

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO
Judge Philip A. Brimmer

Civil Action No. 06-cv-00011-PAB-MJW

BRISTOL COMPANY LIMITED PARTNERSHIP, a Nevada Limited Partnership,

Plaintiff,

v.

BOSCH REXROTH INCORPORATED, a Pennsylvania corporation,
ROBERT BOSCH CORPORATION, a Delaware corporation, and
BOSCH REXROTH CANADA CORP./CORPORATION BOSCH REXROTH CANADA, a
Canadian corporation,

Defendants.

**ORDER GRANTING IN PART AND DENYING IN PART MOTION FOR SUMMARY
JUDGMENT OF NON-INFRINGEMENT AND INVALIDITY**

This matter is before the Court on the motion for summary judgment of noninfringement and invalidity of defendants Bosch Rexroth Incorporated, Robert Bosch Corporation, and Bosch Rexroth Canada Corp./Corporation Bosch Rexroth Canada (collectively, "Bosch").¹ Docket No. 180. The motion is fully briefed and ripe for disposition. Pursuant to 28 U.S.C. § 1338(a), the Court has original jurisdiction over this action, which arises under the U.S. Patent Act, 35 U.S.C. § 101 *et seq.*

¹ Bosch's motion seeks summary judgment of noninfringement, invalidity and on the defense of laches. In a separate order, the Court denied the motion with respect to the laches defense. Order Denying In Part Mot. Summ. J. [Docket No. 194]. In the instant order, the Court addresses the remaining issues of noninfringement and invalidity.

I. BACKGROUND

A. THE PATENTS

Bristol owns U.S. Patent Nos. 5,096,125 (“125 Patent”) and 5,186,396 (“396 Patent”). The inventions claimed therein relate to vehicle-mounted devices for spreading granular material (salt or sand) and liquid material (e.g., calcium chloride) onto roadway surfaces for melting snow and ice. A detailed discussion of the inventions is set forth in the Court’s claim construction ruling and need not be repeated here. See *Bristol Co. Ltd. P’ship v. Bosch Rexroth Inc.*, 684 F. Supp. 2d 1245 (D. Colo. 2010) (“Claim Construction Order”). Simply stated, the patents describe a device that automatically reduces the rate the granular material is applied when the liquid system is activated.

Bristol asserts that Bosch’s CS-230 and CS-440 products infringe claims 1, 15, 16, and 17 of the ’125 Patent and claim 3 of the ’396 Patent. The Court has already construed many of the disputed claim terms. See *id.* Bosch now moves for summary judgment that the CS-230 and CS-440 products do not infringe the asserted claims and that claim 3 is invalid for indefiniteness pursuant to 35 U.S.C. § 112, ¶ 2.

B. THE ACCUSED PRODUCTS

Bristol alleges six Bosch products infringe its patents: (1) the CS-230 with Fixed Prewet Mode - Manual Control, (2) the CS-230 with Fixed Prewet Mode - Electric Control, (3) the CS-440 with Fixed Prewet Mode - Manual Control, (4) the CS-440 with Fixed Prewet Mode - Electric Control, (5) the CS-440 with Return Oil Prewet Mode, and (6) the CS-440 with Dedicated Valve Prewet Mode. The configurations of these products are

generally described in Schematics 1-6 respectively.² See Bristol Resp., Exhibits 18-23 [Docket No. 186-4] at 2-7. Bristol accuses the first five products of infringing the '125 Patent and the sixth product of infringing the '396 Patent.

II. SUMMARY JUDGMENT STANDARD OF REVIEW

Summary judgment is warranted under Federal Rule of Civil Procedure 56 when the “movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” FED. R. CIV. P. 56(a); see *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248-50 (1986). A movant who bears the burden at trial must submit evidence to establish every essential element of its claim. *In re Ribozyme Pharms., Inc. Sec. Litig.*, 209 F. Supp. 2d 1106, 1111 (D. Colo. 2002). The nonmoving party may not rest solely on the allegations in the pleadings, but instead must designate “specific facts showing that there is a genuine issue for trial.” *Celotex Corp. v. Catrett*, 477 U.S. 317, 324 (1986); see FED. R. CIV. P. 56(c).

Only disputes over material facts can create a genuine issue for trial and preclude summary judgment. *Faustin v. City & County of Denver*, 423 F.3d 1192, 1198 (10th Cir. 2005). A disputed fact is “material” if, under the relevant substantive law, it is essential to proper disposition of the claim. *Wright v. Abbott Labs., Inc.*, 259 F.3d 1226, 1231-32 (10th Cir. 2001). An issue is “genuine” if the evidence is such that it might lead a reasonable jury to return a verdict for the nonmoving party. *Allen v. Muskogee*, 119 F.3d 837, 839 (10th Cir. 1997). When reviewing a motion for summary judgment, a court must

² These configurations are generally undisputed. Bosch challenges only Bristol’s characterization of the valves as “DCV” or “FCV.” Bosch Reply [Docket No. 192] at Statement of Fact (“SOF”) 11. This dispute, however, does not affect the Court’s analysis. See footnote 5 *infra*.

view the evidence in the light most favorable to the non-moving party. *Id.*; see *McBeth v. Himes*, 598 F.3d 708, 715 (10th Cir. 2010).

III. ANALYSIS

A. THE '125 PATENT

1. Noninfringement - Standard of Review

A determination of infringement is a two-step process. The first step is determining the meaning and scope of the asserted claims. *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc). Claim construction is a question of law. *Id.* at 1456. The second step is comparing the accused devices to the properly construed claims. *Id.* at 1454. This analysis is a question of fact. *Wright Med. Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1443 (Fed. Cir. 1997). A device literally infringes if each of the elements of the asserted claims is found in the accused device. *Id.*

In the alternative, a device may infringe under the doctrine of equivalents “if every limitation of the asserted claim, or its ‘equivalent,’ is found in the accused subject matter, where an ‘equivalent’ differs from the claimed limitation only insubstantially.” *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 149 F.3d 1309, 1315 (Fed. Cir. 1998). One way of making this determination is by considering whether, on a limitation by limitation basis, the accused product “performs substantially the same function in substantially the same way with substantially the same result as each claim limitation.” *Crown Packaging Tech., Inc. v. Rexam Beverage Can Co.*, 559 F.3d 1308, 1312 (Fed. Cir. 2009). This tripartite test is particularly suitable for mechanical devices, such as the

ones at issue in this case. See *id.* The Court must remain mindful, however, that “[e]quivalence, in the patent law, is not the prisoner of a formula and is not an absolute to be considered in a vacuum.” *Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 24-25 (1997) (quotation omitted). Equivalency is a question of fact. *IMS Tech., Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1430 (Fed. Cir. 2000). “Because infringement under the doctrine of equivalents often presents difficult factual determinations, a summary conclusion that a reasonable jury could not find infringement is often illusive.” *Leggett & Platt, Inc. v. Hickory Springs Mfg. Co.*, 285 F.3d 1353, 1360 (Fed. Cir. 2002).

“For a means-plus-function claim term, the term literally covers an accused device if the relevant structure in the accused device performs the identical function recited in the claim and that structure is identical or equivalent to the corresponding structure in the specification.” *Intellectual Science and Tech., Inc. v. Sony Electronics, Inc.*, 589 F.3d 1179, 1183 (Fed. Cir. 2009). As with the doctrine of equivalents, an element in an accused product is equivalent to a claim limitation if the differences between the two are “insubstantial” to one of ordinary skill in the art. *Leggett*, 285 F.3d at 1359 (citing *Warner-Jenkinson*, 520 U.S. at 40). Insubstantiality in this context, however, may be determined by examining whether the accused device performs “the *identical* function in substantially the same way, with substantially the same result” as the claim limitation. *General Protecht Group, Inc. v. Int’l Trade Comm’n*, 619 F.3d 1303, 1312 (Fed. Cir. 2010) (emphasis added) (quotations and citation omitted).

The analysis used for determining infringement under the doctrine of equivalents for means-plus-function claims is similar to that used for equivalency under literal infringement with the exception that functional identity is not required. *Kemco Sales, Inc. v. Control Papers Co., Inc.*, 208 F.3d 1352, 1364 (Fed. Cir. 2000). Thus, infringement under the doctrine of equivalents occurs if the accused structure performs “substantially the same function, in substantially the same way, to achieve substantially the same result” as the disclosed structure. *Id.* If functional identity is present, nevertheless, and absent later-developed technology (which is not the case here), the inquiry reduces to that for literal infringement. *Frank’s Casing Crew & Rental Tools, Inc. v. Weatherford Int’l, Inc.*, 389 F.3d 1370, 1378-79 (Fed. Cir. 2004); *Ishida Co., Ltd. v. Taylor*, 221 F.3d 1310, 1317 (Fed. Cir. 2000).

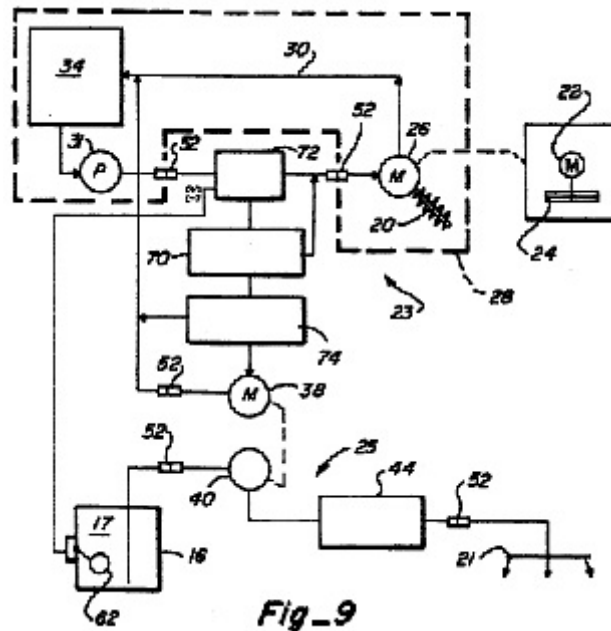
2. Means for Setting the Liquid Feed Rate

Bosch argues that the accused products do not infringe the ’125 Patent because they do not have a means for setting the liquid feed rate as that limitation has been construed. Each of the asserted claims in the ’125 Patent contains this limitation.³ The Court has construed this means-plus-function limitation as functioning to set the rate,

³ Claim 1 requires a “means for selectively setting the liquid feed rate within a range of feed rates.” Claim 15 requires “means for controlling said second means [i.e., the liquid system motor] and thereby the amount of liquid per surface area applied to the surface as a function of the amount of granular material being applied to the surface and a selected ratio of liquid material to granular material.” Claim 16 requires “means for adjustably controlling said second motor as a function of the amount of granular material to be applied to the surface and a selected ratio of liquid material to granular material.” Claim 17 requires “means for proportioning the flow of pressure fluid to said first and second fluid pressure motors as a function of a selected amount of granular material to be applied to the surface and a selected ratio of granular material to liquid material to be applied to the surface.”

from a number of available rates, at which the liquid material is to be spread. Claim Construction Order, 684 F. Supp. 2d at 1263. The Court identified three structures in the '125 Patent that provide this functionality. *Id.* at 1263-67. The parties do not dispute that the accused products provide the claimed function, nor do they dispute that the accused products are not identical or equivalent to two of the corresponding structures—Figures 7 and 8. Rather, the dispute centers on whether the accused products have identical or equivalent structure to that of the third structure—Figure 9. The Court will, therefore, limit its analysis accordingly.

The Court identified in Figure 9 two flow control valves⁴ and liquid and conveyor motors as a means for setting the liquid feed rate. Claim Construction Order, 684 F. Supp. 2d at 1264-66. Figure 9 in the '125 Patent is reproduced below:



⁴ A flow control valve is a valve that divides the flow of hydraulic fluid between two different destinations. Claim Construction Order, 684 F. Supp. 2d at 1261.

The valve and motor components are positioned such that the liquid feed rate is controlled in two stages. *Id.* at 1265. In the first stage, the conveyor (or granular) motor and liquid motor are configured in *parallel* such that the first flow control valve [70] sends some portion of fluid toward the conveyor motor [26] and the remaining portion toward the liquid motor [38]. *Id.* In the second stage, a second flow control valve [74] is placed downstream of the first valve and upstream of the liquid motor and diverts some additional portion of fluid away from the liquid motor and back to the hydraulic reservoir [34]. *Id.* In this way, the two flow control valves control the feed rate of the liquid by reducing the amount of hydraulic fluid powering the liquid motor through diversion of hydraulic fluid to the conveyor motor and reservoir tank respectively.

There is no dispute that the accused products include two flow control valves and conveyor and liquid motors in a *series* configuration, as opposed to a parallel configuration. See Bristol Resp. [Docket No. 186] at 31.⁵ The first flow control valve is upstream of both the conveyor and liquid motors and the second flow control valve is positioned between the conveyor and liquid motors with the liquid motor being downstream. The second flow control valve divides its flow between the downstream liquid motor and the reservoir tank. Bosch claims its products do not infringe because of this series configuration.

Bristol concedes the structures are not identical, but instead claims Bosch's configuration is an equivalent to that disclosed in Figure 9. Bristol Resp. [Docket No. 186] at 31-32. Bristol proffers two arguments in support of such equivalency: (1) "the

⁵ Bosch disputes that its MP18 valve is a flow control valve. However, for purposes of this analysis only, the Court will assume that it is a flow control valve.

Bosch valves do divert a portion of the hydraulic fluid away from the liquid motor in the same way as the valves of the patent,” *id.* at 31, and (2) “[p]lacing such a valve upstream of a liquid motor to control that motor in an in series system is elementary to persons skilled in the art of hydraulics and substantially the same as controlling the liquid by an upstream valve in a parallel system.” *Id.* at 32.

Bristol’s first argument is representative of its general approach to equivalency, that being to compare the individual components of the respective structures that perform the claimed function. In this regard, Bristol’s experts opine that the valve used upstream of the liquid motor in the accused products is “the same” or “substantially the same” as the corresponding valve in the ’125 Patent. Wise Decl. [Docket No. 186-19] at ¶¶ 36-38; see *also* Doherty Decl. [Docket No. 186-20] at ¶ 12 (“The valve immediately upstream and on the same flow path as the liquid motor in a portion of Fig. 9 for example is substantially the same and interchangeable with the valve assembly immediately upstream of the liquid motor in Schematics 1-5.”). Even assuming these statements are supported by more than conclusory opinions, such a component-by-component analysis of the overall structures is not the proper equivalency analysis. See *Odetics, Inc. v. Storage Tech. Corp.*, 185 F.3d 1259, 1267-68 (Fed. Cir. 1999). As the Federal Circuit explained:

[A claim limitation written in § 112, ¶ 6 form] is literally met by structure, materials, or acts in the accused device that perform the claimed function in substantially the same way to achieve substantially the same result. The individual components, if any, of an overall structure that corresponds to the claimed function are not claim limitations. Rather, the claim limitation is the overall structure corresponding to the claimed function . . . Further deconstruction or parsing is incorrect.

Id. at 1268. Thus, Bristol's component-by-component analysis cannot create a genuine issue of material fact as to the equivalence of the overall corresponding structures.

Though Bristol's second argument properly considers the overall structure, the argument is premised on an expert conclusion that suffers from a lack of factual predicate. The expert summarily concludes:

31. The means employed to set the liquid feed rate in the Bosch systems Schematics 1-5 are substantially the same as the means disclosed in the '125 Patent. Persons of ordinary skill in the art would consider the means employed to set the liquid feed rate in the Bosch systems (Schematics 1-5) to be interchangeable with the means disclosed in the '125 Patent. .

. .

39. Persons of ordinary skill in the hydraulic arts would consider placement of the flow control valves in the Bosch configurations to be substantially the same as the placement of valves disclosed in the '125 patent.

Wise Decl. [Docket No. 186-19] at 6-7; see *also* Doherty Decl. [Docket No. 186-20] at ¶¶ 8, 12 (similar). The expert does not identify the basis for this conclusion, such as an analysis of how the accused structures operate and why they operate in substantially the same way to achieve substantially the same result. To the extent the conclusion is based on the expert's component-by-component analysis, that analysis has already been rejected as improper. Bristol has failed to offer any evidence demonstrating sufficient similarity between the way the accused products and patent function and the *results* achieved by them. Thus, the experts' conclusions are not sufficient to raise a genuine issue of material fact. *Matthiesen v. Banc One Mortgage Corp.*, 173 F.3d 1242, 1247 (10th Cir. 1999) (“[T]he testimony of an expert can be rejected on summary judgment if it is conclusory and thus fails to raise a genuine issue of material fact.”); *Intellectual*

Science and Tech., Inc. v. Sony Electronics, Inc., 589 F.3d 1179, 1183-84 (Fed. Cir. 2009).

Indeed, the evidence Bristol does provide suggests the “ways” and “results” are quite different. One of Bristol’s experts opined that a “single stream hydraulic flow path,” i.e., a series configuration, functions such that any percentage change in the hydraulic flow to the upstream motor results in a “*like percentage*” change to the downstream motor. McLaren Aff. [Docket No. 186-17] at ¶¶ 17-18 (emphasis added). Another of Bristol’s experts similarly testified. Doherty Decl. [Docket No. 186-20] at ¶ 11 (“On a single flow path system, a percentage change in fluid flow to the upstream motor will result in a like percentage change to the downstream motor.”). This, however, is in contrast to the parallel system of Figure 9 where, as the percentage of fluid toward the conveyor motor *increases*, the percentage of fluid toward the liquid motor *decreases*. See Claim Construction Order, 684 F. Supp. 2d at 1264-65 (“This diversion . . . simply permits X% of the hydraulic fluid to be sent to the granular system and the remaining 100-X% of the hydraulic fluid to be sent to the liquid system.”).

In sum, there is an absence of any showing that Bosch’s series configuration operates in substantially the same way to achieve substantially the same result as the structure of Figure 9. Accordingly, the accused products do not have a means for setting the liquid feed rate and, thus, do not infringe the ’125 Patent, literally or under the doctrine of equivalents.⁶

⁶ Because Bristol’s infringement claim of the ’125 Patent can be adjudicated on the absence of a means for setting the liquid feed rate, the Court need not address Bosch’s other noninfringement arguments. See *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1535 (Fed. Cir. 1991) (“Since the failure to meet a single limitation is

B. THE '396 PATENT

Before the Court can determine if the asserted claims are infringed, the Court must address Bosch's indefiniteness arguments.

1. Indefiniteness

Bosch contends multiple means-plus-function claim limitations in claim 3 of the '396 Patent are indefinite because the specification fails to disclose the algorithms used to accomplish the claimed functions. The basic invention disclosed in the '396 Patent is an improvement in the controls for synchronizing the liquid and granular material rates encompassed in the '125 Patent, that improvement being the use of computers to adjust the rates. See '396 Patent at col. 1, ll. 58-61; col. 10, ll. 26-31. Claim 3 of the '396 Patent requires, *inter alia*, a "material computer" including:

means for receiving said vehicle speed signal and generating a first signal as a function of said sensed vehicle speed

means for receiving said conveyor speed signal and generating a second signal as a function of said sensed conveyor speed

means for directing said first signal to said ground speed computer for controlling the delivery of said granular material

means for directing said second signal to said liquid material delivery apparatus for controlling the delivery of liquid material thereby

means for selectively setting the liquid material feed rate within a selected range of feed rates

means for selectively setting the granular material feed rate within a selected range of feed rates

sufficient to negate infringement of the claim, we will limit our analysis accordingly.”).

means for maintaining a predetermined ratio of said feed rate of liquid material to said feed rate of granular material

means responsive to actuation of said liquid material delivery apparatus for reducing by a variably selected percentage the quantity of granular material delivered by said granular material delivery apparatus while maintaining said predetermined ratio of the feed rates of delivery of liquid and granular materials

'396 Patent at col. 12, l. 43 - col. 14, l.7. The parties did not request the Court to identify the functions or the disclosed structures for each of the means-plus-function limitations listed above at the claim construction stage of the case. Now, however, the parties dispute whether these limitations are definite or capable of being construed.

The requirement that claims be sufficiently “definite” is set forth in 35 U.S.C. § 112, ¶ 2, which provides that, “[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” “The definiteness inquiry focuses on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the rest of the specification.” *Union Pacific Resources Co. v. Chesapeake Energy Corp.*, 236 F.3d 684, 692 (Fed. Cir. 2001). Whether a claim is indefinite is a question of law. *Id.*

A claim having means-plus-function language is indefinite if the specification fails to disclose sufficient structure linked to the claimed function. *See In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed. Cir. 1994) (en banc). “In cases involving a computer-implemented invention in which the inventor has invoked means-plus-function claiming, [the Federal Circuit] has consistently required that the structure disclosed in the specification be more than simply a general purpose computer or microprocessor.”

Aristocrat Tech. Australia Pty Ltd. v. International Game Tech., 521 F.3d 1328, 1333 (Fed. Cir. 2008). “Because general purpose computers can be programmed to perform very different tasks in very different ways, simply disclosing a computer as the structure designed to perform a particular function does not limit the scope of the claim to ‘the corresponding structure, material, or acts’ that perform the function, as required by section 112 paragraph 6.” *Id.* A general purpose computer programmed to carry out a particular algorithm creates a “new machine” because a general purpose computer “in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software.” *WMS Gaming Inc. v. International Game Tech.*, 184 F.3d 1339, 1348 (Fed. Cir. 1999). Thus, “the corresponding structure for a § 112, ¶ 6 claim for a computer-implemented function is the algorithm disclosed in the specification.” *Aristocrat*, 521 F.3d at 1333 (quotations and citation omitted). The patentee may “express that algorithm in any understandable terms including as a mathematical formula, in prose, or as a flow chart, or in any other manner that provides sufficient structure.” *Finisar Corp. v. DirecTV Group, Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008). While a listing of source code or a highly detailed description of the algorithm to be used is not required, *Aristocrat*, 521 F.3d at 1338, “there must be some explanation of how the computer performs the claimed function.” *Blackboard, Inc. v. Desire2Learn, Inc.*, 574 F.3d 1371, 1384 (Fed. Cir. 2009).

Bristol does not attempt to identify corresponding structure in the specification. Instead, Bristol’s principal argument is that the algorithms associated with the “material computer” would be well known to one skilled in the art and, as such, the patent need not

provide such disclosure. Bristol Resp. [Docket No. 186] at 41-43. The Federal Circuit has repeatedly rejected such an argument. As the Federal Circuit explained:

[Such an argument], however, conflates the definiteness requirement of section 112, paragraphs 2 and 6, and the enablement requirement of section 112, paragraph 1. . . . The question before us is whether the specification contains a sufficiently precise description of the ‘corresponding structure’ to satisfy section 112, paragraph 6, not whether a person of skill in the art could devise some means to carry out the recited function.

Blackboard, 574 F.3d at 1385 (affirming district court’s finding of indefiniteness); see also *Aristocrat*, 521 F.3d at 1336; *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1366-67 (Fed. Cir. 2008). Nevertheless, an independent review of the patents demonstrates that the ’396 Patent specification provides an adequate disclosure of the various computer-implemented means-plus-function limitations.

a. Corresponding Means in the ’125 Patent

Half of the disputed means-plus-function limitations of the ’396 Patent have language virtually identical to those means of Claim 1 in the ’125 Patent:

means for selectively setting the liquid material feed rate within a selected range of feed rates

means for selectively setting the granular material feed rate within a selected range of feed rates

means for maintaining a predetermined ratio of said feed rate of liquid material to said feed rate of granular material

means responsive to actuation of said liquid material delivery apparatus for reducing by a variably selected percentage the quantity of granular material delivered by said granular material delivery apparatus while maintaining said predetermined ratio of feed rates of delivery of liquid and granular materials

See '125 Patent at Claim 1. As the Court recognized at claim construction, the specification of the '125 Patent describes in detail, both through prose and through the figures, the various configurations of valves and motors that accomplish the functions of Claim 1 of the '125 Patent. Claim Construction Order, 684 F. Supp. 2d at 1263-65 (regarding means for the setting the liquid feed rate); *id.* at 1268-69 (regarding means for setting the granular feed rate); *id.* at 1270-76 (regarding means for maintaining predetermined ratio); *id.* at 1276-84 (regarding means for variable reduction). The specification also describes in detail the operation of these structures and how they accomplish the claimed functions. *Id.* The Court construed the corresponding '125 Patent limitations accordingly.

As a continuation-in-part, the '396 Patent incorporates the specification of the '125 Patent. The improvement of the '396 Patent, however, is that the control of the granular and liquid delivery systems is accomplished through the use of a computer rather than the physical structures or configurations of the '125 Patent. In this regard, the description of the '125 Patent structures and their operation provides the necessary algorithms for the '396 Patent's computer implementation of those same structures. Thus, contrary to Bosch's argument, this is not a case where the specification lacks a step-by-step process for performing the recited functions. Rather, the '396 Patent provides the requisite "explanation of how the computer performs the claimed function." *Blackboard*, 574 F.3d at 1384. As such, the Court construes the limitations of the '396 Patent consistent with the algorithms discussed in the Court's construction of the corresponding limitation of the '125 Patent.

b. Means Related to the “First Signal”

While claim 3 of the '396 Patent has virtually identical limitations as those claimed in the '125 Patent, it also has additional limitations. Two such limitations relate to the “first signal”:

means for receiving said vehicle speed signal and generating a first signal as a function of said sensed vehicle speed

means for directing said first signal to said ground speed computer for controlling the delivery of said granular material

'396 Patent at Claim 3. Bosch contends the specification lacks corresponding algorithms. The Court disagrees.

The respective functions of the disputed limitations are, for the first means, receiving said vehicle speed and generating a signal as a function of the vehicle speed, and, for the second means, directing this signal to the ground speed computer so that the signal can control the delivery of the granular material. The '396 Patent explains that the means for accomplishing these functions, namely “ground speed control,” were known in the prior art.

A vehicle speed sensor generates signals which are proportional to the vehicle's speed. . . . In a conventional ground speed control this speed sensor signal input controls the speed of the aggregate material conveyor.

'396 Patent at col. 2, ll. 35-42.

Ground speed control is known in the prior art and is used to adjust the speed of the conveyor 20 according to the speed of travel of the vehicle 12 carrying the aggregate conveyor 20 and the actual conveyor speed.

Id. at col. 9, l. 67-col. 10, l. 12. The '396 Patent also specifically identifies an example of such ground speed control.

A granular and liquid material spreader is shown in W. Küpper, U.S. Pat. No. 4,442,979. The Küpper patent also shows synchronized delivery of both liquid and granular materials according to the speed of travel of the vehicle, *an example of ground speed control*.

Id. at col. 1, ll. 29-34 (emphasis added). “[I]ncorporation of prior art or other extrinsic material to disclose structure may be permissible [if] that material [is] explicitly referenced and clearly linked to the function in question.” *Bristol*, 684 F. Supp. 2d at 1269 (discussing *Biomedino, LLC v. Waters Technologies Corp.*, 490 F.3d 946, 950-51 (Fed. Cir. 2007) and *Atmel Corp. v. Information Storage Devices, Inc.*, 198 F.3d 1374, 1382 (Fed. Cir. 1999)). As evidenced by the excerpts above, the patent explicitly references the prior art that performs the claimed function. Consequently, the ’396 Patent provides the requisite algorithm, which is the algorithm disclosed in the prior art Küpper patent.

c. Means Related to the “Second Signal”

The remaining disputed limitations relate to the “second signal”:

means for receiving said conveyor speed signal and generating a second signal as a function of said sensed conveyor speed

means for directing said second signal to said liquid material delivery apparatus for controlling the delivery of liquid material thereby

’396 Patent at Claim 3.

The parties requested the Court resolve two discrete issues concerning the “second signal”: (1) whether the “second signal” must be separate and discrete from the “first signal”; and (2) the meaning of “controlling” the liquid system.⁷ Claim Construction

⁷ The parties also asked the Court to determine whether the “ground speed computer” and the “material computer” described in the patent can be combined into

Order, 684 F. Supp. 2d at 1294. The Court construed the “second signal” to be separate and distinct from the first signal and to be a function of the conveyor speed, and construed “controlling” to mean dynamic control, not simply activation (i.e., on/off). *Id.* at 1294-96. The parties did not request any further construction. However, such construction is now necessary.

The first step in construing a means-plus-function claim is to identify the claimed function. *JVW Enterprises, Inc. v. Interact Accessories, Inc.*, 424 F.3d 1324, 1330 (Fed. Cir. 2005). While the parties do not address the function of the “means for receiving and generating” limitation, the functions are evident from the claim language. The means *receives* the conveyor speed signal and *generates* a second signal as a function of the conveyor speed.

The parties do, however, dispute the function of the “means for directing” limitation. Their dispute centers on whether the function includes control of the delivery liquid material by the second signal. Bristol argues the “language ‘for controlling the delivery of liquid material thereby’ is not a function of the means, but rather is a quality of the liquid material delivery apparatus.” Bristol Resp. [Docket No. 186] at 39. The Court agrees that the “controlling” clause is not a function of the means, but finds the clause qualifies the “second signal,” not the liquid material delivery apparatus. The means simply must direct the second signal to the liquid material delivery apparatus so that the signal can control the delivery of the liquid. The means only directs; it does not control the delivery of the liquid. The signal controls the delivery of the liquid. Consequently, the

one device. This issue, however, is not relevant to the instant motion.

“controlling” clause is a separate limitation from the “means for directing.” And as noted previously, the Court has construed “controlling” to mean dynamic control, not simply activation.

Having determined the function of the two means-plus-function limitations, the Court must now identify the algorithms in the specification that performs those functions. The '396 Patent explains that the liquid pump controls the delivery of the liquid and that the operation of the pump is related to the speed of the granular conveyor.

In the embodiment shown in FIG. 3, the liquid pump 40 of the liquid delivery system 25 is mechanically connected through a gear box 46 to a shaft of the conveyor 20. In the hydraulic embodiments of FIGS. 5 through 10, the liquid system pump 40 is mechanically connected to a [liquid] drive motor 38, which is in turn in fluid communication with the vehicle hydraulic system 28.

The liquid pump 40 partially determines the feed rate of the liquid 17 supplied to a liquid flow control valve 42, which determines the actual amount or feed rate of the liquid 17 delivered to the nozzles 21. The liquid flow control valve 42 either controls the liquid flow directly or recirculates a selected amount of the liquid 17 to the tank 16. Either way, the amount of liquid feed is infinitely variable over a given range. In the embodiments shown in FIGS. 3 and 5 through 10, the liquid pump motor 38 (not shown in FIG. 3) and the liquid pump 40 are connected so that the feed rates of the granular material 15 and liquid 17 are likewise synchronous, depending upon the speed of the conveyor 20. Variation of liquid flow rate to granular flow rate is partially achieved by altering the amount of the liquid 17 returned to the tank 16 through the liquid flow control valve 42. Liquid flow is further affected by diverting hydraulic fluid from the hydraulic system 28, as will be described in reference to the embodiments of FIGS. 7 through 10.

'396 Patent at col. 4, ll. 24-51 (emphasis added). Thus, the structural configurations of Figures 3 and 5-10 and the text associated with the figures describe how the structures

perform the function of controlling the liquid delivery as a function of the conveyor speed. These structural configurations, which the Court explained in detail (Claim Construction Order, 684 F. Supp. 2d at 1263-84), constitute the algorithms used in the computer-implemented means-plus-function limitations related to the “second signal.”

In view of the foregoing, the specification of the '396 Patent adequately discloses an algorithm for each of the disputed means-plus-function limitations. Claim 3 is not invalid for indefiniteness.

2. Noninfringement

Bristol asserts Bosch's CS-440 with Dedicated Valve Prewet product infringes Claim 3 of the '396 Patent. Bosch contends the accused product does not infringe based on its functioning regarding the “second signal” limitation. As discussed above, there are three separate limitations related to the “second signal”: (1) means for receiving the conveyor speed signal and generating a second signal as a function of the sensed conveyor speed, (2) means for directing the second signal to the liquid material delivery apparatus, and (3) dynamic control of the delivery of liquid with the second signal. The parties' arguments conflate this third limitation with the two means-plus-function limitations and, thus, appear to approach the analysis from the perspective of a means-plus-function claim. Because the Court construed the control as a separate, non-means-plus-function limitation, the Court will attempt to interpret their arguments accordingly.

The general structure and operation of the accused product is not in dispute. The liquid motor is controlled by a signal that is a function of the ground speed, the desired

conveyor speed, as well as multiple other inputs.⁸ Bosch Br. [Docket No. 181] at SOF 27; Bristol Resp. [Docket No. 186] at Add'l SOF 83-85 (discussing the “granular output command signal” as desired conveyor speed). The signal is not a function of the actual conveyor speed. *Id.* It is also undisputed that the accused product uses the sensed conveyor speed as feedback to constantly modulate or refine the input signal controlling the conveyor speed. Bristol Resp. [Docket No. 186] at Add'l SOF 84. The purpose of this feedback mechanism is to ensure the actual granular delivery rate follows the desired delivery rate. Bosch Br. [Docket No. 181] at SOF 34. Bristol contends the actual and desired rates are “virtually identical” because of this feedback mechanism. Bristol Resp. [Docket No. 186] at SOF 34. Additionally, loss of the sensed conveyor signal triggers an error mode that acts as an emergency shut-down of the liquid delivery system. Bristol Resp. [Docket No. 186] at Add'l SOF 88-91; Bosch Reply [Docket No. 192] at Add'l SOF 88-91. In view of foregoing, Bosch contends there is no infringement because the product does not dynamically control the delivery of the liquid material with a signal that is a function of the sensed conveyor speed. Bosch Br. [Docket No. 181] at 27-28, at SOF 37.

Bristol’s infringement argument is based on both literal infringement and infringement under the doctrine of equivalents. Bristol first contends the loss of the

⁸ The CS-440 with Dedicated Valve Prewet generates an output command signal to the liquid delivery system using the following inputs: vehicle speed, granular output command signal; gate opening; granular reduction percentage; liquid material type (4 choices); liquid application spread rate (10 choices); liquid delivery feedback signal from flow meter or liquid motor/pump speed sensor; and the liquid delivery on/off switch. Bristol Resp. [Docket No. 186] at Add'l SOF 83, 85; Bosch Reply [Docket No. 192] at 4 (not disputing Bristol Add'l SOF 83, 85).

sensed conveyor speed signal with the triggered error mode constitutes literal infringement because it dynamically controls the liquid delivery system. Bristol Resp. [Docket No. 186] at 37. Specifically, Bristol points to the fact that the accused product “can be programmed to allow for an adjustable selectable transition stage from normal to error code operations upon loss of conveyor speed signal.” *Id.* at Add’l SOF 88. According to Bristol, this transition stage satisfies the requisite dynamic control. *Id.* Even assuming *arguendo* this is true, Bristol overlooks the claim language and the Court’s construction which collectively require that the signal itself dynamically control the delivery of the liquid. In the accused device, it is not the signal that provides the dynamic control but rather the presence or absence of the signal. The loss of the signal activates the error mode that has already been programmed into the device. Thus, the loss of the signal acts as an on/off switch while the programmed error mode provides the alleged dynamic control. Because Bristol’s position is contrary to the Court’s claim construction, the Court finds that no reasonable jury could conclude the accused product literally infringes claim 3 of the ’396 Patent. Bristol has failed to defeat summary judgment as to literal infringement.

Bristol’s doctrine of equivalents argument is based on the fact that the control signal to the liquid system is a function of the “desired” conveyor speed, which, because of the feedback loop, is allegedly substantially the same as the sensed or “actual” conveyor speed. See Bristol Resp. [Docket No. 186] at Add’l SOF 83-85. According to Bristol, using the desired conveyor speed to generate the controlling second signal is substantially the same as using the actual conveyor speed to generate the signal. Stated another way, Bristol contends a “second signal” that is a function of the “first signal” is

equivalent to a “second signal” that is a function of the sensed conveyor speed because the sensed conveyor speed is supposed to—and does—mirror the “first signal.”

Under the doctrine of equivalents, the Court must consider whether the accused product performs substantially the same function in substantially the same way to obtain substantially the same result as the claim limitation. *Crown Packaging*, 559 F.3d at 1312. In this regard, both parties recognize⁹ that the claimed function of the “second signal” is to dynamically control the liquid delivery. See Bosch Br. [Docket No. 181] at 28; Bristol Resp. [Docket No. 186] at 37. And neither party disputes that the signal in question, the “output command signal to the liquid system,” performs this function. See Bristol Resp. [Docket No. 186] at Add’l SOF 85. Additionally, Bristol argues the function is performed in substantially the same way, if not the identical way, by directing the signal, which varies in intensity, to a flow control valve. *Id.* at 38 (citing Schematic 6). Bristol also notes the amount of liquid delivered through the use of the desired speed compared to the actual speed is substantially the same, differing only in approximately a cupful of liquid per road mile. Bristol Resp. [Docket No. 186] at 38 (citing Wise Decl. [Docket No. 186-19] at ¶ 47 and Kalbfleisch Decl. [Docket No. 186-18] at ¶ 21).

In response, Bosch concedes the function and result prongs are similar, but argues the “ways” are substantially different. Bosch Reply [Docket No. 192] at 21. According to Bosch, the controllers for the granular and liquid materials run

⁹ Because one of the principal disputes is whether the “controlling” clause was part of the function of the “means for directing” limitation, the parties focused attention on the functioning of this means limitation as opposed to the functioning of the “second signal.” Yet notably, both parties otherwise recognize the function of the second signal is to control the liquid delivery.

independently of each other, with the computer calculating the necessary information to maintain the synchronization of the delivery of the materials. Bosch Br. [Docket No. 181] at 33; Sidman Report [Docket No. 178-3] at 38; Zhang Report [Docket No. 178-11] at 4. On the other hand, Bosch states that claim 3 requires a “cascading” configuration such that the liquid delivery is directly based on the conveyor speed of the granular delivery system. As evidence of this allegedly different way, Bosch points to various benefits or features achieved by the accused product:

1. improved accuracy of the liquid controller because it is not dependent on the conveyor loop, which can be disrupted by loading variations and other events in the granular material system;
2. improved responsiveness to changes in the desired overall application rate because the liquid controller does not need to wait for the conveyor control loop to respond; and
3. the liquid control system can continue to operate even if the granular control system fails or is turned off.

Bosch Br. [Docket No. 181] at 33; Sidman Report [Docket No. 178-3] at 38-39; Zhang Report [Docket No. 178-11] at 4. In making these distinctions, however, Bosch focuses only on the fact that the liquid command signal is a function of ground speed; it wholly fails to address that the signal is also a function of the desired conveyor speed.¹⁰

While the Court recognizes the difference in the way the accused product and the

¹⁰ Bosch also disputes the application of the doctrine of equivalents in this context, claiming that it vitiates the claim limitation requiring the first and second signals to be separate and distinct. Bosch Br. [Docket No. 181] at 31-32. Again, however, this argument assumes the first and second signals are functions of the very same, single data point, i.e., the vehicle speed. Such is not the case. The second signal is a function of multiple inputs, many of which differ from those used to generate the first signal. *Compare* Bristol Resp. [Docket No. 186] at Add'l SOF 83 with SOF 85; see *also* Bosch Reply [Docket No. 192] at SOF 83, 85.

claimed “second signal” provide control of the liquid delivery, the Court finds that Bristol has provided sufficient evidence for a reasonable jury to conclude these differences are insubstantial and, thus, that the accused product infringes under the doctrine of equivalents. Accordingly, summary judgment on this point is denied.

IV. CONCLUSION

For the foregoing reasons, it is

ORDERED that defendants Bosch Rexroth Incorporated, Robert Bosch Corporation, and Bosch Rexroth Canada Corp/Corporation Bosch Rexroth Canada’s Motion for Summary Judgment of Non-Infringement, Invalidity, and the Defense of Laches [Docket No. 180] is GRANTED IN PART and DENIED IN PART. The Court grants summary judgment that the following products do not infringe claims 1, 15, 16, and 17 of the ’125 Patent: (1) CS-230 with Fixed Prewet Mode - Manual Control, (2) CS-230 with Fixed Prewet Mode - Electric Control, (3) CS-440 with Fixed Prewet Mode - Manual Control, (4) CS-440 with Fixed Prewet Mode - Electric Control, (5) CS-440 with Return Oil Prewet Model. The Court denies summary judgment that claim 3 of the ’396 Patent is invalid for indefiniteness. The Court denies summary judgment that claim 3 of the ’396 Patent is not infringed by the CS-440 with Dedicated Valve Prewet. The Court denied the motion with respect to the laches defense in a separate order. [Docket No. 194].

DATED March 29, 2011.

BY THE COURT:

s/Philip A. Brimmer
PHILIP A. BRIMMER
United States District Judge