

Feed Mill Production Solutions

Type 8098 FLOWave Meter



bürkert
FLUID CONTROL SYSTEMS

Tackling the challenges of flow measurement during feed production in the Poultry, Beef, Pork and protein sector

Feed Mill Manufacturers have two main priorities: product quality and hygiene. For those operating with different fluids and additives from Oil, Vitamins, Proteins, and additives, there are many challenges in measuring flow while at the same time minimizing waste, energy usage and downtime.

Tom Perkins Area Segment Manager, Hygienic Team for food & beverage at Burkert, looks at how the latest technology in fluid flow measurement can overcome these challenges and deliver additional benefits as well. "Flow measurement is a vital part of food & beverage manufacturing not only for humans, but also for the full protein industry through feed for Chickens, Cows, Pigs etc. From filling vessels to measuring ingredients and controlling cleaning processes, the humble flowmeter performs many tasks. Flowmeters in general come in a variety of shapes and sizes, but for applications in the food and beverage sector, only a few of these are suitable to ensure hygiene standards and precision."



Hygienic by design

The Food & Beverage production and processing industry knows the term "CIP" (Clean-in-Place). These procedures often use demineralized water as well as expensive chemicals to remove scale, bacteria, and debris from process vessels and pipework. However, using a flowmeter that relies on the conductive properties of water, such as a Magmeter (magnetic flowmeter) will find its output readings to be unreliable. Also, when including animal feed additives where oil and other non-conductive liquids are present to the feed, it also does not provide reliable measurement feedback.

One potential solution to these challenges could be a Coriolis flowmeter. The expense of this type of flowmeter makes it an unlikely candidate primarily because the level of accuracy afforded by the Coriolis, is rarely required. In addition, the large footprint of this flowmeter adds significant weight and installation concerns; along with restrictions for mounting and accessibility for annual recalibrations and service. These challenges with traditional solutions often lead to one consistent question, "What Else Is Out There?"



Go With the Flow

Almost every flowmeter design has some drawbacks depending on the media to be measured:

- Sanitary/NON Sanitary product
- Too much particulate
- Conductive or non-conductive
- Too hot or too cold
- Pressure drop (requiring larger pumps)
- Potential for damage / shear of product
- Too many bubbles
- Moving parts in contact with the product (shedding)
- High and low flow concerns

There might be others to add to this list, but at the end of the day - it just has to work – accurately and reliably.

Advanced Technology

In response to a growing need for a flowmeter that could overcome many of these hurdles, Bürkert developed a groundbreaking solution that uses Surface Acoustic Wave (SAW) technology. The physical design of this revolutionary flow measurement system means that there is no direct contact of any sensor components with the fluid, making it ideal for hygienic applications. Furthermore, it can be manufactured to the same surface finish as the rest of the pipeline, meaning that, in terms of hygiene, cleaning and flow conditions, there is no difference to any other piece of straight pipe. FLOWave measures flow in both directions. If a process cannot withstand flow in both directions, there needs to be some sort of signal that warns of flow moving in the wrong direction. The ability to measure in both directions also means that with aggregated flow, the meter still can read and calculate the total flow.

Flow measurement is just one of the capabilities of the FLOWave meter. With the addition of Velocity, Density Factor, Acoustic Wave Factor, and even Temperature, the Type 8098 FLOWave is a meter completely different and far ahead of the standard selection of existing flow meters. Yes, it addresses the “What Else Is Out There” question.

So What Does This Mean?

What is “Density Factor” and what is “Acoustic Wave Transmission”, two things that truly make the difference.

Density Factor:

The best way to explain this is that every product put in through the meter will have a distinct density factor that will relate to that product. Each time this same product is in the meter, the Density Factor display will be similar. While some products do have similar Density Factor readings, establishing a distinct baseline for each specific product in the meter using a static test generates standardized reading profiles for each individual product.

Acoustic Wave Factor:

Using acoustic waves to determine the exact point when one solution replaces another solution. An example of this would be product #1 piping purged with water in preparation for product #2. The FLOWave would instantaneously detect the phase change in the three solutions during a product changeover when using the same product piping system. Another example could be CIP solution and final flush with water; detection between the CIP solution and the water is recognized immediately.

The Density Factor will also detect and change when different products are blended together, a combination of Product A plus Product B provides different readings than product A and Product B read separately.

Temperature Reading:

The FLOWave meter also provides accurate temperature readings created through the energy transmission wave and the time it takes to get from sensor #1 to sensor #2, sensor #3 and sensor #4, traveling along the edge to the tube.

Bürkert's FLOWave is such that it can determine the difference between a standard carbonated soft drink and its sugar-free alternative, the interface between oil and water, the difference between oil #1, oil #2, and oil #3. With all the data coming from a single meter.

Bürkert Fluid Control Systems is one of the leading manufacturers of control and measuring systems for fluids and gases. The products have a wide variety of applications and used by Food and Beverage industries, performance automotive research centers, pharmaceutical research laboratories, as well as in medical engineering and space exploration!

Have a tough application? Need a repeatable, non-contact, hygienic design, multi-parameter liquid sensor - that also reads flow rates reliably and repeatability?



Burkert Fluid Control Systems

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