APPLICATION NOTE: PD Meter Controls Batching Molasses in Animal Feed Production

Molasses is a viscous, sticky, dark byproduct of sugar processing. Sugar manufacturers crush sugar cane or sugar beets to extract the juice and boil it down to form sugar crystals. Molasses is the thick brown syrup left over after the crystals are removed from the juice. The boiling process is repeated multiple times and different types of molasses are produced. The more the molasses is processed, the higher the concentration of vitamins and minerals in the molasses.

Molasses is a cost-effective way to supplement livestock feed. It is used as a livestock feed additive or direct suppliment for rumanint animals (e.g., cattle, goats and sheep), and serves multiple roles in animal diets. The molasses is generally mixed with water in different ratios depending on type of animal, evironment, animal's condition, and the feed type for the mixture addition.

A cattle feed/molasses lick tank

In beef cattle diets, molasses and molasses-based feeds are typically included for one or more of the following benefits:

- Sugar energy for rapid carbohydrate availability
- Growth factors such as branched-chain fatty acids to stimulate rumen microbes
- Palatability that encourages every animal to eat
- Natural source of key essential minerals, including relatively high natural levels of potassium
- Cost-effective, practical and effective carrier for minerals, vitamins, and additives
- Better mix, and less separation and animal sorting (will not allow animals to pick through feed)

HIGHLIGHTS

Industry: Animal feed production
Service: Batching
Fluid: Molasses

Application

Batch control to ensure the proper ratio of molasses is added to feedstream

Problem

- Batch amounts need to be controlled to ensure a repeatable end product is provided
- The high viscosity of molasses makes accurate flow measurement a challenge for many flow meter technologies

Solution

DC-I Series Positive Displacement Flow Meter

- Viscosity insensitive
- High repeatability
- Handles pulsating flow stream
- Low maintenance

BR3000 Series Rate/Totalizer Display

- Displays rate and total simultaneously
- Scaled pulse and 4-20 mA output options
- Internal battery, external DC, or 4-20 mA loop-power supply
- Direct or remotely mounted

The customer, a system integrator for an animal feed manufacturer, needed to control the amount of molasses applied by a spray system to the dry feed. Measuring the flow of molasses can be challenging due to its high viscosity and pulsating flow from the diaphragm pump delivering the molasses to the spray system.

After the feed is mixed and conveyed through the plant, molasses is sprayed onto the mixture and combined to create a consistent end product. The flow rate is monitored to ensure the molasses spray system is operating, and the total applied per feed batch is also monitored to maintain stable batches.

FTI Flow Technology's DC-I Series positive displacement flow meter and BR3000 Series rate/totalizer were selected for their ability to handle high viscosity fluids and pulsating flow, high repeatability, robust design, and low maintenance. The customer is utilizing the 4-20 mA output from the BR3000 rate/totalizer to monitor the flow rate and the scaled pulse to control the batch total through their programmable logic controller.

FTI Flow Technology, Inc.
8930 S. Beck Ave., Suite 107, Tempe, AZ, 85284 USA
Tel: (480) 240-3400 • Fax: (480) 240-3401
ftimarket@ftimeters.com • www.ftimeters.com