

Mass Flow and On-Line % HFCS Measurement Improves Soft Drink Syrup Room Operations

RESULTS

- Profitable, high quality beverages
- Low cost of ownership
- Accuracy
- Repeatability
- Reliability



APPLICATION

Soft drink blending, although a relatively simple process, utilizes high-technology mass flow and %HFCS (high fructose corn syrup) measurement to improve product quality and reduce costs. Quality soft drink production requires a single flowmeter to maintain accuracy on a number of products.

Online %HFCS analysis instruments must be simple to operate and easy to maintain. The equipment and its maintenance must justify the pay back and, foremost, it must produce a high-quality, repeatable product.

Water, HFCS, concentrates and other minor ingredients are blended together to produce simple-syrup. The syrup is stored and transferred to a proportioner, then blended with water to bring to final beverage strength. The final blend is then carbonated to produce the finished product. The process may appear simple, but improper proportioning of syrup ingredients will result in an unfavorable product and poor profitability.

CHALLENGE

A leading soft drink bottler was using positive displacement flowmeters to measure water and corn syrup. This system, which measured volume, experienced inaccuracies resulting when the volume changed as temperature, fluid viscosity and fluid density fluctuated. This conventional method required time-consuming lab

Micro Motion flowmeters maintain accuracy regardless of changes in the fluid temperature, density or viscosity, delivering consistency under all production conditions.

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tests and adjustments to each syrup batch. The positive displacement meters also required significant maintenance and periodic calibrations, increasing the total cost of ownership.

SOLUTION

In their syrup room for the blending of high quality simple-syrup, this bottler replaced its positive displacement meters with Micro Motion® Coriolis flowmeters. The system consists of an industrial-grade PC blending system and three Micro Motion meters.

A major objective of the system was to eliminate quality problems related to variations in corn syrup concentration. Since the corn syrup storage tanks are not agitated, stratification occurs. The volumetric meters could not account for the varying densities.

Micro Motion mass flowmeters not only offer accurate flow measurement, regardless of the changing fluid density, but additionally monitor the corn syrup solids content. Percent solids of 42% and 55% HFCS are supplied to the control system from the Micro Motion transmitters and the blend is adjusted accordingly.

Two 3-inch meters are installed on corn syrup, one for 42% and the other for 55% HFCS. A 1 1/2-inch sensor is used to measure water. Mass flow rate information from all three sensors and the percent solids HFCS information from the 3-inch sensors are transmitted to the industrial-grade PC. The information is processed and the control system determines the correct syrup blends. This provides accuracy and quality control unattainable with the previous system. In addition, because Micro Motion meters have no moving parts, they don't require periodic maintenance or recalibration. As a result, the bottler not only improved product quality, but also saving time and money.

