

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF KANSAS**

CAPSTAN AG SYSTEMS, INC.,

Plaintiff,

v.

**RAVEN INDUSTRIES, INC. and
CNH INDUSTRIAL AMERICA, LLC,**

Defendants.

Case No. 16-4132-DDC-KGS

MEMORANDUM AND ORDER

This is a patent infringement case involving precision agricultural spraying technology. Plaintiff Capstan AG Systems, Inc. filed this lawsuit, alleging that defendants Raven Industries, Inc. and CNH Industrial America, LLC have infringed on two of plaintiff's patents. The two patents—U.S. Patent Numbers 8,191,795 (“the ’795 patent”) and 8,523,085 (“the ’085 patent”)—cover plaintiff's PinPoint® agricultural spraying technology.

This matter comes before the court on the parties' request that the court construe six terms in the '795 and '085 patents as a matter of law under *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996). The parties each have submitted claim construction briefs urging the court to adopt their proposed constructions of the six disputed terms in the '795 and '085 patents. Doc. 63-1 (defendants' Opening Claim Construction Brief); Doc. 64-3 (plaintiff's Opening Claim Construction Brief). The parties also have responded to each other's claim construction briefs. Doc. 72 (plaintiff's Responsive *Markman* Brief); Doc. 73 (defendants' Responsive Claim Construction Brief). The court has considered the information submitted in the parties' briefs and responses as well as the oral

arguments presented at the *Markman* hearing on November 15, 2017, and construes the six disputed terms in the fashion explained below.

I. Legal Standard

A patent must describe the “exact scope of an invention” so that the patentee secures his or her right to “all to which he [or she] is entitled” and informs “the public of what is still open to them.” *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 373 (1996) (quoting *McClain v. Ortmayer*, 141 U.S. 419, 424 (1891)). To achieve these objectives, a patent document contains two distinct elements: (1) a specification which “describ[es] the invention ‘in such full, clear, concise, and exact terms as to enable any person skilled in the art . . . to make and use the same;” and (2) one or more claims which “particularly poin[t] out and distinctly clai[m] the subject matter which the applicant regards as his [or her] invention.” *Id.* (quoting 35 U.S.C. § 112 (further citations omitted)).

A patent’s claims define the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005). “A claim covers and secures a process, a machine, a manufacture, a composition of matter, or a design, but never the function or result of either, nor the scientific explanation of their operation.” *Markman*, 517 U.S. at 373 (citation and internal quotation marks omitted). The claims serve “to forbid not only exact copies of an invention, but [also] products that go to the heart of an invention but avoid[] the literal language of the claim by making a noncritical change.” *Id.* at 373–74 (citation and internal quotation marks omitted).

In a patent infringement case, the court must determine whether the patent claims cover the alleged infringer’s product. *Id.* at 374 (citation omitted). To do so, the court must decide what the words in the claim mean. *Id.* (citation omitted); *see also Bushnell, Inc. v. Brunton Co.*, 673 F. Supp. 2d 1241, 1250 (D. Kan. 2009) (explaining that “[p]roof of infringement requires

construction of the patent claims to determine their scope and comparison of the construed claims to the accused device.” (citing *Elbex Video, Ltd. v. Sensormatic Elecs. Corp.*, 508 F.3d 1366, 1370 (Fed. Cir. 2007) (further citations omitted))).

The Federal Circuit Court of Appeals established guiding principles for claim construction in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). Claim construction begins by considering the language of the claims themselves. *Id.* at 1312 (citing *Vitronics Corp. v. Conceptor, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (further citations omitted)). When constructing claim terms, the court generally should give terms their ordinary and customary meaning. *Id.* (citation omitted). That is, “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application.” *Id.* at 1313 (citations omitted). The claims themselves provide “substantial guidance” for determining “the meaning of particular claim terms.” *Id.* at 1314. Both “the context in which a term is used in the asserted claim” and the “[o]ther claims of the patent in question” also help the court determine the ordinary meaning of a term. *Id.*

The patent’s claims, however, “do not stand alone.” *Id.* at 1315. Instead, the claims “are part of a fully integrated written instrument consisting principally of a specification that concludes with the claims.” *Id.* (citation and internal quotation marks omitted). Therefore, the court must read the claims “in view of the specification, of which they are a part.” *Id.* (citation and internal quotation marks omitted). The Federal Circuit has described the specification as “the single best guide to the meaning of a disputed term,” and “[u]sually it is dispositive.” *Id.* (citation and internal quotation marks omitted).

The specification may contain “a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess.” *Id.* at 1316. When this occurs, the

patentee's definition controls. *Id.* Alternatively, the specification "may reveal an intentional disclaimer, or disavowal, of claim scope by the inventor." *Id.* When this occurs, the patentee "has dictated the correct claim scope, and [his or her] intention, as expressed in the specification, is regarded as dispositive." *Id.* (citation omitted). But the Federal Circuit has "expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment." *Id.* at 1323. In the end, the court must construe the claim in a way that "stays true to the claim language and most naturally aligns with the patent's description of the invention." *Id.* at 1316 (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

The court "should also consider the patent's prosecution history, if it is in evidence." *Id.* at 1317 (citation and internal quotation omitted). The prosecution history is considered "intrinsic evidence" and it includes "the complete record of the proceedings before the [Patent and Trademark Office ("PTO")] and includes the prior art cited during the examination of the patent." *Id.* (citation omitted). Like the specification, the prosecution history helps demonstrate how the inventor understood the patent during the process of explaining and securing the patent. *Id.* But "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.* Still, the prosecution history may enhance the meaning of the claim language by showing how the patentee understood the invention and whether the patentee limited the claim language during the prosecution, thereby narrowing the scope of the claim. *Id.* (citations omitted).

Last, the court may rely on extrinsic evidence when construing the claims. *Id.* (citation omitted). Extrinsic evidence includes "all evidence external to the patent and prosecution

history, including expert and inventor testimony, dictionaries, and learned treatises.” *Id.* (citation and internal quotation marks omitted). Dictionaries and treatises can provide useful tools to help a court determine the meaning of a term to those skilled in the art in question. *Id.* at 1318. But the Federal Circuit has cautioned that extrinsic evidence is less reliable than the patent and prosecution history. *Id.* It is useful only if considered in the context of the intrinsic evidence. *Id.* at 1319. The court thus has discretion to admit and use extrinsic evidence but “should keep in mind the flaws inherent in each type of evidence and assess that evidence accordingly.” *Id.*

II. Analysis

The parties ask the court to construe the following six terms, phrases, or clauses from the ’795 and ’085 patents: (1) “overall application rate,” (2) “flow related individual control value,” (3) “flow factor,” (4) “a controller in communication with each of the valves,” (5) “corporate duty cycle percentage,” and (6) “normalized duty cycle percentage.”¹

The disputed terms appear in Claims 1–6, 8–9, 12–14, 16–17, and 34–35 of the ’795 patent and Claims 1–4, 6, 8, 12, 14–16, and 19 of the ’085 patent . Doc. 69-1 at 27–28 (’795 patent); Doc. 69-3 at 26–27 (’085 patent). The technology disclosed in the two patents—described generally—is a system for spraying liquid agrochemical products (such as fertilizers and pesticides) on an agricultural field. The system sprays the agrochemical using a series of valves or nozzles positioned along a boom attached to a commercial farming vehicle. The technology disclosed in the two patents allows agrochemical-application rates to vary “across the width of the [spraying] system in response to one or more conditions or parameters that may

¹ The parties disputed a seventh term in their original *Markman* briefs. The term was “valve turn radius.” But the parties confirmed at the hearing that they had reached an agreement about the construction of that term. The parties agree that the term is construed as “[a] value based on the speed of a valve while the valve is traversing along an arc of a turn.” *See* Doc. 62 at 2 (reciting in the Joint Claim Construction Chart plaintiff’s proposed construction of “valve turn radius”); *see also* Doc. 73 at 28 (reporting in defendants’ Responsive Claim Construction Brief that the term “valve turn radius” is “now agreed”).

exist in the field.” Doc. 69-1 at 18 (’795 patent, col. 1 ll. 59–62); Doc 69-3 at 17 (’085 patent, col. 1 ll. 64–66). For example, as a tractor carrying a spraying system turns corners in a field, the nozzles on the outside of the system speed up, while the nozzles closer to the tractor slow down. To maintain even coverage of the agrochemical being applied, the flow rate of the outer nozzles must increase, while the flow rate of the inner nozzles must decrease. The technology described in the patents allows the user to adjust the spray rate for each nozzle to compensate for this phenomenon, while controlling the amount of product dispensed from the spraying system as a whole.

The first of plaintiff’s asserted patents to issue was the ’795 patent. The ’085 patent is a “continuation” of the ’795 patent, meaning that it issued from the same original patent application. So, the written description portions of the two patents are nearly identical. The differences between the two patents are found in the patents’ claims.

The independent claims of the ’795 patent and the ’085 patent are similar. They both recite a sprayer system with a controller, individual control values, individual nozzle control, and a flow factor based on the individual control values. The patents’ dependent claims recite specific, narrower embodiments of the inventions, including recitations of specific types of individual control values for use with specific field conditions.

The parties have identified two important differences between the claims of the two patents. *First*, the ’795 patent’s independent claims recite a specific algorithm for determining the “flow factor.” The ’795 patent requires the “flow factor” to be calculated by: (1) multiplying all of the individual control values together to create a multiplied value for each valve, and (2) dividing each resulting multiplied value by an average of all the multiplied values. The ’085 patent’s claims contain no such restriction. *Second*, the independent claims of the ’085 patent

require that the system maintain an “overall application rate.” This limitation is not in the independent claims of the ’795 patent, but it appears in one dependent claim.

The court now turns to address the six disputed claim terms. This discussion, below, begins by providing the parties’ proposed constructions in table format. The court then explains the parties’ reasoning for their proposed constructions in the accompanying text. And last, the court determines the appropriate construction, applying the guiding principles recited by Part I of this Order.

A. “overall application rate”

Term	Plaintiff’s Construction	Defendants’ Construction
overall application rate	Volume of liquid agricultural product applied per area of land	The measured total volume of liquid emitted from all of the valves in the system per unit of time (measured in volume per time)

The parties’ dispute about this term questions whether the claim’s application rate is measured in volume per area or volume per time. Plaintiff asserts the court should construe this claim as one that measures volume per area while defendants argue that the claim properly is construed as measuring volume per time.

Plaintiff relies on three things to support its argument. *First*, plaintiff asserts that the specification’s language supports its construction. Plaintiff contends that the specification explains that “the flow of the system is independently controlled for parameters such as application rate (gallons/acre).” Doc. 69-1 at 18 (’795 patent, col. 1 ll. 22–24). But, as defendants explain, this passage in the specification refers to the prior art—not the disclosed invention of these patents. The “background” section of the specification begins by explaining that “[c]ommercially available independent flow and pressure control systems for dispensing

agrochemicals onto fields exist and are well documented *in the prior art.*” *Id.* (’795 patent, col. 1 ll. 14–16) (emphasis added). The specification continues:

These systems utilize a plurality of solenoid actuated valves that pulse according to a on/off ratio which determines the flow from the group of nozzles at any given pressure. Therefore, the pressure of the system can be controlled for such parameters as droplet size, system flow capacity, stream dynamics, injection penetration, etc., *while the flow of the system is independently controlled for such parameters as application rate (gallons/acre).* These systems are commercially available for agricultural liquid applications of pest control sprays and crop nutrient systems.

Id. (’795 patent, col. 1 ll. 16–26) (emphasis added). In context, plaintiff’s quoted language refers to prior art and the systems used by those earlier inventions. The language is not specific to the disclosed invention. Thus, this particular sentence does not help the court construe the disputed term.

Plaintiff also contends that the specification explains the relationship between flow rate for the valves and overall application rate for the field—that is, the system varies flow rates (volume/time) from the valves while maintaining the overall application rate (volume/area) of the system. Plaintiff asserts that the specification describes this relationship in this fashion:

In one particular embodiment, the plurality of valves can be designed to emit an *overall application rate* of the liquid agricultural product based upon *volume of the product per area of land.* The controller can be configured to *vary the rate at which the liquid agricultural product is emitted from each valve* based upon changing flow factors *without changing the overall application rate* of the agricultural product.

Id. (’795 patent, col. 2 ll. 37–43) (emphasis added). But, as defendants correctly assert, this language describes only one particular embodiment. *See id.* (’795 patent, col. 2 ll. 37 (“In one particular embodiment”). And, when a specification discloses multiple embodiments—like this one does—courts “have interpreted claims to exclude embodiments where those embodiments are inconsistent with unambiguous language in the patent’s specification or

prosecution history.” *Sinorgchem Co., Shandong v. Int’l Trade Comm’n*, 511 F.3d 1132, 1138 (Fed. Cir. 2007); *see also Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1370 (Fed. Cir. 2003) (explaining that courts must examine “whether the specification refers to a limitation only as a part of less than all possible embodiments or whether the specification read as a whole suggests that the very character of the invention requires the limitation be a part of every embodiment.”). As explained below, the specific embodiment that plaintiff references here conflicts with other language in both the specification and the prosecution history. The other language unambiguously describes the overall application rate as something based on volume per time.

Second, plaintiff asserts that the claim language supports its construction. Plaintiff contends that the ’795 patent recites the concept of “valve flow rate” in Claim 1 and introduces “overall application rate” in Claim 2. Claim 2 reads:

2. A system as defined in claim 1, wherein the plurality of valves emit *an overall application rate* of the liquid agricultural product and wherein the controller is configured to vary the rate at which the liquid agricultural product is emitted from each valve based on changing flow factors *without changing the overall application rate*.

Id. at 27 (’795 patent, Claim 2) (emphasis added). Plaintiff asserts that the inventor combined the two concepts into a single claim in the ’085 patent. Claim 1 of the ’085 patent reads:

1. A system for applying liquids, the system comprising:
a plurality of individually controlled valves that are configured to emit liquid at *an overall application rate* based on volume per time; and
a controller in communication with each of the valves, the controller being configured to receive a plurality of flow related individual control values for each valve, the controller being further configured to determine a flow factor for each valve based on the individual control values,
wherein the controller is configured to vary the rate at which the liquid is emitted from each valve as the flow factor for each valve changes *without changing the overall application rate*.

Doc. 69-3 at 26 (Claim 1) ('085 patent, emphasis added). Plaintiff contends that Claim 1 of the '085 patent describes the relationship between the “valve flow rate” and the “overall application rate,” and thus supports its proposed construction. According to plaintiff, Claim 1 shows that the “overall application rate” is based on the “valve flow rate” and that the system is configured to vary the “valve flow rate” in a way to maintain the “overall application rate.” But the plain language of the claim doesn't say that. As defendants assert, plaintiff's argument asks the court to reach its proposed construction based solely on an attorney's argument—something the court cannot do. *See, e.g., Verinata Health, Inc. v. Ariosa Diagnostics, Inc.*, 830 F.3d 1335, 1341 (Fed. Cir. 2016) (rejecting a party's proposed interpretation of an agreement because it had presented no extrinsic evidence to support it, just attorney argument) (citation and internal quotation marks omitted)); *Va. Innovation Scis., Inc. v. Samsung Elec. Co., Ltd.*, 614 F. App'x 503, 511 (Fed. Cir. 2015) (explaining that when a court construes a patent's claim terms “attorney arguments are not relevant intrinsic or extrinsic evidence”); *Phillip M. Adams & Assocs., LLC v. Dell, Inc.*, No. 1:05-cv-64 TS, 2008 WL 7959085, at *23 (D. Utah Sept. 29, 2008) (finding that it is “insufficient” for plaintiff to offer “only pure attorney argument” to support its proposed construction of a claim term).

Finally, plaintiff asserts that defendants have argued to the PTO and in their Invalidity Contentions that “overall application rate” is a rate expressed in volume per unit area. So, plaintiff contends, the court should preclude defendants from making the opposite argument in their claim construction brief here. The court disagrees. Defendants may have made certain arguments in other proceedings, but those arguments are specific to those particular proceedings—not the claim construction at issue here. *See* Doc. 69-8 at 15 (reciting in defendants' Petition for *Inter Partes Review* filed with the PTO that defendants were asserting a

certain construction “for purposes of this *inter partes* review”); *see also* Doc. 69-11 at 2 (asserting in defendants’ Invalidation Contentions that its contentions “are not, and should not be seen as, admissions or adoptions as to any particular claim scope or claim construction”). Also, even if the court could consider defendants’ arguments elsewhere as some form of extrinsic evidence supporting plaintiff’s claim construction, such evidence is certainly “less reliable” than the patents and their prosecution history. *Phillips*, 415 F.3d at 1318.

In contrast, defendants’ arguments assert that the court should adopt their proposed construction because the plain language of the claims supports it. The court agrees. Defendants assert that the claim language expresses the overall application rate as a rate based on volume per time in three separate places:

- “A system for applying liquid agricultural products to a field comprising[] a plurality of individually controlled pulse width modulated valves that are configured to emit a liquid agricultural product at *a rate based on volume per time*” Doc. 69-1 at 27 (’795 patent, Claim 1) (emphasis added).
- “A system for applying liquids, the system comprising [] a plurality of individually controlled valves that are configured to emit liquid at *an overall application rate based on volume per time*” Doc. 69-3 at 26 (’085 patent, Claim 1) (emphasis added).
- “. . . the plurality of valves being configured to emit liquid *at an overall application rate based on volume per time.*” Doc. 69-3 at 26 (’085 patent, Claim 14) (emphasis added).

Plaintiff counters, arguing that the first two examples don’t apply here because they discuss valve flow rate—not overall application rate. But the claim language won’t support plaintiff’s reading. The first passage never explains whether it is discussing valve flow rate, overall application rate, or something else. But the second passage unambiguously states that the “values . . . are configured to emit liquid at *an overall application rate based on volume per time*” Doc. 69-3 at 26 (’085 patent, Claim 1) (emphasis added). Plaintiff also can’t avoid the

plain and unambiguous language of Claim 14 in the '085 patent. It explicitly and specifically discloses a “method for applying liquids using a plurality of individually controlled valves, the method comprising . . . *an overall application rate based on volume per time.*” *Id.* (emphasis added). If these particular claims are meant to describe valve flow rate, then the inventor could have said as much—expressly—in the claim language. But the inventor didn’t. Instead, the plain language of the '085 patent expressly discloses “an overall application rate based on volume per time.” A natural and plain reading of this language conveys the idea that the “overall application rate” is something “based on volume per time” and not volume per area.

Defendants also cite the specification to support their proposed construction. Summarizing the invention, it provides: “The plurality of individually controlled valves are configured to emit the liquid agricultural product at a rate of volume per time.” Doc. 69-1 at 18 ('795 patent, col. 2 ll. 7–10). Again, this language doesn’t specify whether it refers to valve flow rate or overall application rate. But, in the '085 patent—a continuation of the '795 patent—the inventor clarified in the claim language that the “plurality of individually controlled valves” are configured to emit agrochemical “at an overall application rate based on volume per time.” Doc. 69-3 at 26 ('085 patent, Claims 1 & 14). Reading the '085 patent’s claim language and the specification together supports defendants’ proposed construction.

Also, defendants assert, the patent’s file history shows that the patent’s applicant affirmatively adopted and communicated defendants’ proposed construction to the Examiner to overcome a prior art rejection. During the application process, the applicant submitted an amendment in response to non-final PTO action. Doc. 69-4 at 108–115. It amended Claim 1 to require “a plurality of valves configured to emit liquid at an overall application rate based on

volume per time.” *Id.* at 112.² As defendants note, evidence of an amendment to overcome a prior art rejection is highly significant. *See Convolv, Inc. v. Compaq Computer Corp.*, 812 F.3d 1313, 1322–23 (Fed. Cir. 2016) (“In determining the scope of the claims, we . . . pay[] particular attention to the examiner’s focus in allowing the claims after amendment. When an amendment is made during the reexamination proceedings to overcome a prior art rejection, that is a ‘highly influential piece of prosecution history.’” (quoting *Laitram Corp. v. NEC Corp.*, 163 F.3d 1342, 1348 (Fed. Cir. 1998) (further citation omitted))).

Plaintiff responds to defendants’ arguments supporting their proposed construction by asserting that one having ordinary skill in the art would understand that “overall application rate” means the rate at which an agrochemical is applied on a volume per acre basis—and not volume per time, as defendants assert. Plaintiff’s brief provides several “real world” examples of how defendants’ reading conflicts with how the technology actually works. Doc. 72 at 23–25. But these descriptions are simply attorney argument. And they aren’t consistent with the plain language of the patents’ claims.

After considering the plain language of the claims, the specification, and the prosecution history, the court concludes that the intrinsic evidence supports defendants’ proposed construction. The court thus adopts their construction and construes the term “overall application rate” to mean: “The measured total volume of liquid emitted from all of the valves in the system per unit of time (measured in volume per time).”

² In plaintiff’s Responsive *Markman* Brief, while discussing a different claim term, plaintiff appears to concede that it amended the claims specifically to add this limitation to the “overall application rate.” *See* Doc. 72 at 16.

B. “flow related individual control value”

Term	Plaintiff’s Construction	Defendants’ Construction
flow related individual control value	A value that drives a change in flow rate for a valve in response to a condition affecting that valve during operation (e.g., in a turn, in heavy dust, behind a wheel, etc. . . .)	Unitless numbers, that, from valve to valve, are proportional to each other, and that correspond to particular parameters or conditions existing during the application of liquid

The parties dispute whether the term “flow related individual control value” requires the construction to include that the values are “unitless” and “proportional” to each other. The disputed term appears in independent Claim 1 for each patent:

A . . . system comprising . . . a controller in communication with each of the valves, the controller being configured to receive . . . flow related individual control values for each valve

Doc. 69-1 at 27 (’795 patent, Claim 1); Doc. 69-3 at 26 (’085 patent, Claim 1).

The term also appears in several dependent claims to describe how the “flow related individual control values” may compromise an increased or decreased application rate based on certain field conditions. *See* Doc. 69-1 at 27 (’795 patent, Claim 9 (valve turn radius), Claim 12 (wheel tracks), Claim 13 (field affect such as the presence of a fence or access road), Claim 14 (vehicle affect such as dust generation or air disturbance), Claim 17 (swath overlap)); *see also* Doc. 69-3 at 26 (’085 patent, Claim 6 (swath overlap), Claim 7 (irregular valve spacing), Claim 8 (vehicle affect, field affect, or vegetative affect)).

Plaintiff asserts that its proposed construction is more consistent with the claim language because the limiting terms “unitless” and “proportional” never appear in the independent claims. Instead, plaintiff notes, the terms appear only in some dependent claims that disclose specific

embodiments. Plaintiff contends that the court cannot read these specific limitations found only in the dependent claims into the independent claims. *See, e.g., Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1326 (Fed. Cir. 2003) (“Our court has made clear that when a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim in determining either validity or infringement.” (citation and internal quotation marks omitted)); *Ecolab, Inc. v. Paraclipse, Inc.*, 285 F.3d 1362, 1375 (Fed. Cir. 2002) (explaining that the doctrine of claim differentiation presumes that each claim is different in scope and that “[t]his presumption is especially strong where there is a dispute over whether a limitation found in a dependent claim should be read into an independent claim, and that limitation is the only meaningful difference between the two claims.” (citation and internal quotation marks omitted)). *See also Phillips*, 415 F.3d at 1315 (“the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim”).

In contrast, defendants urge the court to include the terms “unitless” and “proportional” in its construction because, they contend, it is more consistent with the specification’s language. First, defendants point out the way the specification’s summary of invention defines this term:

The flow related individual control values generally comprise *unitless* values that *are related to a particular parameter or condition* and are based upon the amount of the liquid agricultural product that is emitted by each valve. For a certain condition or parameter, the flow related individual control values from valve to valve are also *proportional to each other*.

Doc. 69-1 at 18 (’795 patent, col. 2 ll. 47–53) (emphasis added). Defendants also cite several more aspects of the specification which require the values to be both “unitless” and “proportional”:

The flow related individual control values for the valves comprise *unitless* values that are *proportional* to each other and can be based upon any suitable parameter or condition regarding the application of liquid agricultural product.

...

In accordance with the present disclosure, the controller is configured to multiply together the flow related individual control values for each valve. Each individual *unitless* value is then divided by an average of all individual valve or nozzle *unitless* values to create a flow factor for each valve or nozzle.

...

As described above, *the flow related individual control values are unitless* values inputted into the system that are used to control the individual valves based upon a particular condition or parameter.

...

Although the individual control values are unitless, all of the values are proportional to each other for a particular condition or parameter. More specifically, *the values are proportional to each other* with respect to the amount or rate at which the liquid agricultural product is dispensed from each of the valves.

Id. at 22 ('795 patent, col. 9 ll. 17–21, 26–30, col. 10 ll. 16–19, 31–36 (emphasis added)).

Plaintiff responds that defendants' citations to these aspects of the specification are limited to ones that discuss only the "present disclosure"—and not the claimed invention. The court agrees with plaintiff. Although the specification contains the limiting language quoted above, each of the passages refers to exemplary embodiments. And the court cannot read particular embodiments into the claims "when the claim language is broader than such embodiments." *Electro Med. Sys., S.A. v. Cooper Life Scis., Inc.*, 34 F.3d 1048, 1054 (Fed. Cir. 1994) ("[P]articular embodiments appearing in a specification will not be read into the claims when the claim language is broader than such embodiments."); *see also Andersen Corp. v. Fiber Composites, LLC*, 474 F.3d 1361, 1373 (Fed. Cir. 2007) (warning that courts should not "import[] limitations from the specification into the claims absent a clear disclaimer of claim scope.");

Resonate Inc. v. Alteon Websystems, Inc., 338 F.3d 1360, 1364 (Fed. Cir. 2003) (explaining that a patent’s written description “is not a substitute for, nor can it be used to rewrite, the chosen claim language. Though understanding the claim language may be aided by the explanations contained in the written description, it is important not to import into a claim limitations that are not a part of the claim.”).

Defendants rely on several cases to support their construction but they differ from the patents at issue in this case. In those cases, the courts determined that the specifications described limitations that were present in every embodiment of the inventions—not just particular embodiments, like we have here. *See Alloc, Inc. v. Int’l Trade Comm’n*, 342 F.3d 1361, 1369–70 (Fed. Cir. 2003) (holding that when “all the figures and embodiments disclosed in the asserted patents imply” a certain requirement and the patents “do not show or suggest any systems” without the requirement, then the “specification read as a whole leads to the inescapable conclusion that the claimed invention must include [the requirement] in every embodiment.”); *see also Medicines Co. v. Mylan, Inc.*, 853 F.3d 1296, 1304–06 (Fed. Cir. 2017) (explaining that the specification and prosecution history described the “invention” (and not just a particular embodiment) to include the limitation and thus conveyed what the claims meant, even if the claims did not contain limitation).

Also, the specification’s language never mandates the limitations proposed by defendants. Instead, the specification reads: “The flow related individual control values *generally* comprise unitless values” Doc. 69-1 at 18 (’795 patent, col. 2 ll. 47–53) (emphasis added). By using the word “generally,” the specification contemplates other embodiments not requiring the limitations that the specification goes on to describe. The court thus refuses to read the proposed limitations into the term’s construction. *See Script Sec. Sols.*

L.L.C. v. Amazon.com, Inc., No. 2:15-CV-1030-WCB, 2016 WL 3959804, at *4 (E.D. Tex. July 22, 2016) (concluding that when the specification used “even looser language” by reciting that “the invention relates generally to,” the court could not treat that language “as disclaiming the broader claim scope suggested by the plain language of the claim.”).

Defendants also rely on the patents’ file history to support their construction. Defendants contend that the applicant distinguished prior art systems by explaining to the Examiner that “[a]s described in the present application, the disclosed system allows a *proportional* flow factor to be determined for each valve based on a variety of different control values.” Doc. 69-4 at 112 (emphasis added). By doing so, defendants contend, the applicant acted as his own lexicographer, requiring the court to include this limitation in the term’s construction. *See Phillips*, 415 F.3d 1316 (explaining that when the specification “reveal[s] a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess[,] [i]n such cases, the inventor’s lexicography governs.”).

It is true: “[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Phillips*, 415 F.3d at 1317. But, the court also should “reject[] prosecution statements [that are] too vague or ambiguous to qualify as a disavowal of claim scope.” *Omega Eng’g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1325 (Fed. Cir. 2003); *see also Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 833 (Fed. Cir. 2003) (“We therefore do not consider the applicants’ statement to be a clear and unambiguous disavowal of claim scope as required to depart from the meaning of the term provided by the written description.”). Instead, a statement made during prosecution must clearly and unmistakably disavow the scope of the claim. *Omega Eng’g*, 334 F.3d at 1325.

Here, plaintiff contends that defendants' argument ignores other parts of the file history. In particular, during prosecution of the '085 patent, the examiner initially rejected the claims because another patent—held by McQuinn—“discloses a system and method for applying liquids comprising a plurality of individually controlled valves . . . as to the individual control values and flow factors see col. 18, line 7 through col. 20, line 13.” Doc. 69-4 at 100. The cited portion of the McQuinn patent never discloses unitless, proportional values. *See* Doc. 69-6 at 26–27. So, plaintiff contends, the examiner understood the applicant also had not limited “individual control values” to unitless or proportional values.

Then, in the applicant's response to the Examiner's rejection, it distinguished McQuinn from the independent claims of the '085 patent because McQuinn never disclosed a system involving individual flow rates that vary without changing the overall application rate of the system. Doc. 69-4 at 113. Instead, McQuinn appeared to disclose a system where “the individual flow rates are varied solely as a function of the predetermined conditions of the field locations of each respective spray nozzle, which only allows for the system to achieve local spraying objectives.” *Id.* Thus, the applicant distinguished between the two systems because “the overall application rate of McQuinn's system will vary significantly as the individual flow rates of the nozzles are varied to accommodate changing field conditions.” *Id.* When distinguishing between the two systems in this fashion, the applicant never asserted that the '085 patent's claims differed from McQueen because it disclosed “unitless” and “proportional” limitations to the individual control value. The court thus refuses to find that the applicant's single reference to “proportional” in this one part of the prosecution history amounts to a “clear and unmistakable” disavowal of the scope of the claims that are disclosed both by the plain language of the '085 patent's claims and its specification. *Omega Eng'g*, 334 F.3d at 1325; *see*

also Ventana Med. Sys., Inc. v. Biogenex Labs., Inc., 473 F.3d 1173, 1182–83 (Fed. Cir. 2006) (refusing to find that the patentee’s statements in the prosecution history limited the claim scope where “the inventors did not rely on [the disputed term] as a distinction between the claims at issue in this case and the prior art” and “[i]nstead, in response to rejections over the prior art, the inventors limited their arguments to [another function of the claimed inventions].”).

In sum, the court concludes that the intrinsic evidence will not support defendants’ narrower construction of the term. Instead, the court concludes that the patents’ claims and specification support plaintiff’s proposed construction—with one exception. As defendants argue, plaintiff’s use of “etc.” doesn’t provide a precise definition of what the term means.³ The court is concerned that leaving the word in the definition of this term would broaden the term beyond the examples specifically provided for by patents. The court thus omits “etc.” from the proposed construction. And, it construes the term “flow related individual control value” to mean “a value that drives a change in flow rate for a valve in response to a condition affecting that valve during operation (e.g., in a turn, in heavy dust, behind a wheel).”

³ The court does not have the same concerns about the use of “*e.g.*” Plaintiff’s proposed construction uses that term to provide examples of the various conditions that may affect the value while operating—the listed examples are described both in the claims and the specification.

C. “flow factor”

Term	Plaintiff’s Construction	Defendants’ Construction
flow factor	A factor based on individual control values that dictates the rate at which liquid is emitted	The result of: (1) multiplying all of the individual control values together to create a multiplied value for each valve, and then (2) dividing each resulting multiplied value by an average of all the multiplied values

The parties’ dispute about this term involves whether “flow factor” must include a specific algorithm for calculating the flow factor. Defendants assert that a proper construction of the terms requires the algorithm’s inclusion. Plaintiff disagrees.

The claim language of the ’795 patent reads:

1. A system for applying agricultural products to a field comprising:
 - a plurality of individually controlled pulse width modulated valves that are configured to emit a liquid agricultural product at a rate based on volume per time;
 - a controller in communication with each of the valves, the controller being configured to receive multiple flow related individual control values for each valve, *the controller being configured to multiply the individual control values together for each valve to create a multiplied value and to divide each resulting multiplied value by an average of all the multiplied values to create a flow factor for each valve;* and
 - wherein the controller controls the rate at which the liquid agricultural product is emitted from each valve based on the calculated flow factor for each valve.

Doc. 69-1 at 27 (’795 patent, Claim 1) (emphasis added); *see also id.* at 28 (’795 patent, Claim 40). As emphasized in the quotation above, Claim 1 of the ’795 patent includes a specific algorithm for determining the flow factor. Defendants urge the court to construe the claim consistent with the algorithm used in the claim language.

But the '085 patent does not contain similar language. It reads, instead: “the controller being further configured to determine a flow factor for each valve based on the individual control values” Doc. 69-3 at 26 ('085 patent, Claim 1); *see also id.* ('085 patent, Claim 14). Plaintiff thus asserts that the intrinsic record demonstrates specifically that the patentee affirmatively omitted the specific algorithm from the '085 patent's claims, and thereby established that this term does not include the limitation of an algorithm.

Defendants respond that the specifications of both patents require the court to construe the term as one including the algorithm. The summary of the invention portion of the specification explains:

In accordance with the present disclosure, the multiple individual control values can be multiplied together to create a multiplied value for each valve. The multiplied value can then be divided by an average of all the multiplied values to create a flow factor for each valve. The controller is configured to control the rate at which the liquid agricultural product is emitted from each valve based upon the calculated flow factor for each valve.

Doc. 69-1 at 18 ('795 patent, col. 2 ll. 19–26); Doc. 69-3 at 17 ('085 patent, col. 2 ll. 23–27). A few columns later, the specification again describes the flow factor:

In accordance with the present disclosure, the controller is configured to multiply together the flow related individual control values for each valve. Each individual unitless value is then divided by the average of all individual valve or nozzle unitless values to create a flow factor for each valve or nozzle. The flow factor for each valve or nozzle can then be multiplied by a corporate pulse width modulation duty cycle percentage to achieve an unequal distribution of individual nozzle or valve flows that together meet the traditional corporate flow and pressure objectives.

Doc. 69-1 at 22 ('795 patent, col. 9 ll. 26–35); Doc. 69-3 at 21 ('085 patent, col. 9 ll. 26–35).

Also, Figure 1 illustrates the flow factor, as later described in the specification:

As shown in FIG. 1, the multiplied value of the individual control values for each valve is then multiplied by the count of actual values and then divided by the sum of actual values. In other words, the multiplied value for each valve is divided by

the average control value for all the valves. This resulting number represents a flow factor for each valve.

Doc. 69-1 at 22 ('795 patent, col. 10 ll. 62–67); Doc. 69-3 at 21 ('085 patent, col. 10 ll. 62–67).

Defendants assert that the '795 patent's claim language and the specifications for both patents establish that the applicant acted as his own lexicographer, expressly defining “flow factor” as a term that includes the algorithm. Plaintiff claims that defendants are wrong for three reasons.

First, plaintiff argues that portions of the specification (the ones defendants rely on) just describe particular embodiments, not the disclosed invention. The court agrees. Each description in the specification refers to the “present disclosure”—not the claimed invention. Thus, the cases defendants rely on to support their argument are inapposite here. *See Alloc, Inc.*, 342 F.3d at 1369–70 (holding that when “all the figures and embodiments disclosed in the asserted patents imply” a certain requirement and the patents “do not show or suggest any systems” without the requirement, then the “specification read as a whole leads to the inescapable conclusion that the claimed invention must include [the requirement] in every embodiment.”); *see also Amazin' Raisins Int'l, Inc. v. Ocean Spray Cranberries, Inc.*, 306 F. App'x 553, 557 (Fed. Cir. 2008) (holding that the specification “announce[d] the scope of the detailed description of the invention and precede[d] all other discussion of any embodiments or examples” and thus the court read the limitation into the claim, but noting that the case differed from other cases where courts decline to import limitations into a claim when the specification provides “varying definitions and usage for the claim terms at issue”). Unlike those cases, the specification here discusses the algorithm in the context of an exemplary embodiment—and does not impose a limitation that the court must read into every embodiment.

Plaintiff also contends the court cannot read limitations from an embodiment in the specification “into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *GE Lighting Sols., LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014); *see also Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012) (“It is . . . not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words.”). Here, plaintiff argues, the intrinsic record expressly shows that the applicant intended the opposite—*i.e.*, that the applicant never intended to import the limitations from the embodiment into the claim language. That is evident by the applicant’s express decision to exclude the algorithm from the ’085 patent.

Second, plaintiff argues, the applicant here never acted as a lexicographer because the applicant never defined “flow factor” as it did when defining other patent terms. Plaintiff contends that the applicant adopted a specific format for defining terms in the patent. Plaintiff provides three examples where the applicant expressly defined terms in the ’075 patent using unambiguous language. Those terms are: (1) “duty cycle percentage” (where the applicant recited: “The term duty cycle percentage of the pulsating valve *is defined* as the percentage of time the valve is open divided by the total operation time[.]” Doc. 69-1 at 21 (’795 patent, col. 7 ll. 64–66) (emphasis added)); (2) “liquid agricultural product” (where the applicant recited: “As used herein, a ‘liquid agricultural product’ *includes* solutions, emulsions, dispersions, suspensions, and the like[.]” *id.* at 18 (’795 patent, col. 2 ll. 6–7) (emphasis added)); and (3) “select” (where the applicant recited: “The term ‘select’ *is used to describe* user configured flow distributions for such benefits as extra rate on fence rows (to control weeds, etc.), extra rates over wheel tracks, extra rates on male vs. female plant rows, etc., where the rate

distribution is constant within a boom swath[,]" *id.* at 20 ('795 patent, col. 6 ll. 33–36) (emphasis added)).

In contrast, plaintiff argues, the applicant included no similar language to define “flow factor” in such a clear and unambiguous way. The passages from the specification refer only to exemplary embodiments. And the language in the '075 patent’s Claim 1—it included the algorithm—differs from the specific language used when the applicant wanted to define a term, *i.e.*, by stating that a term is “defined” or “includes” or “is used to describe.” The Federal Circuit instructs that courts should not conclude that a patentee has acted as its own lexicographer when a purportedly defined term “departs from [the] format” the patentee used to describe other terms. *Medicines Co. v. Mylan, Inc.*, 853 F.3d 1296, 1306 (Fed. Cir. 2017). This is so because such a departure “lacks the clear expression of intent necessary for the patentee to act as its own lexicographer.” *Id.*; *see also Abbott Labs. v. Andrx Pharms., Inc.*, 473 F.3d 1196, 1210–11 (Fed. Cir. 2007) (holding that the district court erred by finding that the patentee had acted as its own lexicographer because the patent “unambiguously provides definitions of other claim terms” but “[i]n contrast,” never “unambiguously signif[ies] that the description provided [for the disputed term] is definitional”). The court agrees. The patents here “lack the clear expression of intent necessary” to find that the applicant acted as its own lexicographer to define “flow factor.” *Medicines*, 853 F.3d at 1306. Defendants’ argument that the patentee here acted as its own lexicographer do not persuade the court.

Also, and as plaintiff illustrates, the specification describes the algorithm in optional terms—not mandatory ones. The specification teaches that “the multiple individual control values *can be* multiplied together,” and the “multiplied value *can then be divided* by an average of all the multiplied values to create a flow factor for each valve.” Doc. 69-1 at 18 ('795 patent,

col. 2 ll. 19–23) (emphasis added); Doc. 69-3 at 17 ('085 patent, col. 2 ll. 23–27) (emphasis added). The specification also provides: “The flow factor for each valve or nozzle *can then be* multiplied by a corporate pulse width modulation duty cycle percentage” Doc. 69-1 at 22 ('795 patent, col. 9 ll. 31–33) (emphasis added); Doc. 69-3 at 21 ('085 patent, col. 9 ll. 31–33) (emphasis added). Use of such permissive language suggests that the applicant never intended to require this limitation. *See E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369 (Fed. Cir. 2003) (concluding that use of the word “normally” suggested “a preferred aspect of the invention subject to variability rather than a precise definition); *see also Alloc*, 342 F.3d at 1378 (Schall, J., dissenting) (“‘Can’ and ‘may’ are commonly used by patentees to show that a limitation is permissive.”).

Third, plaintiff argues that the applicant never intended for the algorithm to define flow factor because the applicant explicitly took that language out of the claims in the '085 patent. Indeed, several Federal Circuit cases have concluded that, if a patentee broadens claims in a continuation patent by omitting claim limitations from the parent patent, courts should not reinsert those limitations into the continuation patent’s claims. *See Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1353–58 (Fed. Cir. 2004) (holding that progression of claim language showed that the patentee “purposefully sought” a claim broader in scope than its earlier one and “[a]bsent a clear disavowal or contrary definition in the specification or the prosecution history, the patentee is entitled to the full scope of its claim language”); *see also Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 632 F.3d 1246, 1254 (Fed. Cir. 2011) (“importing a . . . limitation improperly discounts substantive differences between the claims [and] [s]uch differences can be a useful guide in understanding the meaning of particular claim terms” (citation and internal quotation marks omitted)); *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d

1325, 1333 (Fed. Cir. 2010) (holding that the district court erred by construing a disputed claim term to include a limitation that appeared in earlier generations of the patent but not the continuation patent). *Enzo Biochem* explained the court’s reasoning: “The applicants knew how to claim [the limitation] as they did in the [earlier generation patents], but specifically omitted that language from the claims of the [continuation] patent. We therefore modify the construction of this limitation with regard to the [continuation] patent to [exclude the limitation that the district court improperly had included in its construction].” *Enzo Biochem*, 599 F.3d at 1333.

As plaintiff observes, defendants have cited no case where a patentee removed a limitation from a continuation patent only to have the court reinsert the limitation in its construction of the term. The court has found no such cases either.

Also, defendants argue that plaintiff cannot rely on the doctrine of claim differentiation to avoid reading the algorithm into the disputed term because, they contend, claim differentiation yields to clear disclosures in the specification. “The doctrine of claim differentiation is ‘based on the common sense notion that different words or phrases used in separate claims are presumed to indicate that the claims have different meanings and scope.’” *Starhome GmbH v. AT&T Mobility LLC*, 743 F.3d 849, 857–58 (Fed. Cir. 2014) (quoting *Karlin Tech. Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 971–72 (Fed. Cir. 1999)). “The doctrine is not a hard and fast rule, but instead a rule of thumb that does not trump the clear import of the specification.” *Id.* at 858 (citation and internal quotation marks omitted). In the cases defendants cite, the doctrine of claim differentiation did not “trump the clear import of the specification” because, the courts concluded, the specification described just one embodiment including the limitation. *Id.* So, even though the language of certain claims differed, the courts construed the terms as ones including limitations described in the specification because those limitations applied to every

embodiment of the invention. *See, e.g., Lydall Thermal/Acoustical, Inc. v. Federal-Mogul Corp.*, 344 F. App'x 607, 613–14 (Fed. Cir. 2009) (concluding that the specification disclosed a single embodiment of the invention and that claim differentiation could not expand the scope of the claim when the written description supported the more narrow construction of the disputed term); *see also ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1375–76 (Fed. Cir. 2009) (refusing to apply claim differentiation to exclude a limitation from a disputed term because the specification “never suggest[ed]” that the term would not include the limitation); *Eon-Net LP v. Flagstar Bancorp*, 653 F.3d 1314, 1323 (Fed. Cir. 2011) (holding that claim differentiation did not apply to exclude a limitation from construction of a claim term because “the written description define[d] the invention” in a particular way and thus rendered improper importing the limitation from the specification into the claim term). As already discussed, that’s not the case here. The specification describes only exemplary embodiments, and thus the court declines to read the algorithm limitation into the disputed term.

Defendants next argue that the prosecution history supports a construction of “flow factor” that includes the algorithm. Defendants direct the court to passages in the prosecution history where the applicant described flow factor by using the mathematical formula. *See* Doc. 69-7 at 7–8; *see also* Doc. 69-4 at 112–114. Defendants assert that the algorithm was critical to the Examiner’s decision to allow the patent because including the algorithm differentiated the invention from the prior art—the McQuinn patent. The court disagrees.

When the applicant applied for the '085 patent, the applicant removed the algorithm from the claims of this continuation patent. So, “[t]he patentee’s whole point in filing the application that resulted in the [continuation patent] was to secure broader claims.” *Advanced Cardiovascular Sys., Inc. v. Medtronic, Inc.*, 265 F.3d 1294, 1306 (Fed. Cir. 2001). Here, the

Examiner initially rejected the application because McQuinn’s patent had disclosed flow factors. Doc. 69-4 at 100. Indeed, the Examiner recited the specific lines from the McQuinn patent that made this disclosure. *Id.* Plaintiff argues that the absence of a specific algorithm in the McQuinn patent shows that the Examiner must have understood that the ’085 patent application also did not restrict the term “flow factor” to a specific algorithm. *See In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011) (finding that the examiner “clearly conveyed his understanding that [the applicant’s invention] was broad enough to encompass [prior art]” when the examiner provided “the specific column and line cites to the prior art reference” thus “put[ting] any reasonable applicant on notice of the examiner’s rejection”).

In its response to the Examiner’s rejection, the applicant never contested whether McQuinn discloses a “flow factor.” Instead, as discussed above, the applicant distinguished McQuinn from the independent claims of the ’085 patent by amending Claim 1 to include a limitation bearing on the term “overall application rate.” Doc. 69-4 at 112; *see also supra* p. 12–13. The applicant never made any similar amendments to the term “flow factor.” The prosecution history thus shows that “the applicant’s attention was called to the examiner’s interpretation of” the term, and “also that the applicant was invited to correct the examiner’s interpretation—an invitation the applicant did not accept.” *Fuji Photo Film Co., Ltd. v. Int’l Trade Comm’n*, 386 F.3d 1095, 1100 (Fed. Cir. 2004). So here, “the applicant’s failure to correct the examiner’s characterization” of “flow factor” as a term that McQuinn also discloses “support[s] the inference” that the applicant’s silence in response to the examiner’s understanding of that term “was not inadvertent.” *Id.*

Finally, defendants assert that plaintiff’s proposed construction renders it invalid for indefiniteness under 35 U.S.C. § 112. “[A] patent is invalid for indefiniteness if its claims, read

in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014). “A claim will be found indefinite only if it ‘is insolubly ambiguous, and no narrowing construction can properly be adopted.’” *PureChoice, Inc. v. Honeywell Int’l, Inc.*, 333 F. App’x 544, 548 (Fed. Cir. 2009) (quoting *Exxon Research & Eng’g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001)). But “several well-settled principles tend to discourage rulings on indefiniteness at the *Markman* stage.” *Uretek Holdings, Inc. v. YD W. Coast Homes, Inc.*, No. 8:15-CV-472-T-36JSS, 2016 WL 3021880, at *3 (M.D. Fla. May 26, 2016) (quoting *CSB-Sys. Int’l, Inc. v. SAP Am., Inc.*, No. 10-2156, 2011 WL 3240838, at *17 (E.D. Pa. July 28, 2011)). “First, the burden of proof is higher for establishing indefiniteness than for determining a term’s construction.” *Id.* “Second, the legal standard for evaluating indefiniteness is different than [the standard] for determining a term’s construction.” *Id.* “These differences arise from the fact that ‘unlike a *Markman* proceeding that gives meaning to patent claims, indefiniteness invalidates the claims entirely.’” *Id.* (quoting *CBS-Sys.*, 2011 WL 3240838, at *18). And, the Federal Circuit has cautioned, it “certainly [has] not endorsed a regime in which validity analysis is a regular component of claim construction.” *Phillips*, 415 F.3d at 1327.

These principles often lead courts to “decline[] to make invalidity determinations at the claim construction stage.” *Uretek*, 2016 WL 3021880, at *3 (collecting cases). Instead, courts have reasoned, “[I]t would be more appropriate and logical to defer the full consideration of any potential indefiniteness challenge to the summary judgment stage, after all fact and expert discovery has been completed.” *Id.*; see also *Intergraph Hardware Techs. Co. v. Toshiba Corp.*, 508 F. Supp. 2d 752, 773 n.3 (N.D. Cal. 2007) (“[The] indefiniteness argument is inappropriate

at the claim construction stage.”). Thus, at the claim construction stage, courts will consider “indefiniteness arguments ‘to determine only whether such claims are amenable to construction and, if so, what construction is appropriate for the claimed ambiguous terms in light of the present intrinsic and extrinsic evidence provided.’” *Uretek*, 2016 WL 3021880, at *3 (quoting *CSB-System Int’l*, 2011 WL 3240838, at *18). Here, the court finds that the disputed term is amenable to construction using the available intrinsic and extrinsic evidence. The court thus declines at this stage of the litigation to consider whether the court’s construction renders the claim indefinite. The court’s construction conclusion does not foreclose defendants from asserting invalidity challenges based on indefiniteness at some later stage in the proceeding. *See Uretek*, 2016 WL 3021880, at *3 (refusing to rule on indefiniteness at the *Markman* stage but preserving defendants’ ability to assert such a challenge at the summary judgment stage); *see also CSB-System Int’l*, 2011 WL 3240838, at *18 (same).

The court thus adopts plaintiff’s proposed construction to define the term “flow factor.” The court agrees with plaintiff that its proposed construction more faithfully tracks the language of the claims and is supported by the specification and the prosecution history. The intrinsic evidence shows that the “flow factor” is: (1) a factor, (2) based on individual control values, (3) that dictates the rate at which liquid is emitted.

The claims disclose a system comprising a controller that is configured to receive “flow related individual control values for each valve” that “create a flow factor for each valve” that “var[ies] the rate at which the liquids agricultural product is emitted from each valve based on changing flow factors” Doc. 69-1 at 27 (’795 patent, Claim 1); *see also* Doc. 69-3 at 26 (’085 patent, Claim 1) (disclosing a controller that is configured to determine “flow factor for each valve based on the individual control values” that “vary the rate at which the liquid is

emitted from each valve as the flow factor for each valve changes”). The specification describes “flow factor” in a fashion that resembles the way the claims describe this term. It discloses a controller that receives multiple individual control values for each valve used “to create a flow factor for each valve” and one that “control[s] the rate at which the liquid agricultural product is emitted from each valve based upon the calculated flow factor for each valve.” Doc. 69-1 at 18 (’795 patent, col. 2, ll. 11–26); Doc. 69-3 at 17 (’085 patent, col. 2, ll. 15–30).

Finally, the prosecution history of the ’085 patent shows that the applicant explained as much:

The controller is configured to receive a plurality of flow related individual control values for each valve and, *based on the control values, determine a flow factor for each valve*. Moreover, the controller is also configured *to vary the rate at which the liquid is emitted from each valve as the flow factor for each valve changes* without changing the overall application rate.

Doc. 69-4 at 112 (emphasis added).

All of this intrinsic evidence supports plaintiff’s proposed construction of the term. The court thus construes the term “flow factor” to mean: “A factor based on individual control values that dictates the rate at which liquid is emitted.”

D. “a controller in communication with each of the valves”

Term	Plaintiff’s Construction	Defendants’ Construction
a controller in communication with each of the valves	A device or group of devices in communication with each of the valves	A single controller that calculates and communicates all of the valves their individual (normalized) duty cycles

The parties dispute whether the term “a controller in communication with each of the valves” discloses a single controller versus a single or multiple controllers. The parties also disagree whether the construction must identify what the controller communicates. The court addresses each argument separately, below.

1. Should the court construe the term as one including a “group of devices” or just a “single controller”?

Defendants argue that the plain language of the ’085 patent’s claims make clear that the patentee identified only a single controller because the claims repeatedly refer to the controller in the singular, consistently using a definite article, “*the controller.*” Defendant cites several such examples from the claim language:

[A] controller in communication with each of the valves, *the controller* being configured to receive a plurality of flow related control values for each valve, *the controller* being further configured to determine a flow factor for each valve based on the individual control values, wherein *the controller* is configured to vary the rate at which the liquid is emitted from each valve as the flow factor for each valve changes without changing the overall application rate.

Doc. 69-3 at 26 (’085 patent, Claim 1) (emphasis added).

[T]he controller being configured to determine the normalized duty cycle percentage for each valve based on the flow factor for each valve and a corporate duty cycle percentage.

Id. (’085 patent, Claim 2) (emphasis added).

[T]he controller is configured to close one of the plurality of valves when at least one of the individual control values for such valve is equal to zero.

Id. ('085 patent, Claim 4) (emphasis added).

[T]he controller being configured to control at least one of the plurality of pulse width modulated valves in conjunction with a non-pulsating valve.

Id. ('085 patent, Claim 11) (emphasis added).

The system of Claim 1, further comprising a rate controller and a flow sensor communicatively coupled to *the controller*, wherein a flow signal transmitted by the flow sensor is modified by *the controller* based on the flow factors, the modified flow signal being transmitted to the rate controller in order to maintain the overall application rate.

Id. ('085 patent, Claim 13) (emphasis added).

The '795 patent's claim language is similar: It refers to the controller by using the definite article "the." Doc. 69-1 at 27–28 ('795 patent, Claims 1–7, 23, 26, 31, 33–34, 36, 38–39).

The specification also describes the controller as one single device, again using the singular article—"the." *See* Doc. 69-1 at 18 ('795 patent, col. 2 ll. 11–13) ("The system further includes a controller in communication with each of the valves. *The controller* is configured to receive multiple flow related individual control values for each valve." (emphasis added)); *see also id.* ('795 patent, col. 2 ll. 24–26) ("*The controller* is configured to control the rate at which the liquid agricultural product is emitted from each valve based upon the calculated flow factor for each valve." (emphasis added)); *id.* at 19 ('795 patent, col. 3 ll. 46–47) ("*the controller* calculates a duty cycle percentage for each valve." (emphasis added)); *id.* at 24 ('795 patent, col. 13 ll. 65–67) ("In this regard, *the controller* can continuously calculate flow factors for each valve during the process." (emphasis added)); *id.* at 3 ('795 patent, Abstract) ("the overall system

flow control performed by *the commercial rate controller.*” (emphasis added)); *id* at 8 (’795 patent, Fig. 4) (showing one controller, element 20).

Plaintiff responds, arguing that defendants’ proposed construction conflicts with four things: (1) the preferred embodiment, (2) the prosecution history, (3) the prior art, and (4) a definition taken from a relevant technical dictionary. *First*, plaintiff recites part of the specification that discloses an embodiment in this fashion: “The individual valves or nozzles are in communication with a corresponding valve control module. In the embodiment illustrated, a single valve control module *may be in communication with up to nine different valves.*” Doc. 69-1 at 25 (’795 patent, col. 15 ll. 33–37) (emphasis added). In this embodiment, the valve control modules “control individual nozzle or valve pulses”—which, plaintiff explains, is the rate at which liquid agricultural product is emitted from each valve. *Id.* (’795 patent, col. 15 ll. 31–33). Plaintiff asserts that this language discloses a preferred embodiment that includes a controller consisting of multiple modules acting together as a functional unit. Plaintiff thus contends that the court should not construe the term to exclude this preferred embodiment.

Defendants respond to plaintiff’s pitch, noting that the embodiment disclosed is not the preferred embodiment, and thus the court need not construe the claim to cover just an exemplary embodiment. Indeed, the specification never identifies this embodiment—one that isn’t described until the 15th column of the specification—as the “preferred embodiment.” *Cf. On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer*, 386 F.3d 1133, 1138 (Fed. Cir. 2004) (noting that the specification specifically referred to the “preferred embodiment”). But, even if it is a preferred embodiment, the court agrees with defendants that the interpretation used by plaintiff’s argument never discloses multiple devices functioning together as the claimed controller. The patents identify the controller as element 20 in Figure 4. Doc. 69-1 at 8 (’795 patent); Doc. 69-3

at 7 ('085 patent). The patent also identifies other devices—valve control modules—labeled element 23 in Figure 4. Doc. 69-1 at 8 ('795 patent); Doc. 69-3 at 7 ('085 patent). The valve control modules are not the same thing as the controller. The patents do not teach that they perform the tasks of a controller such as receiving individual flow related values, using those values to calculate flow factors, or varying flow rates based on the calculated flow factors. Instead, the patents just describe that the valve control modules relay signals from the controller to the valves. Doc. 69-1 at 25 ('795 patent, col. 15 ll. 31–37, col. 15 l. 50–col. 16 l. 49); Doc. 69-3 at 24 ('085 patent, col. 15 ll. 31–37, col. 15 l. 49–col. 16 l. 48). Because these devices perform different functions than the controllers and the patents identify them as devices separate from the controller, the court declines to conclude that this embodiment discloses multiple controllers.

Second, plaintiff asserts that the prosecution history supports construing “controller” to include multiple devices. Plaintiff again relies on the Examiner’s initial rejection of the application based on prior art—the McQuinn patent. Plaintiff contends that the McQuinn patent discloses a multi-module controller and that the Examiner understood the applicant’s disclosed invention to do the same—thus, providing one of the reasons for the rejection. Because the applicant never amended the claims to address this similarity between its invention and the prior art, plaintiff contends, the court must conclude that the Examiner and the applicant understood the disclosed invention included a controller consisting of multiple devices. The court disagrees.

Although the Examiner identified both the '085 patent application and McQuinn’s patent to disclose a controller, Doc. 69-4 at 100, the controller described by McQuinn differs significantly from the one described in the patents at issue here. The McQuinn patent’s claims disclose a “control system” that communicates with each nozzle and a positioning system to

control application rates. Doc. 69-6 at 28 (McQuinn, Claims 1–5). And the McQuinn specification describes a “control system” with a host computer, keyboard, monitor, and multiple independent nodes that are capable of two-way communication between the host computer and the respective node. *Id.* at 22 (McQuinn, col. 10 ll. 7–17). In contrast here, the patents just describe a single “controller.” These stark differences make it unlikely that the Examiner was equating the two controllers as both consisting of multiple devices. Instead, it appears the Examiner merely was noting that both inventions disclosed a controller that controlled individual nozzle flow.

Also, during prosecution of the ’085 patent, the applicant amended the claim language that described the controller. The applicant changed “wherein the controller is configured to *control* the rate at which the liquid is emitted” to “wherein the controller is configured to *vary* the rate at which the liquid is emitted.” Doc. 69-4 at 109. As defendants assert, the patents describe how the invention varied its output—the process involved one, single controller receiving the flow related individual control values, determined a flow factor for each valve, and used that flow factor to vary the rate of output for each nozzle. The patents identify no other devices that perform this function. Thus, the court concludes, the prosecution history does not support a construction that the “controller” can consist of multiple devices.

Third, plaintiff asserts that prior art cited in the patents demonstrates that multi-module controllers were standard in the prior art. The Federal Circuit recognizes that “prior art can often help to demonstrate how a disputed term is used by those skilled in the art.” *Vitronic Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1584 (Fed. Cir. 1996). But the Circuit also has cautioned that “reliance on such evidence is unnecessary, and indeed improper, when the disputed terms can be understood from a careful reading of the public record.” *Id.* (citation omitted). “Nor may it be

used to vary claim terms from how they are defined, even implicitly, in the specification or file history.” *Id.* Here, the court need not consider evidence of prior art because the court can understand the meaning of the disputed term from the claims, specification, and prosecution history. And the prior art provides no reason to vary the term “controller” from how the patents themselves define that term.

Finally, plaintiff relies on a technical dictionary to support its construction of “controller.” Plaintiff cites a dictionary that defines “controller” as “a device or group of devices” and “a functional unit.” Although a dictionary “can be useful in claim construction,” it still amounts to “extrinsic evidence” that is considered “less significant than the intrinsic record in determining the legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317–18 (citations and internal quotation marks omitted). And, the Federal Circuit has instructed, courts should not resort to dictionary definitions to define claim terms when the intrinsic evidence provides the meaning clearly. *Phillips*, 415 F.3d at 1319–24; *see also W.E. Hall Co., Inc. v. Atlanta Corrugating, LLC*, 370 F.3d 1343, 1350 (Fed. Cir. 2004) (“While dictionaries may be used to ascertain the plain and ordinary meaning of claim terms, the intrinsic record is used to resolve ambiguity in claim language or, where it is clear, trump inconsistent dictionary definitions.” (citation omitted)). Because the court can discern the meaning of the term from the intrinsic evidence, it declines to consider the dictionary’s definition to arrive at a different construction.

In sum, the court concludes that defendants’ construction of “a controller in communication with each of the valves” more closely aligns with the plain language of the claims and the specification. Both refer to a single “controller,” using the article “the” throughout. *See Convolv, Inc. v. Compaq Computer Corp.*, 812 F.3d 1313, 1322–23 (Fed. Cir.

2016) (concluding that a claim using “the definite article ‘the’ to refer to the ‘processor’ . . . supports a conclusion that . . . the claims . . . require the user to interface to work with a single processor to perform all of the recited steps”). As defendants argue, if the patentee had wanted to define the “controller” as consisting of multiple devices, then the patentee easily could have said so in the patents’ claims and the specification. But the patentee didn’t. The court adopts defendants’ proposed construction insofar that it defines “a controller in communication with each of the valves” as “a single controller.”

2. Should the court construe the term to include the function of the controller?

The next facet of the dispute for this term turns on the content communicated by the controller. Defendants contend that plaintiff’s proposed construction falls short because it never identifies what the controller communicates. Defendants direct the court to the claim language and the specification to show that the controller’s function is to calculate and send each valve its individual/normalized duty cycle. Doc. 69-1 at 18 (’795 patent, col. 2 ll. 40–43); *id.* at 27 (’795 patent, Claim 1).

Plaintiff asserts that no reason exists to include the functionality. Plaintiff contends that the claims themselves already explain the function of the controller and that adding the functionality gloss to the construction will make the construction more confusing. Plaintiff cites a case where a court concluded that construing the term “enable controller” to include the controller’s functionality was “both confusing and unnecessary” because the claim limitations “already defined . . . the remainder of the claim limitation.” *Lunareye, Inc. v. Indep. Witness, Inc.*, No. 9:05-cv-188, 2006 WL 2854490, at *6 (E.D. Tex. Oct. 3, 2006). The court in that case thus found no reason to import the functionality limitations “into the construction of ‘enable controller’ itself.” *Id.*

But *Lunareye* differs from this case’s claim construction dispute. In *Lunareye*, the court was construing the term “enable controller”—a noun and not a subject-verb-object combination. The term did not include any functionality. But here, the disputed term already includes the controller’s function. The parties have asked the court to construe, “a controller in communication with each of the valves.” So, the court must construe the meaning of that functionality—*i.e.*, “in communication with the valves.” The court agrees with defendants that the claims and specification describe the function of the controller as calculating and communicating the individual (normalized) duty cycles to each of the valves. The court thus adopts defendants’ proposed construction. But it adds one word to the construction to make the construction more clear. It inserts the word “to” to explain that the controller communicates “to” the valves their individualized (normalized) duty cycles. The court thus construes the term “a controller in communication with each of the valves” to mean: “A single controller that calculates and communicates to all of the valves their individual (normalized) duty cycles.”

E. “corporate duty cycle percentage” and “normalized duty cycle percentage”

Term	Plaintiff’s Construction	Defendants’ Construction
corporate duty cycle percentage	A nominal duty cycle percentage applied to each valve to achieve a desired overall application rate under baseline operating conditions	The ratio of the amount all active valves are opened versus the total operation time, which is input into, or received by, the controller, and which corresponds to the overall desired application rate of the liquid under baseline operating conditions ⁴
normalized duty cycle percentage	A duty cycle percentage for a valve that is derived from the flow factor for the valve and the corporate duty cycle	The result of multiplying the flow factor for each valve by the corporate duty cycle percentage

The parties address these two terms together because they are related. The term “corporate duty cycle percentage” appears in just two claims in each patent. Doc. 69-1 at 27–28 (’795 patent, Claims 3 & 40); Doc. 69-3 at 26–27 (’085 patent, Claims 2 & 15). The term “normalized duty cycle percentage” appears nowhere in the ’795 patent’s claims, but is found in four dependent claims of the ’085 patent. Doc. 69-3 at 26–27 (’085 patent, Claims 2, 3, 15, & 16).

The specification describes “duty cycle percentage” in this fashion: “[T]he rate at which the agricultural product is dispensed from the valves is based upon a duty cycle percentage that is calculated by the controller.” Doc. 69-1 at 19 (’795 patent, col. 4 ll. 26–28). Plaintiff explains

⁴ The court recites defendants’ proposed construction from their most recent filing—the parties’ Joint Notice Regarding the Outcome of Claim Construction Negotiations. Doc. 84 at 2. This construction differs slightly from the one defendants proposed in the Joint Claim Construction Chart (Doc. 62 at 2) and in defendants’ Responsive Claim Construction Brief (Doc. 73 at 24).

that this term means the percentage of time that a valve is opened, rather than closed—essentially, the pulse rate of a valve.

Plaintiff asserts that the specification describes one embodiment where the controller determines the desired flow rates from each valve by reference to a baseline set point called a “corporate duty cycle.” Doc. 69-1 at 18 (’795 patent, col. 2 ll. 27–36). This one embodiment of the invention describes the “corporate duty cycle” as a “nominal” percentage that is applied to each valve to achieve the desired flow rate if every valve were emitting at the same rate. *See* Doc. 69-1 at 23 (’795 patent, col. 11 ll. 4–8).

Defendants assert that the more appropriate construction of this term requires defining the “corporate duty cycle percentage” as a “ratio,” not a percentage. Defendants support their proposed construction with three passages from the specification. *See* Doc. 63-1 at 33. But none of these passages refer to a “ratio.” And two of the passages refer only to the “duty cycle percentage,” not the “*corporate* duty cycle percentage. Also, and as plaintiff explains, defendants’ proposed construction produces a corporate duty cycle percentage that changes based on the operational state of the valves—whether they are opened or closed. That is not the lesson of the specification. Instead, the specification describes the corporate duty cycle percentage as one based on the overall application rate, and then the corporate duty cycle percentage is used to determine the percentage of time that each valve is opened. Doc. 69-1 at 17 (’795 patent, col. 2 ll. 27–36).

Also, and as plaintiffs explained at the *Markman* hearing, applying defendants’ proposed construction using a real world example produces an impossible result. If a sprayer has 10 valves, each operating at a 50% duty cycle and 100 ms total operation time, “the ratio of the amount of active valves [that] are opened versus the total operation time” looks like this:

$$\frac{\text{Amount all active valves are opened} = (50\% \times 100 \text{ ms}) \times 10 \text{ valves} = 500 \text{ ms}}{\text{Total operation time} = 100 \text{ ms}}$$

This equation produces a percentage of 500%. This calculation does not square with the teachings of the patents.

Instead, the courts finds that plaintiff's proposed construction of the term "corporate duty cycle percentage" is more consistent with the patents' claims and specification. For this reason, the court adopts plaintiff's proposed construction.

Turning to the other disputed term—"normalized duty cycle percentage"—the '085 patent uses this term in Claim 2. It recites that the system disclosed emits liquid from each valve at a rate "based on a normalized duty cycle percentage . . . for each valve based on the flow factor for each valve and a corporate duty cycle percentage." Doc. 69-3 at 26 ('085 patent, Claim 1). The specification also describes this term as "[t]he flow factor for each valve . . . multiplied by the corporate duty cycle percentage." *Id.* at 22 ('085 patent, col. 11 ll. 4–8). Plaintiff explains that the term means the actual duty cycle percentage assigned to each valve. Plaintiff asserts that the specification describes that the normalized duty cycle percentage is derived from applying the flow factor to the corporate duty cycle, thereby determining the degree by which a valve should depart from the corporate duty cycle percentage, and in what direction (*i.e.*, a higher or lower flow rate). *Id.*

Defendants contend that the court should construe the term to use the word "multiply" instead of plaintiff's proposed construction of "derived." Defendants assert that plaintiff's proposed construction ignores the express teachings of the specification which explain that the normalized duty cycle percentage is based on "[t]he flow factor for each valve . . . multiplied by the corporate duty percentage." *Id.* ('085 patent, col. 11 ll. 4–8) (emphasis added). But, as plaintiffs assert, the specification describes just one embodiment. And courts do not read

limitations from an embodiment described in the specification “into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *GE Lighting Sols. LLC*, 750 F.3d at 1309; *see also Sony Computer Entm’t Am. LLC*, 669 F.3d at 1366 (“It is . . . not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words.”). Here, defendants provide no intrinsic evidence showing a clear indication that the patentee intended to limit the term as defendants’ construction proposes. The court thus adopts plaintiff’s proposed construction.

In sum, the court adopts plaintiff’s proposed construction for “corporate duty cycle percentage” and “normalized duty cycle percentage.” The court construes “corporate duty cycle percentage” to mean: “A nominal duty cycle percentage applied to each valve to achieve a desired overall application rate under baseline operating conditions.” The court construes “normalized duty cycle percentage” to mean: “A duty cycle percentage for a valve that is derived from the flow factor for the valve and the corporate duty cycle.”

III. Conclusion

The court has construed the disputed patent claim terms at the parties’ request. After reviewing the parties’ submissions and considering the arguments presented at the hearing, the court construes the disputed claim terms in accordance with this Order. The court provides its construction for each term in the chart below.

The court also directs the parties to submit an amended joint planning report to Magistrate Judge K. Gary Sebelius within 14 days of this Order, as the Scheduling Order requires. *See Doc. 41 at 2.*

Term	Court's Construction
overall application rate	The measured total volume of liquid emitted from all of the valves in the system per unit of time (measured in volume per time)
flow related individual control value	A value that drives a change in flow rate for a valve in response to a condition affecting that valve during operation (e.g., in a turn, in heavy dust, behind a wheel)
flow factor	A factor based on individual control values that dictates the rate at which liquid is emitted
a controller in communication with each of the valves	A single controller that calculates and communicates to all of the valves their individual (normalized) duty cycles
corporate duty cycle percentage	A nominal duty cycle percentage applied to each valve to achieve a desired overall application rate under baseline operating conditions
normalized duty cycle percentage	A duty cycle percentage for a valve that is derived from the flow factor for the valve and the corporate duty cycle

IT IS THEREFORE ORDERED BY THE COURT that the disputed terms of the '795 and '085 patents are construed as set forth in this Order.

IT IS SO ORDERED.

Dated this 20th day of February, 2018, at Topeka, Kansas.

s/ Daniel D. Crabtree
Daniel D. Crabtree
United States District Judge