

SIEMENS

Protecting our livestock – and ourselves – from harmful bacteria

SITRANS FC430 improves quality control in vaccine production

Process Instrumentation



The customer

Epitopix, LLC, a privately held company based in Willmar, Minnesota, USA, has been manufacturing veterinary vaccines since 2002. Epitopix uses proprietary scientific techniques to discover, develop, produce and sell vaccines that improve animal health and human food safety.

The challenge

The basis for many of the vaccines manufactured by Epitopix is a groundbreaking and patented process referred to as SRP® (Siderophore Receptor and Porin) Technology. The process begins with commercial-scale bacterial fermentation under very specific conditions favorable to the creation of SRP® proteins, which are located on the outer

surface of bacteria and are responsible for transporting nutrients through the bacterial cell wall. Epitopix harvests the SRP® proteins from the bacteria and combines them with substances known as adjuvants to create injectable vaccines against bacterial infection in livestock.

During the final vaccine formulation as a water-in-oil-in-water emulsion, water phase is steadily introduced into oil via a high-shear mixer external to the bulk product recirculation tank. The recirculation rate of the oil and any resulting changes in density must be monitored constantly in order to optimize the production process and ensure consistent vaccine quality.

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The case at a glance

Region: Midwestern USA

Industry: Pharmaceutical

Customer: Epitopix, LLC

Challenge: Monitor recirculation rate of oil and any resulting changes in density to optimize vaccine production process and ensure consistent quality

Product: SITRANS FC430

Main benefits

- Most compact Coriolis solution in its class
- 0.1% measurement accuracy
- Flexible and simple installation
- Outstanding customer service



Measurement instrumentation had not previously been included as part of this particular application, which relied instead on the careful visual observations of trained manufacturing staff. To achieve the critical goal of scaling up production without compromising performance, Epitopix recently made the decision to invest in flow measurement technology that could be incorporated seamlessly into the blending process.

The solution

Epitopix required a high-precision inline flow solution and therefore considered both Coriolis and electromagnetic flow meters. Eventually they determined that Coriolis technology was the appropriate choice because it is capable of high-accuracy density measurement despite the frequent changes in fluid density that occur during blending.

Ultimately, Epitopix selected the digitally based SITRANS FC430 Coriolis flow meter from Siemens, size DN15 (0.5 in) with hygienic DIN clamps. The SITRANS FC430 met several important criteria, including:

- **Compactness.** The manufacturing area is relatively small and is used to create multiple formulations, so Epitopix needed a flowmeter that would not take up a significant amount of space. Because the SITRANS FC430 is the most compact meter in its class, it was easily mounted to a portable cart along with the high-shear mixer and recirculation pump. Interconnecting flexible hoses were added to minimize the effect of vibrations on the flow meter. The cart and its components can be cleaned- and sterilized-in-place as one unit, and can be wheeled to different locations whenever necessary.
- **Accuracy.** With very high measurement accuracy of 0.1% of flow rate, even at low flows, the SITRANS FC430 provides Epitopix with the peace of mind that comes from being able to put full trust in their flow data, and subsequently their product quality control.

- **Flexibility and ease of installation.** The modular nature of the SITRANS FC430 allowed Epitopix to optimize the limited space available by installing the sensor and transmitter at separate locations on the cart. Additionally, because Epitopix had no previous experience with Coriolis technology, they sought a meter designed with simplicity in mind. The transmitter's graphical Local User Interface (LUI) and multiple wizards take the complexity out of programming.
- **Customer service.** A Siemens technical expert and the local Siemens representative were on site at the manufacturing facility when the SITRANS FC430 arrived to assist with the installation and perform a walkthrough of all features. The support team also helped to configure the meter so that flow data could be outputted to a separate recorder. Epitopix was further impressed by the presence of a QR code on the meter, which when scanned with a Smartphone leads directly to an installation video, a user manual and other useful resources.

Epitopix depends on the SITRANS FC430 to establish a normal product density profile by monitoring oil density and volumetric flow as the water phase is blended in. Data derived from the meter helps to determine when fluid addition rates or the mixer speed should be adjusted to match previous density profiles.

According to Donovan Zammert, Engineering Manager at Epitopix, "As a result of incorporating the SITRANS FC430 into our blending application, we are now much better equipped to optimize the time per volume processed and – most importantly – improve consistency from one finished batch of vaccine to the next."

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