UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

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| ST REPRODUCTIVE TECHNOLOGIES, LLC d/b/a STINSIGHT, | § | |
| Plaintiff, | § | |
| v. | § | Civil Action No. 24-cv-00037-JDP |
| SMAXTEC INC. and SMAXTEC ANIMAL CARE GMBH, | § | JURY TRIAL DEMANDED |
| Defendants. | § | |

**PLAINTIFF'S FIRST AMENDED COMPLAINT**

Plaintiff, ST Reproductive Technologies, LLC d/b/a STinsight ("STinsight"), files this First Amended Complaint for patent infringement, damages, and injunctive relief against smaXtec Inc. and smaXtec Animal Care GmbH (collectively, "Defendants"). In support of the Complaint, STinsight alleges as follows:

## I. THE PARTIES

1. STinsight is a limited liability company organized under Delaware law. STinsight's principal place of business is at 22575 State HWY 6 South, Navasota, Texas 77868.

2. smaXtec Inc. is a company organized under Wisconsin law with its principal place of business in Madison, Wisconsin. smaXtec Inc. may be served by delivering a copy of the complaint to its registered agent for service of process: John Etter, 4009 Felland Road, Suite 109, Madison, Wisconsin 53718.

3. smaXtec Animal Care GmbH ("smaXtec Animal Care") is a corporation organized under the laws of Austria. On information and belief, smaXtec Animal Care's principal place of business is Sandgasse 36/2, 8010 Graz, Austria.



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 1 of 66

## II. NATURE OF THE ACTION

4. This civil action includes claims against smaXtec Animal Care and smaXtec Inc. for infringement of U.S. Patent No. 8,823,515 ("the '515 Patent"), U.S. Patent No. 9,844,206 ("the '206 Patent"), and U.S. Patent No. 10,231,644 ("the '644 Patent") (collectively, "the STinsight Patents") under the patent laws of the United States, 35 U.S.C. § 271 *et seq.*

5. STinsight is seeking damages, enhanced damages, prejudgment interest, attorneys' fees, and any other relief that is available and warranted under applicable law from smaXtec Animal Care and smaXtec Inc.

## III. JURISDICTION AND VENUE

6. This Court has subject matter jurisdiction over this matter pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, including 35 U.S.C. § 271 *et seq.*

7. This Court has personal jurisdiction over smaXtec Inc. because smaXtec Inc. is incorporated in this state, has its principal place of business in this district, has continuous and systematic contacts with this state, and has committed acts within this state and this judicial district that give rise to this action.

8. This Court has personal jurisdiction over smaXtec Animal Care because smaXtec Animal Care has continuous and systematic contacts with this state and has committed acts within this state and this judicial district that gave rise to this action. In addition, smaXtec Animal Care is smaXtec Inc.'s parent company and, upon information and belief, smaXtec Animal Care directs and controls certain actions of smaXtec Inc. within this state and this judicial district that pertain to the allegations in this Complaint.

9. Venue is proper against smaXtec Inc. under at least 28 U.S.C. § 1400 because smaXtec Inc. has committed an act of infringement in this district and has a regular and



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 2 of 66

established place of business in this district. Venue is also proper against smaXtec Inc. under 28 U.S.C. § 1391(b)(2) because a substantial part of the events giving rise to the claims occurred in this district.

10. Venue is proper against smaXtec Animal Care under at least 28 U.S.C. § 1400 because it has committed acts of infringement in this district and has a regular and established place of business in this district. Venue is also proper against smaXtec Animal Care under at least 28 U.S.C. § 1391(b)(2) because a substantial part of the events giving rise to the claims occurred in this district. To the extent smaXtec Animal Care is not deemed to reside in this district for any particular claim or claims, venue is proper under 28 U.S.C. § 1391(c)(3), which mandates that defendants not resident in the United States may be sued in any judicial district.

## IV. FACTUAL BACKGROUND

11. As part of its business, STinsight researches, develops, uses, and commercializes technology related to novel herd tracking and management systems. In general, these systems track and manage animal herds by collecting and analyzing stored data and data transmitted from sensors implanted in the animals. For example, the system could include a device implanted in a cow's reticulum (the "second stomach") to measure and record data, such as location data, identification data, and temperature. The data is linked to a database where it can be used to assess and monitor the animal's health in real-time. The STinsight Patents asserted here relate to such technology and are used in STinsight's own commercially available bolus-based health monitoring and herd management system.

12. As explained below, the claims of the STinsight Patents are patent eligible because they are not directed to abstract ideas or any other ineligible subject matter, and they include inventive concepts. The eligibility of the STinsight patents is supported by the expert declaration of Dr. Petra Meier, DVM, a veterinarian with over 15 years of experience in herd



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 3 of 66

management who has reviewed the STinsight patents and claims. Dr. Meier's declaration is attached as Exhibit D (cited as "Meier Decl.").

13. In summary, with respect to the '515 and '206 Patents, Dr. Meier has determined that the claims of the '515 and '206 Patents are "directed to the use of a specific, tangible device with a specific configuration to provide technological improvements in a specific field." Meier Decl., ¶ 45; *see also, e.g., id.*, ¶¶ 30, 47–51, 54, 56, 57. Particularly, "the claims are directed to the use of an RFID device implanted in an animal to provide improvements to animal tracking and herd management." *Id.*, ¶ 45. Thus, in Dr. Meier's opinion, the claims are not directed to any abstract idea, such as "collecting and analyzing information." *Id.*, ¶ 43; *see also, e.g., id.*, ¶¶ 47, 50, 51, 55, 57. Moreover, Dr. Meier has concluded that the claims include numerous "inventive concepts" and contain elements and combinations of elements that are not "well-understood, routine, and conventional." *Id.*, ¶¶ 43, 59–68.

14. With respect to the '644 Patent, Dr. Meier has analyzed the specification and claims and has concluded that claim 5 "is directed to the use of a specific, tangible device with a specific configuration to provide technological improvements in a specific field," namely "the use of a bolus configured with a sensor and radio signal generator that is orally administered to a ruminant animal to provide improvements to bolus and herd management technology, specifically by saving power." Meier Decl., ¶ 77; *see also, e.g., id.*, ¶¶ 75, 78–80, 83. Dr. Meier has also concluded that claim 5 recites "inventive concepts" and elements and combinations of elements that are not "well-understood, routine, and conventional." *Id.*, ¶¶ 80–82; *see also, e.g., id.*, ¶¶ 75, 83.

**The ’515 and ’206 Patents**

15. The ’515 Patent is entitled “Computer Implemented Animal Management System.” The PCT application that issued as the ’515 Patent was filed on September 14, 2010, and the U.S. Patent and Trademark Office issued the ’515 Patent on September 2, 2014.

16. The ’206 Patent is entitled “Computer Implemented Animal Management System.” The application that issued as the ’206 Patent was filed on August 29, 2014, and the U.S. Patent and Trademark Office issued the ’206 Patent on December 19, 2017.

17. The ’515 and ’206 Patents share a patent specification, and both claim priority to provisional application 61/276,723, which was filed on September 15, 2009. The ’206 Patent also claims priority to the PCT application filed on September 14, 2010 that led to the ’515 Patent. Because the patents share a specification, citations to the specification of either patent herein apply to both patents.

18. STinsight acquired the ’515 and ’206 Patents from Bella Technologies, LLC. STinsight owns the entire right, title, and interest to the ’515 and ’206 Patents, including the right to sue for past, current, and future damages.

19. As explained more below, the inventions claimed in the ’515 and ’206 Patents are directed to specific systems and methods for tracking and managing animals that include the implantation of radio-frequency identification devices in the animal. The implanted devices collect information on the animal (*e.g.*, identification data, location data, and temperature) and are integrated into a system that receives and analyzes the information. The claimed systems and methods allow for significant advantages in the art, particularly for cattle breeders and dairy farmers. For example, claim 1 of the ’515 Patent and claim 17 of the ’206 Patent require a “device implanted in an animal” that collects data and “links” or “matches” that data with information stored in an external database. Such data can include the temperature of the animals



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 5 of 66

across a herd, which those in the art rely on to assess the health of the animals and provide appropriate treatment as needed. The claims thus enable numerous advantages including, for example, the automatic and frequent collection of temperature data, as opposed to the conventional method of taking the rectal temperature of individual animals infrequently (*e.g.*, once per day). This reduces labor time and expense, reduces stress on the animals from repeated measurement of rectal temperature, and allows better and safer treatment options from earlier detection. As another example, claim 17 of the '206 Patent specifically requires "retriev[ing] date-time information" from the implanted device in addition to retrieving "animal information." This exemplifies how the claimed systems can be used to continuously monitor the temperature of an animal, determine an average temperature for that animal, and correlate each temperature reading with the time of day. This is advantageous because animals' temperatures often fluctuate throughout the day, and thus the claimed invention allows those in the art to more reliably assess the health of the animal. The patents are discussed in more detail below.

20. The '515 and '206 Patents generally relate to implanted RFID devices incorporated into systems for managing and tracking animals in a herd, such as a herd of cattle. The Technical Field section of the patents describes a "radiofrequency identification device" used with "a computer implemented animal management method which matches animal information retrieved from [the] radiofrequency identification device implanted in an animal with animal information retrieved from a database of at least one computer." '515 Patent at 1:13–2:18; *see also id.* at Abstract (describing "radiofrequency identification device(s) implanted in an animal(s)" used to "assess animal condition and time treatment events"); Meier Decl., ¶ 31.

21. The patents' Background further explains that conventional RFID devices used prior to the invention had "significant problem[s]," including:

> A significant problem with RFID devices can be that the memory in which data can be stored is limited. As a non-limiting example, the 128 bit ROM above-described can only store one unique 38 digit identification number. Understandably, as the number of bits which can be encoded on a RFID increases so does the cost and the size of the RFID. Accordingly, the ROM of RFID devices utilized for tracking, locating and identification of goods remains between 100 and 200 bits and certain ROM of RFID devices include even fewer bits such as 50-100 bits ROM, or even fewer bits.
>
> Another significant problem with RFID devices may be that there is no computer implemented animal management system available for encoding and updating RFID information of an RFID implanted in an animal and integrating the RFID information with relational and storage databases in a server or remote computer for the purpose of remotely monitoring, tracking, sorting, diagnosing, or treating each RFID implanted animal.

'515 Patent at 1:65–2:16. Dr. Meier explains that such problems and unmet needs were consistent with her experience, as she was not aware of any "reliable systems (RFID or otherwise) that could be used to remotely track, diagnose, or treat animals on a herd-wide basis, which are beneficial aspects of animal management that were described and enabled by the '515 and '206 Patents." Meier Decl., ¶ 32.

22. The patents further explain that the invention addresses such problems with conventional technologies by disclosing a "radiofrequency identification device" that can be used to "match[] animal information retrieved from [the] radiofrequency identification device implanted in an animal to animal information retrieved from a database of at least one computer." '515 Patent at 2:17–23; Meier Decl., ¶ 32. Dr. Meier agrees with the inventors' characterization, testifying that the "specification provides solutions to the[] unmet needs" described in the patent, such as by disclosing "RFID devices implanted in animals that collect and store data in real-time and are further integrated with unique animal management programs, for example to integrate physiological data sensed directly from the cow with other data such as 'days in milk.'" Meier Decl., ¶ 32. According to Dr. Meier, such an "arrangement of elements

provides useful information on a herd of animals that was not attainable with conventional technologies." *Id.*

23. Dr. Meier identifies additional problems with conventional herd management technologies that the claimed inventions address. Dr. Meier testifies that, at the time of the invention, "animal management was based in large part on periodic monitoring of the temperature of individual animals to assess their health." Meier Decl., ¶ 18; *see also id.*, ¶ 17. For example, "if an animal has an elevated temperature reading, the farmer may choose to treat it with antibiotics" or "cull it from the herd." *Id.*, ¶ 18. Moreover, "failing to identify an easily-treated illness quickly can result in the illness advancing to a stage requiring higher doses of antibiotics or more involved medical intervention, jeopardizing the animal's life, or adversely affecting the animal's future milk production." *Id.*, ¶ 17. With respect to cattle, for example, Dr. Meier explains that such animals are "prey animals" that "hide their diseases well," meaning that "by the time signs of illness are seen, the veterinarian is already behind with treatment intervention" and "may be several days into the disease process before taking a rectal temperature with the conventional system." *Id.* Additionally, "[c]hanges in physiological characteristics of an animal (such as temperature) can also require different treatments depending on where a cow is in its life cycle, such as which stage of milk production a dairy cow is in, whether a cow is in estrus, and how often the animal has been ill." *Id.* For such reasons, "the farmer needed accurate and reliable temperature information from the past and present, and ideally from the entire herd." *Id.*, ¶ 18. Dr. Meier then explains that "the conventional methods of acquiring temperature measurements at the time of the invention were inaccurate and unreliable" and "failed to address needs in the field that required information beyond mere temperature data." *Id.* Moreover, it was "desirable to identify such health events earlier than

traditional methods permit." *Id.* For such reasons, there was an unmet need in the herd management field for "continuous monitoring, more accurate and reliable data, data at the herd-wide level, and additional data beyond temperature readings." *Id.*

24. As Dr. Meier further explains, "[a]t the time of the invention, manually taking temperature measurements with a rectal thermometer was the most common conventional method of ascertaining health and other physiological information for animal management." *Id.*, ¶ 19. However, rectal temperature measurements were "unreliable, inaccurate, and limited in the type and amount of information that could be obtained from the animals," resulting in an unmet need for "more reliable methods of acquiring animal data and a need to acquire more data and information about the animals than what conventional systems could provide." *Id.*; *see also id.*, ¶ 20 (describing factors that contributed to the unreliability of taking rectal temperature measurements, such as temperature fluctuations caused by stress on the animals, skill and consistency of the operator, weather, and "whether the probe of the thermometer is in contact with feces or a gas pocket within the animal's rectum"). Moreover, due to the unreliability of the measurements, "it was difficult to determine how to adjust or calibrate a given rectal temperature reading in order to ensure its accuracy or compare with a baseline or historical data," rending rectal measurements "unreliable both on an individual and herd-wide level." *Id.*, ¶ 21. This "ma[de] comparisons of an animal's temperature to a baseline or average for assessment of illness, reproductive status, or other health event difficult and unreliable." *Id.*

25. An additional limitation on rectal temperature measurements was "the type and amount of information that could be acquired." *Id.*, ¶ 22. For example, "farmers were limited to measuring temperature and were unable to acquire additional data, such as tracking the movement of the animal or using the acquired data to manage milk production." *Id.*



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 9 of 66

Furthermore, "rectal temperature readings permitted measurements at a single point in time for a single cow, as opposed continuous measurements for the entire herd." *Id*. There was therefore "an unmet need in the industry for a system that could acquire more data on the animal, and to do so more reliably. *Id*., ¶ 22.

26. Dr. Meier further testifies that RFID systems in existence at the time of the invention "had significant limitations, particularly with respect to herd management," and did not solve the problems with the conventional method of measuring rectal temperature. Meier Decl., ¶ 22. For example, "RFID systems available at the time of the invention failed to provide information beyond an individual piece of data taken at a single instant in time, such as an animal's identification number or a single temperature measurement." *Id*., ¶ 26. Specifically, RFID systems at the time "were not integrated with animal management programs, for example, that could provide a useful set of data with additional insights." *Id*. Conventional systems also did not permit farmers to acquire "movement and motion data, reproductive data, data indicating early stages of an illness, information related to milk production, and real-time data on the herd as a whole (i.e., a plurality of animals as opposed to individuals), among other information." *Id*. Accordingly, like rectal temperature readings, RFID systems "were simply too passive or reactive" and "failed to adequately inform farmers of problems, issues, or other information on their animals until it was often too late, or until after unnecessary costs had been incurred." *Id*., ¶ 27.

27. Such problems arise, for example, in the context of herd management in dairy farming. Dairy farmers "often failed to identify temperature fluctuations (and thus illnesses) early in the milk production stage for a cow, when milk production is "ramping up." *Id*., ¶ 27. As Dr. Meier explains, "illness early in the milk production stage, if untreated, meant that the

cow would fail to reach its peak milk production." *Id.* This led to a specific need for a "more proactive system that could provide, for example, early illness detection integrated with data on stages of milk production, and immediate alerts," which was unavailable with conventional systems. *Id.*, ¶ 27.

28. The claims and specifications were focused on addressing such problems by reciting specific configurations of RFID systems and methods and that, therefore, the claims were directed to improved RFID systems and methods and not to an abstract idea. *See* Meier Decl., ¶¶ 28, 30, 45, 47–51, 54, 56, 57.

29. The specification provides specific examples of the RFID systems and methods that the claimed inventions are directed to. For example, the specification describes an example of an RFID device implanted in an animal that is a "bolus" ingested by a cow and retained in a part of the stomach. '515 Patent at 10:16–22; *see also* '515 Patent at claim 25 (claiming an RFID device that is "part of a bolus ingested by a bovine animal"); Meier Decl., ¶ 33. As shown in the red box in Figure 3 of the '515 Patent below, such a bolus can include a "data packet" that includes information acquired by the RFID device that is sent to an RFID reader:

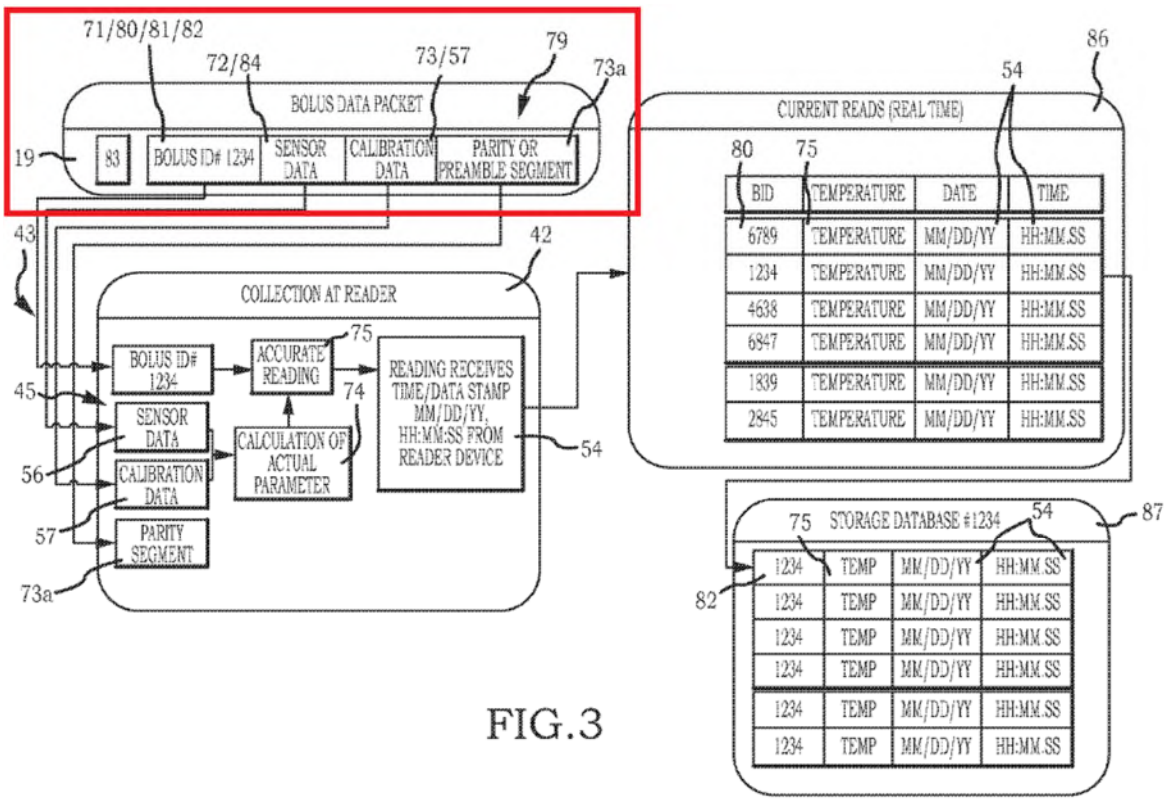



FIG.3

'515 Patent at Fig. 3 (annotations in red). As further shown, the RFID device can be encoded with an "animal identification number (82)" (*see* "BOLUS ID # 1234" in Figure 3) which is used to identify the animal. *Id.* at 10:22–26. Moreover, attached to the RFID device can be a sensor (83) for sensing characteristics of the animal, "such as temperature, pH, heart rate, blood pressure, partial pressures of dissolved gases, or the like." *Id.* at 10:26–38; *see also* "SENSOR DATA" in Fig. 3; *see also* Meier Decl., ¶ 33. These aspects of the invention are made possible by having an RFID device implanted in an animal and are reflected in the claims. *See, e.g.*, '515 Patent at claim 1 ("retrieving an amount of animal identification information from said RFID device implanted in an animal"), claim 6 ("retrieving an amount of sensed temperature information from said plurality of RFID devices implanted in said plurality of animals"); '206 Patent at claim 4 ("wherein said sensed animal information comprises sensed physiological information of said animal").

30. The specification further explains that the disclosed RFID systems and methods can be used to sense data from the animals continuously or intermittently. As the specification explains, "[v]ariation of the sensed RFID object characteristic(s) (84)," such as temperature and pH "can be continuously or intermittently updated by encoding or re-encoding the second bit segment (72) of the RFID (19)" (*see* "SENSOR DATA" (72/84) in Figure 3). '515 Patent at 10:46–49; *see also* Meier Decl., ¶ 33. The patented RFID device further includes "calibration data (57)" that is used by an RFID reader or computer to convert the raw sensor data obtained from the animal accurate and information regarding the animal. '515 Patent at 10:55–11:5.

31. The specification also describes how the animal data acquired by the RFID device implanted in the animal can be collected by the RFID reader, converted to provide an accurate reading, and then stored in real-time using an RFID reader and an external computer. For example, "the RFID object identification information (80) and the sensed RFID object characteristics (84) and the calibration data (57) can be received by the RFID reader (42) and coupled to a time-date stamp (54)." '515 Patent at 10:55–66; *see also* "COLLECTION AT READER" in Figure 3. Then, the "RFID object identification information (80) and the sensed RFID object characteristics value (75) can be separated, sorted and loaded into a current reads database table (86) stored in the first RFID memory (52) or in the server computer (1) or in the remote computer (34) memory." *Id.* at 11:9–14; *see also* "CURRENT READS (REAL TIME)" in Figure 3. In this manner, the disclosed RFID device can provide "current reads" or "real time" measurements for each animal in a herd, which in turn provides an accurate historical record of measurements, such as temperature, for each animal that has the disclosed RFID device. *Id.* at 11:9–29; *see also* "STORAGE DATABASE # 1234" in Figure 3; '515 Patent at 11:30–46. The specification provides additional details on how the data can be transmitted from the device to

the reader and computer (e.g., via LAN, WAN, or Bluetooth), as well as how the information is accessed by and presented to the user (e.g., by entering a cow's identification number into a graphical user interface). *See id.* at 11:47–57; *see also* Meier Decl., ¶ 33.

32. Dr. Meier explains that "[s]uch a configuration provided for the first time specific benefits over the conventional methods of managing animals." Meier Decl., ¶ 34. For example, having a device "implanted in the animal eliminates the need to take temperature rectally, which eliminates the problems with rectal temperature measurements altogether discussed above." *Id*. Additionally, "the implanted RFID device can provide measurements beyond temperature, such as pH, heart rate, blood pressure, partial pressures of dissolved gases, or the like." *Id*. Moreover, the disclosed RFID device "allows for remote, continuous, and accurate monitoring of key measurements for the animals, such as temperature, because the RFID device and sensor are located at the cow and connected to an RFID reader." *Id*. In other words, the "RFID reader receives the information remotely, identifies the exact date and time it was taken, and calibrates the information to provide a record of accurate measurements in real-time." *Id*. This is an improvement and beneficial over conventional technologies that only "provided a single data point, such as temperature, for a single cow at a single point in time." *Id*.

33. The patents further describe and claim integrating the sensed data from the RFID device with additional information from a database, and using the combined data to generate logical outputs, such as real time alerts. *See, e.g.*, '515 Patent at claims 1, 9, 11, 12; '206 Patent at claims 1, 4, 6, 8, 10–21, 23, 24. This configuration provides specific benefits over conventional systems and is reflected in the claims. As recited in claim 1 of the '515 Patent, for example, an RFID system is used for "linking" sensed data from an animal with other "animal information . . . stored in a data base" and combining the two pieces of information in a "logical



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 14 of 66

expression" for "obtaining a logical value relating to said animal." *See also* '206 Patent, claims 1, 12, and 17 (describing a system that "matches" sensed animal information with other information and "solve[s] said at least one logical expression to obtain a corresponding at least one logical value"); Meier Decl., ¶ 35. The specification demonstrates that such "logical values" comprise real-time alerts. *See* Meier Decl., ¶ 35. For example, the specification describes an "alert module" built into the RFID system that "compare[s] the updated RFID object characteristic value (75) . . . with the prior established threshold values (144)" for a particular animal. '515 Patent at 13:64–14:13; Meier Decl., ¶ 35. The "established threshold" for an animal is determined, for example, by taking a historical average of that characteristic for the animal based on "all the prior sensed RFID object characteristic values" for that animal. '515 Patent at 14:13–21; Meier Decl., ¶ 35. The high and low threshold value are then determined by calculating a "mean deviation value," which is also based on the historical data for that animal. '515 Patent at 14:21–38; Meier Decl., ¶ 35. For example, as shown in Figure 9, the animal with Bolus ID #1234 has a "high threshold" of 103.0 degrees Fahrenheit and a "low threshold" of 101.0 degrees Fahrenheit, where "reads exceeding thresholds become alerts" populated in an "alert list" for the animal with bolus ID 1234:

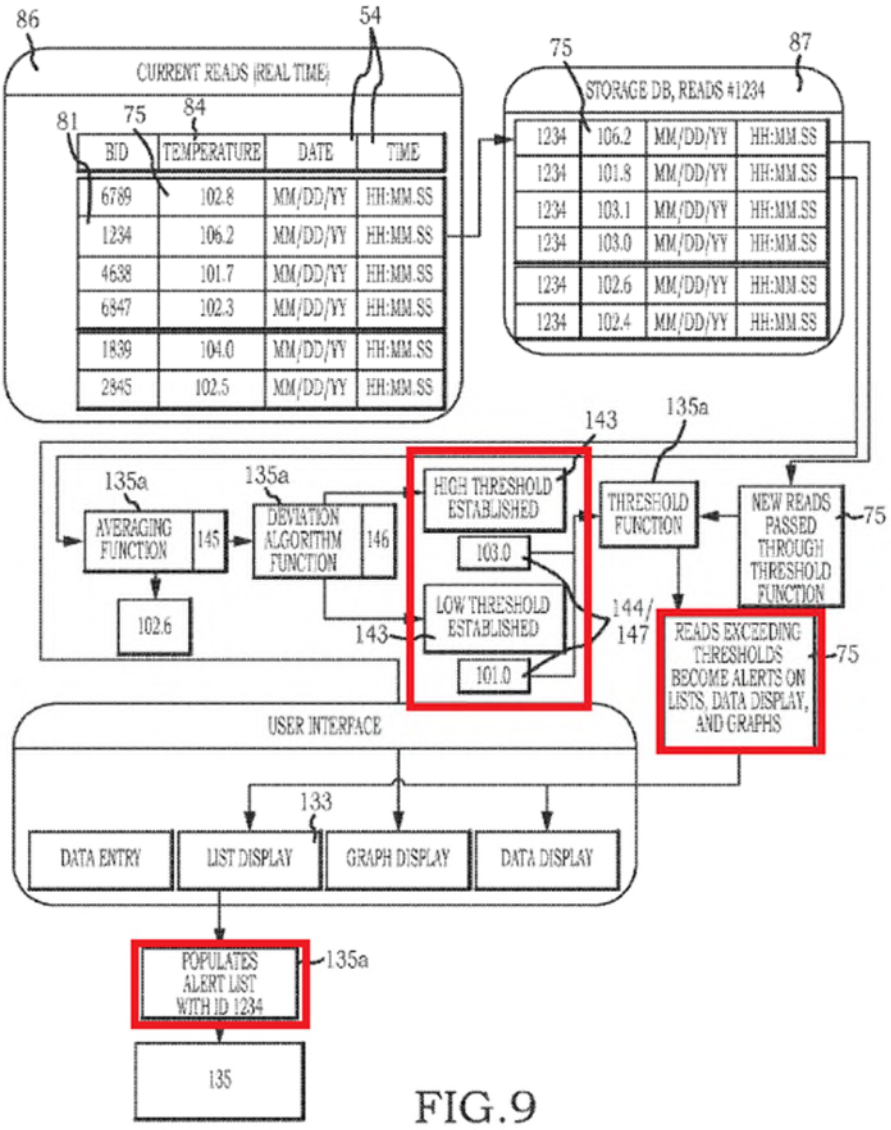



FIG.9

*See also* Meier Decl., ¶ 35. The disclosed RFID system can therefore "compare each new sensed RFID object characteristic value (75) to the threshold values (144)" and "function to populate the alert list (135)" for animals with values "outside of the value range (147) established by the threshold values (144)." '515 Patent at 14:35–44; Meier Decl., ¶ 35. As Dr. Meier explains, such a configuration "permits farmers to be instantly alerted (e.g., via solving for a 'logical value' as claimed) as to a sick animal and to provide a treatment plan or to make a decision about culling the animal." Meier Decl., ¶ 35. To Dr. Meier's knowledge, "no conventional technologies were

able to integrate sensed data (such as temperature) with additional animal information (such an animal identification number and historical average temperatures) to create real-time alerts, which improves herd management, for example, by providing early illness detection and treatment." Meier Decl., ¶ 35.

34. Dr. Meier identifies additional specific benefits enabled by the RFID devices and methods disclosed in the specification. *See, e.g.*, Meier Decl., ¶ 36 (explaining benefits of "defining 'pens'") (citing '515 Patent at 13:11–25, claims 8–10, 12; '206 Patent at claims 7–10, 13–16); Meier Decl., ¶ 37 (explaining benefits of pen list related to milk production) (citing '515 Patent at. at 15:59–63). For example, Dr. Meier explains that "[t]he ability to integrate sensed temperature data with such additional information, such as 'days in milk,' to obtain logical values, as enabled and claimed by the patents, permitted farmers to more efficiently manage their herds." Meier Decl., ¶ 37. "Days in milk" refers to the number of days an animal (e.g., a dairy cow) has been producing milk since giving birth. *Id.* This information is useful because, "immediately after giving birth, the cow's milk production ramps up, producing more and more milk for the first 60 to 90 days." *Id.* Milk production then "tapers off for the remainder of the lactation period (usually about 200–240 more days), and eventually enters a 'dry period' of no milk production." *Id.* However, "[i]f an illness or other health event occurs within the 'ramp up' period, the cow will not hit its peak milk production because it is fighting off the illness." *Id.* Thus, because obtaining "peak milk performance is highly desirable, it would have been desirable to be able to determine a cow's identity, temperature, level of movement, location, and days in milk at any given time so that the proper treatment can be determined and provided immediately, and the inventions claimed in the patents were able to address this unmet need." *Id.*

35. Dr. Meier further explains that "[t]he disclosed RFID systems with implanted RFID devices permitted farmers to remotely track the motion of their animals by acquiring location data, which provides additional benefits over conventional technologies. *See* Meier Decl., ¶ 39 (citing '515 Patent at 10:31–38, 13:56–63, claims 5, 8, 12; '206 Patent at claims 5, 7–10, 12–16, 21, 22). For example, "animals become ill before their temperature rises, and often an elevated temperature was too late to effectively treat the animal." Meier Decl., ¶ 39. However, "animals that exhibit a low level of movement, even before their temperature elevates, are more likely to be ill." *Id.* Access to motion-tracking information, as enabled by the claims, would allow farmers to "treat their animals sooner and thus more effectively." *Id.* (further explaining that the invention enabled farmers to be alerted as to when cows were in estrus ("in heat"), which was previously unavailable).

36. The claimed inventions also enabled farmers to determine and integrate a cow's movement data with temperature data on a herd-wide level. For example, "[a]t the time of the invention, farmers desired to place cows in estrus in a 'breeding pen' so that they can be monitored and bred (naturally or via artificial insemination) at the optimal time." Meier Decl., ¶ 40. A "cow with elevated movement compared suggests an estrus cycle" and, "if that same cow also had an elevated temperature approximately 29 days earlier, it would essentially confirm an estrus cycle." *Id.* Based on that information, "the farmer could identify the cows likely in estrus and place them in an appropriate pen." *Id.* According to Dr. Meier, "[t]he patents provided and claimed an accurate or reliable way to achieve this level of monitoring and organization" and "further enabled farmers to monitor temperature and the other characteristics described above for the entire herd, as opposed to individual measurements for a single animal." *Id.* In short, "[h]aving access to such information on a herd-wide level, as enabled by the invention, would

have allowed, for example, farmers to spot trends with the herd as a whole and to spot individual outliers." *Id.* (citing, *e.g.*, '515 Patent at claim 2 and '206 Patent at claims 2, 19, which recite a "plurality of RFID devices implanted in a plurality of animals").

37. The claims of the '515 and '206 Patent are directed to such improved RFID systems and methods, which are specific, tangible devices (and methods of using them). The claims are therefore not directed to any "abstract idea." *See* Meier Decl., ¶¶ 30, 45–51, 54, 56, 57.

38. For example, claim 1 of the '515 Patent is not directed to an abstract idea or simply collecting and analyzing data from animals. The claim requires configuring and using a specific integrated system including an "RFID device implanted in an animal" and an "RFID device reader." The implanted RFID device is the primary focus of the claim, as it enables animal tracking, as recited in the preamble, and animal identification. Meier Decl., ¶ 47. That information is then linked to a database with information about the animal, including "milk production information or an amount of days milked." *Id.* Independent claims 1, 12, and 17 of the '206 are likewise directed to such an "RFID device." *See Id.*, ¶¶ 48–49.

39. The preambles shared by the independent claims of the '515 and '206 Patents further demonstrate that the claims are directed to improved RFID devices and not to data collecting and analysis. Meier Decl., ¶ 50. The preambles state "[a] computer implemented method of animal tracking." The implantation of the RFID device into the animal, as required by the claims, allows true animal tracking, i.e., tracking an animal's motion and other characteristics over time on the farm without interference. As Dr. Meier explains, "[t]he claimed RFID device permits true tracking of the animal because the device is implanted in, or otherwise attached to,

the animal and thus 'follows,' or continuously tracks, the animal throughout the course of its day-to-day activities, continuously collecting data in real time." *Id.*

40. The specification also demonstrates that the independent claims are directed to the use of improved RFID devices and not mere data collection and analysis, as the the "RFID devices" recited in the claims are focused on (and do) address the specific problems named in the specification, for example, by providing improved RFID devices that track the animals in a herd. Meier Decl., ¶ 51. As Dr. Meier explains, the claims address the problems identified in the specification "by providing a specific 'RFID device,' namely one that senses data directly from the animal and 'links' or 'matches' that data to additional 'animal information' that is 'stored in a data base.'" *Id.* The claims further describe that this integration of data acquired by the RFID device with other information is used to obtain a "logical value" relating to the animal. *Id.*

41. Moreover, the claim elements requiring reading and retrieving data from an RFID device implanted in an animal renders the claimed process distinct from the rectal temperature-taking processes in the prior art, as opposed to merely "automating" such processes. As Dr. Meier explains, "[i]f the claims were merely automating a rectal temperature-taking process, they would require, for example, taking rectal temperatures," which they do not. Meier Decl., ¶ 52. This reflects "one of the specific benefits of using an RFID device," namely "to avoid the inaccuracies associated with taking rectal temperatures." *Id.*; *see also id.*, ¶¶ 18–21 (describing such inaccuracies). The claims also require steps beyond "temperature-taking," such as linking animal information to "an amount of milk production information or an amount of days milked" stored in a "data base," converting animal information "into one or more logical variables," inserting the "logical variables into at least one logical expression," and "obtaining a logical value relating to said animal," *e.g.*, generating alerts for the farmer. *Id.*

42. The dependent claims of the ’515 and ’206 Patents recite additional structural requirements that provide additional improvements to herd management and animal tracking that would not be possible by using abstract steps of collecting and analyzing. For example, dependent claim 2 of the ’515 Patent and dependent claim 2 of the ’206 Patent recite “a plurality of RFID devices implanted in a plurality of animals,” which requires that the RFID device and recited linking of data be applied to multiple animals. As Dr. Meier explains, “[d]ata from implanted devices capable of performing the limitations in the claims for an entire herd allows the farmer to observe overall trends and compare each animal to a baseline,” which further “allows the farmer to identify, for example, outlier animals who may be experiencing health events, such as illness or estrus.” Meier Decl., ¶ 55. This was “not possible with conventional rectal measurements” because such conventional methods “require[] significant time to measure an entire herd and external temperature fluctuations throughout the day, and biological rhythms and metabolism changes based on vastly different time-of-day measurements that occur throughout the process of acquiring data for every animal in the herd would make herd-wide measurements with conventional systems unreliable.” *Id.* (noting further that “as a practical matter, acquiring data for every animal in a herd would be essentially impossible with a realistically-sized workforce”).

43. Dr. Meier further explains that additional dependent claims provided additional improvements over conventional technologies, including by specifying “logical values” such as alerts regarding the “occurrence of illness.” Meier Decl., ¶ 56. As another example, claim 25 of the ’515 Patent is directed to a specific, tangible RFID device, namely a “bolus ingested by a bovine animal.” *Id.*, ¶ 57. Additionally, claim 22 of the ’206 permits motion tracking of the



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 21 of 66

animal specifically by tracking "GPS locations" of the animals that is also enabled through the use the claimed RFID device implanted in the animal. *Id.*, ¶ 58.

44. In short, the '515 and '206 Patents claim "a system of implanted RFIDs" that "present a technological solution that further aids in the consistency, accuracy, and efficiency in managing animals." Meier Decl., ¶ 53. Such benefits "allow users to detect illnesses before symptoms are observable, maximize milk production, track individual animal or herd movement, among other tangible benefits." *Id.* The claims are thus directed an improved RFID device and methods of using it, not an abstract idea.

45. The combinations of claim elements in the '515 and '206 Patent claims also include inventive concepts and recite more than the performance of well-understood, routine, and conventional activities previously known to the industry. *See* Meier Decl., ¶ 59. As explained above, the claims of the '515 and '206 Patents are directed to improvements in RFID device technology. The above improvements also show that the claims include inventive concepts by providing specific benefits over conventional technologies, and that the arrangement of claim elements were not well-understood, routine, and conventional in the industry. *Id.*, ¶ 60. Thus, the claims of the '515 and '206 Patents are patent eligible based on the inclusion of inventive concepts for many of the same reasons they are not abstract. *Id.*

46. Moreover, the specific combination and arrangement of RFID devices implanted in an animal as claimed is an innovative and inventive technique in the field of animal management, as explained by Dr. Meier. Meier Decl., ¶ 61. Specifically, for example, "the use and specific arrangement of RFID devices as claimed, including being implanted in the target animals and in communication with an external database, allows for a multitude of measurements (including both temperature, location, pH, blood pressure, heart rate, and more) to



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 22 of 66

be taken continuously (not just at the time of manual measurement) and combined with additional data (such as days in milk) without disruption to the animal." *Id.*; *see, e.g.*, '515 Patent, claim 1 (reciting "retrieving an amount of animal identification information from [an] RFID device implanted in an animal" and "linking an amount of animal information of said animal stored in a data base of said computer to . . . information retrieved from said RFID device implanted in said animal, said amount of animal information stored in said data base of said computer comprising an amount of milk production information or an amount of days milked"), claims 4–7 (reciting the retrieval of "temperature" and "location" data from the animal and linking it with information from a "data base," including "health information" and "an amount of milk production information or an amount of days milked"); *see also* '206 Patent, claims 1 and 4 (reciting "match[ing] . . . an amount of milk production or a number of days in milk" and "health information" with "physiological information"); *see also* '206 Patent at claims 2, 12, and 17; '206 Patent at 10:46–53 (explaining that "physiological" characteristics of an animal include "temperature, pH, heart rate, blood pressure, partial pressures of dissolved gases, or the like"). As Dr. Meier explains, "[t]his technique was unconventional in animal management in September 2009, either alone or in combination with the other features of claims of the '515 and '206 Patents." Meier Decl., ¶ 61.

47. Moreover, "[t]he simultaneous assessment of animal and herd health based on the continuous, real-time measurements provided by the RFID devices is inventive in the field of animal management for additional reasons." Meier Decl., ¶ 62. For example, "as the inventors recognized, it is very beneficial in optimizing milk production to be able to link the days in milk information to the continuous, real-time temperature of a cow." *Id.* The "interdependence of herd assessment with continuous RFID measurements was unconventional in the field of animal

management prior to the method claimed by the '515 and '206 Patents." *Id.* Accordingly, the linking of "an amount of milk production information or an amount of days milked" to "an amount of animal identification information from said RFID device implanted in an animal," such as temperature data—as stated in claim 1 in each of the '515 and '206 Patents—is particularly inventive and "was not a well-understood, routine, and conventional activity previously known to the industry." *Id.*; *see also, e.g.,* '206 Patent, claims 1 (requiring system to "match said sensed animal information retrieved from said RFID device to animal information of said animal stored in a database including an amount of milk production or a number of days in milk"), claim 7 (specifying that "sensed animal information" is "physiological information of said animal").

48. The use of a "logical expression . . . [to] obtain[] a logical value" based on the above-mentioned "linking" and "matching" of animal information is also inventive. *See, e.g.,* '515 Patent, claim 1, 12; '206 Patent, claims 1, 4, 8, 10–12, 17–21, 23, 24. The claims recite several practical examples of how such a "logical expression" can be implemented in an improved animal management system. Meier Decl., ¶ 63. In claim 9 of the '515 Patent, for example, one of the logical variables is "an occurrence of illness" for a plurality of animals in a "pen during a selected period of time," which is used "to determine whether there is a greater than selected number of said occurrence of illness." As Dr. Meier explained, this is an example of generating a real-time alert that "represents an improvement over conventional technology." Meier Decl., ¶ 56; *see also id.*, ¶ 35 (further explaining how such claimed alerts are generated); '515 Patent, claim 11 ("wherein inserting at least one of said plurality of logical variables into at least one logical expression further comprises inserting an amount of milk production information or an amount of days milked information"), claim 12 ("wherein obtaining a logical

value relating to said animal comprises obtaining for a selected period of time for each of said plurality of animals which of a plurality of pens in which to locate each of said plurality of animals"); '206 Patent, claims 4 ("wherein said logical value indicates an occurrence of an illness of said animal"), claim 6 (wherein said at least one logical expression solves as to a selected period of time as to said plurality of animals correspondingly associated with said animal identification information if a greater than selected number of said illness have occurred"), claim 8 ("wherein said at least one logical value indicates in which of said plurality of pens each of said plurality of animals should be located based on said amount of milk production or said number of days in milk"), claim 10 ("wherein said at least one logical value indicates in which of said plurality of pens each of said plurality of animals should be located based on said reproductive status of each of said plurality of animals"), claim 11 ("wherein said logical value indicates occurrence of said date-time to administer a second compound to each of said plurality of animals"), claims 18–21 (reciting logical values relating to occurrences of animals, including "plurality of animals"). As another example, the specification describes a system configured to use a "diagnosis identifier" that corresponds to a given diagnosis, such as "Mastitis." *Id.* (citing '515 Patent at 12:33–57). Dr. Meier explains that such "functionality links each animal with an implanted RFID device with a corresponding diagnosis status" and "updates that animal's diagnosis status to notify users of a change in status." *Id.* This provides "benefits for users of the claimed animal management method, particularly when used in conjunction with continuous monitoring, as the '515 and '206 Patent claims." *Id.* In summary, "converting an amount of animal information from an animal stored in a database of a computer that is linked to an amount of information retrieved from said RFID device implanted in an

animal into one or more logical variables was not a well-understood, routine, and conventional activity previously known to the industry." *Id.*

49. Another inventive concept is the claimed "obtaining a logical value" based on a continuous input of animal information (from the "RFID device implanted in an animal"), which provides users with information that may not otherwise be obtainable. As Dr. Meier explains, the inventors recognized that there was "an immeasurable benefit to catching illnesses as early as possible" and "[b]y continuously tracking animal information such as temperature, the resulting measurements show reliable trends, patterns, and averages that properly take into account an animal's stress levels, reproductive cycle, movement, and environment, among other factors." Meier Decl., ¶ 64. Compiling a history of reliable measurements to obtain a "logical value" as claimed "can reveal an unexplained shift or change in temperature that gives users the best chance at understanding and addressing the change." *Id.* Dr. Meier further explains that this was an "inventive aspect" of the independent claims "and the inclusion of this claim element in the claimed animal tracking method was not well-understood, routine, or conventional at the time of the invention." *Id.*; *see, e.g.,* '515 Patent, claim 9; '206 Patent, claims 4, 6, 18–20.

50. Dr. Meier identified additional inventive concepts in claims 12 and 17 of the '206 Patent. With respect to claim 12, "sensed animal location information" includes not only one recorded location at one point in time, but also shows actual movement and patterns in that movement. Meier Decl., ¶¶ 65–66. Thus, "[b]y having access to these patterns, as enabled by the claim, users can predict and understand, for example, when cows are due to calve or are in an estrous cycle." *Id.* ¶ 65. Moreover, "integrating location information sensed from an RFID device and integrating with data stored in a database in an animal tracking system was not a well-understood, routine, and conventional activity previously known to the industry." *Id.*

51. With respect to claim 17 of the '206 Patent, "retriev[ing] date-time information from said RFID device" and "match[ing]" that information to "animal information stored in a database" provided another inventive step. *See also* '206 Patent claims 23 and 24 (reciting storing "date-time information" in claimed "database"). As explained in the specification, conventional RFID devices could "only store one unique 38 digit identification number" and there was a need for an integrated system "for the purpose of remotely monitoring, tracking, sorting, diagnosing, or treating each RFID implanted animal." '206 Patent at 2:1–11; Meier Decl., ¶ 66. The claimed step of "retriev[ing] date-time information from said RFID device" and "match[ing]" that information to "animal information stored in a database" enable real-time tracking of animals by matching time and date data to actual physiological or location data taken directly from the animal. Meier Decl., ¶ 66. As Dr. Meier explains, "integrating date-time information sensed from an RFID device and integrating with data stored in a database in an animal tracking system was not a well-understood, routine, and conventional activity previously known to the industry." *Id.*

52. Additionally, the dependent claims recite the use of the claimed RFID devices to acquire additional "animal information," such as "location information" (e.g., '515 claim 5, '206 claims 5 and 21–22), "sensed temperature information" (e.g., '515 claim 6), "sensed physiological information" ('206 claims 4 and 18) and to integrate that information with other information to determine a logical value (e.g., to set an alarm). Meier Decl., ¶ 68. The "other information" includes, for example, "health information" (e.g., '515 claim 7, '206 claims 4 and 18) and "pen location information" (e.g., '515 claim 8). *Id.* As Dr. Meier explains, "[e]ach of these types of 'animal information' and related logical values provide their own additional and unique benefits for the purposes of animal management." *Id.* For example, "location

information' includes not only one recorded location at one point in time, but also shows actual movement and patterns in that movement." *Id.* Dr. Meier explains that "[b]y having access to these patterns, users can predict and understand, for example, when cows are due to calve or are in an estrous cycle." *Id.*

53. Furthermore, the generating or retrieving of information from "a plurality of RFID devices implanted in a plurality of animals" as claimed was inventive and not well-understood, routine, and conventional. *See* '515 Patent, claims 2–10, 12–15; '206 Patent, claim 2, 3, 6–11, 19, 20, 22–24. For example, Generating and retrieving information from "a plurality of RFID devices implanted in a plurality of animals" requires that the RFID device and recited linking of data be applied to multiple animals. As Dr. Meier explains, "[d]ata from implanted devices capable of performing the limitations in the claims for an entire herd allows the farmer to observe overall trends and compare each animal to a baseline," which further "allows the farmer to identify, for example, outlier animals who may be experiencing health events, such as illness or estrus." Meier Decl., ¶ 55. This was "not possible with conventional rectal measurements" because such conventional methods "require[] significant time to measure an entire herd and external temperature fluctuations throughout the day, and biological rhythms and metabolism changes based on vastly different time-of-day measurements that occur throughout the process of acquiring data for every animal in the herd would make herd-wide measurements with conventional systems unreliable." *Id.* (noting further that "as a practical matter, acquiring data for every animal in a herd would be essentially impossible with a realistically-sized workforce"). Accordingly, incorporating "a plurality of RFID devices implanted in a plurality of animals" into the claims was beneficial to herd management and was not routine, conventional, or well-understood at the time of the invention.



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 28 of 66

**The ’644 Patent**

54. The ’644 Patent is entitled “Calf Bolus.” The application that issued as the ’644 Patent was filed on June 12, 2015, and the U.S. Patent and Trademark Office issued the ’644 Patent on March 19, 2019.

55. STinsight acquired the ’644 Patent from Bella Technologies, LLC. STinsight owns the entire right, title, and interest to the ’644 Patent, including the right to sue for past, current, and future damages.

56. The ’644 Patent relates to “an animal monitoring device configured as a bolus for oral administration to reside in the reticulorumen of a ruminant animal.” *See* ’644 Patent, Abstract; *see also* claim 5 (describing “sensors contained in a bolus orally administered to said ruminant animal”); Meier Decl., ¶ 70. As Dr. Meier explains, using boluses for “animal monitoring comes with particular problems and concerns, including for veterinarians in [her] field.” Meier Decl., ¶ 71. For example, “[b]ecause bolus devices are located in the cow’s reticulum, and veterinarians desire to intervene with such devices as little as possible for the cow’s health, veterinarians prefer not to replace or add additional boluses throughout an animal’s life.” *Id*. Prior to the invention, Dr. Meier “was not aware of any bolus devices that could both (1) measure changes in physiological characteristics and (2) do so over the entire course of the animal’s productive life (i.e., between the time of birth and culling).” *Id*. Rather, conventional devices “would either lose power too soon (i.e., before the end of the productive period in the animal’s life) or do nothing more than provide location information when the animal/bolus is near the reader.” *Id*. According to Dr. Meier, “the ’644 Patent provided specific technological solutions to such problems, namely by providing “improvements and benefits to animal monitoring by describing and claiming improved bolus devices that are able to measure

physiological characteristics of animals over the entire course of the animal's productive life." *Id.*

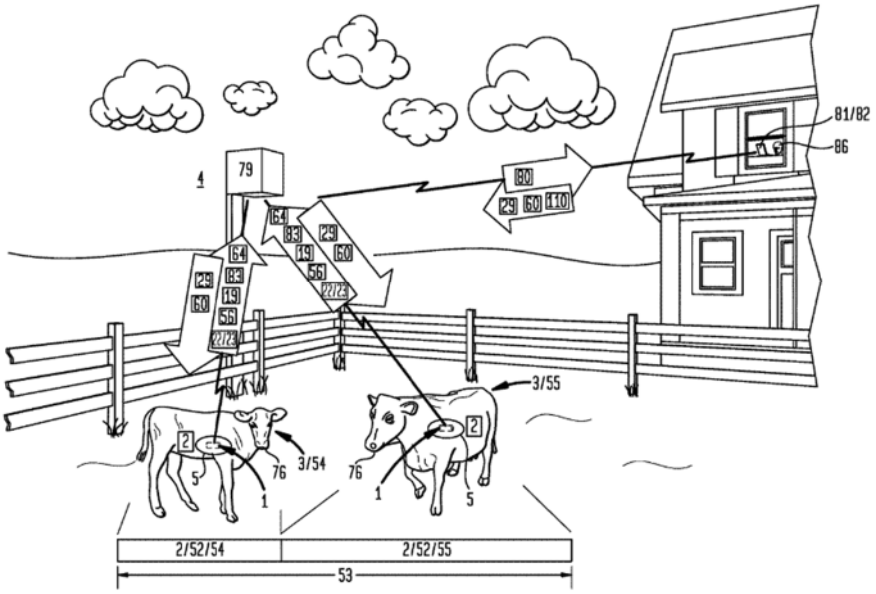
57. The Background of the Invention describes problems that are consistent with Dr. Meier's experiences. For example, it explains that conventional boluses "may not have an operational lifespan long enough to monitor useful physiological parameters over the remaining productive lifespan of the ruminant animal." '644 Patent at 1:18–25; Meier Decl., ¶ 72. Thus, as Dr. Meier confirms, "the patent presents an unmet need for an improved bolus with a longer battery life, as well as a bolus capable of being ingested by a baby calf, such that the bolus can monitor physiological characteristics for the entire productive life of the animal." Meier Decl., ¶ 72.

58. The '644 Patent addressed the problems and unmet needs in the art by describing and claiming, for example, boluses with power-saving features. *See* '644 Patent at 1:41–45 (describing an object of the invention as providing "a bolus which can reside in the reticulorumen of a ruminant animal having an operational lifespan corresponding to the entire lifespan or the productive lifespan of the ruminant animal"), claim 5 (reciting a bolus that saved power by "activating said radio signal generator at pre-determined intervals to generate a radio signal to carry said encoded physiological data"); *see also, e.g.,* Meier Decl., ¶ 73 (describing objects of the invention and disclosed solutions to problems and unmet needs in the field). For instance, the patent describes a bolus that can "include a power management module . . . to extend the operational life of the bolus (1) disposed in the reticulorumen (5) of the ruminant animal (3)." *Id.* at 7:56–60; Meier Decl., ¶ 73. Such boluses "can be operational within the reticulorumen (5) of the ruminant animal (3) for greater than three years and up to about ten years, a period of time substantially greater than that of conventional bolus." *Id.* at 7:60–65; *id.*

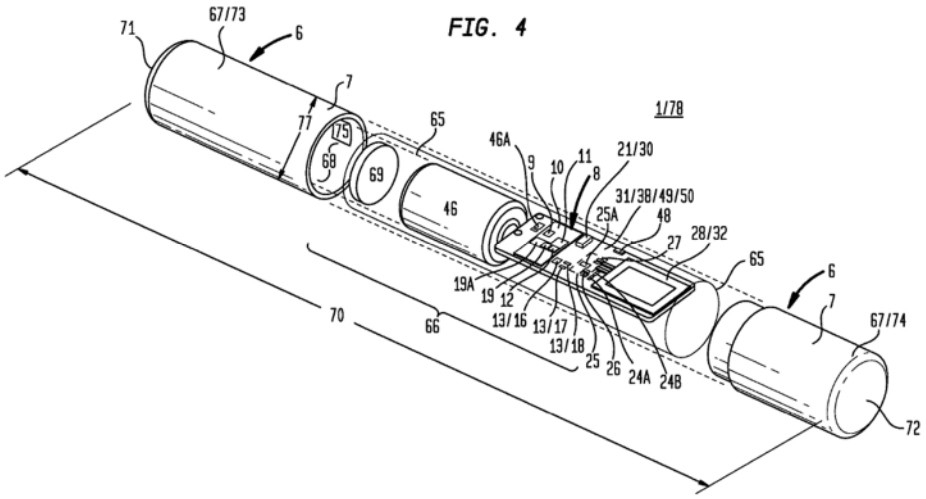
at 7:66–8 (explaining that such boluses "remain operational over the entire productive lifespan (53) of the dairy cow, on average about 2.4 lactations, or about five to six years"); Meier Decl., ¶ 73. According to Dr. Meier, this ability to provide a bolus that transmits physiological data for the entire productive lifetime of the animal is "a significant improvement to bolus technology and the field of animal monitoring." Meier Decl., ¶ 73.

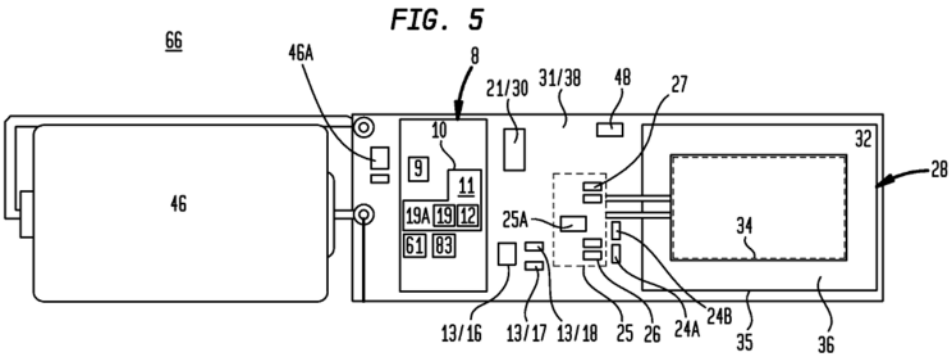
59. Figure 1 below is a diagram from the patent showing such a bolus (1) in the reticulum of a cow that is in communication with other components of an animal management system:

FIG. 1




60. Figures 4 and 5, respectively, depict exploded and cross-sectional views of such boluses:




61. With reference to such figures, the patent explains that "embodiments of the bolus (1) further include a power source (46) (and associated power regulator (46A)) which supplies and adjusts energy (42) (electrical power) to the bolus (1)." '644 Patent at 7:34–37. The power source "can take the form of a battery such as a AA battery, a AAA battery, or the like" and it "provides power to the electronic components supported on the printed circuit board (31) including for example: the microcontroller (8), radio frequency generator (21) and one or more sensors (13)." *Id.* at 7:37–44. The patent then explains that the power provided to a bolus is limited:

> Because the power source (46) of a bolus (1) disposed in the reticulorumen (5) of the ruminant animal (3) cannot be recharged, the operational lifespan of bolus (1) will depend upon capacity of the power source (46) in ampere-hours (Ah) and the load current of the circuit. Power source (46) life will be

> longer as the load current is reduced and vice versa. The calculation to find out the capacity of power source (46) in the form of a battery can be mathematically derived from the following formula:
>
> Battery Life=Battery Capacity in amps per hour/load current in amps×0.70

'644 Patent at 7:44–55. In view of such limitations on power, the bolus can "include a power management module (12) which functions to regulate energy use by the bolus (1) to extend the operational life of the bolus (1) disposed in the reticulorumen (5) of the ruminant animal (3)." *Id.* at 7:56–60.

62. The patent further provides several examples of boluses that are configured with various "power management modules." In one example, the patent describes a power-saving measure based on operating the radio signal generator at pre-determined intervals. As the patent explains, "the majority of energy (42) used by the bolus (1) is in operation of the radio signal generator (21)," and thus "increasing the time period between transmission bursts (56) and limiting the duration of the transmission burst (56) only to that period of time necessary to transmit the limited amount of encoded physiological data (19) can substantially increase the operating lifespan of the bolus (1)." '644 Patent at 10:37–43; *see also* claim 5 (reciting "enabling a radio signal generator located within said bolus" and "activating said radio signal generator at pre-determined intervals to generate a radio signal to carry said encoded physiological data"). Accordingly, the disclosed bolus can be configured such that there it operates at pre-determined intervals, which may be "a substantial period of time between operational periods of the radio signal generator (21), such as twenty four hours" or may be "very short, such as, a few milliseconds." *Id.* at 10:26–37. The patent further explains that "because the encoded physiological data (19) for movement (58) and temperature (57) may be used to determine whether the ruminant animal (3) is in estrus" the pre-determined intervals may be configured such that there is "a lesser period of time between operational periods of the radio



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 33 of 66

signal generator (21), such as every six hours, and the operational period of the radio signal generator (21) may be adjusted to a period of time to transmit the additional encoded physiological data (19)." *Id.* at 11:9–20. In other words, the pre-determined intervals may be adjusted or optimized depending on the status of the animal, such as whether it is estrus.

63. Claim 5 of the '644 Patent is directed to such improved boluses and not to any abstract idea, law of nature, or natural phenomenon. That is, claim 5 is directed to the use of a specific, tangible device with a specific configuration to provide technological improvements in a specific field. Meier Decl., ¶ 77; *see also id.*, ¶¶ 74–76. More specifically, it is directed to the use of a bolus configured with a sensor and radio signal generator that is orally administered to a ruminant animal to provide improvements to bolus and herd management technology, in particular by saving power. *Id.*, ¶ 77.

64. Claim 5 requires configuring and using a specific integrated system, including "one or more sensors contained in a bolus orally administered to said ruminant animal" that includes a specific configuration of a "radio signal generator." Meier Decl., ¶ 78. As Dr. Meier confirms, this "ingested bolus device, which includes a radio signal generator, is the primary focus of the claim, as the device collects and transmits data from within the ruminant animal to enable the monitoring of physiological parameters of the animal." *Id.* An ingested bolus as claimed is a tangible, physical device that is not a law of nature, natural phenomenon, or abstract idea. *Id.*

65. Moreover, Dr. Meier explains that "the bolus claimed in the '644 Patent is specifically directed to solving particular problems, including ones described in the specification, and is therefore directed to an *improved* bolus device." Meier Decl., ¶ 79 (emphasis in original). In particular, the claim recites "enabling a radio signal generator located within said bolus" and



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 34 of 66

"activating said radio signal generator at pre-determined intervals to generate a radio signal to carry said encoded physiological data." *Id.* Activating the radio signal generator at pre-determined intervals is a particular means of saving power to extend the life of bolus to cover the productive life of a ruminant animal, and that it can allow for a smaller bolus, such as one that can be ingested by a calf. *Id.* As Dr. Meier explains, "[t]hese are solutions to problems that are unique to herd management and bolus technology." *Id.* Claim 5 is thus directed to such an improved bolus device because it addresses such problems. *See id.*

66. Moreover, the combination of claim elements includes inventive concepts and involves more than the performance of well-understood, routine, and conventional activities previously known to the industry. *See* Meier Decl., ¶ 81. As explained above, '644 Patent claim 5 is directed to improvements in a bolus device, and such improvements—namely saving power and extending the life of the bolus—as compared to conventional technology, further shows that the claims include inventive concepts, and that the arrangement of claim elements were not well-understood, routine, and conventional in the industry. *Id.* The claims of the '644 Patent therefore contain inventive concepts for many of the same reasons they are directed to an *improved* bolus device and not directed to a law of nature, natural phenomenon, or abstract idea. *Id.*

67. Additionally, as Dr. Meier explains, "it was not well-understood, routine, and conventional in the herd management field to include the combined steps of 'enabling a radio signal generator located within said bolus' and 'activating said radio signal generator at pre-determined intervals to generate a radio signal to carry said encoded physiological data' in the context of using an ingested bolus to monitor physiological parameters of a ruminant animal." *Id.* Rather, "conventional boluses at the time of the invention failed to include such power-saving steps and therefore had a shorter life than the claimed bolus, and also were too large for ingestion by a



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 35 of 66

calf, as explained above." *Id*. Thus, such "unconventional steps . . . provided specific benefits over conventional technologies, and were not well-known, routine, and conventional." *Id*.

68. In sum, claim 5 of the '644 Patent is not directed to abstract ideas, natural phenomena, or law of nature and includes inventive concepts. *See* Meier Decl., ¶ 83. It is therefore patent eligible.

**The smaXtec System**

69. Upon information and belief, smaXtec Inc. imports, uses, offers to sell, and sells a bolus-based herd health monitoring system known as the "smaXtec System" in the United States. *See, e.g.*, https://smaxtec.com/en/smaxtec-services/.

70. Upon information and belief, smaXtec Animal Care is directly involved in or directs and controls the manufacture, importation, use, offers to sell, and sale of the smaXtec System in the United States.

## V. COUNT I – INFRINGEMENT OF U.S. PATENT NO. 8,823,515

71. Each of the above paragraphs 1 through 70 is incorporated by reference into this count as if fully restated herein.

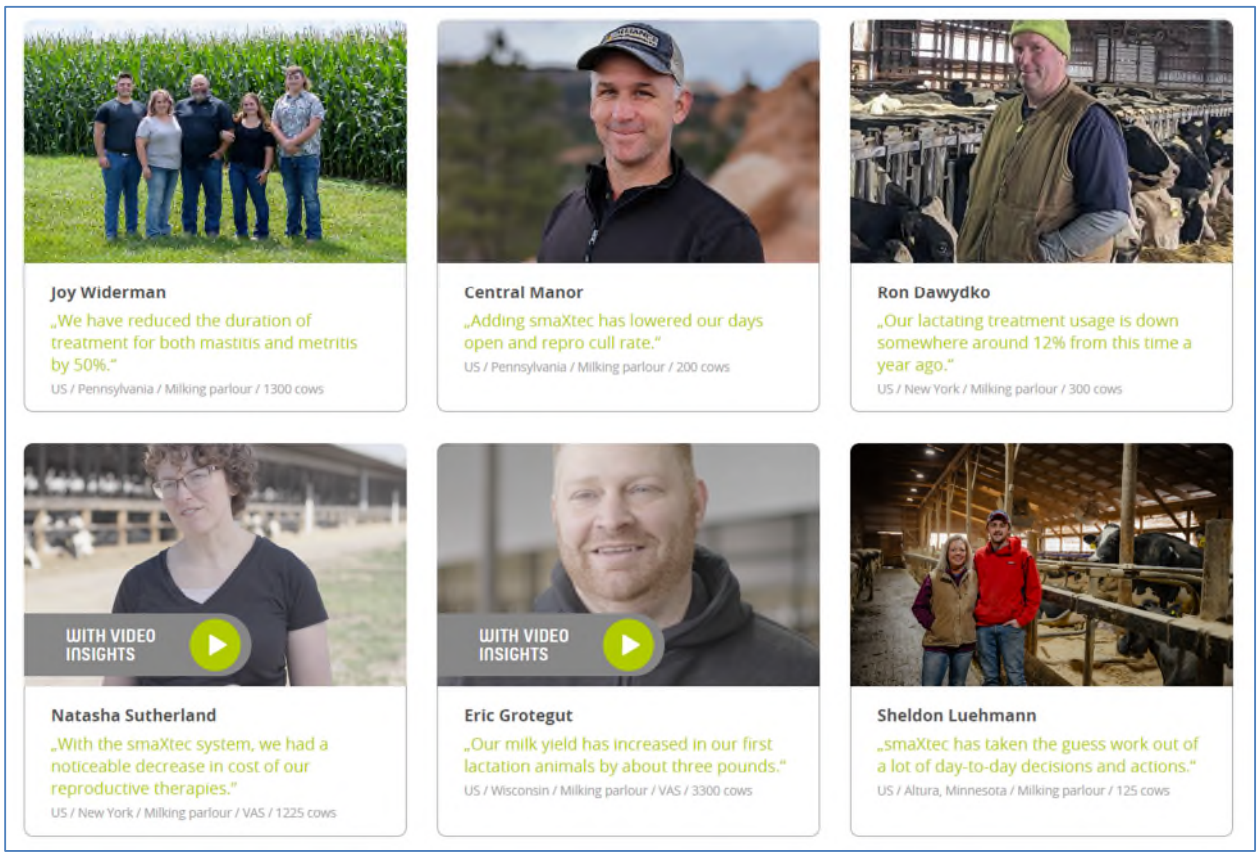
72. On September 2, 2014, the '515 Patent was duly and legally issued for an invention titled "Computer Implemented Animal Management System." A true and correct copy of the '515 Patent is attached hereto as Exhibit A.

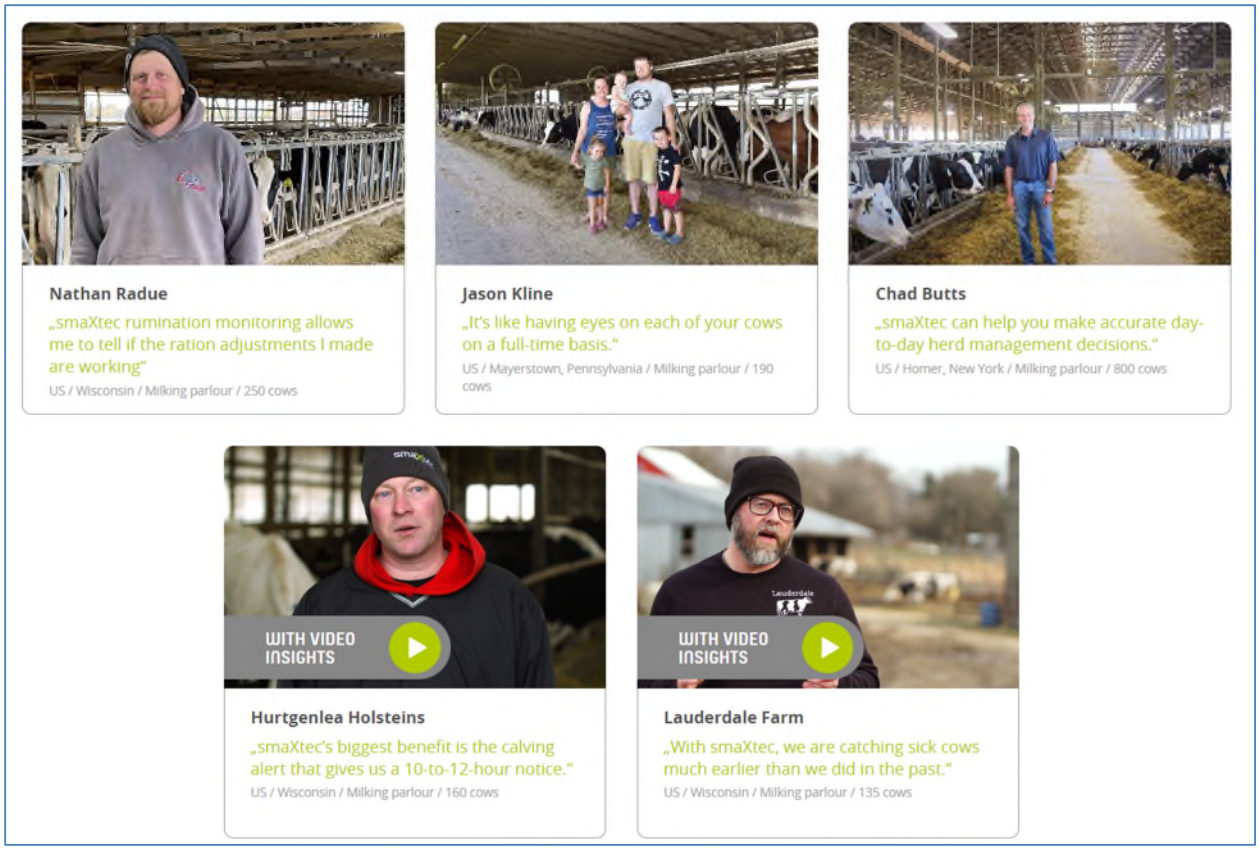
73. STinsight is the owner of the '515 Patent.

74. smaXtec Inc. infringes and continues to infringe at least claim 1 and some or all of the dependent claims of the '515 Patent (either literally or under the doctrine of equivalents) by making, importing, using, selling, and/or offering to sell the smaXtec System. Moreover, on information and belief, smaXtec Inc. has indirectly infringed, and continues to indirectly

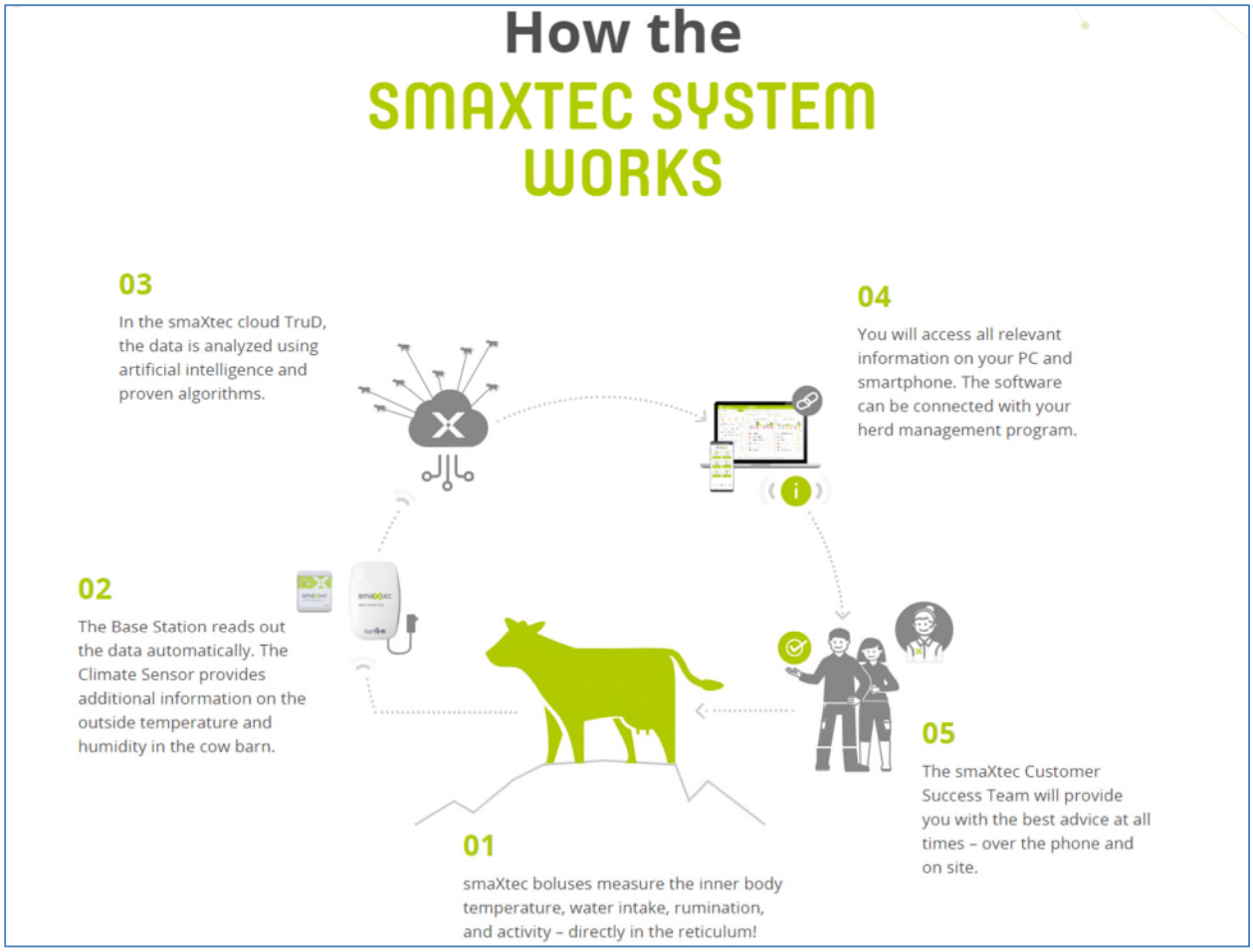
infringe, the ’515 Patent by inducing infringement, wherein the direct infringers include, but are not limited to, smaXtec Inc.’s affiliates, employees, contractors, and customers.

75. smaXtec Animal Care also infringes and continues to infringe at least claim 1 of the ’515 Patent (either literally or under the doctrine of equivalents) by making, importing, using, selling, and/or offering to sell the smaXtec System. Moreover, smaXtec Animal Care has indirectly infringed, and continues to indirectly infringe, the ’515 Patent by inducing infringement, wherein the direct infringers include, but are not limited to, smaXtec Inc. and other affiliates of smaXtec Animal care, employees, contractors, and customers. For example, as confirmed by numerous testimonials on its website, smaXtec Animal Care induces infringement by actively directing and controlling customers in the United States in the use of the smaXtec System, with the knowledge that such use constitutes patent infringement:






*See* https://smaxtec.com/us/testimonials-us/. smaXtec Animal Care induces its customers' direct infringement of the '515 Patent by providing, for example, training, demonstrations, and user manuals to its customers on the use of the smaXtec System:




https://smaxtec.com/us/ (explaining that the "smaXtec Customer Success Team will provide [customers] with the best advice at all times – over the phone and on site"). *See* https://support.smaxtec.com/wp-content/uploads/2021/01/20200429_smaXtec-User-Manual.pdf.

76. Upon information and belief, the smaXtec System meets every limitation of the method claimed in at least claim 1 of the '515 Patent, in at least the way described below.

77. Claim 1 of the '515 Patent recites a "computer implemented method of animal tracking." Using the smaXtec System involves using a computer implemented method for tracking animals, namely cows within a herd. *See* https://smaxtec.com/en/; https://www.agriexpo.online/prod/smaxtec-animal-care-gmbh/product-172514-9493.html (referring to a "Tracking bolus smaXtec Bolus pH Plus").

78. Claim 1 further recites "connecting a computer to an RFID device reader." "RFID" in the '515 Patent refers to various radiofrequency identification technologies, which would include "LoRa" or "LoRaWAN" technologies that use radiofrequencies to transmit and receive identification and other data. The smaXtec System includes RFID device readers that employ such technologies, namely "read-out devices" that collect and transmit data from a cow:

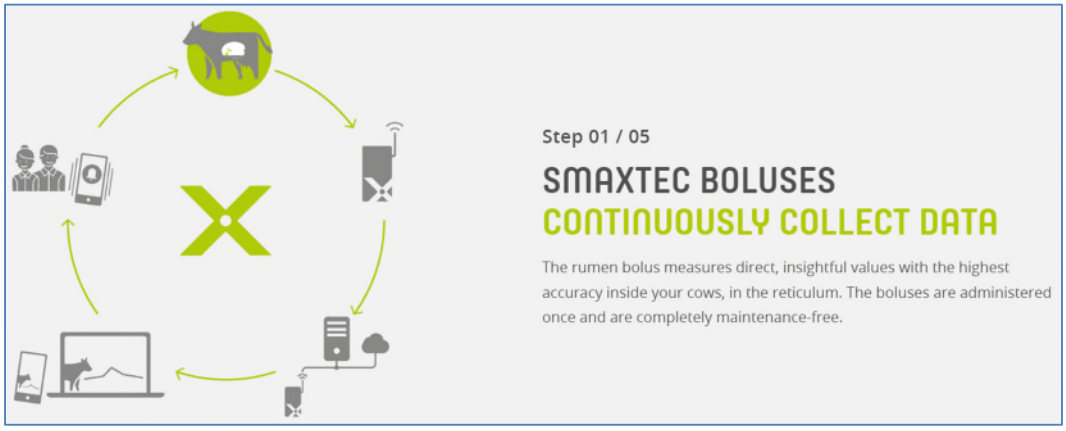
https://smaxtec.com/en/function/. An example of a smaXtec read-out device is shown below:

https://smaxtec.com/en/smaxtec-system-in-detail/#infrastructure.

79. Further, the read-out devices in the smaXtec System are connected to a computer:

https://smaxtec.com/en/function; *see also* https://smaxtec.com/en/smaxtec-system-in-detail/#infrastructure (explaining that "[y]ou can access your data via browser on every PC").

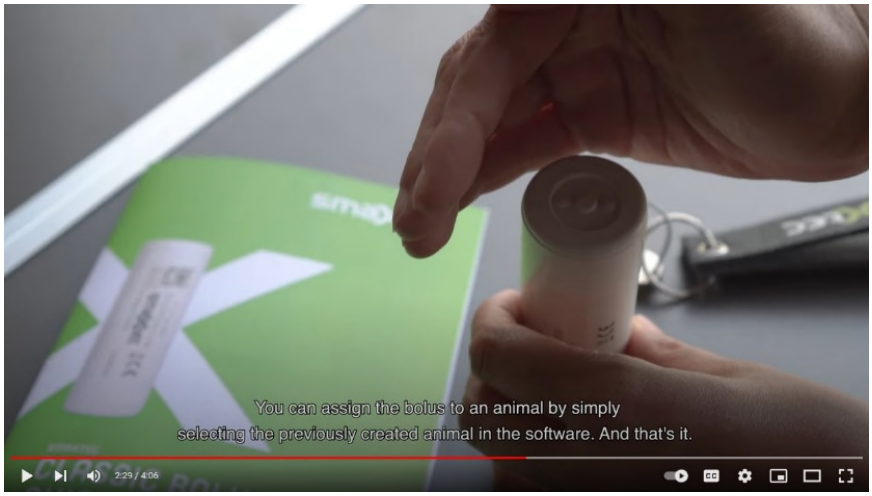
80. Claim 1 further recites "reading an RFID device implanted in an animal with said RFID device reader." The smaXtec System includes an RFID device implanted in an animal, namely "boluses" that are implanted in a cow's reticulum and that "continuously collect data" from the cow:



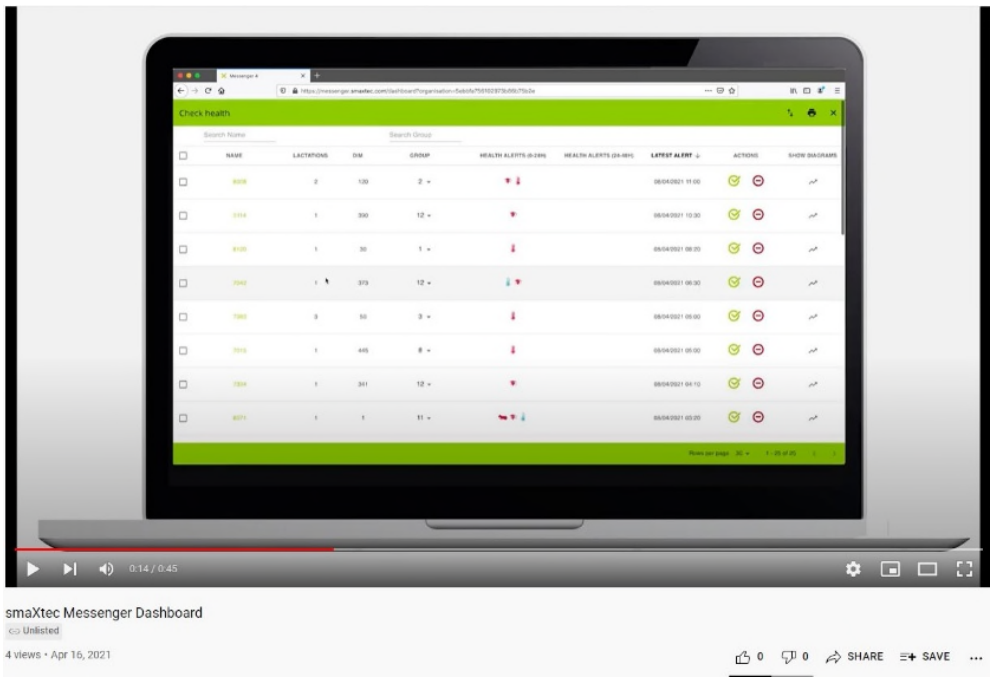

https://smaxtec.com/en/function/. One such bolus is the smaXtec "pH bolus" shown below:

https://smaxtec.com/en/smaxtec-system-in-detail/#infrastructure. The read-out devices discussed above are RFID device readers that receive and read information from boluses, which are RFID devices implanted in an animal.

81. Claim 1 further recites "retrieving an amount of animal identification information from said RFID device implanted in an animal." Each bolus in the smaXtec System is assigned to a particular animal:




https://www.youtube.com/watch?v=tzBHxxk2c8k&ab_channel=smaXtec. The smaXtec System assigns an identification number (*i.e.*, the "name" in the image below) to each bolus/animal:

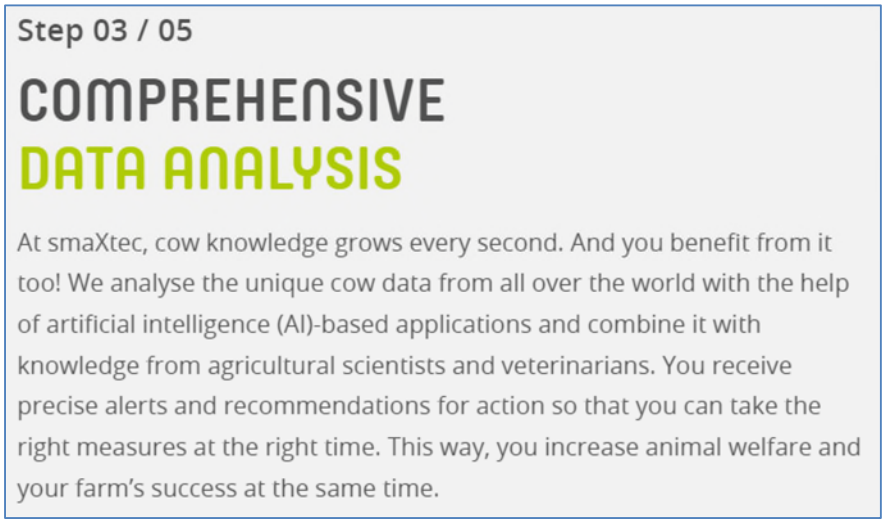



https://www.youtube.com/watch?v=NYwH8hRD6sk.

82. Claim 1 further recites "linking an amount of animal information of said animal stored in a data base of said computer to said amount of information retrieved from said RFID device implanted in said animal, said amount of animal information stored in said data base of said computer comprising an amount of milk production information or an amount of days milked." The smaXtec System includes a database that stores information about each animal, and it links that information to a particular animal/bolus identification number. As shown above, this stored "animal information" specifically includes the amount of days milked (or "DIM").

83. Claim 1 further recites "converting said amount of animal information of said animal stored in said database of said computer linked to said amount of information retrieved from said RFID device implanted in said animal into one or more logical variables; inserting at least one of said plurality of logical variables into at least one logical expression; and obtaining a logical value relating to said animal." The smaXtec System's "artificial intelligence" features

operate by converting stored and retrieved animal information into logical variables, inserting them into logical expressions, and obtaining logical values:




https://smaxtec.com/en/function/.

84. The smaXtec System's use of a linked bolus device implanted in animals to generate "drinking alerts" for particular animals is one example of how using the smaXtec System involves converting animal information into logical variables, inserting the logical variables into a logical expression, and obtaining a logical value relating to the animal. *See* https://smaxtec.com/en/blog/drinking-behaviour-of-dairy-cows/. The implanted device regularly measures the animal's temperature and sends that information to a remote system. *Id.* The system determines that an animal is drinking if there is a drop in temperature. *Id.* The system stores information on the number of "drinking cycles" per day and links that information to an animal's bolus ID. *Id.* The system determines that a drinking alert is appropriate by calculating whether there is "[i]nsufficient water intake" because "[t]he number of drinking cycles per day is too low." *Id.* In this example, the system converts the sensed temperature measurements into variables in a calculation that determines certain attributes for the animal, such as the number of drinking cycles per day and whether the number of drinking cycles is too low.

85. The smaXtec System's illness detection alert feature is another example of how using the smaXtec System involves converting animal information into logical variables, inserting the logical variables into a logical expression, and obtaining a logical value relating to the animal. *See* https://smaxtec.com/en/blog/pneumonia-in-dairy-cows/. Specifically, the system calculates and stores an animal's "regular temperature" through "continuous measurement of the inner body temperature, because the bolus records the inner body temperature with the highest accuracy (+/- 0.01° C)." *Id.* The system calculates that an alert is appropriate when it "detects even the smallest deviations from the animal's regular temperature," which can be indicative of an illness, such as pneumonia. *Id.* In this example, the system converts the sensed temperature measurements into variables in a calculation that determines whether the current temperature deviates from the regular temperature.

86. smaXtec Inc.'s and smaXtec Animal Care's use of the patented method, and inducement of others to use the patented method, is without STinsight's authorization. Accordingly, smaXtec Inc. and smaXtec Animal Care have infringed, and continue to infringe, the '515 Patent.

87. Upon information and belief, smaXtec Inc. and smaXtec Animal Care have long been aware of the '515 Patent. Moreover, STinsight notified smaXtec Inc. and smaXtec Animal Care that the smaXtec System infringes the '515 Patent. Despite this notice, however, smaXtec Inc. and smaXtec Animal Care continue to knowingly and willfully infringe the '515 Patent.

88. smaXtec Inc. and smaXtec Animal Care should be permanently enjoined from practicing the '515 Patent. smaXtec Inc.'s and smaXtec Animal Care's infringing use of the '515 Patent is likely to cause irreparable harm to STinsight. STinsight is an innovator in bolus-based herd health technology and derives revenue from the sale and use of its technology, and



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 45 of 66

STinsight has never licensed its technology. If smaXtec Inc. and smaXtec Animal Care are permitted to continue to use STinsight's technology, it would undermine STinsight's exclusive rights to the technology. This is likely to harm the value of STinsight's technology and reputation and cause irreparable injury to STinsight. Moreover, if smaXtec Inc. and smaXtec Animal Care are permitted to incorporate STinsight's innovative technology into its products and services, STinsight's reputation as an innovator will be irreparably damaged.

89. In addition, STinsight has been, and will continue to be, irreparably harmed by smaXtec Inc.'s and smaXtec Animal Care's continued infringement of its patents because STinsight will be forced to invest time and money in litigation enforcing its patents instead of investing in researching and developing its technology.

90. A permanent injunction against smaXtec Inc. and smaXtec Animal Care is necessary to avoid irreparable injury to STinsight.

91. Finally, smaXtec Inc.'s and smaXtec Animal Care's infringement has caused harm to STinsight, and STinsight is entitled to recover damages from smaXtec Inc. and smaXtec Animal Care in an amount subject to proof at trial.

## VI. COUNT II – INFRINGEMENT OF U.S. PATENT NO. 9,844,206

92. Each of the above paragraphs 1 through 91 is incorporated by reference into this count as if fully restated herein.

93. On December 19, 2017, the '206 Patent was duly and legally issued for an invention titled "Computer Implemented Animal Management System." A true and correct copy of the '206 Patent is attached hereto as Exhibit B.

94. STinsight is the owner of the '206 Patent.

95. smaXtec Inc. infringes and continues to infringe at least claims 1 and 17 and some or all of the dependent claims of the '206 Patent (either literally or under the doctrine of

equivalents) by making, importing, using, selling, and/or offering to sell the smaXtec System. Moreover, smaXtec Inc. has indirectly infringed, and continues to indirectly infringe, the ’206 Patent by inducing infringement, wherein the direct infringers include, but are not limited to, smaXtec Inc.’s affiliates, employees, contractors, and customers.

96. smaXtec Animal Care also infringes and continues to infringe at least claims 1 and 17 of the ’206 Patent (either literally or under the doctrine of equivalents) by making, importing, using, and/or offering to sell the smaXtec System. Moreover, smaXtec Animal Care has indirectly infringed, and continues to indirectly infringe, the ’206 Patent by inducing infringement, wherein the direct infringers include, but are not limited to, smaXtec Inc. and other affiliates of smaXtec Animal care, employees, contractors, and customers. For example, smaXtec Animal Care induces infringement by actively directing and controlling others in the use of the smaXtec System, with the knowledge that such use constitutes patent infringement.

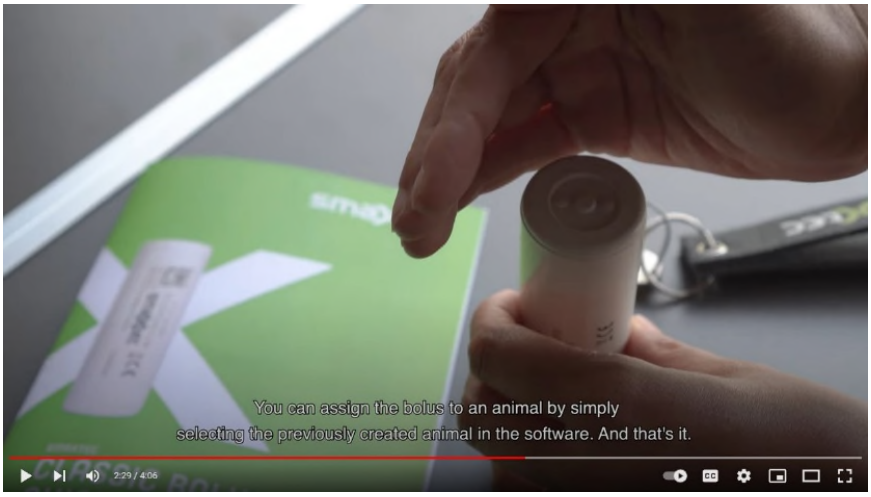
97. Upon information and belief, the smaXtec System meets every limitation of the system claimed in at least claim 17 of the ’206 Patent, in at least the way described below.

98. Claim 17 of the ’206 Patent requires a “computer implemented animal management system.” The smaXtec System is a computer implemented animal management system, namely a system for managing the health of cows within a herd.

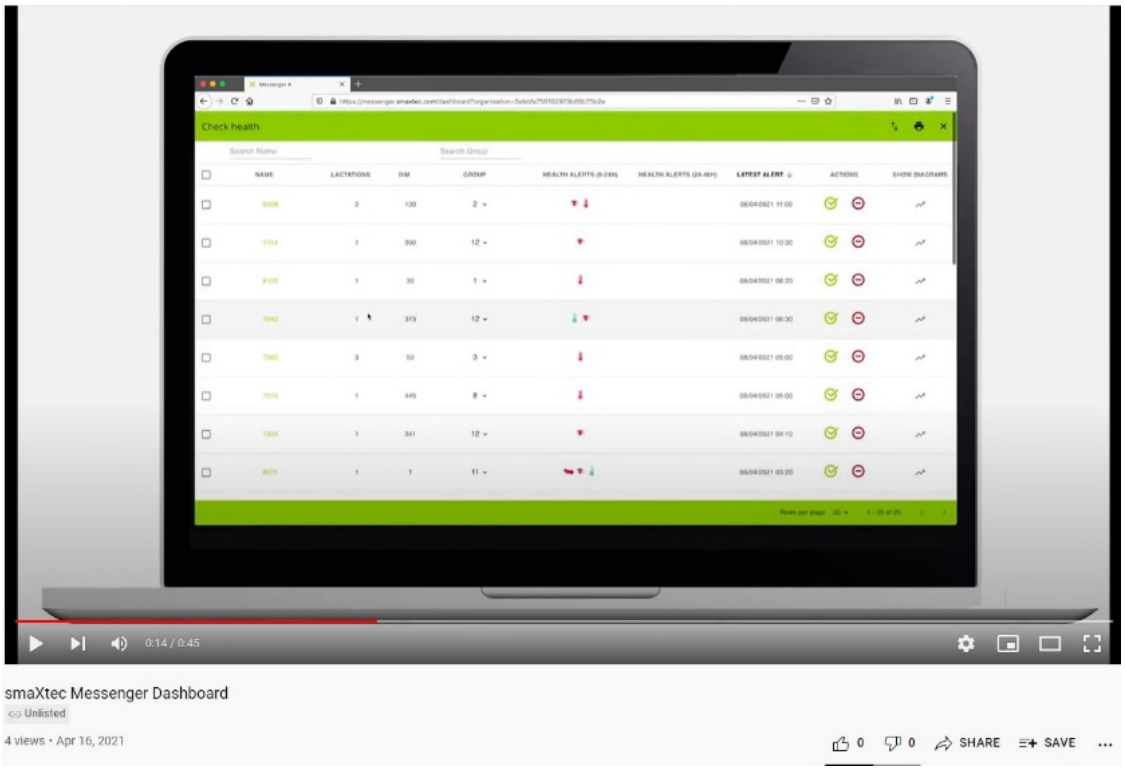
99. Claim 17 recites “a processor communicatively coupled to a non-transitory computer readable media.” The smaXtec System is implemented by a computer:

http://smaxtec.com/en.

100. Claim 17 further recites that the processor contain program instructions executable to "retrieve animal identification information from an RFID device implanted in an animal." "RFID" in the '206 Patent refers to various radiofrequency identification technologies, which would include "LoRa" or "LoRaWAN" technologies that use radiofrequencies to transmit and receive identification and other data. The smaXtec System includes boluses implanted in a cow's reticulum, which are RFID devices that employ such technology. In particular, each bolus in the smaXtec System is assigned to a particular animal:



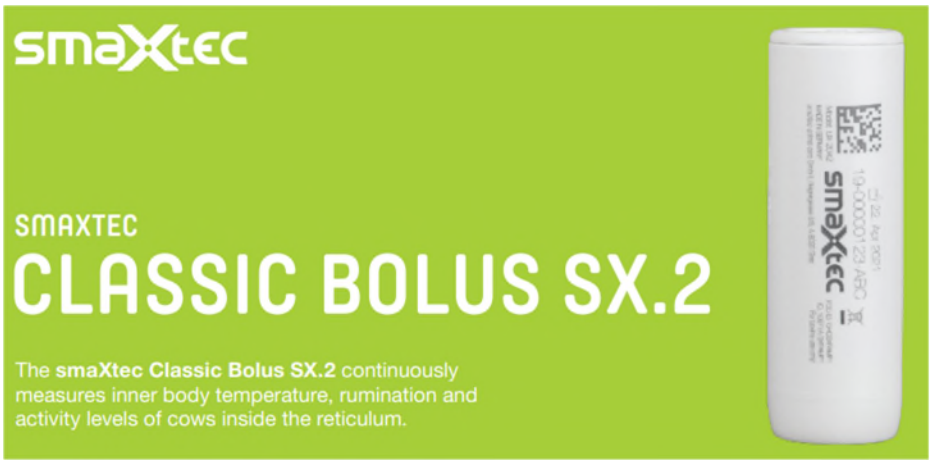
https://www.youtube.com/watch?v=tzBHxxk2c8k&ab_channel=smaXtec. The smaXtec System also assigns an identification number (*i.e.*, the "name" in the image below) to each bolus/animal:




https://www.youtube.com/watch?v=NYwH8hRD6sk. The smaXtec System further includes "read-out devices" for retrieving that information:

https://smaxtec.com/en/function.

101. Claim 17 further recites that the processor contain program instructions executable to "retrieve sensed animal information from said RFID device." The smaXtec System senses animal information, such as temperature, rumination, and activity levels:



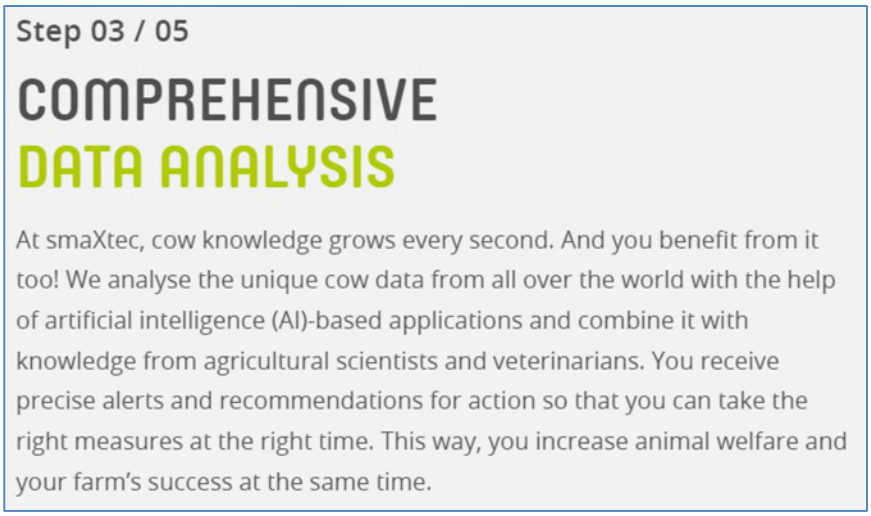

https://smaxtec.com/en/smaxtec-system-in-detail/#boli ("Product Sheet" for "Classic Bolus SX.2"). That information is retrieved by the read-out devices discussed above.

102. Claim 17 further recites that the processor contains program instructions executable to "retrieve date-time information from said RFID device." The data retrieved by the read-out devices from the boluses includes date and time information:

https://smaxtec.com/en/blog/measuring-inner-body-temperature-of-dairy-cows/.

103. Claim 17 further recites that the processor contains program instructions executable to "match said sensed animal information retrieved from said RFID device to animal information stored in a database." The smaXtec System includes a database that stores information about each animal by animal/bolus number, and it matches the sensed animal information from the RFID, including temperature, to the animal information stored in the database.

104. Claim 17 further recites that the processor contain program instructions executable to "enter said sensed animal information retrieved from said RFID device and said animal information stored in said database as logical variables into at least one logical expression; and solve said at least one logical expression to obtain a corresponding at least one logical value." The smaXtec System's "artificial intelligence" features operate by converting stored and retrieved animal information into logical variables, inserting them into logical expressions, and obtaining logical values:




https://smaxtec.com/en/function/.

105. The smaXtec System's use of a linked bolus device implanted in animals to generate "drinking alerts" for particular animals is one example of how using the smaXtec

System involves entering animal information as logical variables into at least one logical expression and solving the logical expression to obtain a corresponding logical value. *See* https://smaxtec.com/en/blog/drinking-behaviour-of-dairy-cows/. The implanted device regularly measures the animal's temperature and sends that information to a remote system. *Id.* The system determines that an animal is drinking if there is a drop in temperature. *Id.* The system stores information on the number of "drinking cycles" per day and links that information to an animal's bolus ID. *Id.* The system determines that a drinking alert is appropriate by calculating whether there is "[i]nsufficient water intake" because "[t]he number of drinking cycles per day is too low." *Id.* In this example, the system enters the animal's temperature measurements into a calculation that determines certain attributes for the animal, such as the number of drinking cycles per day and whether the number of drinking cycles is too low.

106. The smaXtec System's illness detection alert feature is another example of how using the smaXtec System involves entering animal information as logical variables into at least one logical expression and solving the logical expression to obtain a corresponding logical value. *See* https://smaxtec.com/en/blog/pneumonia-in-dairy-cows/. Specifically, the system calculates and stores an animal's "regular temperature" through "continuous measurement of the inner body temperature, because the bolus records the inner body temperature with the highest accuracy (+/- 0.01° C)." *Id.* The system calculates that an alert is appropriate when it "detects even the smallest deviations from the animal's regular temperature," which can be indicative of an illness, such as pneumonia. *Id.* In this example, the animal's temperature readings are entered into the system to determine whether the current temperature deviates from the animal's regular temperature.

107. smaXtec Inc. and smaXtec Animal Care also infringe Claim 1 of the ’206 Patent for the reasons already provided. In particular, Claim 1 of the ’206 Patent includes many of the same limitations as Claim 17, and those limitations are found in smaXtec’s System as described above. Claim 1 further recites that the database includes “an amount of milk production or a number of days in milk.” As described in Count I, the database of the smaXtec System includes this information.

108. smaXtec Inc.’s and smaXtec Animal Care’s making, using, importing, selling, and offering to sell the patented system is without STinsight’s authorization. Accordingly, smaXtec Inc. and smaXtec Animal Care have directly infringed, and continue to directly infringe, the ’206 Patent.

109. Upon information and belief, smaXtec Inc. and smaXtec Animal Care have long been aware of the ’206 Patent. Moreover, STinsight notified smaXtec Inc. and smaXtec Animal Care that the smaXtec System infringes the ’206 Patent. Despite this notice, however, smaXtec Inc. and smaXtec Animal Care continue to knowingly and willfully infringe the ’206 Patent.

110. smaXtec Inc. and smaXtec Animal Care should be permanently enjoined from practicing the ’206 Patent. smaXtec Inc.’s and smaXtec Animal Care’s infringing use of the ’206 Patent is likely to cause irreparable harm to STinsight. STinsight is an innovator in bolus technology and derives revenue using its technology, and STinsight has never licensed its technology. If smaXtec Inc. and smaXtec Animal Care are permitted to continue to use STinsight’s technology, it would undermine STinsight’s exclusive rights to the technology. This is likely to harm the value of STinsight’s technology and reputation and cause irreparable injury to STinsight. Moreover, if smaXtec Inc. and smaXtec Animal Care are permitted to incorporate

STinsight's innovative technology into its products and services, STinsight's reputation as an innovator will be irreparably damaged.

111. In addition, STinsight has been, and will continue to be, irreparably harmed by smaXtec Inc.'s and smaXtec Animal Care's continued infringement of its patents because STinsight will be forced to invest time and money in litigation enforcing its patents instead of investing in researching and developing its technology.

112. A permanent injunction against smaXtec Inc. and smaXtec Animal Care is necessary to avoid irreparable injury to STinsight.

113. Finally, smaXtec Inc.'s and smaXtec Animal Care's infringement has caused harm to STinsight, and STinsight is entitled to recover damages from smaXtec Inc. and smaXtec Animal Care in an amount subject to proof at trial.

## VII. COUNT III – INFRINGEMENT OF U.S. PATENT NO. 10,231,644

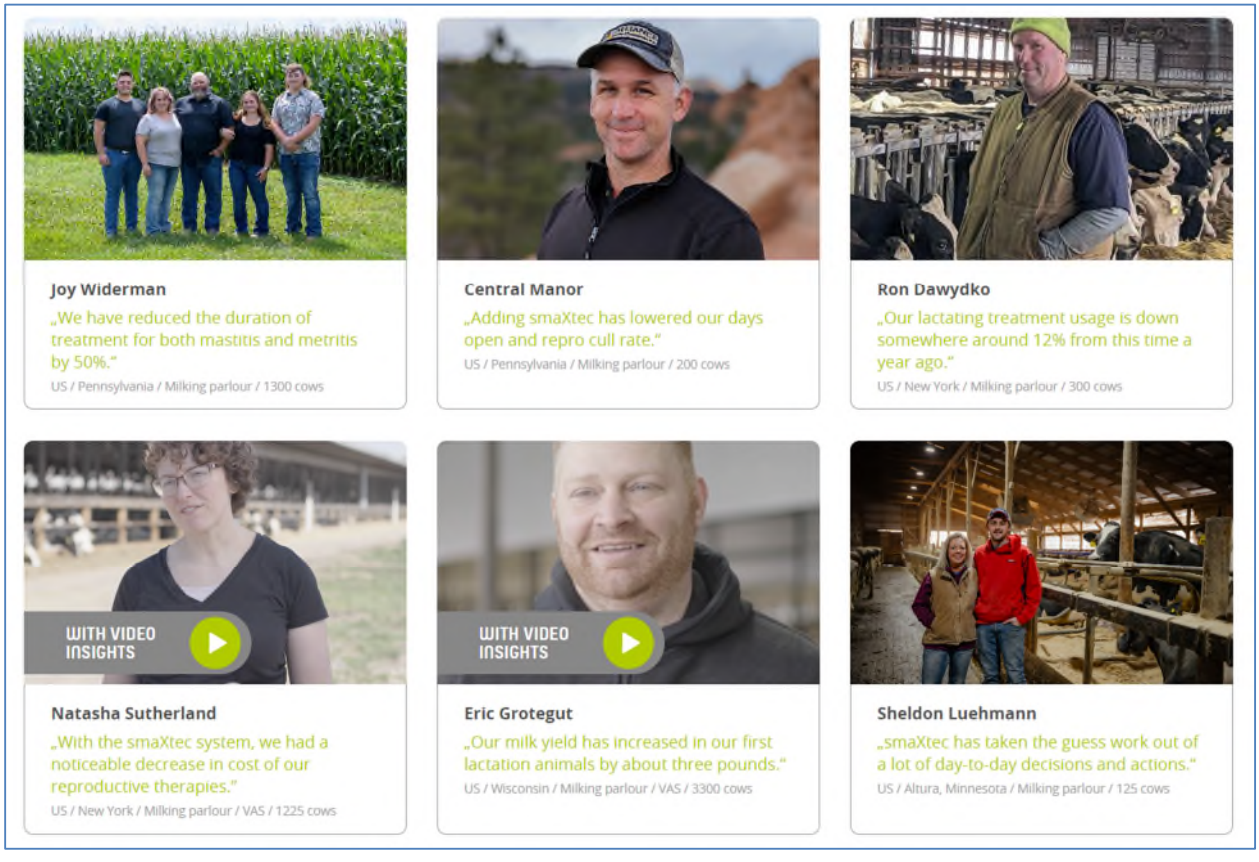
114. Each of the above paragraphs 1 through 113 is incorporated by reference into this count as if fully restated herein.

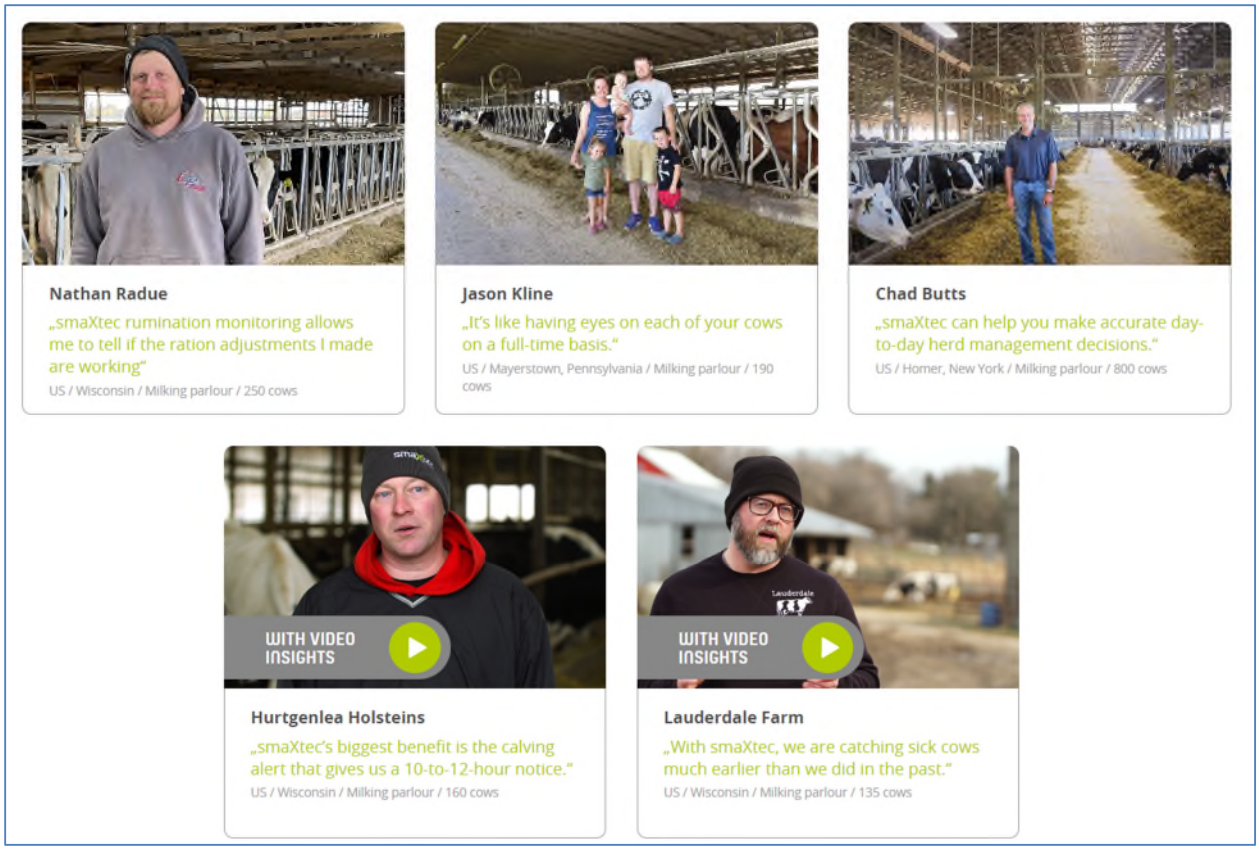
115. On March 19, 2019, the '644 Patent was duly and legally issued for an invention titled "Calf Bolus." A true and correct copy of the '644 Patent is attached hereto as Exhibit C.

116. STinsight is the owner of the '644 Patent.

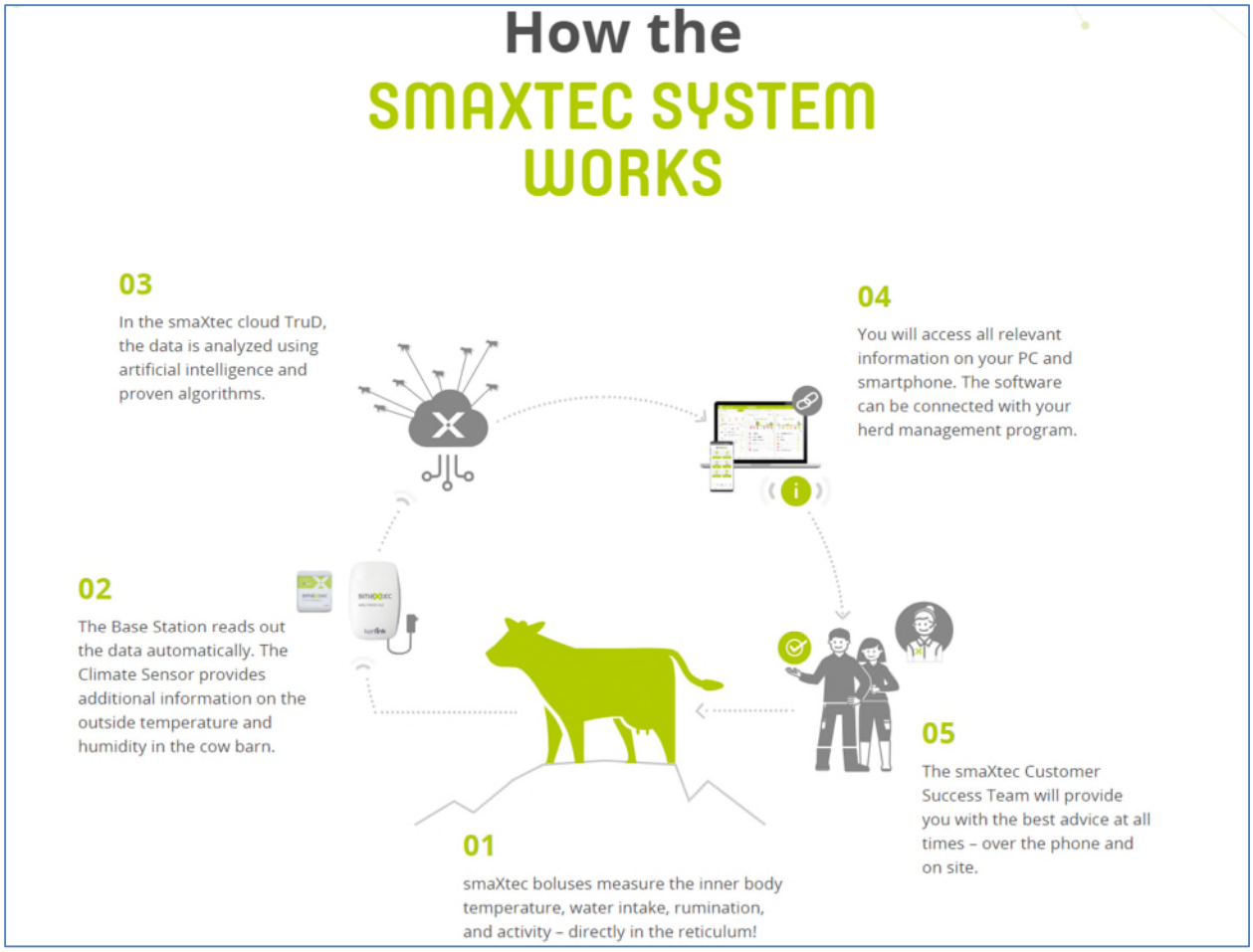
117. smaXtec Inc. infringes and continues to infringe at least claim 5 of the '644 Patent (either literally or under the doctrine of equivalents) by making, importing, using, selling, and/or offering to sell the smaXtec System. Moreover, smaXtec Inc. has indirectly infringed, and continues to indirectly infringe, the '644 Patent by inducing infringement, wherein the direct infringers include, but are not limited to, smaXtec Inc.'s affiliates, employees, contractors, and customers.

118. smaXtec Animal Care also infringes and continues to infringe at least claim 5 of the ’644 Patent (either literally or under the doctrine of equivalents) by making, importing, using, and/or offering to sell the smaXtec System. Moreover, smaXtec Animal Care has indirectly infringed, and continues to indirectly infringe, the ’644 Patent by inducing infringement, wherein the direct infringers include, but are not limited to, smaXtec Inc. and other affiliates of smaXtec Animal care, employees, contractors, and customers. For example, as confirmed by numerous testimonials on its website, smaXtec Animal Care induces infringement by actively directing and controlling customers in the United States in the use of the smaXtec System, with the knowledge that such use constitutes patent infringement:






*See* https://smaxtec.com/us/testimonials-us/. smaXtec Animal Care induces its customers' direct infringement of the '644 Patent by providing, for example, training, demonstrations, and user manuals to its customers on the use of the smaXtec System:

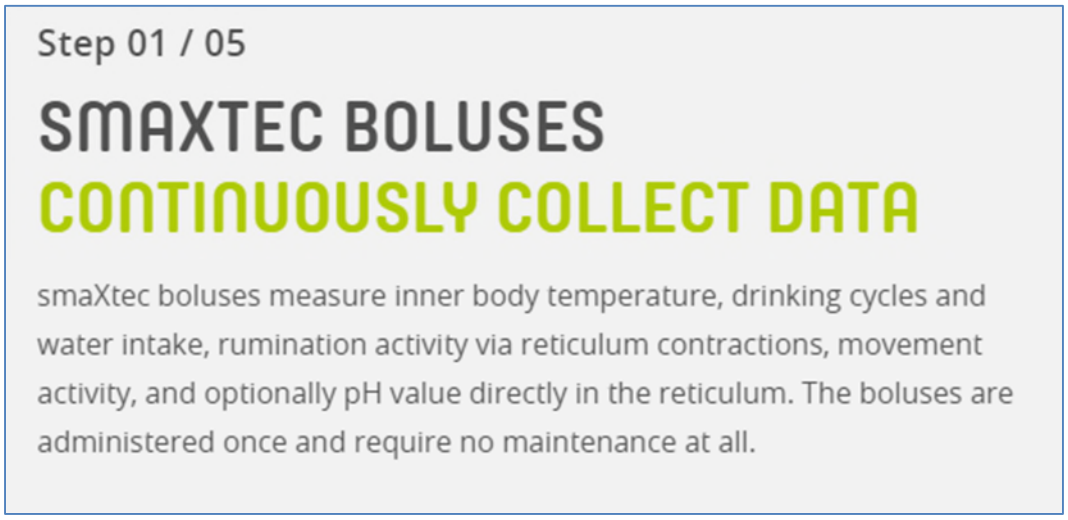



https://smaxtec.com/us/ (explaining that the "smaXtec Customer Success Team will provide [customers] with the best advice at all times – over the phone and on site"). *See* https://support.smaxtec.com/wp-content/uploads/2021/01/20200429_smaXtec-User-Manual.pdf.

119. Upon information and belief, the smaXtec System meets every limitation of the method claimed in at least claim 5 of the '644 Patent, in at least the way described below.

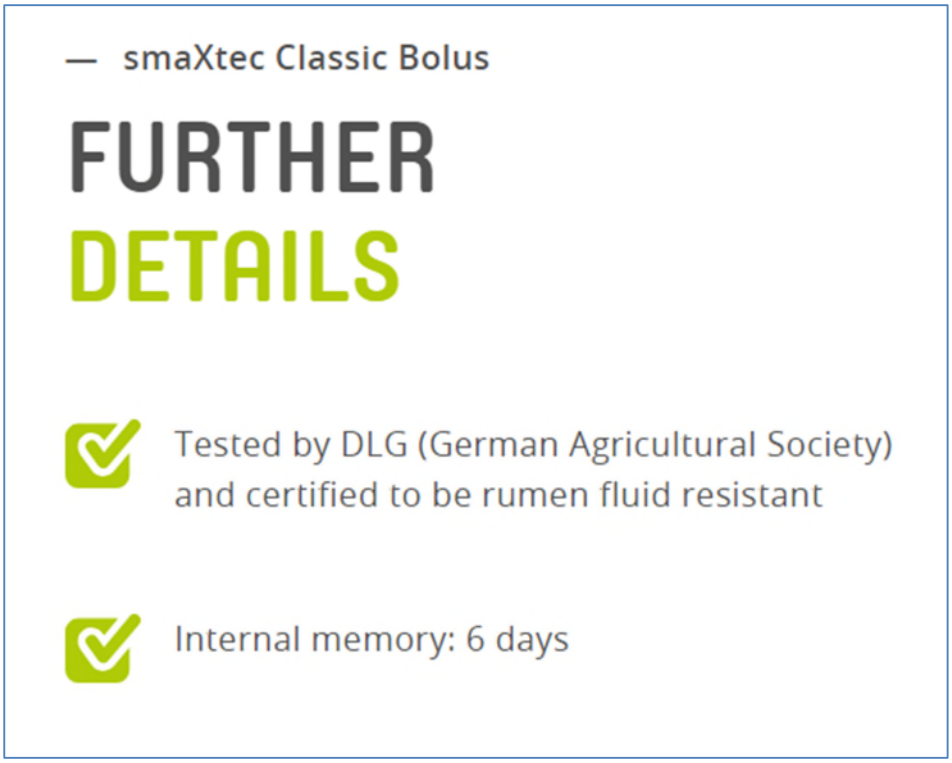
120. Claim 5 of the '644 Patent recites a "method of monitoring physiological parameters of a ruminant animal." Using the smaXtec System involves using a method of monitoring physiological parameters of a ruminant animal, including temperature and pH in cattle. *See* https://smaxtec.com/en/; https://www.agriexpo.online/prod/smaxtec-animal-care-gmbh/product-172514-9493.html.

121. Claim 5 further recites "generating a sensor signal from one or more sensors contained in a bolus orally administered to said ruminant animal, said sensor signal varies based on a corresponding change in one or more physiological parameters of said ruminant animal." The smaXtec System includes orally-administered boluses that contain sensors for measuring changes in physiological parameters, including but not limited to inner body temperature and pH value:



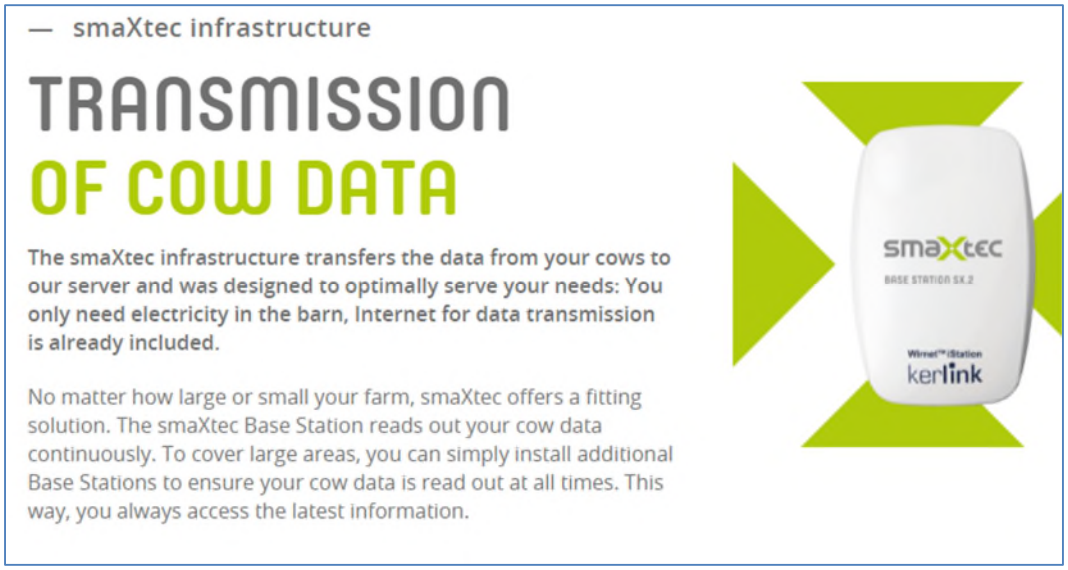

https://smaxtec.com/us/function-us/.

122. Claim 5 further recites "encoding said sensor signal from said one or more sensors as encoded physiological data corresponding to said one or more physiological parameters of said ruminant animal" and "storing said encoded physiological data in a non-transitory computer readable media." The smaXtec System encodes the sensor signal as physiological data and stores the data on storage integrated in the smaXtec bolus. According to the smaXtec website, Classic Product Sheet, and pH Plus Bolus Product Sheet, the smaXtec bolus devices have six days of data storage in internal memory:



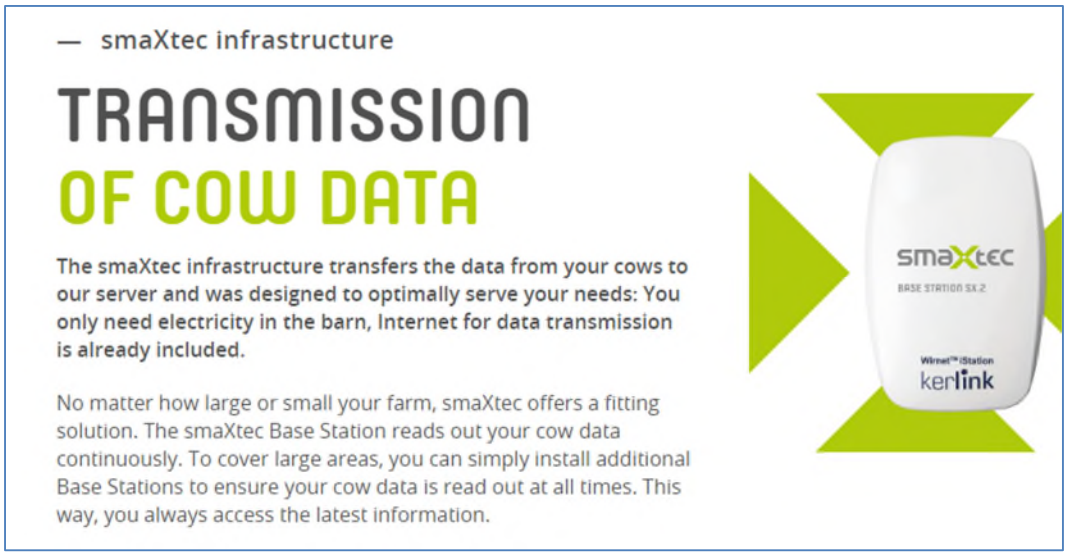

https://smaxtec.com/us/smaxtec-system-3/; https://smaxtec.com/en/smaxtec-system-in-detail/#boli ("Product Sheet" for "Classic Bolus" and "Product Sheet" for "pH Plus Bolus"). In addition, based on an inspection of a sample smaXtec device, smaXtec's boluses include a memory unit for storing encoded data.

123. Further, the smaXtec System includes "read-out devices" that read the radio frequency transmitted by the bolus implanted in the cow:



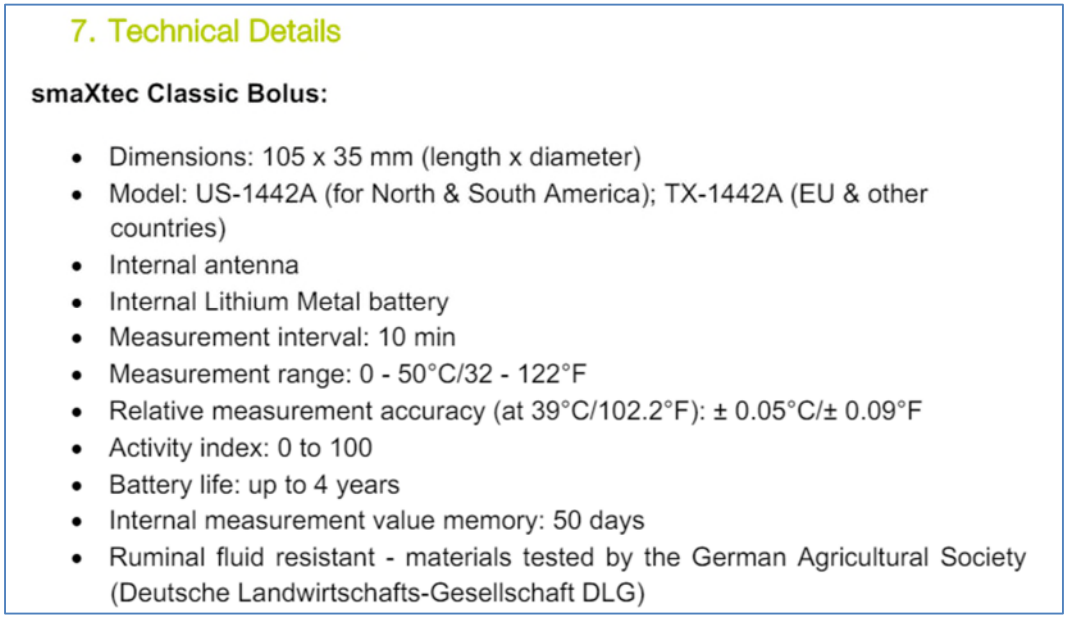

https://smaxtec.com/en/smaxtec-system-in-detail/#infrastructure (explaining that the read-out device "automatically reads the data").

124. Claim 5 further recites "enabling a radio signal generator located within said bolus." The bolus in the smaXtec System includes a radio signal generator to allow transmission of the encoded physiological data to a smaXtec Base Stations:



https://smaxtec.com/en/smaxtec-system-in-detail/. In addition, based on an inspection of a sample smaXtec device, the smaXtec boluses use a system-on-chip with a radio signal transmitter.

125. Claim 5 further recites "activating said radio signal generator at pre-determined intervals to generate a radio signal to carry said encoded physiological data." Based on an inspection of a sample smaXtec bolus, the device includes a system-on-chip that, upon information and belief, is used by smaXtec to transmit data at predetermined intervals. This is consistent with smaXtec's technical documentation, which confirms that the sensors in the smaXtec boluses have a 10-minute "measurement interval":



7. Technical Details

**smaXtec Classic Bolus:**

- Dimensions: 105 x 35 mm (length x diameter)
- Model: US-1442A (for North & South America); TX-1442A (EU & other countries)
- Internal antenna
- Internal Lithium Metal battery
- Measurement interval: 10 min
- Measurement range: 0 - 50°C/32 - 122°F
- Relative measurement accuracy (at 39°C/102.2°F): ± 0.05°C/± 0.09°F
- Activity index: 0 to 100
- Battery life: up to 4 years
- Internal measurement value memory: 50 days
- Ruminal fluid resistant - materials tested by the German Agricultural Society (Deutsche Landwirtschafts-Gesellschaft DLG)

**smaXtec pH Plus Bolus:**

- Dimensions: 132 x 35 mm (length x diameter)
- Model: US-1042A (for North & South America), SX-1042A (EU & other countries)
- Internal antenna
- Internal Lithium Metal Battery
- Measurement interval: 10 min
- Measurement range (pH): pH 3 - 9
- Measurement range (temperature): 0°C - 80°C/32 – 176°F
- Measurement accuracy (pH): up to day 90 pH ±0.2 up to day 150 pH ±0.4
- Relative measurement accuracy (temperature at 39°C/102.2°F): ± 0.05°C/± 0.09°F
- Measurement resolution (pH): pH 0.01
- Measurement resolution (temperature): 0.01°C/0.018°F
- Activity index: 0 to 100
- Measurement duration pH measurement: 150 days (5 months)
- Battery life (temperature and activity measurement): up to 4 years
- Shelf life from date of manufacture: 18 months
- Guarantee pH measurement: 50 days
- Internal measurement value memory: 50 days
- Ruminal fluid resistant – materials tested by the German Agricultural Society (Deutsche Landwirtschafts-Gesellschaft DLG)

https://support.smaxtec.com/wp-content/uploads/2021/01/20200429_smaXtec-User-Manual.pdf. Configuring the bolus to take measurements in predetermined intervals is consistent with the understanding and belief, based in part on the bolus inspection, that the radio signal generator in the smaXtec System activates at pre-determined intervals to generate a radio signal to carry the encoded physiological data.

126. Claim 5 further recites "generating said radio signal having a frequency of between about 700 MHz to about 1 GHz." The smaXtec System generates a radio signal having a frequency between 700 MHz and 1 GHz. First, smaXtec has represented that the smaXtec System uses LoRa technology, which uses the 902 to 928 MHz radio frequency bands in the United States to transmit radio signals. Second, according to the smaXtec website, the smaXtec System uses a Kerlink Wirnet iStation:

https://smaxtec.com/us/smaxtec-system-3/. The Kerlink receiver operates at 868 MHz. Based on either metric, the smaXtec generates a radio signal with a frequency between about 700 MHz to about 1 GHz. *See* https://lorawan-webshop.com/shop/31-outdoor-gateways/202-kerlink-wirnet-istation-868-mhz/.

127. smaXtec Inc.'s and smaXtec Animal Care's making, using, importing, selling, and offering to sell the patented system is without STinsight's authorization. Accordingly, smaXtec Inc. and smaXtec Animal Care have directly infringed, and continue to directly infringe, the '644 Patent.

128. Upon information and belief, smaXtec Inc. and smaXtec Animal Care have long been aware of the '644 Patent. Moreover, STinsight notified smaXtec Inc. and smaXtec Animal Care that the smaXtec System infringes the '644 Patent. Despite this notice, however, smaXtec Inc. and smaXtec Animal Care continue to knowingly and willfully infringe the '644 Patent.

129. smaXtec Inc. and smaXtec Animal Care should be permanently enjoined from practicing the '644 Patent. smaXtec Inc.'s and smaXtec Animal Care's infringing use of the '644

Patent is likely to cause irreparable harm to STinsight. STinsight is an innovator in bolus technology and derives revenue using its technology, and STinsight has never licensed its technology. If smaXtec Inc. and smaXtec Animal Care are permitted to continue to use STinsight's technology, it would undermine STinsight's exclusive rights to the technology. This is likely to harm the value of STinsight's technology and reputation and cause irreparable injury to STinsight. Moreover, if smaXtec Inc. and smaXtec Animal Care are permitted to incorporate STinsight's innovative technology into its products and services, STinsight's reputation as an innovator will be irreparably damaged.

130. In addition, STinsight has been, and will continue to be, irreparably harmed by smaXtec Inc.'s and smaXtec Animal Care's continued infringement of its patents because STinsight will be forced to invest time and money in litigation enforcing its patents instead of investing in researching and developing its technology.

131. A permanent injunction against smaXtec Inc. and smaXtec Animal Care is necessary to avoid irreparable injury to STinsight.

132. Finally, smaXtec Inc.'s and smaXtec Animal Care's infringement has caused harm to STinsight, and STinsight is entitled to recover damages from smaXtec Inc. and smaXtec Animal Care in an amount subject to proof at trial.

## VIII. ATTORNEYS' FEES

133. The above paragraphs 1 through 132 is incorporated by reference as if fully restated herein.

134. Defendants' conduct, including their willful patent infringement and their knowing and deliberate decision to engage in infringing conduct not permitted by license or court order, makes this case exceptional. Plaintiff, therefore, is entitled to collect reasonable attorneys' fees pursuant to 35 U.S.C. § 285.



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 64 of 66

## IX. PRAYER FOR RELIEF

WHEREFORE Plaintiff prays for judgment based on claims of the ’515, ’206, and ’644 Patents and seek relief against Defendants as follows:

(a) for judgment that Defendants have infringed the ’515 Patent;

(b) for judgment that Defendants have infringed the ’206 Patent;

(c) for judgment that Defendants have infringed the ’644 Patent;

(d) for judgment that Defendants infringement is willful;

(e) for an accounting of all damages sustained by Plaintiff as the result of the acts of infringement by Defendants, but not less than a reasonable royalty under 35 U.S.C. § 284;

(f) for increased damages pursuant to 35 U.S.C. § 284;

(g) for a permanent injunction against Defendants’ continuing infringement, or in the alternative, an ongoing royalty for continued infringement of the ’515 Patent;

(h) for a permanent injunction against Defendants’ continuing infringement, or in the alternative, an ongoing royalty for continued infringement of the ’206 Patent;

(i) for a permanent injunction against Defendants’ continuing infringement, or in the alternative, an ongoing royalty for continued infringement of the ’644 Patent;

(j) for an award of attorneys’ fees and costs pursuant to 35 U.S.C. § 285;

(k) for all actual damages together with prejudgment interest and post-judgment interest; and

(l) all other and further relief as the Court may deem just and proper.

## X. JURY DEMAND

Pursuant to Federal Rule of Civil Procedure 38(b), Plaintiff demands a jury trial on all issues so triable.



Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 65 of 66

Dated: April 23, 2024

Respectfully submitted,

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Smaxtec Exhibit 1018
Smaxtec, Inc. v. ST Reproductive Tech, LLC
Page 66 of 66