendorf, Fort Worth, and Milwaukee West systems were almost completed when the complaint was filed. (*Id.* at 336:22–24.) The court notes, however, that the Houston facility was not installed for more than a year later. (*Id.*) Venture also emphasizes that it modified its systems in April 2017 after Sunoco had filed a motion for leave to supplement its complaint with the ‘948 and ‘548 patents. (See Pl.’s Mot. for Leave to Amend & Suppl. Compl. [157].) These patents do not disclose blending at a truck rack, and Venture had previously argued that its systems were non-infringing because Venture had placed a rack tank between the blending instrument and truck rack. But this argument was based on Manion’s flawed opinion letter, which casts a shadow over Venture’s insistence that it was acting in good faith until it learned of the ‘948

and ‘548 patents. Ultimately, the court is troubled that Venture chose, with full knowledge of the infringement risk because of this suit, to dramatically expand its use of the butane blending system in question.

The evidence of Venture’s copying, bad faith reliance on Manion’s opinion letter, less-than-ideal litigation conduct, and expansion of butane blending during litigation demonstrates the appropriateness of an award of enhanced damages. See *Halo Elecs.*, 136 S. Ct. at 1932. The court awards treble damages in its discretion and pursuant to authority under 35 U.S.C. § 284.¹⁹

F. Attorney Fees

Sunoco also asks the court to award attorney fees in its favor. See 35 U.S.C. § 285 (“The court in exceptional cases may award reasonable attorney fees to the prevailing party.”). The court declines to do so. True, as described above, Venture’s conduct as a litigant could be criticized. An “exceptional case” for § 285 purposes, however, is one “that stands out from others with respect to the substantive strength of a party’s litigating position . . . or the unreasonable manner in which the case was litigated.” *Octane Fitness, LLC v. Icon Health & Fitness, Inc.*, 572 U.S. 545, 554 (2014). Although Venture can be faulted for certain conduct throughout the course of this case, the court does not find that these issues have made this an exceptional case warranting attorney fees.

¹⁹ Although the court awards treble damages, prejudgment interest can be applied only to the portion for Sunoco’s actual damages—that is, Sunoco cannot receive interest on the enhanced portion of the damages. See *Underwater Devices Inc. v. Morrison-Knudsen Co.*, 717 F.2d 1380, 1389 (Fed. Cir. 1983), *overruled on other grounds by In re Seagate Tech., LLC*, 497 F.3d 1360 (Fed. Cir. 2007)

CONCLUSION

The court finds that claims 12 and 13 of the '302 Patent are invalid. The remaining claims are valid, and Venture has infringed them. The court permanently enjoins further infringement and orders Venture to pay Sunoco \$6 million in damages. The parties' joint statement on the amount of prejudgment interest on the non-trebled (\$2 million) award is due by February 21, 2020.

ENTER:

Date: January 29, 2020


REBECCA R. PALLMEYER
United States District Judge