United States Court of Appeals for the Federal Circuit

00-1501,-1563

LNP ENGINEERING PLASTICS, INC. and KAWASAKI CHEMICAL HOLDING CO., INC.,

Plaintiffs-Appellants,

v.

MILLER WASTE MILLS, INC. (trading as RTP Company),

Defendant-Cross Appellant.

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Appealed from: U.S. District Court for the District of Delaware

Judge Roderick R. McKelvie

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DECIDED: December 21, 2001

Before NEWMAN, RADER, and BRYSON, Circuit Judges.

RADER, Circuit Judge.

After the jury returned its verdict, both plaintiffs, LNP Engineering Plastics, Inc., and Kawasaki Chemical Holding Co., Inc. (collectively LNP), and defendant, Miller Waste Mills, Inc. (trading as RTP Company), filed various motions including motions for judgment as a matter of law (JMOL). The United States District Court for the District of Delaware granted various of these motions, thereby substantially reversing the jury verdict. LNP Eng'g Plastics, Inc. v. Miller Waste Mills, Inc., No. 96-462-RRM, slip op. (D. Del. Dec. 17, 1999). The district court correctly determined that substantial evidence shows that RTP's accused products do infringe claim 1 of LNP's United States Patent No. 5,019,450 (the '450 patent). The district court also properly granted JMOL that claim 1 of the '450 patent is not invalid for indefiniteness. This court, therefore, affirms those portions of the district court's judgment. However, substantial evidence supports the jury's verdict that claim 1 of United States Patent No. 5,213,889 (the

'889 patent) is invalid for obviousness. This court, therefore, reverses the district court's grant of JMOL on that judgment and of a new trial on obviousness.

After a second trial, the jury determined that RTP did not willfully infringe the '450 patent. This court affirms the district court's denial of LNP's motion for a new trial on willfulness. In a third trial, the district court found that LNP did not commit inequitable conduct during the reexamination of the '889 and '450 patents. Because the district court did not clearly err in finding a lack of intent on the part of the prosecuting attorney in not obtaining a full translation of a Japanese reference, this court affirms.

I.

This case features plastic products produced with long fiber reinforced thermoplastics (LFRTs). Thermoplastics are polymeric materials that soften upon exposure to heat and return to their original strength when cooled to room temperature. Manufacturers improve the strength and stiffness of these materials by reinforcing the thermoplastic with various rigid plastic, glass, or carbon fibers.

The manufacturing process for LFRTs pulls these rigid plastic, glass, or carbon strands through a bed of molten thermoplastic to coat, or "wet," the fibers. The process of pulling the fibers through molten thermoplastic is called "pultrusion." After coating, LFRT producers typically chop the fibers into pellets for storage and shipping. A LFRT user then remelts the pellets in an injection or blow molding process to form plastic products, such as handles for snow shovels or flooring for military aircraft.

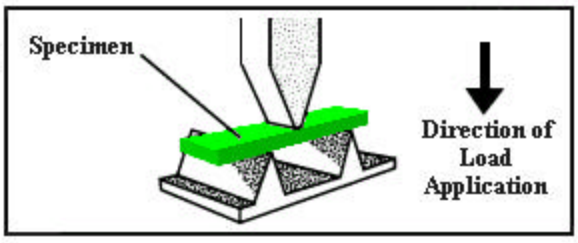
Since the 1950s, plastics have been reinforced with either short or long fibers. Two factors determine the stiffness of reinforced plastics: the length of the fiber filaments and the degree to which the filaments are wetted by the thermoplastic. These two factors often limit each other. In other words, short fibers are easier to wet, but the shortness of the fibers

produces plastics of lower strength. On the other hand, long fibers produce plastics of higher strength but are difficult to wet, resulting in reinforced plastics with scattered bundles of fibers. These bundles create brittle spots rather than flexible and sturdy plastics. Additionally, to increase LFRT strength, manufacturers wet the strands with thermoplastics of a higher molecular weight. These weightier thermoplastics, however, create a viscous melt bath that again complicates complete wetting of long fibers.

To assess the degree of LFRT wetting, experts use three methods -- visual inspection, a flexural modulus test, or a dispersal and length test. Under a visual inspection test, an analyst cuts a LFRT pellet open and examines it under a microscope. The analyst looks for indications of poor wetting, namely loose fibers or bundles of fibers not fully surrounded by thermoplastic.

Under the flexural modulus test, an analyst typically melts LFRT pellets and injects them into a rectangular mold. The analyst then places the resulting rectangular bar into a machine that bends the bar. The machine determines the amount of force necessary to flex the bar. The test expresses the flexing force as a percentage of the theoretically attainable flexural modulus of the thermoplastic and the fiber material separately. The LFRT industry recognizes the flexural modulus test as a standard protocol and calls it ASTM D790-80.

ASTM D790: *Specimen of 1/8" x 1/2" x 5" is placed on two supports and a load is applied at the center. The load at yield is a material's flexural strength.*



Under the dispersal and length test, an analyst injection molds LFRT pellets, typically into a rectangular bar, then heats the resulting molded product in an oven to ash the thermoplastic. The analyst then examines the filaments left behind to determine the randomness of their dispersal throughout the bar. A completely random distribution of fiber filaments indicates thorough wetting. The analyst also examines the length of the filaments in the ashed bar with the aid of a computer. Longer filaments again indicate better wetting.

In the early 1980s, a group of three inventors at Imperial Chemical Industries, PLC (ICI), Frederic N. Cogswell, David J. Hezzell, and Peter J. Williams, discovered that use of lower molecular weight thermoplastics produced a less viscous melt bath and better wetting of fibers. They further discovered that spreading the fiber strands before and during the melt bath also enhanced the wetting. As explained earlier, with better wetting, this new method made more flexible and stronger LFRT. The inventors applied for a patent in 1983, assigning their rights in the invention to ICI. The patent issued as United States Patent No. 4,559,262 (the '262 patent), claiming fiber reinforced structures.

In 1989, ICI filed a continuation application of a divisional of the '262 patent. The United States Patent and Trademark Office (PTO) issued the continuation application as the '450 patent on May 28, 1991. The '450 patent has the same written description as the '262 patent and claims pellets of reinforced thermoplastic material. In 1991, ICI filed another continuation application of a divisional for the '262 patent. The PTO issued this application as the '899 patent on May 25, 1993. The '899 patent also has the same written description as the '262 patent and claims molded articles formed from fiber reinforced thermoplastic compositions.

In 1991, ICI granted Kawasaki a license under the '262 and '450 patents. Kawasaki in turn granted LNP Engineering Plastics, Inc., a license under this same technology. On September 14, 1995, ICI assigned its interest in all three patents to Kawasaki. That same

month, Kawasaki requested that the PTO reexamine the '450 and '889 patents. The PTO issued reexamination certificates for both patents on October 29, 1996. Claim 1 of the '450 patent, as reexamined, recites:

> 1. Pellets of reinforced thermoplastic material containing at least 30% by volume of parallel, aligned reinforcing filaments between 2 and 100 mm in length, the filaments extending through the length of the pellets, the pellets having been cut from a continuous reinforced product prepared by melt pultrusion in which the filaments have been substantially completely wetted by a molten thermoplastic material, and which pellets can be injection molded into an article in which the filaments are present in the form of randomly dispersed individual filaments at least 50% by weight of the filaments of the pellets retaining a length of greater than 2 mm in the molded article.

United States Patent No. B1 5,019,450, col. 1, ll. 23-35 (indications of change removed and emphasis added). Claim 1 of the '889 patent, as reexamined, recites:

> 1. A molded article formed from a fibre reinforced thermoplastic composition in a process which includes the step of melting and homogenizing a composition containing at least 30% by weight of fiber reinforced pellets between 2 mm and 100 mm long which pellets have filaments extending the length of the pellet, characterized in that the molded article contains reinforcing filaments in the form of individual filaments and at least 50% by weight of the filaments in the pellets being present in the molded article at a length of greater than 2 mm, the pellets having been cut from a structure of continuous, parallel, aligned, reinforcing filaments which have been substantially completely wetted by a molten thermoplastic polymer in a melt pultrusion process.

United States Patent No. B1 5,213,889, col. 1, l. 23 to col. 2, l. 11 (indications of change removed and emphasis added).

In September 1996, LNP sued RTP for infringement of all three patents, asserting claim 3 of the '262 patent and claim 1 of the '450 and '889 patents. In November 1998, the district court issued a memorandum construing the claim terms disputed by the parties. After a nine-

day trial that same month, the jury returned its verdict finding that, inter alia: (1) RTP's accused products do not infringe any of the asserted claims; (2) claim 1 of the '889 patent is invalid for obviousness; (3) all of the asserted claims are invalid for indefiniteness; and (4) claim 1 of the '889 patent is not invalid for failure to provide an adequate written description. Both parties filed post-trial motions in December 1998.

One year later, the district court completely reversed the jury on the above verdict, granting the JMOL motions of each party. The district court determined that: (1) RTP's accused products infringe the '450 and '889 patents (and that, in the alternative, LNP is entitled to a new trial on infringement); (2) claim 1 of the '889 patent is not invalid for obviousness (and that, in the alternative, LNP is entitled to a new trial on obviousness); (3) the three asserted claims are not invalid for indefiniteness; and (4) claim 1 of the '889 patent is invalid for failure to meet the written description requirement.

On May 30, 2000, the district court started a four-day trial on, inter alia, willful infringement of the '450 patent. The jury found that RTP did not willfully infringe. The district court denied LNP's post-verdict motion for a new willful infringement trial. On June 29, 2000, the district court held a bench trial to consider RTP's defense that the '450 and '889 patents are unenforceable due to LNP's inequitable conduct during reexamination. The district court rejected RTP's inequitable conduct defense. At length, the district court entered final judgment.

LNP appeals the district court's grant of JMOL that claim 1 of the '889 patent is invalid for failure to meet the written description requirement and the district court's denial of LNP's motion for a new trial on willful infringement. RTP cross appeals the district court's claim construction, the district court's grant of a new trial and JMOL for infringement of the '450 and '889 patents and nonobviousness of claim 1 of the '889 patent, the district court's grant of

JMOL that claim 1 of the '450 and '889 patents is not indefinite, and the district court's determination that LNP did not commit inequitable conduct. In this appeal, LNP is no longer pursuing any claims from the '262 patent. Therefore, this court need not address the jury's and district court's determinations on that patent. This court has jurisdiction over the present appeal under 28 U.S.C.

§ 1295(a)(1) (1994).

II.

Claim construction is a matter of law that this court reviews without deference. Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454, 46 USPQ2d 1169, 1172 (Fed. Cir. 1998) (en banc). Applying the claim construction to the accused device in an infringement determination is a question of fact to which this court accords substantial deference in a jury trial. Embrex, Inc. v. Serv. Eng'g Corp., 216 F.3d 1343, 1348-49, 55 USPQ2d 1161, 1164 (Fed. Cir. 2000). This court reviews a jury's conclusions on obviousness, a question of law, without deference, and the underlying findings of fact, whether explicit or implicit within the verdict, for substantial evidence. Upjohn Co. v. MOVA Pharm. Corp., 225 F.3d 1306, 1310, 56 USPQ2d 1286, 1289 (Fed. Cir. 2000).

This court reviews without deference a district court's grant of JMOL under Federal Rule of Civil Procedure 50. Burroughs Wellcome Co. v. Barr Labs. Inc., 40 F.3d 1223, 1227, 32 USPQ2d 1915, 1919 (Fed. Cir. 1994). A district court may overturn a jury's verdict only if, upon the record before the jury, reasonable jurors could not have reached that verdict. Perkin-Elmer Corp. v. Computervision Corp., 732 F.2d 888, 893, 221 USPQ 669, 673 (Fed. Cir. 1984). A district court's grant of a new trial is a procedural issue that this court reviews under the law of the regional circuit. Southwest Software, Inc. v. Harlequin Inc., 226 F.3d 1280, 1290, 56 USPQ2d 1161, 1168 (Fed. Cir. 2000). The United States Court of Appeals for the Third Circuit reviews the grant of a new trial for abuse of discretion unless the ruling was based on legal precepts, in which case the review accords no deference. Griffiths v. CIGNA Corp., 988 F.2d 457, 462 (3d Cir. 1993).

"A determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." Personalized Media Communications, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 705, 48 USPQ2d 1880, 1888

(Fed. Cir. 1998). This court, therefore, reviews an indefiniteness determination without deference. Id. at 702. This court reviews a district court's determination on inequitable conduct for an abuse of discretion. Molins PLC v. Textron, Inc., 48 F.3d 1172, 1178, 33 USPQ2d 1823, 1827 (Fed. Cir. 1995).

Claim language defines claim scope. SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107, 1121, 227 USPQ 577, 586 (Fed. Cir. 1985) (en banc) ("Infringement, literal or by equivalence, is determined by comparing an accused product not with a preferred embodiment described in the specification, or with a commercialized embodiment of the patentee, but with the properly and previously construed claims in suit."). To help determine the meaning of a disputed claim term, however, a construing court may turn to the patent's written description and the patent's prosecution history. Whittaker Corp. v. UNR Indus., Inc., 911 F.2d 709, 711, 15 USPQ2d 1742, 1744 (Fed. Cir. 1990).

The district court in the present case construed the term "substantially completely wetted" of claim 1 of both the '450 and '889 patents to mean:

> Largely, but not necessarily wholly, surrounded by resin. In the context of LFRT pellets, it is surrounding the individual filaments by resin to the extent that in articles injection molded from such pellets, the individual filaments are randomly dispersed and at least 50% by weight of the filaments retain a length of 2 millimeters or greater.

LNP, No. 96-462-RRM, slip op. at 17 (D. Del. Dec. 17, 1999). Thus, the court defined this claim term according to the dispersal and length test, and not by the flexural modulus test.

The meaning of the word "substantially" is 'largely but not wholly that which is specified." Webster's Ninth New Collegiate Dictionary 1176 (9th ed. 1983). According to both parties' explanations of the technology, "completely wetted" means "wholly surrounded by resin." Therefore, the claim language supports the correctness of the district court's interpretation of "substantially completely wetted" as "[l]argely, but not necessarily wholly,

surrounded by resin." See Ecolab, Inc. v. Envirochem, Inc., 264 F.3d 1358, 1369, 60 USPQ2d 1173, -- (Fed. Cir. 2001) ("substantially uniform" means "largely, but not wholly" the same in form).

Neither claim at issue mentions the flexural modulus test nor refers even obliquely to that test as a limitation. Claim 6 of the '450 patent, which depends from claim 1, however, recites:

> 6. Pellets according to claim 1 which have been cut from a continuous reinforced product in which the individual filaments of the product have been wetted to the extent that the longitudinal flexural modulus of the product as determined by ASTM D790-80 is at least 70% of the theoretically attainable flexural modulus.

United States Patent No. B1 5,019,450, col. 2, ll. 9-14 (indications of change removed and emphasis added). Thus, dependent claim 6, presumptively narrower than claim 1, adds a specific flexural modulus limitation of at least 70%. This narrower claim at least opens the possibility that the broader "substantially completely wetted" language of claim 1 of the '450 patent embraces more than a flexural modulus of at least 70%.

Moreover, claim 3 of the '262 patent recites:

> A thermoformable fibre reinforced structure comprising a thermoplastic polymer and at least 30% by volume of parallel, aligned reinforcing filaments . . . said filaments being substantially completely wetted by thermoplastic polymer characterised in that when the structure is chopped into moulding pellets between 2 mm and 100 mm in length and formed into a shaped article by a process which includes the step of subjecting the pellets to a melt homogenisation process to produce a random distribution of individual filaments in molten polymer, the fibre length is retained to the extent that at least 50% by weight of the filaments are at least 2 mm long.

col. 28, ll. 31-43 (emphasis added). Thus, the parent patent to both the '450 and '889 patents defines "substantially completely wetted" according to length and dispersal and does not incorporate any flexural modulus requirement. Again this evidence suggests that "substantially completely wetted" is not limited to a specific flexural modulus result.

As mentioned above, the term "substantially completely wetted" is neither recited nor specifically defined anywhere in the written description of the patents. The written description does explain the flexural modulus test and recites it throughout as a measure of LFRT strength. The trial record as well as the written description shows that flexural modulus is a typical way to measure LFRT strength and, therefore, degree of wettedness. The written description also explains good wetting results in terms of fiber length and fiber dispersal. See, e.g., '450 Patent, col. 9, ll. 24-26, ll. 29-37, col. 10, ll. 6-17, col. 16, ll. 19-24, col. 21, ll. 28-31. Again, the written description does not limit claim 1 by any flexural modulus test result.

The prosecution history also does not indicate that the claim terms require flexural modulus testing.* The patent owner added the terms "substantially completely" to claim 1 of the '889 patent during the reexamination proceeding. As originally filed, claim 1 only recited "wetted." In the '450 patent, the patent owner added the entire term "substantially completely wetted" to claim 1 during reexamination. Because the claims recited filament length and dispersal before reexamination, RTP argues that the district court's construction writes the term "substantially completely wetted" out of the claim by defining it in terms of length and dispersal.

During the reexamination proceedings, LNP amended claim 1 of the '889 patent to add "substantially completely" as a modifier for "wetted" explaining:

> Claim 1 has . . . been amended to clarify the melt pultrusion process which results in the individual filaments in the molded article and to avoid a possible trivial and

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* RTP argues also that during prosecution of the '262 patent, LNP defined "substantially completely wetted" to require a flexural modulus of at least 90%. However, it is clear, when the prosecution history is viewed in context, that LNP referred to the 90% flexural modulus with respect to a preferred embodiment of its invention rather than as a limitation upon the scope of the invention. Gart v. Logitech, Inc., 254 F.3d 1334,1343, 59 USPQ2d 1290, -- (Fed. Cir. 2001) (noting that "it is well established that broad claims supported by the written description should not be limited in their interpretation to a preferred embodiment"). Dependent claim 6 of the '450 patent reinforces this understanding by including an explicit limitation that the flexural modulus be at least 70%.

> unintended interpretation of the claim which might be read to cover molded articles with substantial unwetted filament bundles and a small amount of individual filaments.

(emphasis added). LNP amended claim 1 of the '450 patent to add "substantially completely wetted" explaining: "Claim 1 has been amended . . . to clarify the melt protrusion process which results in individual filaments in the molded article, and to provide antecedent basis for 'wetted' in claim 6." (emphasis added). As support for these amendments, LNP cited to sections of the written description that disclose wetting the surface of individual filaments to obtain high levels of flexural modulus ('450 Patent, col. 3, ll. 42-58), retention of fiber length by virtue of good wetting ('450 Patent, col. 9, ll. 32-38), and a percent weight comparison between completely wetted product with product of an unknown extent of wetting ('450 Patent, col. 11, Example 1).

During reexamination, the PTO examiner made prior art rejections for both patents based on the GB-849 reference, the British counterpart of United States Patent No. 4,037,011 to Hattori. As part of its response, LNP explained:

> When there is substantial complete wetting of the filaments in the pellets, the pellets can be injection molded into an article in which the filaments are present in the form of individual filaments having excellent filament length retention and which has an excellent cosmetic appearance without visible bundling of filaments.

LNP further explained: "GB-849 does not anticipate the claimed invention as it does not inherently teach or suggest a molded articles [sic] in which the filaments are found as individual filaments due to a high degree of wetting." The reexamination history of both patents thus supports that "substantially completely" and "substantially completely wetted" were added to the claims as clarifications, not as additional limitations.

In sum, this court has reviewed the claim language, specification language, and prosecution history, and finds that the record supports the district court's interpretation. The district court thus correctly concluded that "substantially completely wetted" means "largely, but

not necessarily wholly, surrounded by resin." Moreover the district court correctly determined that a flexural modulus test result does not limit claim 1 of both patents.

III.

To prove that RTP literally infringed claim 1 of the '450 patent, LNP bore the burden of proving by preponderant evidence that RTP's accused products satisfy every limitation of claim 1. See Biovail Corp. Int'l v. Andrx Pharms., Inc., 239 F.3d 1297, 1302, 57 USPQ2d 1813, 1817 (Fed. Cir. 2001). The trial record shows that LNP technician Daria Miller tested two different RTP products. According to Ms. Miller's tests, these samples had a glass content of greater than 30% by volume and the average length of the sample filaments was over 2.0 mm in more than 50% of the filaments. Mr. Peter J. McCamley, Vice President of Research and Development for RTP, corroborated Ms. Miller's test data. Mr. McCamley testified that RTP's LFRT pellets retain a filament length greater than 2 mm for 50% or greater of fiber by weight. Mr. McCamley further testified that all but two of RTP's products having 50% by weight of fiber or greater have a volume fraction of at least 30% fiber.

LNP's expert witness, Dr. R. Byron Pipes, further corroborated Ms. Miller's test results. Dr. Pipes testified that his visual inspection disclosed no loose unwetted fibers in RTP pellets. His inspection by microscope also yielded no loose unwetted fibers. Dr. Pipes further examined ashed specimens of RTP's pellets. The ashed pellets had fibers with a vertebrate structure. Moreover the fibers were intermeshed with one another. Thus, the record contains ample and substantial evidence that RTP's accused products infringe claim 1 of the '450 patent.

To rebut this case of infringement, RTP put forth an ICI lab report from 1990 which concluded: "RTP is not infringing ICI patents because they produce a 16% fiber volume (26% by weight) product that must employ a means of impregnation similar to PCI's approach [as

described in United States Patent No. 4,439,387 to Hawley]." This report, however, had tested RTP's early LFRT product, not the post-1993 product at issue in the present suit. RTP also put forth evidence that its products all have a theoretically attainable flexural modulus of less than 78%. RTP incorrectly asserted that claim 1 of the '450 patent requires a flexural modulus of at least 90%. Accordingly, RTP argued at trial that its accused products do not infringe. However, as explained above, claim 1 of the '450 patent is not limited by any flexural modulus result. Thus, the record before the jury contained no evidence to rebut the substantial evidence of infringement. The district court, therefore, correctly granted JMOL that RTP's accused products infringe the '450 patent.

IV.

"When an infringer has actual notice of a patentee's rights, the infringer has an affirmative duty of due care to avoid infringement." Crystal Semiconductor Corp. v. Tritech Microelectronics Int'l, Inc., 246 F.3d 1336, 1351, 57 USPQ2d 1953, 1961 (Fed. Cir. 2001). Usually, this duty of due care requires a potential infringer to obtain competent legal advice before continuing its potentially infringing activities. Electro Med. Sys. S.A. v. Cooper Life Scis., 34 F.3d 1048, 1056, 32 USPQ2d 1017, 1023 (Fed. Cir. 1994). The record shows that RTP had notice that it was a potential infringer in 1992. RTP, however, did not obtain any opinions of counsel until 1994. RTP used these opinions of counsel during trial to rebut LNP's accusations of willful infringement.

LNP did not object to RTP's use of these opinions during trial. In fact, LNP moved RTP's November 1994 opinion of counsel into evidence during the 1998 infringement and validity trial. After the jury found that RTP was not guilty of willful infringement, LNP requested the district court to grant a new trial, claiming it was prejudiced by the admission of the opinion evidence.

LNP asserts that opinions of counsel obtained two years after the accused infringer has notice are insufficient to rebut an accusation of willful infringement and should, therefore, be inadmissible. However, because LNP did not argue that these letters were inadmissible at trial and because LNP itself moved one of the letters into evidence, the district court did not abuse its discretion in admitting the letters and did not abuse its discretion in denying LNP a new trial.

V.

Under Federal Rule of Civil Procedure 59, a new trial may be granted based on an erroneous jury instruction, but, under Rule 61, this may occur only if the erroneous instruction "affect[s] the substantial rights of the parties." Black v Stephens, 662 F.2d 181, 192-93 (3d Cir. 1981). The district court found the jury's obviousness verdict to be tainted with a misunderstanding that claim 1 of the '889 patent recited flexural modulus as the test for determining whether a LFRT is "substantially completely wetted." Although it does not contain this limitation, claim 1 also does not prohibit evidence of flexural modulus as an indicator of the degree of wettedness.

As the district court explained, flexural modulus tests the degree of wetting of the filaments. Therefore, flexural modulus is relevant to the degree of wettedness of the filaments. LNP, slip op. at 102. The '889 patent discloses:

> In order to achieve the high levels of flexural modulus possible by use of the invention it is necessary that as much as possible of the surfaces of the continuous fibres are wetted by the molten polymer. Thus where a fibre consists of a plurality of filaments the surfaces of the individual filaments making up the fibre must be wetted for optimum effect.

col. 3, ll. 44-50 (emphasis added). In other words, dispersed, well-wetted filaments, instead of unwetted fiber bundles, result in high levels of flexural modulus.

Furthermore, LNP's expert witness, Professor Gibson, stated that an LFRT with a flexural modulus of greater than 70% would be substantially completely wetted, resulting in fiber length retention. Mr. Cogswell, inventor of the '889 patent, also testified that high flexural modulus means good wetting and that good wetting results in fibre length retention. RTP's expert witness, Dr. Broutman, testified that high levels of flexural modulus means good wetting and good wetting means random fiber distribution.

Accordingly, even if the jury considered flexural modulus evidence in its obviousness verdict, such consideration was appropriate. The district court, therefore, did not err by not instructing the jury to avoid consideration of flexural modulus in its deliberations on validity of the '889 patent. Thus, this court discerns no reason to grant LNP a new trial on obviousness.

The jury indicated on the verdict form that it found claim 1 of the '889 patent obvious in light of, inter alia, Great Britain Patent No. 1,167,849 (the Hattori patent), United States Patent No. 3,042,570 (the Bradt patent), and Fiberfil LFRT pellets made by Polymer Composites, Inc. (PCI). None of these references specifically disclose the length or dispersal characteristics of LFRTs. Because the prior art did not contain length and dispersal characteristics specifically recited in claim 1 of the '889 patent, the district court granted JMOL that claim 1 is not obvious over prior art.

This court commences its review of obviousness with an examination of the scope and content of the prior art. The Hattori patent discloses a method for making LFRT pellets with a high concentration of glass -- 70 to 90% glass. The Hattori method uses a melt pultrusion process similar to the '889 patent. The Hattori patent discloses that "under the optimum condition each individual glass filament is coated and substantially wetted by the thermoplastic resin." Hattori at p.5, ll. 33-36. In other words, the Hattori method disperses fiber filaments. The Hattori patent then teaches ways to improve wetting by adjusting the speed of the

pultrusion process, adjusting the viscosity of the melt bath, and opening the fiber strand before pultrusion. Hattori at p.6, ll. 88-105.

The Hattori patent incorporates the Bradt patent by reference. The Bradt patent also teaches a continuous melt pultrusion process. It also discloses spreader bars for opening the fiber strand during pultrusion as taught by the '889 patent.

Turning to differences between the prior art and the claimed invention, Hattori, of course, claims a method and the ‘889 patent claims an LFRT made with pultrusion. On the other hand, the Hattori patent teaches the same melt pultrusion process disclosed in the '889 patent. The Hattori patent specifically instructs one of ordinary skill to adjust melt viscosity and to spread fiber strands during pultrusion as disclosed in the '899 patent to achieve the characteristics in claim 1. Dr. Broutman testified that the melt pultrusion process disclosed in the Bradt and Hattori patents allow the production of LFRT products with the length and dispersal characteristics claimed in the ‘889 patent.

This court’s predecessor recognized that prior art describing a product is highly relevant to patentability determinations for a process that may be performed using the product. See In re Ackenbach, 45 F.2d 437, 439, 7 USPQ 268, 270 (CCPA 1930) ("[I]f a previously patented device, in its normal and usual operation, will perform the function which an appellant claims in a subsequent application for process patent, then such application for process patent will be considered to have been anticipated by the former patented device."). Similarly, prior art describing a process also may be highly relevant to patentability for a product that may be produced using the process. Specifically, if one of ordinary skill in the art would have been motivated to use the teachings of a prior art process, in its normal disclosed operation, to create a product that a patentee claims in a subsequent patent, then such patent would have been obvious over the former disclosed process. See Lamb-Weston, Inc. v. McCain Foods,

Ltd., 78 F.3d 540, 545, 37 USPQ2d 1856, 1860 (Fed. Cir. 1996) (finding obvious a patent claiming a parfried waffle-shaped potato fry in view of a known process for making parfried french fries). This case fits that description. The melt pultrusion process and adjustments taught by Hattori would motivate a person of skill in the art to make the suggested adjustments in order to create an LFRT with the characteristics of claim 1 of the '889 patent.

Moreover, evidence indicated that the Fiberfil product yielded a weight-average filament length of 5.8 mm. The district court discounted this evidence, stating that it does not show that the Hattori patent discloses random dispersion in a molded product. However, as described above, the Hattori patent pultrusion process is the same as that disclosed in the '889 patent and Hattori teaches adjusting the pultrusion process to achieve better wetting of the strand. As explained above, better wetting results in dispersal. Accordingly, the record supplies substantial evidence for a reasonable jury to find that claim 1 of the '889 patent would have been obvious over the Hattori patent alone or in further combination with the Fiberfil LFRT product.

In view of this court's finding that claim 1 of the '889 patent would have been obvious, this court declines to address the issue raised by LNP of whether disclosure in an originally filed claim is part of the written description and thus available to satisfy the written description requirement of § 112, ¶ 1. See In re Gardner, 480 F.2d 879, 178 USPQ 149 (CCPA 1973).

VI.

Under 35 U.S.C. § 112 (1994), a patent must "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." The test for determining whether a claim meets the definiteness requirement is "whether one skilled in the art would understand the bounds of the claim when read in light of the specification." Personalized Media, 161 F.3d at 705 (quoting Miles Lab., Inc. v. Shandon,

Inc., 997 F.2d 870, 875, 27 USPQ2D 1123, 1126 (Fed. Cir. 1993)).

One of the inventors of the '450 patent, Mr. Hezzel, said that he did not "know what substantially completely wetted means." Mr. Hezzel's inability to understand this phrase on its own, however, does not automatically mean that claim 1 is indefinite. Although the term "substantially completely wetted" is not defined in the text of the written description of the '450 patent, the district court determined that the claims sufficiently delineate the meaning of that term. As explained above, "substantially completely wetted" means "largely, but not necessarily wholly, surrounded by resin." According to the written description and the testimony of both parties, experts determine wettedness by the flexural modulus, visual inspection, and length and dispersal tests. Claim 1 specifically recites the length and dispersal test. Claim 3 of the '262 patent, the parent of the '450 patent, specifically defines "substantially completely wetted." That claim requires the filaments to be sufficiently wetted to produce a random spatial distribution of the filaments in the melt homogenization process and to attain a specific weight-average filament length distribution. These tests and the full disclosure of the patent sufficiently inform one of ordinary skill in this art of the bounds of the claims. Therefore, the district court correctly held that claim 1 of the '450 patent is not indefinite.

VII.

During reexamination of the patents at issue, the prosecuting attorney, Mr. Schwarze, received an Office Action from the Japanese Patent Office (JPO) rejecting the claims of the Japanese counterpart application to the '889 patent. The rejection referenced a prior art patent, Japanese Patent Publication No. 56-5714 (JPP '714), which is related to Japanese Patent Publication No. 56-715 (JPP '715), a reference that LNP did disclose to the PTO. Mr. Schwarze had a portion of JPP '714 translated. Mr. Schwarze testified that he found the

translated portion to be cumulative to JPP '715 and thus immaterial. Mr. Schwarze, therefore, did not submit JPP '714 to the PTO. Based on this record, the district court inquired about inequitable conduct.

The district court first found JPP '714 material and not cumulative of JPP '715. The district court also found that Mr. Schwarze's overall behavior raised issues of inequitable conduct. In particular, the district court raised questions about Mr. Schwarze's decision to forego a full translation of a reference the JPO identified as causing patentability issues. Moreover Mr. Schwarze told the PTO: "[I]t is submitted that all of the present claims . . . patentably distinguish over the prior art of record and known to Requestor."

These questions were the focus of the trial on inequitable conduct. During that proceeding, the district court examined LNP's actions during the reexamination proceedings and concluded that these actions on the whole did not evince intent to deceive the PTO. The court properly considered the issues of intent and materiality to find that LNP did not commit inequitable conduct.

This court has stated that an applicant need not disclose a material reference if it is cumulative to or less material than those already before the examiner. Elk Corp. of Dallas v. GAF Bldg. Materials Corp., 168 F.3d 28, 31, 49 USPQ2d 1853, 1856 (Fed. Cir. 1999). However, an applicant may submit cumulative materials under 37 C.F.R. § 1.98(c) (1996):

> When the disclosures of two or more patents or publications listed in an information disclosure statement are substantively cumulative, a copy of one of the patents or publications may be submitted . . . [with a statement] that the[] other patents or publications are cumulative. If a written English-language translation of a non-English language document, or portion thereof, is within the possession, custody or control of, or is readily available to any individual designated in § 1.56(c), a copy of the translation shall accompany the statement.

The Manual of Patent Examining Procedure further explains:

> Applicants and other individuals, as set forth in 37 CFR 1.56, have a duty to bring to the attention of the Office any material prior art or other information cited or brought

> to their attention in any related foreign application. The inference that such prior art or other information is material is especially strong where it is the only prior art cited or where it has been used in rejecting the same or similar claims in the foreign application.

MPEP § 2001.06(a) (6th ed. 1995) (emphasis added). Moreover, as this court has emphasized, when a question of materiality is close, a patent applicant should err on the side of disclosure. La Bounty Mfg. v. United States Int'l Trade Comm'n, 958 F.2d 1066, 1076, 22 USPQ2d 1025, 1033 (Fed. Cir. 1992). In sum, this court discerns no error in determining that JPP '714 was material and non-cumulative.

A very deferential standard of review, however, governs inequitable conduct determinations. Moreover, the district court's determination on intent in this case depended heavily on the assessment of witness testimony at trial. This court may not reassess, and indeed is incapable of reassessing, witness credibility and motive issues on review. Upon this record, this court detects no clear error in the district court's finding that Mr. Schwarze did not intend to deceive the PTO. Accordingly, this court affirms the district court's determination that the '450 and '889 patents are not unenforceable due to inequitable conduct.

CONCLUSION

This court affirms the district court's grant of JMOL that RTP infringes claim 1 of the '450 patent and that the '450 patent is not invalid for indefiniteness. This court also affirms the district court's denial of LNP's request for a new willfulness trial and the district court's determination that LNP did not commit inequitable conduct during reexamination of the '450 and '889 patents. However, this court reverses the district court's grant of LNP's request for a new trial on obviousness and the district court's grant of JMOL that claim 1 of the '889 patent would not have been obvious over prior art.

COSTS

Each party shall bear its own costs.

AFFIRMED-IN-PART and REVERSED-IN-PART.