United States District Court,
D. Massachusetts.

**LES TRAITMENTS DES EAUX POSEIDON, INC,**
Plaintiff.
v.
**KWI, INC., KWI, N.A., KIC, Inc,**
and Southern Berkshire Mechanical Corp. Defendants.

No. CIV. A. 99-30189 MAP

**March 30, 2001.**

Owner of patent for wastewater clarifying device using diffused air flotation process sued competitor for infringement. Construing claims, the District Court, Ponsor, J., held that: (1) structural features identified in written description would be applied to limit scope of claims; (2) "Injection means" and "scraping means" were means-plus-function elements; and (3) terms "saturate" and "saturation" meant dissolving of sufficient air or gas into liquid so that liquid contained 60% to 90% of its maximum air concentration.

Claims construed.

5,662,804. Construed.

Ira J. Levy, Peter Ludwig, Darby & Darby, Frank Maldari, Darby & Darby P.C., New York City, J. Kevin Grogan, McCormick, Paulding & Huber, LLP, Arthur F. Dionne, McCormick, Paulding & Huber, Springfield, MA, Brian Moriarty, Darby & Darby, New York City, for Plaintiff.

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***MEMORANDUM REGARDING MOTIONS FOR CLAIM CONSTRUCTION*** **(Docket Nos. 81 & 90)**

PONSOR**, District Judge.**

## I. *INTRODUCTION*

Before this court are the parties' motions for claim construction of U.S. Patent No. 5,662,804, entitled "Method and Apparatus for Separating Non-Soluble Particles from a Liquid" ("Patent '804"). Les Traitments Des Eaux Poseidon, Inc. ("Poseidon") filed suit against KWI, Inc., KWI, N.A., KIC, Inc. and Southern Berkshire Mechanical Corp. (collectively "KWI"), alleging that KWI infringes claims 1 and 11 of Patent '804. KWI has moved for construction of these claims and Poseidon has filed a cross-motion requesting its own claim construction. For the following reasons, both motions will be granted in part and

denied in part.

## II. *BACKGROUND*

### A. *The Technology Generally and the Patented Invention*

Poseidon has been assigned Patent '804 which concerns a method and apparatus for separating non-soluble particles from wastewater. The invention combines pressurized air or gas with wastewater in a large tank. As the air or gas depressurizes, it forms bubbles which adhere to the non-soluble particles in the wastewater. The combined particle-bubbles-more buoyant than the wastewater-rise to the surface and form a sludge. The sludge is then skimmed from the top of the tank and disposed of. This process, generally, is termed "diffused air flotation" ("DAF"). The apparatus used in the DAF process is called a "clarifier."

DAF clarifiers often include upwardly inclined plates inside the tank. The plates improve the tank's efficiency by increasing its surface area without increasing its size. The greater the surface area, the greater the likelihood that air bubbles will adhere to non-soluble particles before the bubbles rise to the surface of the water. In turn, the smaller the tank's size, the easier it is to install and use. Patent '804 includes plates that angle upwards towards the tank's walls, leaving a small space between the plates and the wall for particle bubbles to move up toward the surface of the water.

In addition to increasing the tank's surface area, a clarifier's efficiency can be improved by adding polymers to the wastewater. Both the particles and bubbles carry a negative charge which can create a repulsive force that prevents the particles and bubbles from combining. Polymeric additives reduce the negative charge and, therefore, increase the likelihood that the bubbles will adhere to the particles.

### B. *The Disputed Claims*

Patent '804 asserts thirteen claims. Claims 1 and 11 are the subject of this dispute. FN1 Claim 1 of Patent 804 claims:

FN1. Both parties agree that the proposed definitions apply to claim 1 and claim 11 and that the terms at issue should be construed and defined in the same manner in each claim.

A clarifier for use in treating a liquid containing non-soluble particles in suspension in order to separate these particles from the liquid, said clarifier comprising:
a tank of given height having a top portion and bottom portion;

a supply duct opening into the bottom portion of the tank for feeding the liquid to be treated into said tank;

injection means for injecting a gas under pressure into at least part of liquid supplied to the supply duct in order to saturate said liquid with said gas and thus to generate gas bubbles as the saturated liquid is subject to depressurization within the tank, the gas bubbles that are so-generated adhering to the particles in suspension in the liquid and lifting them up to form a floating layer of sludge in the top portion of the tank;

a scraping means in the top portion of the tank for skimming off the layer of sludge while it is formed;

a plurality of plates extending at an angle within the tank above the supply duct, said plates defining a set of

upwardly inclined channels each having an upper end that is opened and through which the liquid fed into the tank may enter the channel, each channel having a lower end and each channel not including a supply therein; and

a liquid outlet mounted within the lower end of each channel to collect and remove from the tank the liquid that has been treated within the same.

'804 Patent, col. 8, l. 45-col. 9, l. 8. Claim 11 of Patent '804 claims:
A method for treating a liquid containing non-soluble particles in suspension in order to separate these particles from the liquid, said method comprising the steps of:

providing a tank of a given height having a top portion, a bottom portion with a liquid supply duct and a plurality of internal plates extending at an angle with the tank, said plates defining a set of upwardly inclined channels each having an upper end that is opened and each channel not including a liquid supply duct therein, and a lower end that is closed;

injecting a gas under pressure into some of the liquid to be treated in order to saturate said liquid with said gas;

feeding said gas-saturated liquid in the duct at the bottom portion of the tank under the plates, the liquid that is so fed being subject to depressurization, thereby generating gas bubbles that adhere to the particles in suspension in the liquid and lift them up to form a floating layer of sludge in the top portion of the tank;

skimming off the layer of sludge while it is formed in the top portion of the tank; and

collecting and removing the liquid treated within the tank at the lower end of each channel.

'804 Patent, col. 8, l. 47-.col. 1. 4.
**C. *The Specification***

In a section entitled "Background of the Invention," the specification identifies two drawbacks to known clarifiers. First, the known clarifiers' " 'horizontal' structure... makes them cumbersome." '804 Patent, col. 2, 11. 15-16. Second, "fast and sudden depressurization occurs" as soon as wastewater enters the known clarifiers' tank. Id. at 11. 22-23. The depressurization causes many of the air bubbles to surface without adhering to particles.

To address these drawbacks, the specification lists three "objects" of the present invention, to create a clarifier that: 1) has ground surface area at least 50% smaller than known clarifiers; 2) increases the probability that air bubbles will adhere to particles; and 3) can remove more particles while using less polymeric additive.

The patent specification includes four figures. Figure 1 depicts an example of the prior art and shows a large tank that is longer than it is tall. The tank includes plates extending upward at an angle from its base. Wastewater enters the tank from a supply duct on the side wall and sludge is skimmed from the wastewater's surface.

Figure 2 depicts an image of the "basic structure of a clarifier according to the invention." '804 Patent, col.

3, 11. 52-53. Figure 2 shows a cross-section of a vertically extending tank. Wastewater feeds into the tank from a single supply duct located at the base of the tank. The plates attach to the side wall of the tank and angle upward.

Figure 3 depicts an image of the "first preferred... embodiment" of the invention. '804 Patent, col. 3, 1. 56. Figure 3, like Figure 2, shows a cross-section of a vertically extending tank with wastewater entering from a single supply duct at the bottom of the tank. The plates in Figure 3, however, attach in the center of the tank and extend, at an upward angle, toward both sides of the tank's walls.

Figures 4 and 5 depict a clarifier according to a second preferred embodiment. Figure 4 shows a cross-section of a tank that is wider than it is tall with three supply ducts at the base of the tank. Approximately seven columns of plates rise from the base of the tank upwards. The plates extend from the center outward on two sides. Figure 5 depicts the same clarifier shown in Figure 4, but from a side angle. From this perspective, the clarifier looks nearly identical to the first preferred embodiment shown in Figure 3; it has one supply duct at the base of the tank and plates extending from the center of the tank toward the two side walls.

The specification also includes a section entitled "General Description of the Invention." After asserting that the general description is "non-restrictive," '804 Patent, col. 3. 1. 47, the patentee lists the components of the invention that "comprise[ ] the same basic structural elements as the known clarifier." Id. at 1. 66. The patentee then highlights the advantages of the disclosed invention:

The only yet important differences between the known clarifier and the clarifier according to the invention are that:

the tank extends vertically instead of horizontally;

as a result of such an "orientation" of the tank, the supply duct is located at the bottom of the tank instead of being located at one lateral end thereof;

the plates extend in parallel relationship one above the other along the height of the tank instead of extending in parallel relationship along the length of the same;

the scraper on top of the tank is opposite to the supply duct instead of extending adjacent to this duct; and

the bottom portion of the tank into which the supply duct opens, or, alternatively, the outlet of supply duct itself is tapering upwardly and outwardly to define a nozzle.

'804 Patent, col. 4, 11. 15-29. FN2 The patentee further describes these as "structural differences [that] are essential and make the clarifier according to the invention much better than any known clarifier of the same capacity.. " '804 Patent, col. 4, 11. 30-32. After describing seven advantages that the structural differences provide, the patentee states, "All these structural features altogether make the clarifier according to the invention much easier to install and use and much more efficient that [sic] the know [sic] clarifiers presently in use on an industrial scale. " '804 Patent, col. 5, 11. 22-25.

FN2. For convenience, any numbered references to the patent diagrams have been elided from the excerpts included in this memorandum.

**D.** ***The Prosecution History***

On March 7, 1997, the patentee submitted an Information Disclosure Statement ("IDS") to the Commissioner of Patents and Trademarks. The IDS distinguished several prior art references, focusing primarily on U.S. Patent No. 3,754,656 ("the Horiguchi Patent").

The IDS states that the "structural features" of the clarifier disclosed in the Horiguchi Patent and the clarifier disclosed in Patent '804 are completely different. In particular, the IDS lists two "major differences" between Patent '804 and the Horiguchi Patent. First, Patent '804 uses:

a single supply duct that is located in the bottom portion of the tank. This supply duct is positioned under the plurality of plates so that the liquid fed into the tank comes into contact with the lower plate and then moves up along the lateral wall of the tank ....

Def.'s Ex. B, tab 1, pg. 3. Second, in the clarifier as disclosed in Patent '804:

the upper ends of all the channels extend at a short distance from the adjacent lateral walls of the tank and are left open to allow the liquid that moves up along the lateral walls of the tank (after having hit the lower plate), to enter into the channels through these opened upper ends. Thus, all the channels are fed from a *single* source of waste liquid that is located in the bottom portion of the tank.

Id. at 4 (emphasis in original). The IDS lists four "major advantages" that stem from these two "major differences." The four major advantages are repetitions of the second, third, fourth, and seventh advantages listed in the specification. FN3

FN3. The four advantages stated in the specification are:
First of all, the introduction of waste water ... at the bottom of the tank, where the water column is highest, permits to stabilize [sic] in a much better way the generation and size of the microbubbles of gas, thereby improving the performance of the clarifier and thus making it possible to reduce the amount of polymeric additives that are required to improve the flocculation mechanism.
Secondly, the fact that the microbubbles are generated at the bottom of the tank and move up along the full height of the same permits to substantially increase the concentration and distribution of such microbubbles and thus the opportunity for such bubbles (i) to contact non-soluble particles in suspension in the liquid, (ii) to attach to the same and (iii) to lift them up.
Thirdly, the fact that the flow of injected liquid and microbubbles comes into contact with the lower plate of the clarifier which is just above the supply duct, permits to increase also the opportunity for the gas bubbles and/or the non-soluble particles to contact and attach to each other and thus become buoyant.
Fourthly, the fact that the microbubbles and solid particles attached thereto move up through a restricted passage between the lateral walls of the tank and the upper edges of the plates is of the uppermost importance, since the microbubbles and particles thus form a kind of vertical curtain ... which actually acts as a filter or screen for the liquid when the same 'turns down' at the upper edges of the plates and moves within each channel towards the corresponding liquid outlets.

Id. at 5-6.

KWI argues that the five essential structural elements listed in the specification and the two major differences listed in the IDS should limit the scope of claims 1 and 11. Poseidon disagrees, arguing that the language from the specification and the IDS should not be read into the claims. In addition, Poseidon proposes several claim constructions of its own.

## III. *STANDARD OF REVIEW*

[1] A literal patent infringement analysis involves two steps. First, the trial court must properly construe the asserted claim as a matter of law. Second, the trier of fact must determine "whether the accused method or product infringes the asserted claim as properly construed." *Vitronics Corp. v. Conceptronic, Inc.,* 90 F.3d at 1581-1582; *accord,* Johnson Worldwide Associates, Inc. v. Zebco Corp., 175 F.3d 985, 988 (Fed.Cir.1999); Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1247-48 (Fed. Cir.1998). This memorandum concerns the first step of this analysis-the proper construction of the asserted claim.

[2] [3] Claim construction requires the application of two seemingly contradictory interpretive canons. *See,* Renishaw PLC, 158 F.3d at 1248. The first canon emphasizes that claim constructions should be determined by the language of the claims themselves; construing courts should not import terms and limitations from other sources. *See, Id*. The second canon holds that claim terms should not be considered in a vacuum, but must be construed "as illuminated by the written description and the prosecution history." KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1355 (Fed.Cir.2000).

The Federal Circuit has developed a set of interpretive principles to help stay true to the claim language while, at the same time, ensuring that the claim construction accords with the description of the invention as articulated in the patent specification and the prosecution history. The first set of principles involves "the general relationship between the claims and the written description." Renishaw PLC, 158 F.3d at 1248. The second set of principles involves the use of a patent's prosecution history to limit the scope of claims.

[4] As an initial principle, claim construction inquiries begin and end with the actual words of the claim. Id. at 1248. The claim defines the scope of the protection a patent provides and a claim construction should "accord with the words chosen by the patentee to stake out the boundary of the claimed property." *Id*.

Nevertheless, a claim does not, under all circumstances, provide the last word. A construing court may look beyond the language of the claims to the specification in two situations. First, a construing court can "use statements in the written description to confine or otherwise affect a patent's scope" when the claim terms themselves are unclear or ambiguous. Renishaw PLC, 158 F.3d at 1248. Under these circumstances, the claim terms "invite reference" to the specification and the specification may be used to further clarify the ambiguous terms. Johnson Worldwide Assoc., Inc., 175 F.3d at 989.

Second, a construing court must "consult the specification to determine whether the patentee redefined any of [the claim terms]." Watts v. XL Systems, Inc., 232 F.3d 877, 883 (Fed.Cir.2000). If the patentee provides clear definitions for claim terms within the specification, the trial court must refer to the specification "because only there is the claim term defined as it is used by the patentee." Renishaw PLC, 158 F.3d at 1249. In fact, "[i]t is entirely proper to 'use the specification in order to determine what the inventor meant by terms or phrases in the claims.' " Laitram Corp. v. Morehouse Industries, Inc., 143 F.3d 1456, 1462 (Fed.Cir.1998); *quoting,* Minnesota Min. and Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc., 976 F.2d 1559, 1566 (Fed.Cir.1992).

In order for the claim to be interpreted in light of the meanings ascribed in the specification, however, those meanings must "appear 'with reasonable clarity, deliberateness, and precision' before [they] affect the claim." Renishaw PLC, 158 F.3d at 1249; *quoting,* In Re Paulsen, 30 F.3d 1475, 1480 (Fed.Cir.1994). Yet, as the Federal Circuit has recently held, "the written description can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format." SciMed Life Systems, Inc. v. Advanced Cardiovascular Systems, Inc., 242 F.3d 1337, 1343-45 (Fed.Cir.2001).

[5] As a second interpretive principle, the Federal Circuit has consistently held that "[a]rguments and amendments made during the prosecution of a patent application and other aspects of the prosecution history... must be examined to determine the meaning of [claim] terms." Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed.Cir.), *cert. denied,* 516 U.S. 987, 116 S.Ct. 515, 133 L.Ed.2d 424 (1995). Thus, "any interpretation that is provided or disavowed in the prosecution history also shapes the claim scope." Renishaw PLC, 158 F.3d at 1249 n. 3.

## IV. *DISCUSSION*

This memorandum will first discuss KWI's claim construction requests and then turn to Poseidon's requests.

### A. *KWI's Requests For Claim Construction*

#### 1. *Claims Limited by the Specification*

[6] KWI argues that claims 1 and 11 should be limited according to the five structural features identified in the patent's written description. The five structural features are that:

1. the tank extends vertically;

2. the supply duct is located at the bottom of the tank;

3. the plates extend in parallel relationship one above the other along the height of the tank;

4. the scraper on top of the tank is opposite to the supply duct; and

5. the bottom portion of the tank into which the supply duct opens, or, alternatively, the outlet of supply duct itself is tapering upwardly and outwardly to define a nozzle.

*See* '804 Patent, col. 4, 11. 15-29. KWI is correct; the five structural differences are articulated with sufficient clarity and precision that they should limit the scope of the claims. FN4

FN4. KWI also argues that the claims should be limited by the phrase "where the water column is highest." The patentee uses this phrase in both the specification and IDS to describe an advantage derived from the introduction of wastewater at the bottom of the tank. Since the phrase is used to describe an advantage reaped by a structural difference, and not to describe the structural difference itself, the term should not be used to limit the claims.

Claim construction begins, in all cases, with the language of the claims. *See, e.g.* Johnson Worldwide

Assoc., Inc., 175 F.3d at 989. KWI asserts that the claim language is ambiguous and, therefore, invites reference to the specification. It highlights the phrases "pointing at an angle" and "tank of a given height having a top portion and a bottom portion" as indicative of that ambiguity. Although some of the language in the claim terms is quite broad, it is not so broad as to be unclear. *See,* Moore U.S.A., Inc. v. Standard Register Co., 229 F.3d 1091, 1110 (Fed.Cir.2000) ( "[t]he fact that a claim is broad does not mean that it is vague or incomplete"), *petition for cert. filed,* (No. 00-1346 (Feb. 26, 2001)).

Yet, even if the claim language is clear, this court must still consult the specification to determine whether the patentee has "dictat[ed] the manner in which the claim terms are to be construed." SciMed Life Systems, 242 F.3d 1337, 1343-45. In particular, "one purpose for examining the specification is to determine if the patentee has limited the scope of the claims." Watts, 232 F.3d at 882.

Here, there is substantial evidence to indicate that the five structural features articulated in the written description limit the scope of the claims. The language surrounding these structural features underscores their significance; they are identified as "essential" and "important." In addition, the specification lists seven advantages to Patent '804's clarifier derived from these features. The advantages dovetail with the main purposes of Patent '804 listed in the specification: to create a clarifier that takes up less ground space, uses fewer polymeric additives, and ensures a greater probability that bubbles will adhere to particles. In light of this unambiguous language, the specification has provided important definitions which should be read into the claim. *See* SciMed Life Systems, Inc., 242 F.3d 1337, 1343-45 (where characterization of the invention in the written description is "broad and unequivocal," the invention should be limited accordingly).

What is more, the patentee uses these "essential" and "important" differences to distinguish Patent '804's clarifier from prior art. In all but one of the descriptions, Patent '804's structural elements are placed in direct contrast to the prior art. For example, the specification states that "the tank extends vertically *instead* of horizontally." '804 Patent, col. 4, 1.17 (emphasis added). In addition the patentee states that "these structural differences... make the clarifier according to the invention much better than any known clarifier of the same capacity," Id. at 30-32, and that "these structural features altogether make the clarifier according to the invention much easier to install and use and much more efficient that [sic] the know [sic] clarifiers presently in use on an industrial scale." Id. at col. 5, 11. 22-25.

It is well-settled that such "explicit meanings given to claim terms to overcome prior art will limit those claim terms accordingly." Johnson Worldwide Assoc., Inc., 175 F.3d 985, 991 (1999); *citing,* Spectrum Int'l, Inc. v. Sterilite Corp., 164 F.3d 1372, 1378 (Fed.Cir.1998). Although this principle is often asserted when a patentee distinguishes prior art during prosecution, the Federal Circuit has repeatedly applied this principle to distinctions articulated in the specification as well. *See,* SciMed Life Systems, Inc., 242 F.3d 1337, 1343-44 (where specification distinguishes prior art "the claims should not be read so broadly as to encompass the distinguished prior art structure"); Watts, 232 F.3d at 882 (where specification limits invention to structures that utilize misaligned taper angles, that limitation will limit the scope of the claim); Tronzo v. Biomet, Inc., 156 F.3d 1154, 1159 (Fed.Cir.1998) (written description did not support claim covering conical and non-conical shaped cups where the specification "specifically distinguishes the prior art [non-conical shape cups] as inferior and touts the advantages of the conical shape of the [patented cup]"); O.I. Corp. v. Tekmar Co., Inc., 115 F.3d 1576, 1581 (Fed.Cir.1997) (limiting means-plus-function claim to non-smooth or conical passage structures where the specification "expressly distinguishes over prior art passages by stating that those passages are generally smooth-walled").

Poseidon, for its part, argues that these structural elements are not sufficiently clear to affect the claims. It

points to boilerplate language in the specification asserting that the general description is "non-restrictive." This general language carries little weight, however. It is not possible to have an "essential" structural feature also be "non-restrictive." The emphasis placed on the structural features and the numerous advantages that stem from them belies this language.

In addition, Poseidon argues that the second preferred embodiment directly contradicts the first essential structural feature-that the tank extend vertically instead of horizontally. Given this contradiction, Poseidon argues that the patent claim should be read to exclude that structural feature and to include the second preferred embodiment.

This argument, at first blush, has some strength. The second preferred embodiment depicts a clarifier that is wider than it is tall. The first essential structural feature, however, states that the tank extends vertically instead of horizontally; that is, it is taller that it is wide.

While recognizing that "it is unlikely that an inventor would define the invention in a way that excluded the preferred embodiment," Hoechst Celanese Corp. v. BP Chems. Ltd., 78 F.3d 1575, 1581 (Fed.Cir.1996), the court must recognize this as one of the instances where the patent documents provide "highly persuasive evidentiary support" for just such an interpretation. *Vitronics Corp.,* 90 F.3d at 1583. FN5

FN5. In *Vitronics,* the Federal Circuit refused to define the term "solder reflow temperature" to mean "liquidus temperature" because the meaning of the disputed term was made "clear from a reading of the claim itself and the specification." *Vitronics Corp.,* 90 F.3d at 1583. As a result, the "highly persuasive evidentiary support" necessary to exclude the sole embodiment listed in the specification from the scope of the claim did not exist. *Id.*

In this case, on the other hand, the specification includes two preferred embodiments. Only the second preferred embodiment conflicts with the specification's general description. In addition, the prosecution history provides an interpretation of the claim which is in direct contrast to the second preferred embodiment. "This is a critical distinction from the situation in the *Vitronics* case where there was no issue of claims being limited before the patent was issued." Ultra-Temp Corp. v. Advanced Vacuum Systems, Inc., 11 F.Supp.2d 141, 147 (D.Mass.1998).
First, the patentee has disclaimed an interpretation of claims 1 and 11 that would include the second preferred embodiment. As is discussed further in part two of this section, the patentee emphasized during prosecution that the clarifier contained a single supply duct. The second preferred embodiment depicts a clarifier with multiple supply ducts. Poseidon cannot now hold out the second preferred embodiment as a defense against claim construction after having disclaimed the embodiment during prosecution. *See* Ekchian v. Home Depot, Inc., 104 F.3d 1299, 1304 (Fed.Cir.1997) ("the prosecution history, which includes all express representations made by or on behalf of the applicant to the examiner to induce a patent grant, limits the interpretation of the claims so as to exclude any interpretation that may have been disclaimed or disavowed during prosecution") (internal quotations omitted).

Second, the patentee repeatedly promotes the value derived from a tank that is taller than it is wide. In the "Brief Description of the Prior Art" the patentee states that "existing clarifiers... have drawbacks because of their 'horizontal' structure, they require a substantial amount of space that makes them cumbersome and difficult to install." '804 Patent, col. 4, 11.15-18. A main purpose of the invention is to address this "drawback." The patentee states, "a first object of the present invention is to provide a clarifier... which thanks to its shape and structure, occupies a surface area on the ground that is 50% or less smaller than any

known clarifier of the same capacity." '804 Patent, col. 2, 11. 30-35. FN6 This "first object" is achieved by the tank extending vertically instead of horizontally. "[T]he vertical orientation of the tank substantially reduces the surface area occupied by the same onto the ground. *This is a tremendous advantage*. " '804 Patent, col. 4, 11. 31-34 (emphasis added).

FN6. This same language is repeated in the Patents abstract. *See,* '804 Patent, abstract col. 2, 11. 30-37.

If the specification leaves any ambiguity as to the "essential" nature of the structural elements, that ambiguity is resolved by the IDS. *See,* Eastman Kodak Co. v. Goodyear Tire & Rubber Co., 114 F.3d 1547, 1554 (Fed.Cir.1997) (where specification does not supply entirely conclusive proof of claim meaning, the court looks to other sources, including the prosecution history, for the meaning of the claim language), *overruled on other grounds by,* Cybor Corp. v. FAS Technologies, Inc., 138 F.3d 1448 (Fed.Cir.1998).

The IDS incorporates the five structural elements listed in the specification, stating that "the advantages that derive from the basic structure and method of operation of the clarifier according to the invention are clearly enumerated on pages 7 and 8 of the original description." Pages 7 and 8 describe the seven advantages derived from the "essential" structural elements at issue here. By incorporating these structural elements during the prosecution of the patent, the patentee has reemphasized their importance. These five structural elements are not merely non-restrictive descriptions, they are the derivation of the numerous advantages Patent '804's clarifier enjoys over prior art. The structural elements provide "meaning[s] of the claim term[s] as [they are] used by the inventor in the context of the entirety of his invention." Interactive Gift Express, Inc. v. CompuServe, Inc., 231 F.3d 859, 866 (Fed.Cir.2000). As such, they should limit the scope of the claims.

**2.** ***Claims Limited by the IDS***

[7] KWI next argues that claims 1 and 11 should be limited by statements made in the IDS. KWI argues that by distinguishing the Horiguchi patent from Patent '804, the patentee limited the scope of the claim. This court agrees; the IDS provides clear descriptions of the structure and functioning of Patent '804 which should limit the scope of claims 1 and 11.

The patentee filed the IDS to distinguish Patent '804 from the Horiguchi Patent. Since Patent '804 "may appear to be very similar" to the Horiguchi Patent, the IDS provided "a more detailed study" of the clarifiers disclosed by the two patents in order to "clearly show[ ] that these two clarifiers are *completely* different from each other." Def.'s Ex. B, tab 1, pg. 3 (emphasis in original).

The patentee discloses the following structural features of Patent '804 as major differences. First, Patent '804 uses:

a single supply duct that is located in the bottom portion of the tank. This supply duct is positioned under the plurality of plates so that the liquid fed into the tank comes into contact with the lower plate and then moves up along the lateral wall of the tank....

Id. Second, in the clarifier as disclosed in Patent '804:

the upper ends of all the channels extend at a short distance from the adjacent lateral walls of the tank and

are left open to allow the liquid that moves up along the lateral walls of the tank (after having hit the lower plate), to enter into the channels through these opened upper ends. Thus, all the channels are fed from a *single* source of waste liquid that is located in the bottom portion of the tank.

Id. at 4. The IDS lists a number of "major advantages" that stem from these two "major differences." The major advantages are nearly identical to the, second, third, fourth, and seventh advantages listed in the specification. Id. at 5-6. KWI argues that claims 1 and 11 should be limited in accord with these statements.

It is well-settled that an "applicant's representations during prosecution... shed light on the construction of claims." Laitram Corp. v. Morehouse Industries, Inc., 143 F.3d 1456, 1463 (Fed.Cir.1998); Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed.Cir.1995) ( "Arguments and amendments made during the prosecution of a patent application and other aspects of the prosecution history... must be examined to determine the meaning of terms"). Thus, "any interpretation that is provided or disavowed in the prosecution history also shapes the claim scope." Renishaw PLC, 158 F.3d at 1249 n. 3.

In addition, an IDS is a part of the prosecution history and can be considered as a "basis for a court to interpret scope of the claims of a granted patent." Ekchian v. Home Depot, Inc., 104 F.3d 1299, 1304 (1997). As a result, "[a]n argument contained in an IDS which purports to distinguish an invention from the prior art thus may affect the scope of the patent ultimately granted." *Id*.

Here, Poseidon has gone out of its way to distinguish its clarifier from the Horiguchi Patent. The distinctions constitute major differences between the two patents that result in major advantages to Patent '804's clarification process. The patentee clearly "intended his statements to be relied on" by the patent examiner, and "the courts and the public may rely on them as well." Ekchian v. Home Depot, Inc., 104 F.3d at 1303.

[8] Poseidon argues that, regardless of the IDS, the claims should be read to include multiple supply ducts. It first asserts that the claims use an indefinite article to describe the supply duct and that, customarily, indefinite articles are interpreted as meaning "one or more." KCJ Corp., 223 F.3d at 1356. Similarly, Poseidon argues that the IDS directly conflicts with the specification's second preferred embodiment. The second preferred embodiment depicts a clarifier with a "plurality of supply ducts" while, as noted, the IDS depicts the invention as having a single supply duct. *Compare* '804 Patent, col. 6, 1. 61, *with* Def.'s Ex. B, tab 1, pg. 3.

[9] Although indefinite articles in claims are presumed to mean "one or more," this presumption may be rebutted. KCJ Corp., 223 F.3d at 1356. "[A]n applicant may disclaim before the [patent examiner] a plural interpretation and thus lose the benefit of the customary meaning of indefinite articles in patent claims." *Id*.

Similarly, a patentee may disclaim a preferred embodiment during prosecution. "[S]tatements made during prosecution... may commit to a particular meaning for a patent term, which meaning is then binding in litigation." CVI/Beta Ventures, Inc. v. Tura LP, 112 F.3d 1146, 1158 (Fed.Cir.1997), *cert. denied,* 522 U.S. 1109, 118 S.Ct. 1039, 140 L.Ed.2d 105 (1998). When the scope of a claim has been narrowed by the prosecution history, "it is not surprising that... some of the embodiments may no[ ] longer fall within [the claim's] purview." Ultra-Temp Corp. v. Advanced Vacuum Systems, Inc., 11 F.Supp.2d 141, 146 (D.Mass.1998); Biodex Corp. v. Loredan Biomedical, Inc., 946 F.2d 850, 863 (Fed.Cir.1991) (a particular interpretation of a claim can be disclaimed by the inventor during prosecution), *cert. denied,* 504 U.S. 980, 112 S.Ct. 2957, 119 L.Ed.2d 579 (1992).

Here, the patentee has unambiguously disclaimed a plural interpretation of the term "supply duct." The IDS states that Patent '804 contains "a single supply duct that is located at the bottom portion of the tank" and that "all the channels [within the clarifier] are fed from a *single* source of waste liquid that is located in the bottom of the tank." Def.'s Ex. B, tab 1, pg. 4 (emphasis in original). This explicit language disclaims any inference that may customarily be drawn from an indefinite article. What is more, the language limits the scope of the claims to exclude the second preferred embodiment since "[c]laims are not correctly construed to cover what was expressly disclaimed." Cultor Corp. v. A.E. Staley Mfg. Co., 224 F.3d 1328, 1331 (Fed.Cir.2000); Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed.Cir.1995) ("The prosecution history limits the interpretation of claim terms so as to exclude any interpretation that was disclaimed during prosecution"). FN7

FN7. Poseidon, at oral argument, asserted that the recently decided case of Vanguard Products Corp. v. Parker Hannifin Corp., 234 F.3d 1370 (Fed.Cir.2000), prevented this court from limiting the claims according to the statements made in the IDS. *Vanguard Products,* however, is inapposite. In *Vanguard Products,* the Federal Circuit held that "[t]he method of manufacture, even when cited as advantageous [in the prosecution history], does not of itself convert product claims into claims limited to a particular process." *Id.* at 1372. Here, however, the IDS does not tout the method of manufacture of a particular invention. Instead, the IDS details the "structural features" of the clarifier itself. It is these structural features which form the basis for claims 1 and 11. Since the structure of the clarifier is integral to the interpretation of both claims, statements made in the IDS which aid in that interpretation must be heeded.

In conclusion, claims 1 and 11 will be construed to contain the following limitations from the specification and the IDS:

1. the tank extends vertically;

2. the supply duct is located at the bottom of the tank;

3. the plates extend in parallel relationship one above the other along the height of the tank;

4. the scraper on top of the tank is opposite to the supply duct;

5. the bottom portion of the tank into which the supply duct opens, or, alternatively, the outlet of supply duct itself is tapering upwardly and outwardly to define a nozzle.

6. a single supply duct is located in the bottom portion of the tank. This supply duct is positioned under the plurality of plates so that the liquid fed into the tank comes into contact with the lower plate and then moves up along the lateral wall of the tank; and

7. the upper ends of all the channels extend at a short distance from the adjacent lateral walls of the tank and are left open to allow the liquid that moves up along the lateral walls of the tank (after having hit the lower plate), to enter into the channels through these opened upper ends. Thus, all the channels are fed from a *single* source of waste liquid that is located in the bottom portion of the tank. FN8

FN8. KWI requests that the claims include the phrase "through a restricted passage between the lateral

wall(s) of the tank and the upper edges of plates housed therein" instead of the language included in the seventh construction. KWI's preferred language occurs in both the IDS and the specification as an advantage to the tank's structure. Although very similar, KWI's preferred language does not describe the structure of the clarifier; it merely describes the advantages derived from the structure as articulated in the seventh construction.

**B.** ***Poseidon's Claim Construction Requests***

Poseidon, for its part, argues that the following claim terms are in need of interpretation and should be construed as indicated below.

1. The term "tank" should be construed as an artificial vessel for holding or storing liquid;

2. The term "top portion" should be construed as the upper half of the tank;

3. The term "bottom portion" should be construed as the bottom half of the tank;

4. The term "supply duct" should be construed as a tube leading into the lower half of the tank under the level of the plates, through which liquid is provided;

5. The term "depressurization" should be construed as a decrease in pressure of the liquid containing air resulting in the generation of bubbles;

6. The term "plates" should be construed as smooth, flat pieces of metal;

7. The term "channel" should be construed as a passageway comprised of two or more plates and having a generally u-shaped configuration;

8. The term "liquid outlet" is a port located at the lower end of each channel to collect and remove from the tank liquid that has been treated;

9. The term "injections means" should be construed as a pump, or equivalent, used to force a gas into some liquid under pressure;

10. The term "scraping means" should be construed as a scraper, scoop or skimmer for removing the floating layer of sludge; and

11. The terms "saturate" and "saturation" should be construed as the condition in which at least a portion of the liquid to be fed to the tank contains enough dissolved air such that bubbles begin to form upon a decrease in pressure.

The following terms are sufficiently clear that they do not need further construction: 1) tank; 2) top portion; 3) bottom portion; 4) supply duct; 5) depressurization; 6) plates; 7) channel; 8) liquid outlet. These terms, within the context of the claims, are not ambiguous and do not invite reference either to intrinsic or extrinsic evidence. *See* Johnson Worldwide Assoc., Inc., 175 F.3d at 990. In addition, to the extent that these terms are not addressed in the general description and IDS discussed above, they are not defined with sufficient

"clarity, deliberateness, and precision" to be limited by the specification or prosecution history. Renishaw PLC, 158 F.3d at 1249. The remaining claim terms do require construction and will be discussed in turn.

**1.** ***Injection Means and Scraping Means***

[10] Poseidon argues that the terms "injection means" and "scraping means" should be construed as means-plus-function elements pursuant to 35 U.S.C. s. 112, para. 6 ("Section 112, para. 6"). The court agrees. Section 112, para. 6 states:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. s. 112, para. 6.

Application of Section 112, para. 6 is appropriate where "it is apparent that the element invokes purely functional terms, without the additional recital of specific structure or material for performing that function." *Al-* Site Corp. v. VSI Int., Inc., 174 F.3d 1308, 1318 (Fed.Cir.1999). Although neither necessary nor sufficient, the phrase 'means for' "typically invokes s. 112, para. 6 while other formulations generally do not." *Id*.

Both "injection means" and "scraping means" should be construed as means-plus-function elements covered by Section 112, para. 6. Each element invokes Section 112, para. 6 by using the phrase "means for." In addition, each element recites purely functional terms without indicating any specific structure or material for performing the function. *See id*. at 1318.

**2.** ***Saturate and Saturation***

Poseidon argues that the terms "saturate" and "saturation" have a specific meaning to those skilled in the art of Diffused Air Flotation that is different from the common understanding of those terms. "Saturate" is commonly defined as "to cause (a substance) to unite with the greatest possible amount of another substance, through solution, chemical combination, or the like." RANDOM HOUSE UNABRIDGED DICTIONARY 1705 (2d ed.1993). Poseidon argues that those skilled in the art of diffused air flotation would have used the term to indicate "the condition in which at least a portion of the liquid to be fed to the tank contains enough dissolved air such that bubbles begin to form upon a decrease in pressure."

Poseidon is correct that the terms have a specific meaning to those skilled in the art of DAF, but the terms should be construed slightly differently from Poseidon's suggestion.

[11] [12] Claim terms are construed through the eyes of a person of ordinary skill in the field. *See, The* Toro Co. v. White Consolidated Indus., 199 F.3d 1295, 1299 (Fed.Cir.1999). Where a claim term has a specialized meaning to those skilled in the art, that meaning controls unless the evidence indicates that the patentee used the words in a different manner. *See,* Karlin Tech. Inc. v. Surgical Dynamics, Inc., 177 F.3d 968, 971 (Fed.Cir.1999). Under these circumstances, extrinsic evidence may be considered, if needed, to assist in determining the meaning of technical terms in the claim. *See, Vitronics Corp.,* 90 F.3d at 1583.

[13] Poseidon has provided sufficient evidence to suggest that the terms "saturate" and "saturation" have a particular meaning to those skilled in DAF. The affidavit of Harri K. Kytomaa indicates that those skilled in

DAF do not use these terms to indicate 100% saturation. Instead, the terms are used to suggest that liquid infused with air can have "multiple saturation levels" expressed as a percent of the maximum air concentration of the liquid. Kytomaa bases his interpretation on his own experience as well as several texts dedicated to DAF. What is more, it does not appear as if the claims use these terms in a manner other than that which someone skilled in the art would understand.

The texts cited by Kytomaa, and his own statements, however, do not support the broad definition provided by Poseidon. Kytomaa asserts that the DAF field employs saturation levels that range from 60% to 90%. *See* Docket 90, Ex. D para. 10. In addition, each of the treatises Kytomaa refers to indicate that saturation levels in the DAF field range from 60% to 90%. Accordingly, the terms saturate and saturation will be construed as meaning "dissolving sufficient air or gas into the liquid so that the liquid contains 60% to 90% of its maximum air concentration."

## V. *CONCLUSION*

For the foregoing reasons, defendant's motion for claim construction is granted and plaintiff's motion for claim construction is granted in part, and denied in part. The clerk will set a date for a status conference to schedule future proceedings.

A separate order will issue.

## *ORDER*

For the reasons stated in the accompanying Memorandum, defendants' and plaintiff's Motions for Claim Construction are hereby ALLOWED in part and DENIED in part. Claims 1 and 11 will be construed in the following manner:

1. the tank extends vertically (meaning it is taller than it is wide);

2. the supply duct is located at the bottom of the tank;

3. the plates extend in parallel relationship one above the other along the height of the tank;

4. the scraper on top of the tank is opposite to the supply duct;

5. the bottom portion of the tank into which the supply duct opens, or, alternatively, the outlet of supply duct itself is tapering upwardly and outwardly to define a nozzle;

6. a single supply duct is located in the bottom portion of the tank. This supply duct is positioned under the plurality of plates so that the liquid fed into the tank comes into contact with the lower plate and then moves up along the lateral wall of the tank;

7. the upper ends of all the channels extend at a short distance from the adjacent lateral walls of the tank and are left open to allow the liquid that moves up along the lateral walls of the tank (after having hit the lower plate), to enter into the channels through these opened upper ends. Thus, all the channels are fed from a *single* source of waste liquid that is located in the bottom portion of the tank;

8. "Injection means" and "scraping means" are means-plus-function elements covered by 35 U.S.C. s. 112,

para. 6; and

9. The terms "saturate" and "saturation" mean "dissolving sufficient air or gas into the liquid so that the liquid contains 60% to 90% of its maximum air concentration."

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