

United States District Court,
N.D. Illinois, Eastern Division.

LIQUID DYNAMICS CORP,
Plaintiff.

v.

VAUGHAN COMPANY, INC,
Defendant.

Aug. 4, 2008.

Steven C. Schroer, Christine Abuel Pompa, Jon A. Birmingham, Mark Warren Hetzler, Sarah M. Walkington, Fitch, Even, Tabin & Flannery, Chicago, IL, for Plaintiff.

Alan L. Unikel, Christopher Eric Paetsch, David L. Newman, Joseph Harrison Herron, II, Louis S. Chronowski, Jr., Matthew A. Werber, Richard Lewis Reinish, Seyfarth Shaw LLP, Chicago, IL, for Defendant.

MEMORANDUM OPINION AND ORDER

MATTHEW F. KENNELLY, District Judge.

Liquid Dynamics Corporation ("LD") has sued Vaughan Company, Inc., contending that Vaughan's components for mixing systems used in certain wastewater treatment tanks infringes LD's U.S. patent number 5,458,414 (the "'414 patent"), and asserting antitrust and tort claims. Vaughan has moved for partial summary judgment, asserting an issue regarding construction of a term in claim 1 of the '414 patent and arguing that the doctrine of equivalents is unavailable to LD as a matter of law. FN1 For the following reasons, the Court denies Vaughan's motion.

FN1. Initially, Vaughan's motion for partial summary judgment was directed to LD's claims of literal infringement as well as infringement under the doctrine of equivalents.

Facts

LD's invention aims to solve a problem inherent in long-term storage of wastewater or manure slurries in large tanks: the tendency of solid and liquid components of the waste compounds to separate, with the solid components settling at the bottom of the tank and forming a thick crust at the surface of the tank. Prior inventions that continuously mixed the contents to prevent the separation into liquid and solid components were generally expensive to operate and not entirely effective. The invention claimed in the '414 patent thoroughly re-suspends solid components just prior to use, using a minimum number of "submerged flow generating units" and avoiding altogether the use of flow generating units outside of the tank contents. LD Ex. B, '414 Patent, col. 2:39-55. In short, the system renders the liquid and solid tank contents sufficiently

homogeneous (expending as little energy as possible) to allow liquid handling devices to unload the slurry from the tank for transport.

In its suit against Vaughan, LD alleges, among other things, that certain of Vaughan's Rotamix slurry mixing systems infringe claims 1 and 8 of the '414 patent, both literally and under the doctrine of equivalents. The disputed elements of those claims read as follows:

1. Apparatus for storing a slurry having solid and liquid components, comprising:

A storage tank defining a volume for holding a body of liquid and solid slurry components, including a floor of generally circular configuration and having a center, said storage tank further including an outer surrounding wall positioned generally at a radial distance from the center;

at least two flow generating means positioned to be submerged within the liquid and solid slurry components for generating flow of at least one of the slurry components along a rotational direction, each of said flow generating means being disposed at distances from the center ranging between approximately 30 percent and 70 percent of said radial distance;

8. Apparatus for storing a slurry having solid and liquid components and for mixing the solid and liquid slurry components to form a substantially homogenous slurry, comprising:

a storage tank for holding a body of solid and liquid slurry components, said storage tank including a floor of generally circular configuration and having a center, said storage tank further including an outer surrounding wall positioned generally at a radial distance from the center; and

at least a first and a second flow generating means for submersion within the solid and liquid slurry components for generating flows of the solid and liquid slurry components along respective directions, said flow generating means each being located at a position in a range between less than 75 percent of said preselected radial distance from the center of said storage tank and greater than 25 percent of said radial distance from the center of said storage tank;....

Id., cols. 8-10.

Vaughan moved for partial summary judgment, contending that 133 of the mixing systems at issue in this suit do not literally infringe any claim of the '414 patent because the systems' nozzles are not located within the specific region of the tank Vaughan contends the patent requires. Vaughan also asserted that those 133 systems do not infringe the '414 patent under the doctrine of equivalents because LD, during its prosecution of the '414 patent, surrendered the right to assert that the claims cover mixers not having at least two nozzles within the claimed region. Vaughan further contended in its motion for partial summary judgment that forty of the mixing systems at issue do not literally infringe any claim of the '414 patent because they have rectangular, rather than generally circular, floors. According to Vaughan, allowing the application of the doctrine of equivalents with regard to the shape of the floors would improperly vitiate the "generally circular" element required by the patent.

Not all of these arguments are still before the Court, however, because on February 8, 2008, after this motion was partially briefed, the judge to whom the case was then assigned entered a stipulation and order limiting Vaughan's motion to the patent infringement claims made by LD under the doctrine of equivalents.

See Jan. 7, 2008 Stipulation and Order para. A. Thus, the Court must construe claims 1 and 8 of the '414 patent and determine whether the doctrine of equivalents is available to LD as a matter of law. The order also limited the scope of Vaughan's motion to only one of its products-the system installed at Nashville Central-and stayed additional discovery relating to alleged patent infringement by the remaining systems. For purposes of the present motion, LD has agreed not to dispute that the actual nozzle locations of the Nashville Central system are as shown in the drawings attached to the declaration of Glenn Dorsch and are outside of a radial band extending between 25 and 75 percent of the tank radius. The Nashville Central system is a round tank 108 feet in diameter with eight nozzles located at 81.5 percent of the tank radius and four nozzles located at 22.2 percent of the tank radius.

Discussion

Summary judgment is appropriate in a patent case, as in any other case, when there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law. Fed.R.Civ.P. 56(c); *Avia Grp. Int'l, Inc. v. L.A. Gear Calif., Inc.*, 853 F.2d 1557, 1561 (Fed.Cir.1998). In determining whether there is a genuine issue of fact, the Court views the evidence and draws all reasonable inferences in favor of the party opposing the motion. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986).

A patent infringement analysis entails two steps. The first, claim construction, is a question of law requiring the Court to determine the meaning and scope of the patent claims alleged to be infringed. See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed.Cir.1995). Second, the Court must compare the properly construed claims to the device accused of infringing-a question of fact. See, e.g., *Bayer AG v. Elan Pharm. Research Corp.*, 212 F.3d 1241, 1247 (Fed.Cir.2000). A court may resolve the issue of infringement on summary judgment only if "no reasonable jury could find that every limitation recited in the properly construed claim either is or is not found in the accused device." *Frank's Casing Crew & Rental Tools, Inc. v. Weatherford Int'l, Inc.*, 389 F.3d 1370, 1376 (Fed.Cir.2004). Infringement may be shown under the doctrine of equivalents if the plaintiff makes "a showing that the difference between the claimed invention and the accused product [i]s insubstantial." *Stumbo v. Eastman Outdoors, Inc.*, 508 F.3d 1358, 1364 (Fed.Cir.2007).

1. Claim analysis

For purposes of claim construction, the parties dispute only the proper construction of the term "approximately" in claim 1, contained in the phrase "between approximately 30 percent and 70 percent." The remainder of the terms in claims 1 and 8 are straightforward and unambiguous. LD asserts that the term "approximately" permits variations in each direction of at least ten percent of the total radial dimension of the tank. FN2 Vaughan, on the other hand, argues that the term "approximately" cannot logically be construed in a way that extends the claimed range of claim 1 beyond the band extending from 25 percent to 75 percent of the radial distance, or in other words, beyond the range claimed by claim 8.

FN2. LD also argues that it "is ultimately for a jury to decide the scope of 'approximately' appearing in claim 1." *Id.* at 4. This assertion is incorrect. Rather, "the construction of a patent, including terms of art within its claim, is exclusively within the province of the court." *Markman*, 517 U.S. at 372.

There is a " 'heavy presumption' that a claim term carries its ordinary and customary meaning." *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed.Cir.2002) (citing *Johnson Worldwide Assoc., Inc. v. Zebco Corp.*, 175 F.3d 985, 989 (Fed.Cir.1999)). The ordinary and customary meaning of a term is

the meaning that the term would have to a person with an ordinary level of skill in the relevant field at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed.Cir.2005) (en banc). FN3 The person with an ordinary level of skill "is deemed to read the claim term ... in the context of the entire patent, including the specification." *Id.* The intrinsic record "usually provides the technological and temporal context to enable the court to ascertain the meaning of the claim to one of ordinary skill in the [relevant field] at the time of the invention." *V-Formation, Inc. v. Benetton Grp. SpA*, 401 F.3d 1307, 1310 (Fed.Cir.2005).

FN3. The rationale for using this objective baseline is "the well-settled understanding that ... patents are addressed to and intended to be read by others of skill in the pertinent [field]." *Phillips*, 415 F.3d at 1313 (citing *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1119 (Fed.Cir.2002)).

For some time, the Federal Circuit, at least in some of its decisions, recommended that district courts "resort initially to the relevant dictionary definitions to determine the ordinary meaning of the [disputed] term." *See, e.g., E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1367 (Fed.Cir.2003). Its decision in *Phillips* made clear, however, that dictionaries may be helpful in claim construction involving "little more than the application of the widely accepted meaning of commonly understood words" but that in the majority of cases, courts should look first to " 'the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.' " *Phillips*, 415 F.3d at 1314 (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed.Cir.2004)). FN4 Specifically, the Court should first examine the intrinsic evidence: the context in which the term is used in the asserted claim; the differences between the claims; the written description contained in the patent specification; and, if it is in evidence, the patent's prosecution history, for the purpose of excluding an interpretation that the patentee disclaimed. *Id.* at 1314-1317. "To avoid importing limitations from the specification into the claims," however, the Court must bear in mind "that the purposes of the specification are to teach and enable those of skill in the [relevant field] to make and use the invention and to provide a best mode for doing so." *Id.* at 1323. Thus, the Court typically should not confine the claims to the specific embodiments described in the specification. *Id.*

FN4. The Federal Circuit explained in *Phillips* that "[t]he main problem with elevating the dictionary to such prominence is that it focuses the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent." *Id.* at 1321.

A district court can, "in its sound discretion ... admit and use [extrinsic] evidence" during claim construction, although the Federal Circuit in *Phillips* warned that such evidence is "unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." *Id.* at 1319. That said, expert testimony on the background of a technology, how an invention works, or what meaning a particular term has in the pertinent field, can be useful as long as it is not conclusory and unsupported or " 'clearly at odds with ... the written record of the patent.' " *Id.* at 1318 (citing *Key Pharms. v. Hercon Labs., Corp.*, 161 F.3d 709, 716 (Fed.Cir.1998)).

The parties agree that the patent specification is of particular relevance to the Court's determination of the proper construction of the term "approximately"; their disagreement lies in the meaning that the Court should infer from it. Vaughan argues that the specification teaches that the phrase "between approximately

30 percent and 70 percent" in claim 1 must represent a range no greater than the band extending between 25 percent and 75 percent of the radial distance from the center of the tank. Specifically, Vaughan cites three passages from the specification stating that 1) "flow outputs ... are located within an annular band located between 25 percent and 75 percent and most preferably between 30 percent and 70 percent of the radial distance from the center"; 2) "According to an important aspect of the present invention, the jet nozzles 24 are located within an annular band ranging from 25 percent and 75 percent, and more preferably between 30 percent and 70 percent of the radial distance from the tank center C to the tank wall 12"; and 3) "In FIG. 9, the annular band has an inner limit r1 and an outer r2 ranging between 25 percent and 75 percent, and more preferably between 30 percent and 70 percent of the radial distance to tank wall 12." LD Ex. B, '414 patent, col. 5:11-16, col. 7:31-34 & col. 8:14-23.

LD counters that the specification confirms-rather than contradicts-its proposed construction of the term "approximately" by making clear that the 30 to 70 percent element is not meant to constitute a precise limit. The "Summary of the Invention," LD observes, states that "the flow generating means" are "disposed only at distances from the center portion ranging between approximately 25 percent and 75 percent...." Id., col. 3:1-4. LD contends that a person with ordinary skill in the field reading the specification would understand that the term "approximately" can expand the 30 to 70 percent range of claim beyond the range between 25 and 75 percent.

Vaughan argues that the Court should disregard the cited language from the "Summary of the Invention" because, it contends, LD effectively abandoned a range between "approximately 25 percent and 75 percent" when it agreed to claim 8 as issued, without the use of the word "approximately." Vaughan argues that the absence of the word "approximately" from claim 8 is especially telling, because LD's use of the term in claim 1 indicates that LD knew to use it when it wished to do so. Thus, Vaughan contends, LD's attempt to insert the term belatedly into claim 8 is improper.

The Court does not read LD's brief as arguing for the inclusion of the term "approximately" in the construction of claim 8. Rather, LD argues that the applicants' use of the term "approximately" to modify "between ... 25 percent and 75 percent" in the "Summary of the Invention" supports its contention that 25 percent and 75 percent are not firm outer limits beyond which the term "approximately" in claim 1 cannot extend the claimed range. The Court sees no reason why it should disregard the language LD cites from the summary of the invention.

Next, Vaughan contends that its proffered construction-limiting the effect of the term "approximately" to at most, an extension of the 30 to 70 percent range to a range of 25 to 75 percent-is supported by the differences between claim 1 and claim 8. As Vaughan notes, "[d]ifferences among claims can also be a useful guide in understanding the meaning of particular claim terms." Phillips, 415 F.3d at 1314 (citing *Laitram Corp. v. Rexnord, inc.*, 939 F.2d 1533, 1538 (Fed.Cir.1991)). Vaughan contends that because claim 1 requires that the "flow generating means" be located "between approximately 30 percent and 70 percent of said radial distance," while claim 8 requires that they be located "in a range between less than 75 percent ... and greater than 25 percent," claim 8's boundaries provide limits to the modifier "approximately" in claim 1.

Vaughan attempts to support this construction by analogizing the differences between claim 1 and claim 8 to the distinctions between the claims at issue in *Ortho-McNeil Pharm., Inc. v. Caraco Pharm. Laboratories, Ltd.*, 476 F.3d 1321 (Fed.Cir.2007). In that case, the Federal Circuit held that the "dichotomy between the specific ratio of 1:5 [in one claim] and the broader ratio ranges of the other claims points to a narrow scope for the 'about 1:5' limitation." Id. at 1328. In that case, however, the 1:5 ratio in the disputed claim was

distinguishable from the other claims because the other claims all referenced ranges of ratios, such as "about 1:1 to about 1:1600." *Id.* at 1327. It was because the 1:5 ratio stood alone, rather than as one end of a range, that the Court gave the modifier "about" that preceded the ratio a narrow scope, explaining that the inventors intended to be more precise with that claim than with those employing ranges. FN5 *Id.* The Court cannot draw a similar inference from LD's use of the term "approximately" in claim 1. On the contrary, LD's use of the term "approximately" in claim 1 but not in claim 8 indicates that the inventors likely put it in claim 1 for a reason.

FN5. Actually, even the Federal Circuit's "narrow" construction of "about" was not all that narrow; the court affirmed the district court's construction of the term "about 1:5" to mean "approximately 1:5, encompassing a range of ratios no greater than 1:3.6 to 1:7.1," which adds, as LD notes, a 40% range in each direction. *Ortho-McNeil Pharm.*, 476 F.3d at 1328.

Next, Vaughan cites the patent applicants' descriptions of preferred embodiments in the specification as further evidence that "approximately" in claim 1 should be construed narrowly. In three passages, as quoted above, the inventors refer to a band ranging "between 25 percent and 75 percent" and "more [or most] preferably between 30 percent and 70 percent" of the radial distance from the center of the tank. *See supra* at 7-8. The Federal Circuit has, however, "repeatedly warned against confining the claims" to the "very specific embodiments of the invention" often described in the specification. *Phillips*, 415 F.3d at 1323. The Court must read the specification as it was intended to be used—as a teaching tool to instruct "a person of ordinary skill in the [field] how to make and use the invention." *Id.* With that in mind, the Court's task is to determine whether the specification sets out "specific examples of the invention" for teaching purposes or "whether the patentee instead intends for the claims and the embodiments in the specification to be strictly coextensive." *Id.* (citing *SciMed Life Sys.*, 242 F.3d at 1341).

As the Court noted earlier, the summary of the invention describes flow generating means located at distances "ranging between approximately 25 percent and 75 percent of the preselected radial distance." LD Ex. C, '414 Patent, col. 3:3-5. It is true that the description of the preferred embodiments includes flow generating means located within a range extending inward from the 25 to 75 percent range to the more preferable 30 to 70 percent range and that it does not employ the term "approximately" to modify their enumerated 25 to 75 percent range. This alone is not sufficient to treat 25 percent as the absolute inner limit and 75 percent as the absolute outer limit for all the claims (or more particularly for claim 1), thereby construing the word "approximately" in the summary of the invention only to narrow the range and never to expand it. Furthermore, the Court simply cannot conclude that the absence of the word "approximately" from the preferred embodiments' enumerated ranges indicates that the inventors intended the enumerated ranges to represent the absolute limits of the claims themselves. In sum, the Court concludes that a person with ordinary skill in the relevant field would not consider the patentee to have "intend[ed] for the claims and the embodiments in the specification to be strictly coextensive." *Phillips*, 415 F.3d at 1323.

Vaughan and LD also dispute the significance of the prosecution history in the construction of the term "approximately" in claim 1. Vaughan argues that the prosecution history contains a clear disclaimer of ranges outside of the band extending between 25 and 75 percent of the radial distance from the center of the tanks. According to Vaughan, LD argued repeatedly during the prosecution of the '414 patent that "its claims were patentable over the prior art because the prior art did not teach locating nozzles between 30 and 70 percent." Vaughan Mot. for Partial Summ. Judg. at 20. LD disputes Vaughan's representation of the record, however, charging Vaughan with "artful editing" of "isolated quotations." LD Resp. at 13. LD contends that,

read in context, its references to nozzle locations in the range between 30 and 70 percent merely represented one component of a broader argument about a combination of differences between the invention and the prior art. *Id.*

The prosecution history of a patent "often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1317. It can, however, "inform the meaning of the claim language by demonstrating how the inventor understood the invention." *Id.* Thus, the Court's purpose in reviewing the prosecution history should be principally to "exclude any interpretation that was disclaimed during prosecution." *Id.* (quoting *Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1384 (Fed.Cir.2005)).

In an Office Action on February 12, 1993, the examiner rejected claims 1, 5-11, and 23 of the patent application under 35 U.S.C. s. 103 as obvious over Peters (U.S. Patent No. 4,332,484) and Koskinen (U.S. Patent No. 2,522,281). *See Vaughan Ex. 6* at 153, 156-57. The examiner also rejected dependent claims 12-22 as obvious over Valdespino (U.S. Patent No. 3,271,304). *Id.* at 157. Specifically, the examiner stated that the Peters patent "discloses an apparatus for storing a slurry comprising a circular storage tank 1 having a floor and side wall and also having a flow generating means comprising a sump" *Id.* at 156. The examiner also stated that the Koskinen patent discloses "an apparatus for storing a slurry (fibrous pulp) in a tank 10 having three flow generating means 15 spaced at a radial distance between 25 and 75% and creating a substantially volume filling flow." *Id.* at 157. According to the examiner, "[i]t would have been obvious to a person skilled in the [field] to provide Peter's [sic] device with a second and third mixer of the type disclosed in Peter's [sic] in view of the teaching of Koskinen...." *Id.*

In a first amendment (Amendment A) filed on August 12, 1993 in response to the rejection, the applicants distinguished the claimed invention from the Koskinen and Peters patents. *Vaughan Ex. 7* at 228-29. They argued that the invention set forth in claim 1, "directed to at least two flow generating means positioned at distances from the center of the storage, ranging from between approximately 30% and 70%, is not shown or suggested in either Peters or Koskinen, taken either alone or in combination." *Id.* at 228. Unlike claim 1's invention, they noted, Peters "employs a submerged nozzle located at the center of the storage tank" as well as "nozzles located above the surface." *Id.* The applicants distinguished the Koskinen patent by observing that:

Koskinen teaches a plurality of upwardly directed nozzles for flow discharges which do not provide the substantially volume filling flow called for in Applicants' claimed invention, and which require added tank structures (e.g., a central cone and peripherally located guide members) not required in Applicants' claimed invention. Nowhere does Koskinen teach or even remotely suggest that the upwardly directed mixers be located within a specific range of radial instances, let alone Applicants' claimed range of radial distances between approximately 30% and 70% of the tank radius.

Id. at 228-29. LD argues that with regard to claim 1, the arguments in this amendment surrender, at most, nozzles located at the center of or on the surface of the tank-the locations taught by Peters. Because the Koskinen patent did not teach specific ranges, LD argues, there was no need to surrender any such scope to render claim 1 patentable over Koskinen.

The applicants also distinguished claim 11, which later became the current claim 8, from the Peters and Koskinen references. They observed that their own claim "calls for first and second submerged flow generating means located at less than 75% of the radius of the storage tank, with one of the flow generating means located at a position greater than 25% of the tank radius." *Id.* at 229. The Peters patent, by contrast,

showed nozzles only at the center and the periphery of the tank, while the Koskinen patent did "not even teach or remotely suggest that the flow generating means be located within a range of radial distances within a storage tank, let alone a range of distances between 75% and 25% of the tank radius, as in Applicants' claimed invention." *Id.* According to the applicants, only their "claimed arrangement provides a substantially volume filling flow without requiring tank structural features such as cones, peripherally located flow guides, swinging gates and baffles." The applicants went on to distinguish dependent claims 12-22 from the prior art by arguing that the examiner was incorrect in stating that the Valdespino patent shows a flow generating means within 25 to 75 percent of the tank radius. In fact, they argued, the Valdespino patent did not show flow generating means within any specified range of the tank radius, let alone the range of 25 to 75 percent claimed by the applicants. LD argues that with respect to claim 8, this argument surrendered, at most, nozzles located at the center of the tank and at the wall of the tank, the locations taught by the Peters patent. Again, LD argues that the Koskinen patent's failure to teach specific ranges meant that there were no ranges for the applicants to surrender during the prosecution of their patent application.

Following the applicants' first amendment, the examiner issued a second rejection under 35 U.S.C. s. 103 in an Office Action on October 7, 1993, stating that because the Koskinen patent taught that some flow generating devices should be in the 25 to 75 percent range, "it would have been obvious to a person skilled in the [field] to place the flow generating means in the range of 25-75% of the radial distance of the tank." Vaughan Ex. 11 at 235.

The applicants filed another amendment (Amendment B) and response to the second rejection on March 23, 1994, noting that

Claim 1, as amended, is submitted to be patentable over Peters and Koskinen in that it recites the specific positioning of the flow generating devices in a storage tank at a distance in the range of between 30 and 70 percent of the tank radius, and recites directing the flow issuing from the flow generating means in the same directional sense and at an angle to develop a tangential component of flow each of the flow generating means to impart a rotational movement of the entire body of liquid and solid components. Claim 1 further recites a pressure source being connected to the flow generating means with the latter being pointed outwardly and at an angle to a radius to impart a helical flow to the liquid and solid components....

Vaughan Ex. 12 at 264.

Again distinguishing their invention from that of Peters, the applicants contended that

Peters does *not disclose any flow* paths much less those resulting from the positioning and directing of the flow-generating means at such angles and in a band within 30 percent to 70 percent of the radius. It took the present inventors some time and experience to determine where to locate the flow generating means and how to orient them to obtain the desired flows.... Also, the flow-generating devices must be located and aimed and the pressure source must be large enough to create the internal, helical, toroidal flow which is in opposition to the normal settling flow of heavier particles in a storage tank."

Id. at 266 (emphasis in original). They went on to argue that "Peters ... has no concept whatsoever of generating the type of low herein described ... and neither obtains nor describes the homogeneity achieved with his invention." *Id.* at 267. Distinguishing claim 1 from the Koskinen patent, the applicants pointed out that Koskinen's discharge nozzles are located at the surface of the liquid. LD contends that these arguments focused largely on the orientation of the nozzles and surrendered, at most, systems with a single nozzle (like

Peters), because surrender is limited to what is shown in the prior art. At any rate, LD argues, there is no clear and unmistakable surrender of nozzle locations outside of the 30 to 70 percent range.

In arguing regarding why claim 11-now claim 8-was patentable over the Peters, Koskinen, and Valdespino references, the applicants did not refer at all to the claimed range. Instead, they focused on why the claimed upward and radially outward flow was entirely distinct from the downward, radially inward flows of the prior art. Thus, LD argues, Amendment B shows no clear and unmistakable surrender of nozzle locations outside of the recited 25 to 75 percent range.

Following the second amendment, the examiner issued a Notice of Allowability on April 12, 1994. The '414 patent ultimately was issued on October 17, 1995.

Vaughan contends that the applicants' arguments to the patent examiner put the public on notice that placing the flow generating means within the 30 to 70 percent, or at most, the 25 to 75 percent radial band, is critical to practicing the claimed invention. Whether or not the applicants also distinguished their claimed invention from the prior art based on other distinctions, Vaughan contends, their arguments concerning their claimed ranges operate as a classic disclaimer of scope, disclaiming anything outside of the claimed 25 to 75 percent range.

LD responds that the applicants' arguments never narrowed the recited ranges and that they merely identified the differences in nozzle locations between the claim elements and the prior art in combination with other distinguishing elements. According to LD, the fact that there were multiple prior art references with nozzles in the range of 30 to 70 percent, including the Koskinen patent, which the examiner cited for having flow generating means within the band claimed by applicants, shows that any argument based on nozzle locations alone "would have been futile." LD Response at 13. Thus, LD argues, there has been "no 'clear and unmistakable' surrender of any nozzle locations." *Id.*

" '[A] clear and unmistakable disavowal of scope during prosecution' may affect the construction of a claim term." *Lucent Techs., Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1211 (Fed.Cir.2008) (quoting *Purdue Pharma L.P. v. Endo Pharms., Inc.*, 438 F.3d 1123, 1136 (Fed.Cir.2006)). The " 'totality of the prosecution history' informs the disavowal inquiry." *Computer Docking Station Corp. v. Dell, Inc.*, 519 F.3d 1366, 1379 (Fed.Cir.2008) (quoting *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319, 1326 (Fed.Cir.2002)). "Where an applicant argues that a claim possesses a feature that the prior art does not possess in order to overcome a prior art rejection, the argument may serve to narrow the scope of otherwise broad claim language." *Seachange Int'l., Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1372-73 (Fed.Cir.2005) (citing *Rheox, Inc.*, 276 F.3d at 1325). Moreover, invoking multiple grounds for distinguishing a claim over prior art "does not immunize each [ground] from being used to construe the claim language." *Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1374 (Fed.Cir.2007).

Here, the sum of the applicants' arguments during prosecution would not lead a competitor to believe that the applicants had disavowed coverage of flow generating means or nozzles outside of the 25 to 75 percent radial band. *Cf. Seachange Int'l Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1372 (Fed.Cir.2005) (competitors are entitled to rely on patentees' representations made during prosecution to "ascertain[] the degree of lawful conduct") (citation omitted). Although the applicants referred several times during their prosecution of the patent to either the 25 to 75 percent or the 30 to 70 percent radial bands, they did so principally as part of their argument about the substantial helical flow that their invention created and that made their claims patentable over the prior art. As LD notes, although the examiner cited the Koskinen patent for having flow

generating means within the claimed band, that patent did not teach specific ranges for upwardly directed nozzles, the Peters patent taught nozzles only at the center and the wall of the tank, and the Valdespino patent did not show flow generating means within any specified range of the tank radius. Although the applicants may have disavowed nozzles at the center and the wall of the tank, as the Peters patent showed, they did not clearly disavow nozzles located outside of the 30 to 70 percent range claimed by claim 1 or the 25 to 75 percent range claimed by claim 8.

In determining what a person with ordinary skill would understand the term "approximately" in claim 1 to mean, the Court can also consider, in the context of the intrinsic evidence reviewed above, the declaration of LD's expert, Edward Gillette. LD contends that Gillette's declaration shows that the meaning of the term "approximately" to one of ordinary skill in the art "allows for construction tolerances of at least ten percent of the total radial dimension of the tank." LD Resp. at 4. LD thus contends that the Court should construe the term "approximately" in claim 1 to allow for "at least a ten percent deviation" from the 30 to 70 percent radial band, extending the range claimed by the phrase between "approximately 30 percent and 70 percent of said radial distance" to "at least 20/80%." *Id.* at 4-5.

Gillette, a registered professional engineer with over 37 years of engineering experience in the wastewater treatment field, states that a person with ordinary skill in the field would understand that the term "approximately" modifying the 30 to 70 percent range in claim 1 permits a deviation in either direction of at least ten percent of the tank radius. *See* LD Ex. A, para. 15-16. Gillette also opines that a person with ordinary skill in the field might understand the term "approximately" to extend the range even farther, so long as the nozzles were not located at the perimeter or the center of the tank. *Id.* para. 16. Gillette explains that he bases this opinion on "standard construction tolerances in this industry"; because nozzles are often installed in tanks with obstructions not easily changed, such as piping or rebar buried within the concrete floor, it is easier to adjust the placement of the nozzles than it is to move the structural elements of the tanks. *Id.* para. 17-18. Gillette also notes that the nozzles do not need to interlock with other parts. *Id.* at 18. Thus, unlike in the case of assemblies requiring parts to be joined together, moving nozzles around a couple of feet does not prevent the functioning of other nozzles or other tank structures and, in the context of such enormous tanks, is insubstantial. *Id.*

In his declaration, Gillette also reviews the specification and prosecution history of the '414 patent. *Id.* para. 19. He concludes that a person with ordinary skill in the field reading the specification would understand that claim 1 is not limited to the 25 to 75 percent range. *Id.* First, the use of the word "approximately" in the summary of the invention would show that the inventors did not surrender nozzle locations beyond a precise 25 to 75 percent band. *Id.* Next, Gillette contends that the background section confirms this understanding because it describes problems in prior art with nozzles positioned at the center of the tank or at the wall of the tank. *Id.* Finally, Gillette states that a person with ordinary skill in the field would not understand the specification of the patent to limit the claimed invention, but rather simply to describe preferred embodiments, particularly because the patent also states that "[c]hanges in form and in the proportion of parts, as well as the substitution of equivalents, are contemplated as circumstances may suggest or make expedient." *Id.* para. 20.

Next, Gillette states that a person with ordinary skill in the field reading the prosecution history would not understand that anything in it constituted a clear disavowal of any range beyond the 25 to 75 percent band. *Id.* para. 26. Neither Amendment A nor Amendment B was directed to the 30 to 70 percent range of claim 1 or the 25 to 75 percent range of claim 8. *Id.* para. 21. Gillette also states that a person with ordinary skill in the field would understand that the inventors did not argue the ranges in claim 1 and claim 8 alone as

being patentable; rather, when identifying differences between the claims and Peters and Koskinen, the inventors referred to multiple elements in combination. Gillette contends that a person with ordinary skill in the field would understand from the prosecution history that the specific location of the nozzles would not in and of itself achieve the desired result of substantial helical flow. *Id.* para. 23-24.

LD argues that Gillette's reasoning is entirely consistent with the claims, the written description of the patent, and the prosecution history. Vaughan contends, on the other hand, that the Court should not consider Gillette's testimony at all because extrinsic evidence is unnecessary to determine the meaning of the term "approximately" and because there is no evidence that it is a term of art in the wastewater field. Even if the Court does consider his testimony, Vaughan argues, the Court should reject it as absurd, uncorroborated, and lacking in common sense.

As LD notes, however, Vaughan does not itself address how a person with ordinary skill in the field would understand the word "approximately" to modify the stated ranges or why such a person would view 25 percent and 75 percent as strict outer limits. The Court agrees with LD; Gillette's declaration regarding the manner in which one of ordinary skill in the field would view the claims, the specification, and the prosecution history is consistent with the Court's own conclusions to the extent that they reject the notion that 25 percent and 75 percent are strict outer limits of any claimed range. Gillette's proposed construction of the term "approximately"-lending it a meaning of, roughly, plus or minus ten percent of the radial distance-is not, as Vaughan contends, absurd and lacking in common sense. Rather, the Court finds that in light of the intrinsic evidence it has reviewed, Gillette's proposed construction comports with the Court's view of the meaning the term would have to a person with ordinary skill in the field at the time of the invention. *See Innova/Pure Water*, 381 F.3d at 1116.

Although relying on extrinsic evidence is improper when analyzing the intrinsic evidence alone will "resolve any ambiguity in a disputed claim term," *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.2005), "it is entirely appropriate ... for a court to consult trustworthy extrinsic evidence to ensure that the claim construction ... is not inconsistent with clearly expressed, plainly apposite and widely held understandings in the pertinent technical field." *Plant Genetic Sys., N.V. v. DeKalb Genetics Corp.*, 315 F.3d 1335, 1346 (Fed.Cir.2003) (internal quotation marks and citation omitted). The intrinsic evidence establishes, to the Court's satisfaction, that 25 percent and 75 percent of the radial distance are not the outer limits beyond which the term "approximately" cannot extend the 30 to 70 percent range in claim 1. It does not make clear, however, how far beyond those points the modifier can stretch the range. It is for that purpose that the Court considers the expert testimony of Gillette and concludes, at least for the purpose of the present motion, that a person of skill in the relevant field would interpret the term "approximately" in claim 1 to expand the claimed range by 10 percent of the radial distance in each direction, or in other words, to expand it to a range of 20 to 80 percent. The Court therefore denies Vaughan's motion for summary judgment as to the construction of the term "approximately."

2. Doctrine of equivalents

Vaughan argues that LD is barred by "argument-based estoppel" from asserting that Vaughan's Nashville Central system infringes the '414 patent under the doctrine of equivalents. LD counters that the doctrine of equivalents is, in fact, available because the prosecution history does not "evinced a clear and unmistakable surrender of subject matter." *Conoco, Inc. v. Energy & Environmental Int'l, L.C.*, 460 F.3d 1349, 1364 (Fed.Cir.2006). LD contends that both the 25 to 75 percent range of claim 8 and the 30 to 70 percent range of claim 1 have scopes of equivalents to be determined as a matter of fact by a jury.

Under the doctrine of equivalents, "a product or process that does not literally infringe upon the express terms of a patent may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." *Warner-Jenkinson Co. v. Hilton Davis Chemicals Co.*, 520 U.S. 17, 21, 117 S.Ct. 1040, 137 L.Ed.2d 146 (1997). Thus, to prove infringement under the doctrine of equivalents, the patentee must establish that "the accused device contains an equivalent for each limitation not literally satisfied." *Catalina Marketing Int'l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 812 (Fed.Cir.2002). If a single limitation of a claim or its equivalent is not present in the accused device or method, there can be no infringement under the doctrine of equivalents. *See Kustom Signals, Inc. v. Applied Concepts, Inc.*, 264 F.3d 1326, 1333 (Fed.Cir.2001).

The applicability of the doctrine of equivalents can be limited, however, by the doctrine of prosecution history estoppel, which can occur in either of two forms: amendment-based estoppel or argument-based estoppel. *Conoco, Inc.*, 460 F.3d at 1363. The former occurs when, during prosecution, the patentee makes a narrowing amendment to the claim. *Id.* Argument-based estoppel, on the other hand, is implicated when the patent holder surrenders claim scope to the patent examiner through arguments made during prosecution. *Id.*

The two forms of estoppel carry different burdens of proof. A patentee who narrows a claim through an amendment bears the burden of demonstrating "that the reason for the amendment was unrelated to patentability (e.g., to avoid prior art)." *Id.* (citing *Warner-Jenkinson*, 520 U.S. at 33). "Narrowing the claims in response to a rejection during prosecution creates a presumption that the applicant surrendered the territory between the original claims and the amended claims." *Lucent Techs., Inc. v. Gateway, Inc.*, 525 F.3d 1200, 1218 (Fed.Cir.2008) (citing *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 740, 122 S.Ct. 1831, 152 L.Ed.2d 944 (2002)).

Vaughan instead invokes the doctrine of argument-based estoppel, which is closely related to the doctrine of prosecution disclaimer discussed in the previous section of this decision. *See Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1326 n. 1 (Fed.Cir.2003). As with prosecution disclaimer, argument-based estoppel requires the alleged infringer to show that "the prosecution history ... evince[s] a clear and unmistakable surrender of subject matter." *Conoco*, 460 F.3d at 1364 (citing *Deering Precision, L.L.C. v. Vector Distribution Systems, Inc.*, 347 F.3d 1314, 1326 (Fed.Cir.2003)). The Court may not presume that a patentee's "simple arguments and explanations to the patent examiner" surrender entire fields of equivalents, the way a formal amendment would. *Id.* Rather, "[t]he relevant inquiry is whether a competitor would reasonably believe that the applicant had surrendered the relevant subject matter." *Id.* (quoting *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1457 (Fed.Cir.1998)). Each argument can create its own estoppel "so long as the prior art was not distinguished based on the combination of these various grounds." *PODS, Inc. v. Porta-Stor*, 484 F.3d 1359, 1367 (Fed.Cir.2007) (citing *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1581-83 (Fed.Cir.1995)).

Vaughan's arguments in favor of applying argument-based estoppel against LD are substantially the same as its arguments for prosecution disclaimer. Again, Vaughan points out that the applicants, in the course of prosecuting their patent, distinguished claim 1 over the Peters and Koskinen references by noting that claim 1 recites a specific range of 30 to 70 percent and argued that the Valdespino reference did not teach the applicants' claimed arrangement with nozzles located in the 25 to 75 percent range. By emphasizing the location of the nozzles in their claimed invention, Vaughan contends, LD surrendered any claim regarding mixing systems not having at least two nozzles in the 25 to 75 percent range. As the Court stated in its discussion of prosecution disclaimer, however, the applicants' references to their claimed ranges were made

as part of a broader argument for patentability on the ground that their "particular claimed combination of elements resuspends solids that have previously been allowed to settle or that keeps the solids in a uniform, homogenous state in the body of liquid." LD Ex. 12 at 264.

Vaughan argues that in the applicants' August 12, 1993 response to the first Office Action, the applicants relied on the claimed ranges as a separate basis for distinguishing claims 1 and 8 from the prior art, thus implicating the rule that each argument can create its own estoppel as long as it is offered as a separate basis for distinguishing the prior art. *See* *PODS, Inc.*, 484 F.3d at 1368. The Court does not read the applicants' argument this way. As LD notes, the applicant in *PODS* created separate estoppels by delineating each of its three distinctions as an independent basis for patentability. *See id.* at 1368. By contrast, in arguing for the patentability of their invention in the August 12, 1993 response, the applicants in the present case repeatedly used phrases like "claimed arrangement," "claimed invention," and "invention." *See* LD Ex. 7 at 228-230. In the Court's view, the applicants consistently directed their argument to the patentability of their distinct combination of nozzle locations, nozzle orientation, "substantially volume-filling flow," and "toroidal and circumferential flow" generated without the use of cones, gates, baffles, and flow guides along the periphery of the tank. *Id.* For this reason, and for the reasons the Court set forth in its rejection of Vaughan's prosecution disclaimer argument, the Court finds that although the applicants may have surrendered nozzles located at the center or at the wall of mixers, a competitor would not reasonably believe that the applicants disavowed all subject matter outside of the 25 to 75 percent range. *See* *Cybor Corp.*, 138 F.3d at 1457. The Court therefore finds that the doctrine of equivalents is not unavailable to LD as a matter of law with respect to claim 1 and claim 8 of the '414 patent.

CONCLUSION

For the reasons stated above, the Court denies defendant's motion for partial summary judgment of noninfringement [docket no. 60]. The case is set for a status hearing on August 12, 2008 at 9:30 a.m. Counsel are directed to file a joint status report on or before August 11, 2008 addressing what remains to be done to complete discovery and bring the case to disposition, and proposing a comprehensive schedule for the remainder of the case. The schedule should take due regard of the fact that the case is, at this point, approximately two years old.

N.D.Ill.,2008.

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