

Application News

PD Flow Meters Measure Ingredients In The Snack Food Industry

Industry: Food & Beverage

Service: Flow Rate/Total

Fluid: Salad Oil, HFCS & Water

Overview

Just read the package, box or can containing any food product, and you'll see many different ingredients. One of the critical factors affecting the quality of these products is the proportion of added ingredients. Snack food manufacturers frequently utilize batch processes involving various ingredients, in differing amounts, added to a mixing tank.

Situation

A leading snack food company sought a way of accurately measuring ingredients in a process that involved salad oil, water, high fructose corn syrup (HFCS) and other liquid sweeteners. In these and other ingredient applications, flow measurement equipment must be robust, reliable, easily maintained and, above all, provide repeatable results time after time to ensure product consistency and taste.

The snack food company required a flow meter employing U.S. Food and Drug Administration (FDA) approved materials and allowing for a Clean-in-Place (CIP) capability. At this point in their process, the customer did not require sanitary connections on their flow meters. They also needed a solution providing low pressure drop across the meter on thicker fluids.

In the salad oil application, the flow meter would have to handle 80cP fluid at 32 Gallons per Minute (GPM) and provide a square-wave pulse output to a Programmable Logic Controller (PLC). For use with HFCS, it needed to measure 32 GPM with a viscosity of 220 cP, and also provide a square-wave pulse output.

Solution

Flow Technology's patented DC-I Series Positive Displacement (PD) flow meter proved to be an effective answer to measuring snack food ingredients. These rugged, highly accurate meters are available in 1/8" to 2" line sizes. They have an accuracy of +/- 0.5% with a repeatability accuracy of +/- 0.05%, and operate up to 400° F (204° C). The meters can also provide up to 1000:1 turndown.

On this project, the DC-I Series flow meter was paired with Flow Technology's IS160-01 Hall Effect Sensor. This sensor detects magnets embedded in the flow meter impellers and provides a square-wave pulse output using the 19-94506-01 quick disconnect cable. The pulse output can be sent to a PLC for batch control, or connected to other monitoring devices.

System Description

For the salad oil and HFCS applications, the snack food manufacturer chose the DC20I-6113-5220000 PD flow meter along with the Hall Effect sensor and cable. A separate application required a meter to measure water at a rate of 12-24 GPM. In this case, the DC10I-6113-5110000 was selected along with the Hall Effect sensor and cable.

A key benefit realized by the customer was lower pressure drop across the flow meters, which was enabled by the loose geometry of the DC-I Series' proprietary thermoplastic impeller design. And because the DC-I Series meters are CIP compatible, maintenance personnel can remove their cover plate to dislodge any foreign material caught in the impellers. This allows the process to be up and running again in five minutes or less—without removing the flowmeter from service.

In addition, the repeatability of the PD meters ensured consistent batching of ingredients into the customer's mixing tanks.

Technical Information

Flow Meters: DC20I-6113-5220000, DC10I-6113-5110000

Electronics: IS160-01 Hall Effect Sensor

Flow Rate: 12-32 GPM

Fluid: Salad Oil, HFCS and Water



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