**IN THE UNITED STATES DISTRICT COURT**
**FOR THE EASTERN DISTRICT OF TEXAS**
**TYLER DIVISION**

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| **INVENSYS SYSTEMS, INC.,** | § | |
| | § | |
| **Plaintiff,** | § | |
| | § | |
| **v.** | § | |
| | § | |
| **EMERSON ELECTRIC CO. and MICRO MOTION INC., USA,** | § | |
| | § | |
| **Defendants,** | § | |
| | § | |
| **and** | § | **Case No. 6:12-cv-799** |
| | § | |
| **MICRO MOTION INC., USA,** | § | |
| | § | |
| **Counterclaim-Plaintiff,** | § | |
| | § | |
| **v.** | § | |
| | § | |
| **INVENSYS SYSTEMS, INC.,** | § | |
| | § | |
| **Counterclaim-Defendant.** | § | |
| | § | |

**MEMORANDUM OPINION AND ORDER**

This Memorandum Opinion construes the disputed claim terms in U.S. Patent Nos. 7,124,646 ("the '646 Patent"); 7,136,761 ("the '761 Patent"); 6,311,136 ("the '136 Patent"); 7,505,854 ("the '854 Patent"); 6,754,594 ("the '594 Patent"); 7,571,062 ("the '062 Patent"); and 8,000,906 ("the '906 Patent") (collectively, "the Invensys Patents"), asserted in this suit by Invensys Systems, Inc. ("Invensys"). Also before the Court is Micro Motion's Motion for Summary Judgment of Indefiniteness (Docket No. 144).

On May 1, 2014, the parties presented arguments on the disputed claim terms at a *Markman* hearing and also presented oral arguments on the motion for summary judgment. For

the reasons stated herein, the Court **ADOPTS** the constructions set forth below and **DENIES** Micro Motion's Motion for Summary Judgment.

## BACKGROUND

Plaintiff Invensys alleges Micro Motion and Emerson infringe the seven patents it asserts here. Micro Motion brought counterclaims accusing Invensys of infringing two patents it has asserted. All nine patents are generally related to Coriolis flowmeters—devices that measure the properties (including mass, volume, and density) of fluids flowing through a conduit. Micro Motion's asserted patents are construed in a contemporaneously issued Memorandum Opinion and Order.

## APPLICABLE LAW

### *Claim Construction*

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). The Court examines a patent's intrinsic evidence to define the patented invention's scope. *Id.* at 1313–1314; *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). Intrinsic evidence includes the claims, the rest of the specification and the prosecution history. *Phillips*, 415 F.3d at 1312–13; *Bell Atl. Network Servs.*, 262 F.3d at 1267. The Court gives claim terms their ordinary and customary meaning as understood by one of ordinary skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003).

Claim language guides the Court's construction of claim terms. *Phillips*, 415 F.3d at 1314. "[T]he context in which a term is used in the asserted claim can be highly instructive." *Id.* Other claims, asserted and unasserted, can provide additional instruction because "terms are normally used consistently throughout the patent." *Id.* Differences among claims, such as additional limitations in dependent claims, can provide further guidance. *Id.*

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). In the specification, a patentee may define his own terms, give a claim term a different meaning that it would otherwise possess, or disclaim or disavow some claim scope. *Phillips*, 415 F.3d at 1316. Although the Court generally presumes terms possess their ordinary meaning, this presumption can be overcome by statements of clear disclaimer. *See SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1343-44 (Fed. Cir. 2001). This presumption does not arise when the patentee acts as his own lexicographer. *See Irdeto Access, Inc. v. EchoStar Satellite Corp.*, 383 F.3d 1295, 1301 (Fed. Cir. 2004).

The specification may also resolve ambiguous claim terms "where the ordinary and accustomed meaning of the words used in the claims lack sufficient clarity to permit the scope of the claim to be ascertained from the words alone." *Teleflex, Inc.*, 299 F.3d at 1325. For example, "[a] claim interpretation that excludes a preferred embodiment from the scope of the claim 'is rarely, if ever, correct.'" *Globetrotter Software, Inc. v. Elam Computer Group Inc.*, 362

F.3d 1367, 1381 (Fed. Cir. 2004) (quoting *Vitronics Corp.*, 90 F.3d at 1583). But, "[a]lthough the specification may aid the court in interpreting the meaning of disputed language in the claims, particular embodiments and examples appearing in the specification will not generally be read into the claims." *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988); *see also Phillips*, 415 F.3d at 1323.

The prosecution history is another tool to supply the proper context for claim construction because a patentee may define a term during prosecution of the patent. *Home Diagnostics Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1356 (Fed. Cir. 2004) ("As in the case of the specification, a patent applicant may define a term in prosecuting a patent"). The well-established doctrine of prosecution disclaimer "preclud[es] patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution." *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003). The prosecution history must show that the patentee clearly and unambiguously disclaimed or disavowed the proposed interpretation during prosecution to obtain claim allowance. *Middleton, Inc. v. 3M Co.*, 311 F.3d 1384, 1388 (Fed. Cir. 2002); *see also Springs Window Fashions LP v. Novo Indus., L.P.*, 323 F.3d 989, 994 (Fed. Cir. 2003) ("The disclaimer . . . must be effected with 'reasonable clarity and deliberateness.'") (citations omitted)). "Indeed, by distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover." *Spectrum Int'l, Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1378–79 (Fed. Cir. 1988) (quotation omitted). "As a basic principle of claim interpretation, prosecution disclaimer promotes the public notice function of the intrinsic evidence and protects the public's reliance on definitive statements made during prosecution." *Omega Eng'g, Inc.*, 334 F.3d at 1324.

Although "less significant than the intrinsic record in determining the legally operative meaning of claim language," the Court may rely on extrinsic evidence to "shed useful light on the relevant art." *Phillips*, 415 F.3d at 1317 (quotation omitted). Technical dictionaries and treatises may help the Court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but such sources may also provide overly broad definitions or may not be indicative of how terms are used in the patent. *Id.* at 1318. Similarly, expert testimony may aid the Court in determining the particular meaning of a term in the pertinent field, but "conclusory, unsupported assertions by experts as to the definition of a claim term are not useful." *Id.* Generally, extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.*

The patent in suit may contain means-plus-function limitations that require construction. Where a claim limitation is expressed in means-plus-function language and does not recite definite structure in support of its function, the limitation is subject to 35 U.S.C. § 112 ¶ 6. *Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997). In relevant part, § 112 mandates that "such a claim limitation be construed to cover the corresponding structure . . . described in the specification and equivalents thereof." *Id.* (citing 35 U.S.C. § 112 ¶ 6.). Accordingly, when faced with means-plus-function limitations, courts "must turn to the written description of the patent to find the structure that corresponds to the means recited in the [limitations]." *Id*.

Construing a means-plus-function limitation involves two inquiries. The first step requires "a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). Once a court has determined the limitation's function, "the next step is to determine the corresponding structure

disclosed in the specification and equivalents thereof." *Medtronic*, 248 F.3d at 1311. A structure is corresponding "only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id*. Moreover, the focus of the corresponding structure inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id*.

***Summary Judgment***

"Summary judgment is appropriate in a patent case, as in other cases, when there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law." *Nike, Inc. v. Wolverine World Wide, Inc.*, 43 F.3d 644, 646 (Fed. Cir. 1994); FED. R. CIV. P. 56(c). The moving party bears the initial burden of "informing the district court of the basis for its motion" and identifying the matter that "it believes demonstrate[s] the absence of a genuine issue of material fact." *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986). If the moving party meets this burden, the nonmoving party must then set forth "specific facts showing that there is a genuine issue for trial." FED. R. CIV. P. 56(c); *see also T.W. Elec. Serv., Inc. v. Pac. Elec. Contractors Ass'n*, 809 F.2d 626, 630 (9th Cir. 1987).

A party seeking to invalidate a patent must overcome a presumption that the patent is valid. *See* 35 U.S.C. § 282; *Microsoft Corp. v. i4i Ltd. P'ship*, 131 S. Ct. 2238, 2243 (2011); *U.S. Gypsum Co. v. Nat'l Gypsum Co.*, 74 F.3d 1209, 1212 (Fed. Cir. 1996). This presumption places the burden on the challenging party to prove the patent is invalid by clear and convincing evidence. *Microsoft*, 131 S. Ct. at 2243; *U.S. Gypsum Co.*, 74 F.3d at 1212. Close questions of indefiniteness "are properly resolved in favor of the patentee." *Datamize, LLC v. Plumtree*

*Software, Inc.*, 417 F.3d 1342, 1348 (Fed. Cir. 2005); *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1380 (Fed. Cir. 2001).

Claims must particularly point out and distinctly claim the invention. "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112 ¶ 2. The primary purpose of the requirement of definiteness is to provide notice to those skilled in the art of what will constitute infringement. *See United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236 (1942). The definiteness standard is one of reasonableness under the circumstances, requiring that, in light of the teachings of the prior art and the invention at issue, the claims apprise those skilled in the art of the scope of the invention with a reasonable degree of precision and particularity. *See Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 624 (Fed. Cir. 1985). To rule "on a claim of patent indefiniteness, a court must determine whether one skilled in the art would understand what is claimed when the claim is read in light of the specification." *Bancorp. Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1372 (Fed. Cir. 2004). "A determination of indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims, [and] therefore, like claim construction, is a question of law." *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1378 (Fed. Cir. 1999).

## ANALYSIS

### I. Claim Construction

#### A. Agreed Terms

The parties have agreed to the construction of two terms. Docket No. 156.

| Claim Term | Agreed Claim Construction |
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| "a PI control algorithm" ('136 Patent: claim 17) | a proportional plus integral control algorithm |
| "collect data corresponding to a subsequent cycle of the sensor signal simultaneously with processing the data for the current cycle" | plain and ordinary meaning |

In view of the parties' agreements on the proper construction of these terms, the Court **ADOPTS** the parties' constructions.

### B. Disputed Terms

**"configure to" and "operable to" and variants thereof**

| Invensys's Proposed Construction | Defendants' Proposed Construction |
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| Plain and ordinary meaning. | "configured to," "operable to," and "circuitry to" render the claims indefinite. If not indefinite, the terms "configured to" and "operable to" mean:<br><br>configured to or operable to (as the case may be) perform the recited function under the conditions of use for which it was intended |

Regarding these terms, the parties' dispute is whether these terms are indefinite, or alternatively, if construction is necessary. Invensys argues that no construction is required because these terms are easily understood by a jury. Docket No. 122 at 7. Further, Invensys contends that Defendants' proposal seeks to impermissibly add limitations to these terms. *Id.* at 7–8. Although primarily arguing that these terms render the claims indefinite,[1] Defendants propose an alternative construction that they contend clarifies that "configured to" requires more than "merely being capable of being configured." Docket No. 137 at 1. By adding words to the exact disputed claim language, Defendants merely propose additional limitations that are not in the plain language of the claims. Further, these terms are readily accessible to the jury. Accordingly, the Court finds no construction is necessary for this term.

[1] Defendants' indefiniteness argument is addressed below. *See infra* at 27–28.

**“input module,” “output module,” and “processing device”**

| Invensys’s Proposed Construction | Defendants’ Proposed Construction |
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| These terms are not means-plus-function elements.<br><br>Plain and ordinary meaning. | These terms should be construed as means-plus-function elements.<br><br><u>input module and output module</u><br>The specification does not use the term “input module” or “output module”, and it does not identify structure corresponding to the input module and output module limitations.<br><br><u>processing device</u><br>The structure in the specification, to the extent it is identified at all, is the algorithm set forth at 66:26-65 and in figures Figs. 9, 10, 26, 42, 45, 52 and 53 of the ’646 patent, as well as the text accompanying those figures. |

The parties dispute whether these terms should be construed as means-plus-function terms under § 112, ¶ 6. Invensys contends that since the word “means” is not used, there is a presumption that the term is not means-plus-function. Docket No. 122 at 24. Because the Defendants failed to rebut that presumption and because the terms can be understood by a jury without further explanation, Invensys argues these terms should be given their plain and ordinary meaning. *Id.* Defendants contend that the presumption against means-plus-function construction is rebutted here because “input module,” “output module,” and “processing device” are generic terms that recite no corresponding structure for performing their recited functions. Docket No. 137 at 20. Defendants further argue that the patent specifications similarly fail to identify any corresponding structure for these terms. *Id.* at 21.

“Processing device” is readily recognized by those skilled in the art as a processor, thereby evidencing corresponding structure. Accordingly, “processing device” is not a means-plus-function term, and because it is easily understood by a jury, needs no further construction.

However, "module" is not as readily recognized in the art. While "module" has sometimes avoided means-plus-function construction in specific contexts, module has also been considered a nonce word and subject to § 112, ¶ 6. *Compare, e.g.*, *Beneficial Innovations, Inc. v. Blockdot, Inc.*, No. 2:07-cv-263, 2010 WL 1441779, at *16 (E.D. Tex. Apr. 12, 2010) (holding that § 112, ¶ 6 did not apply when construing a term including "module" in the context of a software system); *PalmTop Productions, Inc. v. Lo-Q PLC*, 450 F. Supp. 2d 1344, 1364–65 (N.D. Ga. 2006) (rejecting application of means-plus-function construction to "communications module" in the context of a telecommunications patent) *with Ranpak Corp. v. Storopack, Inc.*, No. 98-1009, 1998 WL 513598, at *2 (Fed. Cir. 1998) (applying § 112, ¶ 6 where "settable control module" invoked merely a black box without recitation of structure to perform the specified function). Here, "module" is "simply a nonce word or a verbal construct that is not recognized as the name of structure and is simply a substitute for the term 'means for,'" therefore invoking § 112, ¶ 6. *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1360 (Fed. Cir. 2004). Although Defendants argue no structure is recited in either the claims or the specification, Figure 5 and its accompanying description demonstrate the structure necessary to "receive a sensor signal" and "output the drive signal." '761 Patent, at 11:45–12:4. In relation to Figure 5, the specification describes analog-to-digital ("A/D") converters as supplying the digital signals to the controller and digital-to-analog ("D/A") converters as producing a drive signal, thus providing a corresponding structure. *Id.* at 11:61–12:2.

Accordingly, "input module" and "output module" are construed as means-plus-function terms. The functions recited in the claims are to "receive a sensor signal" and to "output the drive signal," respectively. The structure is the analog-to-digital ("A/D") converters (510) and digital-to-analog ("D/A") converters (515) of Figure 5.

**"Maintains oscillation during a transition" and variants thereof**

| Term | Invensys's Proposed Construction | Defendants' Proposed Construction |
|---|---|---|
| "control system operable to modify the drive signal and thereby maintain oscillation of the flowtube during a transition of the flowtube from a first state in which the flowtube is substantially empty of liquid to a second state in which the flowtube is substantially full of liquid . . ."<br><br>"control system operable to modify the drive signal and thereby maintain oscillation of the flowtube during a transition of the flowtube from a substantially empty state to a substantially full state" | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>"The control system modifies the drive signal, and, except for programmed pauses between setpoint adjustments, the drive signal maintains oscillation of the flow tube at amplitude setpoints set by the controller throughout the transition from the point in time the flowtube is substantially empty of liquid until the flowtube is substantially full of liquid. |
| "control system operable to modify the drive signal and thereby maintain oscillation of the flowtube during a transition . . ." | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>"The control system modifies the drive signal, and, except for programmed pauses between setpoint adjustments, the drive signal maintains oscillation of the flow tube at amplitude setpoints set by the controller throughout the transition from the point in time the flowtube is substantially empty of liquid until the flowtube is substantially full of liquid. |
| "maintaining oscillation during an onset of liquid flow through the substantially empty flow tube"<br><br>"maintaining oscillation of the | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>"Except for programmed |

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| flowtube during an onset of fluid flow through the flowtube” | | pauses between setpoint adjustments, maintaining oscillation of the flow tube at amplitude setpoints set by the controller throughout transition from the point in time when the flowtube is substantially empty until the flowtube is no longer substantially empty.” |
| “maintaining oscillation of the flowtube while separate batches of the liquid fluid flow are processed through the flowtube, wherein the flowtube is substantially empty of liquid between the separate batches” | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>“Except for programmed pauses between setpoint adjustments, maintaining oscillation of the flow tube at amplitude setpoints set by the controller throughout the processing of a first batch of liquid fluid flow, the transition between the first and second batches that includes a period when the flowtube is substantially empty of liquid fluid flow, and the processing of a second batch of liquid fluid flow.” |
| “wherein the control system is further operable to modify the drive signal and thereby maintain oscillation of the flowtube while separate batches of the liquid fluid flow are processed through the flowtube, wherein the flowtube is substantially empty of liquid in between the separate batches” | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>“The control system modifies the drive signal, and, except for programmed pauses between setpoint adjustments, the drive signal maintains oscillation of the flow tube at amplitude setpoints set by the controller throughout the processing of a first batch of liquid fluid flow, the transition between the first and second |

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| | | batches that includes a period when the flowtube is substantially empty of liquid fluid flow, and the processing of a second batch of liquid fluid flow. |
| "maintaining oscillation of the flowtube when the flowtube is substantially filled by the fluid flow" | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>"maintaining oscillation of the flow tube at amplitude setpoints set by the controller during that portion of the onset of fluid flow when the flowtube is substantially filled by the flowing fluid." |

Although there are several terms in dispute here, the relevant substance of the argument for each is the same and they can therefore be analyzed together. For each term, Invensys argues that no construction is necessary, since the meaning is accessible to both those skilled in the art and to lay members of the jury. Docket No. 122 at 14. Invensys further contends that Defendants' proposals add a requirement that oscillation must be maintained at multiple amplitude setpoints, contrary to the specification of the patents. *Id.* at 14 – 15. Defendants respond that Invensys's proposal of applying the plain and ordinary meaning is overly broad and would cover prior art traditional analog flowmeters. Docket No. 137 at 6–7. Defendants assert that in order to differentiate the patented invention from prior art and based on the specification of the asserted patents, these terms must include a requirement that the amplitude of oscillation be maintained at one or more setpoints set by the controller. *Id.* at 8–9.

The claims at issue here provide no justification to explicitly add the requirement of setpoints as proposed by Defendants. In the context of maintaining oscillation, the claims require the control system to "modify the drive signal and thereby maintain oscillation." *E.g.*,

'761 Patent, at 56:12–17. This is also the concept taught by the specification. *Id*. at Abstract ("An output module is operable to output the drive signal to the flowtube and a control system is ***operable to modify the drive signal and thereby maintain oscillation*** of the flowtube . . . ."). While embodiments of the specification may teach that certain setpoints can be used to modify the drive signal, the setpoints are not specifically required by the claims. *E.g.*, *id*. at 2:9–26. Accordingly, no construction is necessary for these terms.

**"during an onset" and "during a transition"**

| Invensys's Proposed Construction | Defendants' Proposed Construction |
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| Plain and ordinary meaning. | from the point in time the flowtube is substantially empty of liquid until the flowtube is no longer substantially empty of liquid |

Encompassed in the disagreement over the previous terms is the parties' dispute over the meaning of "during" as used within those terms. Invensys contends that the use of "during" in the preceding terms is easily understandable and that Defendants' proposed construction invites confusion. Docket No. 122 at 15–16. Defendants argue that their proposed construction captures the meaning of the claim, which requires first oscillating the tube when it is substantially empty and continuing to oscillate the tub during liquid flow onset, which necessarily means the tube is no longer substantially empty. Docket No. 137 at 5.

"During" is a very easily accessible word that any lay member of the jury can easily comprehend without assistance. Defendants' proposal is unnecessarily complex and complicates an easily understood phrase. Accordingly, no construction is necessary for this term.

**"Determine the flow rate during a transition" and variants thereof**

| Term | Invensys's Proposed Construction | Defendants' Proposed Construction |
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| "determine, based on the sensor signal, the flow rate of the flowing liquid during a | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should |

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| transition of the flowtube from a first state in which the flowtube is substantially empty of the flowing liquid to a second state in which the flowtube is substantially full of the flowing liquid" | | be construed to mean:<br><br>"Ascertain exactly the actual flow rate of the flowing liquid throughout the transition from the point in time the flowtube is substantially empty of liquid until the flowtube is substantially full of liquid." |
| "determine, based on the sensor signal, the flow rate of the liquid flowing through the flowtube during a transition from the second state to the first state" | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>"Ascertain exactly the actual flow rate of the flowing liquid throughout the transition from the point in time the flowtube is substantially full of liquid until the flowtube is substantially empty of liquid." |
| "determine the flow rate of the flowing liquid when separate batches of the flowing liquid pass through the flowtube, wherein the flowtube is substantially empty of the flowing liquid in between the separate batches" | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>"Ascertain exactly the actual flow rate of the flowing liquid throughout the passage through the flowtube of a first batch of flowing liquid, the transition between the first and second batches that includes a period when the flowtube is substantially empty of flowing liquid, and the passage through the flowtube of a second batch of flowing liquid." |
| "determine, based on the sensor signal, the flow rate of the liquid flowing through the flowtube during a transition from the second state to the first state" | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>"Ascertain exactly the actual flow rate of the flowing liquid |

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| | | throughout the transition from the point in time the flowtube is substantially full of liquid until the flowtube is substantially empty of liquid." |
| "determining a total amount of the flowing liquid" | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>"Ascertaining exactly the actual total amount of the flowing liquid that has passed through the flowtube since the flowing liquid started flowing." |
| "determining the flow rate of the flowing liquid when separate batches of the flowing liquid pass through the flowtube, wherein the flowtube is substantially empty of the flowing liquid between the separate batches." | Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean:<br><br>"Ascertaining exactly the actual flow rate of the flowing liquid throughout the passage through the flowtube of a first batch of flowing liquid, the transition between the first and second batches that includes a period when the flowtube is substantially empty of flowing liquid, and the passage through the flowtube of a second batch of flowing liquid." |

Again, several terms have been raised by the parties based on substantially similar arguments. The primary disagreement here concerns the accuracy to which each measurement must be "determined" in each of these terms. Invensys argues that neither the claims nor anything else in the intrinsic record indicates a requirement for 100% certainty in determining any the relevant measures, as Defendants propose. Docket No. 122 at 10–11. Invensys further contends that the patents-in-suit only claim significantly improved accuracy over prior art analog

flowmeters, not infallibility, and in fact disclose acceptable degrees of error. *Id.* at 11–12. Defendants argue that the claim language requires, for example, "determining the flow rate," rather than "determining an approximate value of the flow rate." Docket No. 137 at 2. Additionally, according to Defendants, the claim cannot merely mean "determining the flow rate better than prior art," since such an interpretation would be ambiguous as to how much better the measurements must be. *Id.* at 3. Defendants contend that to avoid ambiguity, and therefore invalidity due to indefiniteness, the construction of these terms requires that "determine" specify a degree of accuracy. *Id.* at 4.

Use of the word "determine" in the context of the disputed claims simply connotes measuring the flow rate or other attribute. The ordinary meaning of the word "determine" does not create a specific standard for the accuracy of the determination. Further, there are no requirements in the claims or in the specifications of the asserted patents that require or imply exactitude in determining these measurements. As cited by Invensys, the patent specifications actually teach error rates, therefore condoning some level of imprecision in determining these measurements. Because Defendants' proposals improperly add limitations not in the claims and because these terms are otherwise easily understood, no construction is necessary for any of these terms.

**"in response to detecting a system disturbance" and variants thereof**

| Term | Invensys's Proposed Construction | Defendants' Proposed Construction |
|---|---|---|
| "a digital transmitter operable to transition the flowmeter from a first drive signal generating mode into a second drive signal generating mode in response to detecting a system disturbance" | Plain and ordinary meaning.<br><br>"detecting a system disturbance" means "detecting an undesirable change in flowtube oscillation" | "Disturbance" is indefinite.<br><br>If it is not indefinite, "detecting a system disturbance" is detecting where there is some external disturbance to the system or some unanticipated object/material that flows |

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| | | through the flowtube.<br><br>The digital transmitter must be operable, under the conditions of use for which it was intended, to ascertain whether or not a system disturbance has occurred, and, if it ascertains that a system disturbance has occurred, to switch drive signal generating modes as a result of that detection. |
| "transitioning the flowmeter from the first drive signal generating mode into a second drive signal generating mode in response to detecting a system disturbance" | Plain and ordinary meaning.<br><br>"detecting a system disturbance" means "detecting an undesirable change in flowtube oscillation" | "Disturbance" is indefinite.<br><br>If it is not indefinite, "detecting a system disturbance" is detecting where there is some external disturbance to the system or some unanticipated object/material that flows through the flowtube.<br><br>Determining whether or not a system disturbance has occurred, and, if a system disturbance has occurred, switching drive signal generating modes as a result of the detection of that disturbance. |
| "configured to transition the flowmeter from a first drive signal generating mode into a second drive signal generating mode in response to detecting a system disturbance" | Plain and ordinary meaning.<br><br>"detecting a system disturbance" means "detecting an undesirable change in flowtube oscillation" | "Disturbance" is indefinite.<br><br>If it is not indefinite, "detecting a system disturbance" is detecting where there is some external disturbance to the system or some unanticipated object/material that flows through the flowtube.<br><br>The digital transmitter must be configured such that, under the conditions of use for which it was intended, it ascertains whether or not a system disturbance has occurred, and, if it ascertains that a system disturbance has occurred, it |

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|---|---|---|
| | | switches drive signal generating modes as a result of that detection. |

Regarding these terms, the primary dispute is how to define "disturbance." Invensys proposes construing "detecting a system disturbance" and advocates that its proposed construction is supported by the specification. Docket No. 122 at 16. Because the specification teaches that the system can be restabilized following a system disturbance, Invensys argues that a system disturbance must cause an undesirable change in flowtube oscillation. *Id.* at 17. Invensys also contends that Defendants' proposals are overly limiting and unnecessarily replace the easily understood word "detecting" with the synonym "ascertaining." *Id.* Beyond arguing that these terms are fatally indefinite, Defendants rely on a single example in the specification that uses the word "disturbance" within the context of an "external disturbance." Among many other uses of the word, that one example relates to different modes of the meter and the conditions that may advise the use of one mode or another. Docket No. 137 at 9. Defendants therefore contend that since the one example of the word "disturbance" aligns with "some ***external*** disturbance," that the meaning of the term should be confined as such. *Id.* at 9–10.

Here, Invensys's proposal is inadequate due to its excessive subjectivity. "Undesirable change" opens a vast universe of possibilities with no guidance as to what the bounds of those potential changes might be. Defendants' proposal is similarly misguided since it limits "disturbances" to a single example of a mode change. The specification uses the word "disturb" at several points as a trigger for mode changes. *E.g.*, '854 Patent, 3:60–63 (explaining that a transition from the second mode to the first mode may occur "in response to detecting a system disturbance associated with the digital flowmeter"); 4:7–10 (discussing a transition from third mode to first mode "in response to detecting a system disturbance); 4:23–26 (describing the

flowmeter transitioning from fourth mode to third mode "upon detecting a system disturbance). The specification therefore teaches that system disturbances are those events that trigger mode changes.

Accordingly, the only construction necessary regarding these terms is to define "a system disturbance." The specification teaches four events that trigger mode changes, and based upon those teachings, "a system disturbance" is therefore construed as "a condition where (1) flowmeter measurements become unstable; (2) there is an external disturbance to the flow tubes; (3) there is an unanticipated object or material flowing in the flow tube; or (4) there is a two-phase or three-phase flow in the flow tube."

**"digital synthesis mode"**

| Invensys's Proposed Construction | Defendants' Proposed Construction |
|---|---|
| mode where the drive signal is digitally created | a mode in which the control and measurement system digitally creates a new waveform as the drive signal rather than feeding back a form of the sensor signal as the drive signal |

The disputed issue regarding this term is the extent to which "digital synthesis mode" excludes the use of a feedback signal. Invensys argues that Defendants' proposal is both overly vague and imports limitations not found in the claims. Docket No. 122 at 20–21. Invensys contends that the specification allows for the drive signal in digital synthesis mode to be based on an analysis of a feedback signal and therefore it may be a "form" of the sensor signal. *Id.* at 21. Defendants charge that Invensys's proposal is too broad, since it provides no distinction between "digital synthesis mode" and "feedback mode." Docket No. 137 at 14–15.

The parties appear to agree that in "digital synthesis mode" the signal is "created essentially from scratch." Docket No. 147 at 6; Docket No. 137 at 17. Additionally, the word "synthesize" means "to combine in order to make something new." Merriam-Webster,

http://www.merriam-webster.com/dictionary/synthesize. The claims make clear that "digital synthesis mode" and "positive feedback mode" are distinct modes of operation for the flowmeter. '854 Patent, at 34:1–4; 34:19–25. The construction of this term should therefore appropriately differentiate "digital synthesis mode" from "positive feedback mode." As the specification and claims teach, in digital synthesis mode, the signal is created from scratch, but can be based on an analysis of a feedback signal. '854 Patent, at 15:29–32. Accordingly, "digital synthesis mode" is construed as "a mode where the drive signal is digitally created from scratch rather than feeding back the sensor signal."

**"positive feedback mode"**

| Invensys's Proposed Construction | Defendants' Proposed Construction |
|---|---|
| Plain and ordinary meaning. | A mode in which the drive signal includes components of a sensor signal detected by the sensor and fed back to the driver |

In defining "positive feedback mode," the parties dispute the extent to which the feedback signal must be used. Invensys contends that the claims fully describe this mode, therefore no further construction is necessary. Docket No. 122 at 22. Invensys further argues that the patent requires no part of the original sensor signal be included in the drive signal. *Id.* at 22–23. Defendants respond that Invensys's proposed construction again improperly diminishes the differences between "digital synthesis mode" and "positive feedback mode." Docket No. 137 at 18. Defendants are particularly troubled by Invensys's contention that there is no requirement that any part of the original sensor signal be included in the drive signal in this mode. *Id.*

The Court is similarly troubled by Invensys's contention. "Feedback" necessarily implies that some component of the output signal is returned as input. Therefore to assert that no part of the original sensor signal needs to be included in the drive signal is contrary to the ordinary

meaning of the claims and specification. The specification explains that the "controller generates the drive signal by applying a . . . positive gain (resulting in positive feedback)." '062 Patent at 20:34–37. Therefore, positive feedback mode requires that the drive signal must be a processed form of the sensor signal to which positive gain has been applied. While the Court disagrees with Invensys's argument, Defendants' construction also fails to fully capture the requirements of "positive feedback mode." "Positive feedback mode" requires processing the signal by applying a gain before feeding it back, not merely including "components" of the signal. '062 Patent at 20:34–37.

Accordingly, because "feedback" as used in this term sufficiently captures the process required for "positive feedback mode." no construction is necessary for this term. However, the parties are instructed to conform their trial arguments to the explanation provided by the Court.

**"data for a complete cycle of the periodic sensor"**

| Invensys's Proposed Construction | Defendants' Proposed Construction |
|---|---|
| Plain and ordinary meaning. | data for one and only one complete cycle of the periodic sensor signal |

The parties' dispute here concerns whether this term limits data processed to one, and only one, complete cycle. Invensys argues that black-letter patent law dictates that "a" means "one or more than one," not "one and only one." Docket No. 122 at 26 (citing *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed Cir. 2008)). Invensys further asserts that Defendants' proposal conflicts with embodiments disclosed in the specification, which allow for more than one and only one cycle of data. *Id.* at 26–27. Defendants argue that the '062 Patent shows a clear intent to limit "a" to "one" because the specification explains that "[p]rocessing is performed on data corresponding to a full cycle" and that "the first task in assembling data for a

cycle is to determine where the cycle begins and ends." Docket No. 137 at 26 (quoting '062 Patent at 13:29–32).

The specification citation offered by Defendants does not evidence "a clear intent to limit 'a' . . . to "one." *Baldwin Graphic*, 512 F.3d at 1342. There is nothing in the Defendants' cited quote or elsewhere in the specification that precludes using more than one cycle. The portion of the specification cited by Defendants merely requires using "a" full cycle, rather than a partial cycle. Therefore, even if the cited portion of the specification did rise to a disavowal—and it does not—it would only require the use of full cycles and would not limit the number of cycles to one. Accordingly, the claim is not limited as the Defendants argue and no construction is necessary for this term.

**"zero offset"**

| Invensys's Proposed Construction | Defendants' Proposed Construction |
|---|---|
| Plain and ordinary meaning.<br><br>Alternatively, "DC offset" | the average measured amplitude of a signal where the average actual amplitude is zero |

During the *Markman* hearing the parties agreed to the construe "zero offset" as "the measured value of the sensor signal when the actual value of the signal is zero." Accordingly, the Court adopts the agreed upon construction.

**"second drive signal is different from the first drive signal"**

| Invensys's Proposed Construction | Defendants' Proposed Construction |
|---|---|
| Plain and ordinary meaning. | The second drive signal is a different mode of signal from the first drive signal |

The issue here is what constitutes a "different" drive signal and whether "different" merely encompasses changes to the signal characteristics such as frequency or amplitude, or whether a "different" signal requires a mode change. Invensys contends that Defendants' proposal improperly requires different drive signals to have different modes, contrary to the

specification. Docket No. 122 at 18–19. Invensys also explains that "different" signals can indicate any difference whatsoever because the specification allows for the system to generate different drive signals for the two drivers. *Id.* Defendants argue that their proposal is based on the only two examples provided in the specification for the differences between initiating motion and sustaining motion, which is the context of this term in the claims. Docket No. 137 at 14.

Invensys's position on this term reads the claim too broadly and disregards the express language of the claims where this term appears. The claims specifically describe a "different" drive signal to be sent to the same driver, precluding Invensys's position that the "different" signals could be sent to different drivers. '062 Patent at 59:6–24. Defendants' argument that a different mode of signal is required is shown in the embodiments, but to include that would unnecessarily import a limitation from the specification. However, given the context of the claims and specification, the claim word "different" must mean more than the typical signal variations of an analog feedback loop. As discussed above, the second drive signal must be a newly generated drive signal, not merely a modified feedback signal, because the system "generate[s] a drive signal based on the sensor signal." *Id.* at 59:16. The parties are instructed to conform their trial arguments to this explanation, and the Court believes this resolves the parties' dispute for this term. With this instruction, a jury should be able to reasonably determine if a signal is "different" based upon the evidence and in the context of these claims. Accordingly, subject to the limitations explained herein, no construction is necessary.

**"in response to the extent to which the flowtube is filled by the fluid flow"**

| Invensys's Proposed Construction | Defendants' Proposed Construction |
|---|---|
| Plain and ordinary meaning. | This limitation is indefinite.<br><br>If it is not indefinite, it should be construed to mean: |

| | |
|---|---|
| | "Ascertaining the extent to which the flowtube is filled by fluid flow, and, if a change in that extent is ascertained, adjusting the drive gain to maintain oscillation as required by claim 5." |

The dispute here centers on whether the meter must definitively determine the extent to which the flowtube is filled by fluid. Invensys argues this term is easily understood, therefore requiring no construction, and that Defendants' proposal improperly implies that a definitive determination is required. Docket No. 122 at 18. Defendants argue that, if not indefinite, the plain language of this limitation requires not simply determining whether the flowtube is filled with liquid, but the "extent to which" it is filled with liquid. Docket No. 137 at 11.

While Defendants' proposed construction goes beyond the requirements of the claim, their argument has merit. The specification clearly explains that the controller must "determine[] the level of aeration" and "then correct[] the mass flow measurement accordingly." '906 Patent at 46:20–31. Reading the disputed claim language in light of the specification demonstrates a cause and effect relationship whereby the adjustment made to drive gain corresponds to the amount of fluid in the flowtube. *Id.* at 54:34–36. In other words, the claim requires that the amount of gain is adjusted to correspond to variations in the amount of fluid. Accordingly, the claim will not read on a meter that does not so respond, which the plain language of the claim also makes clear: "adjusting the drive gain to maintain oscillation of the flowtube in response ***to the extent*** to which the flowtube is filled by fluid flow." *Id.* The parties are instructed to conform their trial arguments to this explanation, but since the claim words themselves state the same result, this term is easily understood. Accordingly, no construction is necessary.

**"a digital control system"**

| Invensys's Proposed Construction | Defendants' Proposed Construction |
|---|---|
| A control system that is capable of digitally processing the drive signal | A control system that operates at least partially in the digital domain |

During the *Markman* hearing the parties agreed to the construe "a digital control system" as "a control system that operates at least partially in the digital domain on the drive side." Accordingly, the Court adopts the agreed upon construction.

## II. Motion for Summary Judgment of Indefiniteness

Defendants also move for summary judgment asserting that the following patent claims are invalid as indefinite under 35 U.S.C. § 112(b):

- Claims 1 and 9 of the '761 patent and Claims 1 and 8 of the '906 patent (for use of "input module" and "output module");
- Claim 1 and 10 of the '646 patent and Claim 15 of the '854 patent (for use of "processing device");
- Claims 1, 5, 9, 10, 11, 15, 17, and 19 of the '646 patent (for use of "determine the flow rate" and variants thereof);
- Claims 1, 5, 7, 9, and 11 of the '761 patent and Claims 1, 5, 7, and 8 of the '906 patent (for use of "maintains oscillation of the flowtube" and variants thereof);
- Claims 1, 8, and 15 of the '854 patent (for use of "system disturbance");
- Claims 1, 5, and 9-11 of the '646 patent, Claims 15, 20, and 21 of the '854 patent, and Claims 13, 23-25, 29, 30, 36, 40, and 43 of the '062 patent (for use of "configured to");
- Claims 1, 2, 4, 9, 11, and 12 of the '761 patent, Claims 1 and 7 of the '854 patent, and Claims 1-3, 8, and 9 of the '906 patent (for use of "operable to");
- Claims 17, 21, 24-26, and 36 of the '136 patent and Claims 1, 3, 4, 6, 9-11, 13, and 14 of the '594 patent (for use of "circuitry"); and
- Claims 17, 21, 24-26, and 36 of the '136 patent, Claims 3, 4, 6, 8, 13, and 14 of the '594 patent (as impermissibly claiming both a system and a method).

**"input module," "output module," and "processing device"**

Defendants argue that "input module," "output module," and "processing device" are indefinite because they are means-plus-function limitations that fail to disclose a corresponding structure. Docket No. 144 at 4, 6. According to Defendants, "module" and "device" are non-

structural words, no corresponding structure for these terms is recited in the claims, and these terms do not even appear in the specification (outside the Abstract). *Id.* at 5, 6–7. Invensys responds that none of these terms are means-plus-function limitations, but even assuming they are, sufficient structure is recited in the specification. Docket No. 148 at 1–3.

As previously discussed, "input module" and "output module" are means-plus-function terms, with sufficient structure recited in the specification. *See supra* at 9–10. The structure of these modules is the A/D and D/A converters of Figure 5. *Id.* "Processing device" is not a mean-plus-function term because it is easily understood by those skilled in the art as a processor. *See supra* at 9. Accordingly, the Motion is **DENIED** as to these terms.

**"determine the flow rate" and "maintains oscillation"**

Defendants argue that "determine the flow rate" and variants of that term are indefinite because the Invensys Patents fail to adequately disclose what constitutes "determining" the flow rate, especially in terms of the required degree of accuracy of such a determination. Docket No. 144 at 7–8. Defendants contend that understanding the accuracy of flow rate determinations is critical in order to differentiate the Invensys Patents from the prior art. *Id.* Defendants' argument concerning "maintain oscillation" is substantially similar, arguing that it is unclear to what degree and for how long oscillation must be maintained. *Id.* at 8. Again, this is critical to differentiating the invention from the prior art according to Defendants. *Id.* at 9–10.

Invensys responds that these terms are not indefinite merely because they may read on prior art. Docket No. 148 at 6–7. Invensys further argues that the bulk of the specification of the Invensys Patents is devoted to describing how to "determine the flow rate" and "maintain oscillation," belying any accusation that these terms are indefinite. *Id.* at 8.

Neither of these terms renders the claims in which they appear indefinite. "Determine" is an easily understood word that merely requires an assessment to be made. There is no requirement in the terms or in the claims that requires any specific degree of quality or accuracy. Similarly, "maintain" is easily understood to require maintenance, without requiring any specific degree or length of time. Whether these terms sufficiently differentiate the Invensys Patents against prior art is not appropriately addressed in an indefiniteness summary judgment motion. Accordingly, the Motion is **DENIED** as to these terms.

**"system disturbance"**

Defendants contend "system disturbance" is indefinite because it is insufficiently defined in the '854 Patent and because it has no ordinary meaning to those skilled in the art. Docket No. 144 at 10. Invensys argues that "system disturbance" is sufficiently explained in the '854 Patent based on the several examples of "system disturbances." Docket No. 148 at 8–9. As discussed when construing this term, there are several examples of "system disturbances" taught by the specification, such that skilled artisans would easily understand this term, especially in light of those examples. *See supra* at 19. Accordingly, the Motion is **DENIED** as to this term.

**"configured to," "operable to," and "circuitry to"**

Defendants argue that terms such as "configured to," "operable to," and "circuitry to," used throughout the claims, constitute broad functional language that render the claims indefinite under *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1 (1946). Docket No. 144 at 10–11. Defendants concede that this argument has not been adopted by the Federal Circuit in light of the post-*Halliburton* statutory allowance for means-plus-function claims, but raise the argument purely to preserve the issue for appeal. *Id.* As Defendants concede, under current

Federal Circuit precedent, this argument fails. *See In re Donaldson Co.*, 16 F.3d 1189, 1194 (Fed. Cir. 1994) (en banc). Accordingly, the Motion is **DENIED** as to these terms.

**Mixed System/Method Claims**

Using the example of claim 36 of the '136 Patent, Defendants argue that several claims of the '136 Patent and '594 Patent impermissibly recite both apparatus and method limitations. Docket No. 144 at 11. Defendants contend that claim 36 begins by reciting the structure of a digital flowmeter, but then adds a method step, requiring the "control and measurement system" to "use digital processing to adjust a phase of the drive signal." '136 Patent at 62:3–24. Defendants assert this renders the claim indefinite because it is unclear whether creating the digital flowmeter infringes or whether using digital processing with the flowmeter infringes. Docket No. 144 at 11–12. Invensys responds that these claims do not impermissibly combine system and method claims because it is clear that claim 36 is merely describing the capabilities of the "control and measurement system," not specifying an action required of a user. Docket No. 148 at 10–11.

Here, the claims do not impermissibly combine system and method claims. Indefinite mixed claims require the recitation of a system and a method for using that system in the same claim. *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005). Typically, this occurs when the user of the recited system or device is required under the claims to take a specific action. *See id.* (rejecting a claim as indefinite where the user of the system recited in the claim was also required to use the device in the same claim). Here, the challenged claims are merely reciting capabilities of the system claimed, not actions required of the system user. Accordingly, the Motion is **DENIED** as to the issue of mixed system/method claims.

Having rejected all grounds raised for Defendants' Motion for Summary Judgment of Indefiniteness, the Motion is **DENIED**.

## CONCLUSION

For the foregoing reasons, the Court hereby **ADOPTS** the claim constructions as set forth above. For ease of reference, the Court's claim interpretations are set forth in a table in Appendix A. Further, the Court **DENIES** Defendants' Motion for Summary Judgment.

**So ORDERED and SIGNED this 6th day of August, 2014.**

**LEONARD DAVIS**
**UNITED STATES DISTRICT JUDGE**

## APPENDIX A

| Terms, Phrases, or Clauses | Court's Construction |
|---|---|
| "configured to" and "operable to" and variants thereof (as used in all claims) | No construction necessary. |
| "a PI control algorithm" | **[AGREED]** a proportional plus integral control algorithm |
| "input module" and "output module" | This is a means-plus-function element under 35 U.S.C. § 112, ¶ 6.<br><br>Function:<br>• input module: receives a sensor signal<br>• output module: outputs the drive signal<br><br>Structure: the analog-to-digital ("A/D") and digital-to-analog ("D/A") converters of Figure 5 |
| "Maintains oscillation during a transition" and variants thereof:<br><br>"control system operable to modify the drive signal and thereby maintain oscillation of the flowtube during a transition of the flowtube from a first state in which the flowtube is substantially empty of liquid to a second state in which the flowtube is substantially full of liquid…"<br><br>"control system operable to modify the drive signal and thereby maintain oscillation of the flowtube during a transition of the flowtube from a substantially empty state to a substantially full state" | No construction necessary. |
| "maintaining oscillation during an onset of liquid flow through the substantially empty flow tube"<br><br>"maintaining oscillation of the flowtube during an onset of fluid flow through the flowtube" | No construction necessary. |
| "maintaining oscillation of the flowtube while separate batches of the liquid fluid flow are processed through the flowtube, wherein the flowtube is substantially empty of liquid between the separate batches" | No construction necessary. |
| "wherein the control system is further operable | No construction necessary. |

| | |
|---|---|
| to modify the drive signal and thereby maintain oscillation of the flowtube while separate batches of the liquid fluid flow are processed through the flowtube, wherein the flowtube is substantially empty of liquid in between the separate batches" | |
| "maintaining oscillation of the flowtube when the flowtube is substantially filled by the fluid flow" | No construction necessary. |
| "during an onset" | No construction necessary. |
| "processing devices" | No construction necessary. |
| "Determine the flow rate during a transition" and variants thereof<br><br>"determine, based on the sensor signal, the flow rate of the flowing liquid during a transition of the flowtube from a first state in which the flowtube is substantially empty of the flowing liquid to a second state in which the flowtube is substantially full of the flowing liquid" | No construction necessary. |
| "determine, based on the sensor signal, the flow rate of the liquid flowing through the flowtube during a transition from the second state to the first state" | No construction necessary. |
| "determine the flow rate of the flowing liquid when separate batches of the flowing liquid pass through the flowtube, wherein the flowtube is substantially empty of the flowing liquid in between the separate batches" | No construction necessary. |
| "determine, based on the sensor signal, the flow rate of the liquid flowing through the flowtube during a transition from the second state to the first state" | No construction necessary. |
| "determining a total amount of the flowing liquid" | No construction necessary. |
| "determining the flow rate of the flowing liquid when separate batches of the flowing liquid pass through the flowtube, wherein the flowtube is substantially empty of the flowing liquid between the separate batches." | No construction necessary. |
| "in response to detecting a system disturbance" and variants thereof<br><br>"a digital transmitter operable to transition the flowmeter from a first drive signal generating | "A system disturbance" is "a condition where: (1) flowmeter measurements become unstable; (2) there is an external disturbance to the flow tubes; (3) there is an unanticipated object or material flowing in the flow tube; or (4) there |

| | |
|---|---|
| mode into a second drive signal generating mode in response to detecting a system disturbance” | is a two-phase or three-phase flow in the flow tube.”<br><br>No further construction necessary. |
| “transitioning the flowmeter from the first drive signal generating mode into a second drive signal generating mode in response to detecting a system disturbance” | No construction necessary. |
| “configured to transition the flowmeter from a first drive signal generating mode into a second drive<br>signal generating mode in response to detecting a system disturbance” | No construction necessary. |
| “digital synthesis mode” | a mode where the drive signal is digitally created from scratch rather than feeding back the sensor signal |
| “positive feedback mode” | No construction necessary. |
| “data for a complete cycle of the periodic sensor” | No construction necessary. |
| “zero offset” | **[AGREED]** the measured value of the sensor signal when the actual value of the signal is zero |
| “collect data corresponding to a subsequent cycle of the sensor signal simultaneously with processing the data for the current cycle” | **[AGREED]** Plain and ordinary meaning. |
| “second drive signal is different from the first drive signal” | No construction necessary. |
| “in response to the extent to which the flowtube is filled by the fluid flow” | No construction necessary. |
| “a digital control system” | **[AGREED]** a system that processes sensor signals in digital form |