NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

U.S. WATER SERVICES, INC., ROY JOHNSON,
Plaintiffs-Appellants

v.

NOVOZYMES A/S, NOVOZYMES NORTH AMERICA, INC.,
Defendants-Appellees

2018-2075

Appeal from the United States District Court for the Western District of Wisconsin in No. 3:13-cv-00864-jdp, Judge James D. Peterson.

Decided: April 19, 2019

MICHELLE MARIE UMBERGER, Perkins Coie LLP, Madison, WI, argued for plaintiffs-appellants. Also represented by CHRISTOPHER GRAYDON WAYNE HANEWICZ, AUTUMN N. NERO, DAVID R. PEKAREK KROHN, JOHN SINGLETON SKILTON.

J. DAVID HADDEN, Fenwick & West, LLP, Mountain View, CA, argued for defendants-appellees. Also represented by EWA M. DAVISON, ELIZABETH B. HAGAN,

JONATHAN THOMAS MCMICHAEL, DAVID KEITH TELLEKSON, Seattle, WA.

Before MOORE, WALLACH, and TARANTO, *Circuit Judges.*

WALLACH, *Circuit Judge.*

This case returns to us for a second time from the U.S. District Court for the Western District of Wisconsin ("District Court"). Appellants U.S. Water Services, Inc. and Roy Johnson (collectively, "U.S. Water") sued Appellees Novozymes A/S and Novozymes North America, Inc. (collectively, "Novozymes"). U.S. Water alleged Novozymes infringed, inter alia, claims 1, 6, and 12 of U.S. Patent No. 8,415,137 ("the '137 patent") and claims 1–2, 5, 7–9, and 18–20 of U.S. Patent No. 8,609,399 ("the '399 patent") (together, "the Asserted Claims") (collectively, "the Patents-in-Suit"). After we remanded the case, a jury determined that the Asserted Claims were not inherently anticipated by Patent Cooperation Treaty Publication No. WO 01/62947 A1 ("Veit") (J.A. 1000–29). *See* J.A. 203 (Jury Verdict Form). Both parties filed post-trial motions, and the District Court partially granted judgment as a matter of law ("JMOL") in favor of Novozymes, holding that the Asserted Claims were invalid as inherently anticipated. *See U.S. Water Servs., Inc. v. Novozymes A/S* (*U.S. Water II*), 316 F. Supp. 3d 1076, 1084, 1085 (W.D. Wis. 2018); *see also* J.A. 1 (Amended Judgment).

U.S. Water appeals. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1) (2012). We reverse and remand.

BACKGROUND

I. The Patents-in-Suit

Entitled "Preventing Phytate Salt Deposition in Polar Solvent Systems," the '137 patent describes methods for reducing the formation of deposits of "phytic acid salts and phytates," the metallic salts of phytic acid, during ethanol

production. '137 patent col. 1 l. 17; *see id.* at col. 1 ll. 16–19.[1] The Patents-in-Suit employ phytic acid along with "soluble metals in food or fuel ethanol-processing fluid" to "produc[e] insoluble organometallic salt deposit or scale on the processing equipment that must be removed in order to facilitate further ethanol processing." *Id.* col. 1 ll. 12–16. The invention, therefore, aids in "reducing or even preventing the formation of insoluble material, deposits, or scale on equipment used," *id.* col. 3 ll. 18–20, during ethanol production, thereby allowing "the proper operation of mechanical devices used in ethanol processing," *id.* col. 1 ll. 35–36.

Independent claim 1 of the '137 patent is illustrative and recites:

> A method of reducing formation of insoluble deposits of phytic acid or salts of phytic acid on surfaces in a fuel ethanol-processing equipment, the method comprising:

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[1] The Patents-in-Suit are "continuations of the application that . . . led to U.S. Patent No. 8,039,244." *U.S. Water Servs., Inc. v. Novozymes A/S* (*U.S. Water I*), 843 F.3d 1345, 1348 (Fed. Cir. 2016). A continuation is a patent "application filed subsequently to another application, while the prior application is pending, disclosing all or a substantial part of the subject-matter of the prior application and containing claims to subject-matter common to both applications, both applications being filed by the same inventor or his legal representative." *Id.* at 1348 n.1. Because the Patents-in-Suit share a common specification, we cite to only the '137 patent for ease of reference unless otherwise specified.

> adding phytase[2] to an ethanol processing fluid in the equipment containing phytic acid or salts of phytic acid under conditions suitable for converting the insoluble phytic acid or phytic acid salts to soluble products; thereby reducing the formation of deposits of insoluble phytic acid or phytic acid salts on surfaces in the equipment; wherein the equipment in which deposit formation is reduced comprises a beer column[3], and
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> wherein the pH[4] of the ethanol processing fluid in the beer column is 4.5 or higher during production of ethanol.

Id. col. 12 ll. 30–42; *see* 399 patent col. 12 ll. 45–47 (providing a similar method to reduce phytic acid deposits "in a piece of heat transfer equipment").

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2 "Phytase is an enzyme known to be capable of breaking down the phytic acid found in plant material." '137 patent col. 5. ll. 39–40.

3 The "beer column" "is a component of a distillation unit in which alcohol is vaporized and removed from the beer." J.A. 174 (internal quotation marks omitted). During claim construction, the parties' experts agreed that "the term 'beer column' is one readily understood by [a person having] ordinary skill in the art [('PHOSITA')]," J.A. 1718 (citations omitted), and "[t]he parties agree[d] that the function of the beer column is to remove ethanol from the fermented fluid," J.A. 1717.

4 U.S. Water's expert testified that pH is "a measurement of hydronium ion concentration in a solution, which . . . means the measure of acidity, so the range is from 0 to 14." J.A. 2201.

II. The Prior Art

Entitled "Fermentation with a Phytase," Veit describes, inter alia, "a process of alcohol and other fermented compounds production, in particular ethanol production." *See* J.A. 1001. Veit discloses that "[t]he addition of phytase during the fermentation . . . [or] a combined or simultaneous fermentation and saccharification[5] step" of ethanol production may result in "increases [in] the fermentation and ethanol yields." J.A. 1005. Example 1 of Veit is an experiment describing "a fermentation process of the invention where the yeast is not stressed [and] . . . the addition of phytase is shown to improve[] the fermentation process." J.A. 1007. Example 1 is the only experiment carried out in Veit, and it is conducted in two cups of liquid in a "500 [milliliter] blue cap bottle." J.A. 1016. During the experiment, Example 1 uses "1.0 FYT/g of phytase"[6] added during the pre-saccharification reaction ("the Protocol"). J.A. 1017.

III. Procedural History

In *U.S. Water I*, we held that a dispute exists "as to whether adding phytase in the manner disclosed in . . . Veit will necessarily lead to a reduction of insoluble

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[5] Saccharification is a process for "produc[ing] low molecular sugars . . . [extracted during liquefaction] that can be metabolized by yeast [after further hydrolysis]." J.A. 1003.

[6] One unit of phytase activity ("FYT") is the amount the phytase enzyme hydrolyzes the phytic acid per gram of the specified mash. *See U.S. Water II*, 316 F. Supp. 3d at 1083; *see also* J.A. 1008 (explaining that "the phytase activity is determined [in] FYT units, one FYT being the amount of enzyme that liberates 1 micromole inorganic ortho-phosphate per min[ute]" under the conditions of the experiment).

organometallic salt deposits," and "the District Court improperly granted summary judgment on inherent anticipation." 843 F.3d at 1352.[7] We determined that U.S. Water provided "sufficient evidence" to support a jury verdict of no inherent anticipation over Veit, *id.* at 1351, and we remanded the case to the District Court to determine whether the Asserted Claims were inherently anticipated by Veit, *see id.* at 1348, 1352. On remand, the jury determined, inter alia, that "Novozymes [had not] proven by clear and convincing evidence that Veit anticipates the [A]sserted [C]laims by inherently disclosing the requirement of reducing the formation of insoluble deposits of phytic acid or salts of phytic acid." J.A. 203. After finding infringement of the Asserted Claims, *see* J.A. 195–203, the jury returned a damages award of $7,582,966, J.A. 206–07.

Following the entry of judgment, Novozymes moved for JMOL. *See* J.A. 3989. Novozymes argued that Veit "inherently anticipat[es] the Asserted Claims," J.A. 3997 (capitalization modified), because Example 1 shows that "in the absence of any phytate, no deposits of phytate can form," J.A. 4003 (italics omitted). While the District Court agreed that U.S. Water provided enough evidence to demonstrate that Veit failed to reduce deposits, explaining "that breaking down only some of the vast amount of phytic acid in the ethanol fluid would not necessarily reduce deposits," *U.S. Water II*, 316 F. Supp. 3d at 1082, it ultimately overturned the jury's verdict, *id.* at 1084. The District Court determined, in contrast to the jury's finding, that "Veit inherently disclosed using phytase to reduce phytate deposits because Veit's fermentation test expressly disclosed conditions sufficient to break down all the phytic acid present in

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[7] Because the relevant facts have been recited in part in *U.S. Water I*, 843 F.3d at 1348–49, we presume familiarity with that decision and recite only those facts necessary to address subsequent developments here.

the ethanol fluid, thereby preventing phytate fouling."[8] *Id.*; *see id.* at 1082–84 (explaining that Example 1 inherently anticipated the Asserted Claims). Based on this determination, the District Court granted Novozymes's JMOL Motion pursuant to Federal Rule of Civil Procedure 50(b), amended the judgment, and denied all remaining motions as moot. *Id.* at 1085; *see* J.A. 1 (Amended Judgment).

DISCUSSION

I. Standard of Review and Legal Standards

In reviewing the grant of JMOL, we apply the law of the regional circuit, *Energy Heating, LLC v. Heat On-The-Fly, LLC*, 889 F.3d 1291, 1303 (Fed. Cir. 2018), here, the Seventh Circuit. The Seventh Circuit reviews a grant of JMOL de novo. *Learning Curve Toys, Inc. v. PlayWood Toys, Inc.*, 342 F.3d 714, 721 (7th Cir. 2003). When "a party has been fully heard on an issue during a jury trial and the court finds that a reasonable jury would not have a legally sufficient evidentiary basis to find for that party," the district court may "grant a motion for [JMOL] against the party." Fed. R. Civ. P. 50(a)(1); *see* Fed. R. Civ. P. 50(b) (allowing for renewed JMOL motions). A grant of JMOL is appropriate "if no reasonable juror could have found in favor of [the non-movant]." *Waters v. City of Chicago*, 580 F.3d 575, 580 (7th Cir. 2009).

"A person shall be entitled to a patent unless," inter alia, "the invention was . . . described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States." 35 U.S.C.

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[8] During ethanol production, the deposits formed on processing equipment are referred to as "fouling" throughout the ethanol industry. *See* J.A. 1640.

§ 102, 102(b) (2006).[9] A prior art reference anticipates a patent's claim "when the four corners of [that] . . . document describe every element of the claimed invention, either expressly or inherently, such that a [PHOSITA] could practice the invention without undue experimentation." *Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331, 1356 (Fed. Cir. 2010) (internal quotation marks and citation omitted). "Anticipation by inherent disclosure is appropriate only when the reference discloses prior art that must *necessarily* include the unstated limitation." *Monsanto Tech. LLC v. E.I. DuPont de Nemours & Co.*, 878 F.3d 1336, 1343 (Fed. Cir. 2018) (internal quotation marks, brackets, ellipsis, and citation omitted); *see In re Cruciferous Sprout Litig.*, 301 F.3d 1343, 1349 (Fed. Cir. 2002) ("[A] prior art reference may anticipate when the claim limitations not expressly found in that reference are nonetheless inherent in it."). "[A]nticipation is a question of fact that we review for substantial evidence when tried to a jury." *Orion IP, LLC v. Hyundai Motor Am.*, 605 F.3d 967, 974 (Fed. Cir. 2010) (citation omitted). Likewise, "[w]hether a claim limitation is inherent in a prior art reference is a question of fact." *Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1328 (Fed. Cir. 2001) (citation omitted).

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[9] Congress amended § 102 when it passed the Leahy-Smith America Invents Act ("AIA"). Pub. L. No. 112-29, § 3(b)(1), 125 Stat. 284, 285–87 (2011). However, because the applications that led to the Patents-in-Suit never contained a claim having an effective filing date on or after March 16, 2013 (the effective date of the statutory changes enacted in 2011), or a reference under 35 U.S.C. §§ 120, 121, or 365(c) to any patent or application that ever contained such a claim, the pre-AIA § 102 applies. *See id.* § 3(n)(1), 125 Stat. at 293.

II. The District Court Erred by Granting JMOL Because the Evidence Permitted the Jury to Find That Veit Does Not Inherently Anticipate the Asserted Claims

The District Court determined that "as a matter of law" "Novozymes met its burden to show that the [P]atents-in-[S]uit were anticipated by Veit," and "[n]o reasonable view of the evidence supports the jury's verdict on this point." *U.S. Water II*, 316 F. Supp. 3d at 1084. U.S. Water asserts that the District Court erred because "Novozymes was required to show that no rational jury could have found that Example 1 did not inherently anticipate" the Asserted Claims, Appellants' Br. 41, and that "it is the reduction of deposits on the[] specific surfaces—heat transfer equipment and beer columns—that must 'inevitably' be reduced following Example 1," *id.* at 45. We agree with U.S. Water.

The District Court erred in ruling as a matter of law that Veit inherently anticipates the Asserted Claims. The Asserted Claims require the reduction of phytic acid deposits in specific locations of an ethanol plant such as on the "heat transfer equipment" or in the "beer column." '399 patent col. 12 l. 47; '137 patent col. 12 l. 40. By contrast, Veit does not disclose any examples using phytase to reduce phytic acid deposits in an ethanol plant, but rather describes in Example 1 an experiment in a laboratory bottle. *See* J.A. 1016–18. Example 1 explains that "the phytase [is not added] into fermentation," but rather it is added "into a saccharification step that's happening at 60 to 70 degrees C[elsius]." J.A. 3005 (Novozymes's expert testimony). The "pre-saccharification" reaction described in Example 1, J.A. 1016, however, differs from the reaction required by the Asserted Claims, in which the formation of "insoluble deposits of phytic acid or salts of phytic acid on surfaces in fuel ethanol processing equipment," i.e., the beer column, '137 patent col. 12 ll. 30–32, is reduced, *see id.* col. 12 ll. 33–36 (claiming "adding phytase . . . *under conditions suitable* for converting the insoluble phytic acid or phytic acid salts to soluble products" (emphasis added)), col. 6 ll. 11–13

(explaining, in the specification, the suitable conditions, in which phytase is added "at a time point and under conditions required for the particular type of equipment or stage of ethanol processing"). As U.S. Water's expert explained, the Asserted Claims "talk about fouling in a beer column . . . [and] heat transfer equipment, which [a PHOSITA] would look at and say . . . [the fouling is] in the beer/mash heat exchangers, in the evaporators, [occurs during] distillation," which occurs after the phytase addition during the pre-saccharification stage of Veit. J.A. 2998, 2171–73, (stating that fermentation occurs "before [the beer] moves into the distillation process"), 2544 (explaining, by Novozymes's expert, that "saccharification" occurs before fermentation).

The conditions in Example 1 of Veit's pre-saccharification reaction differ from the conditions recited in the Asserted Claims, which is meaningful because, of the "phytic acid that's running through th[e] heat exchanger[, t]here's only 1 or 2 percent that actually [reduces deposits]." J.A. 2964; *see* J.A. 3004 (explaining that pre-saccharification "is not" the same as fermentation). Enzymes that may be effective at saccharification's temperatures may be ineffective at the lower temperatures required during fermentation. J.A. 3007 (explaining, by U.S. Water's expert, that "[m]any enzymes are inhibited by ethanol" and that "an enzyme that would be usable at 50 to 70 degrees C[elsius] presaccharification where there's no ethanol" may be inhibited "if you add it into a fermenter [where] the ethanol . . . [is] up to 13% or more"). Further, the conditions under which the phytase is added, such as the pH, pressure, and temperature, impact how phytase reacts. *See* J.A. 3005–07 (explaining, by U.S. Water's expert, that conditions, such as temperature and pH, impact phytase and differ between the fermentation and saccharification stages); *see also* J.A. 2712 (explaining, by Novozymes's expert, that he could not "speculate on the amount [of phytic acid reduction] required to see a measurable change" in

deposits without understanding the "variables that are responsible for deposits" in the plant). Therefore, Veit's addition of phytase at the pre-saccharification stage cannot disclose the reduction of phytic acid deposits on ethanol processing plant equipment as required by the Asserted Claims. *See* J.A. 3008 (providing, by U.S. Water's expert, that Veit "doesn't talk about fouling and deposits; he's focused on fermentation"), 3047 (explaining, by U.S. Water's expert, that "phytic acid deposits or fouling" will not occur if there is no phytic acid).

Similarly, unlike the stated limitations for reducing deposits found in the Asserted Claims, Example 1 does not provide any conditions necessary to determine whether any deposit on equipment is formed during the experiment, nor does it provide any specific variables that impact phytase in a way that will always reduce deposits in the plant equipment. *See, e.g.*, '137 patent col. 12 ll. 41–42 (providing that "the pH of the ethanol processing fluid . . . is 4.5 or higher"); *see also* J.A. 1016–18 (Veit Example 1). U.S. Water's expert explained that the reduction in deposits would not occur in the ethanol plant if the process conditions are not correct. J.A. 3017 (explaining that "the purpose of phytase broadly is to break down phytic acid, but it does it with different success in different pathways under different conditions"), 3023 (stating the conditions "matter very much"). There is, therefore, substantial evidence to support the jury finding that Example 1 only discloses the *possibility* of reducing phytic acid concentration below detection levels, which is not legally sufficient to demonstrate inherent anticipation. J.A. 1004; *see* J.A. 3005 (explaining that "there's only one experiment given in the Veit patent application" and that "in their one example they don't actually add the phytase into fermentation; they add it into a saccharification step," which happens at a higher temperature), 3008 (providing that "Veit doesn't give any guidance for how to pick phytases with respect to the reduction of fouling in deposits because it

doesn't talk about" deposit reduction and that it does not provide "guidance that would necessarily result in deposit reduction"); *Hansgirg v. Kemmer*, 102 F.2d 212, 214 (CCPA 1939) ("Inherency, however, may not be established by *probabilities or possibilities*. The mere fact that a certain thing may result from a given set of circumstances is not sufficient."(emphasis added)); *see also PAR Pharm., Inc. v. TWI Pharm., Inc.*, 773 F.3d 1186, 1195–96 (Fed. Cir. 2014) (explaining that "to rely on inherency . . . the limitation at issue necessarily must be present, or the natural result of the combination of elements explicitly disclosed by the prior art").

Because Example 1 is silent as to whether its Protocol would reduce phytate fouling in the "beer column" or "heat transfer equipment" and Novozymes did not provide evidence that Example 1 satisfies all the required constraints in the Asserted Claims, Veit does not disclose whether any deposits would have formed when using Example 1's Protocol in a fuel ethanol plant. *Cf. Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1377 (Fed. Cir. 2005) (recognizing the principle "that disclosure of a broad genus does not necessarily specifically disclose a species within that genus," but finding, in that case, that "the prior art does not merely disclose a genus of skin benefit ingredients without disclosing the particular claimed ingredient"). Novozymes, therefore, did not meet its burden at trial of showing by clear and convincing evidence that Example 1 would always eliminate phytic acid deposits under the conditions required by the Asserted Claims. *See Core Wireless Licensing S.A.R.L. v. LG Elecs., Inc.*, 880 F.3d 1356, 1364 (Fed. Cir. 2018) (explaining that, "[b]ecause the burden rests with the alleged infringer to present clear and convincing evidence supporting a finding of invalidity, granting [JMOL] for the party carrying the burden of proof is generally 'reserved for extreme cases,' such as when the opposing party's witness makes a key admission" (citation omitted)); *PAR Pharm.*, 773 F.3d at 1195 (vacating and remanding

the district court's inherency analysis and reasoning that "the concept of inherency must be limited when applied to obviousness, and is present only when the limitation at issue is the 'natural result' of the combination of prior art elements"). Given a jury could reasonably find that Veit does not inherently anticipate the Asserted Claims, the District Court erred in granting Novozymes's JMOL Motion.

Novozymes's primary counterargument is unpersuasive. Novozymes argues, "while Example 1 was not itself conducted in a fuel ethanol plant, it was meant to exemplify actual use in a plant" because it "was intended as proof of the concept that addition of phytase to ethanol processing fluid in a fuel ethanol plant would be effective to degrade all phytate present." Appellees' Br. 56 (italics omitted). Example 1 of Veit, however, does not disclose any deposit reduction on plant equipment as required by the Asserted Claims. *See* J.A. 1000–29. Rather, Novozymes's expert simply explained that Example 1 is "equivalent" to the deposit reduction used by Novozymes's infringing plants. *See* J.A. 2639. Because "[a]ll [parties] agree that Veit does not expressly teach a method of deposit control," *U.S. Water II*, 316 F. Supp. 3d at 1082, and it could not be determined by Veit alone how Example 1's Protocol would reduce deposits in an actual plant, it was reasonable for the jury to agree with U.S. Water's expert that Example 1 did not inherently anticipate the Asserted Claims, *see Circuit Check Inc. v. QXQ Inc.*, 795 F.3d 1331, 1335 (Fed. Cir. 2015) (explaining that the jury "was entitled to weigh th[e] testimony" presented at trial). Therefore, the District Court erred in overturning the jury's verdict.

CONCLUSION

We have considered Novozymes's remaining arguments and find them unpersuasive. Accordingly, the

Amended Judgment of the U.S. District Court for the Western District of Wisconsin is

REVERSED AND REMANDED