

OEM

Soft Drink Blending

Overview of Soft Drink Blending

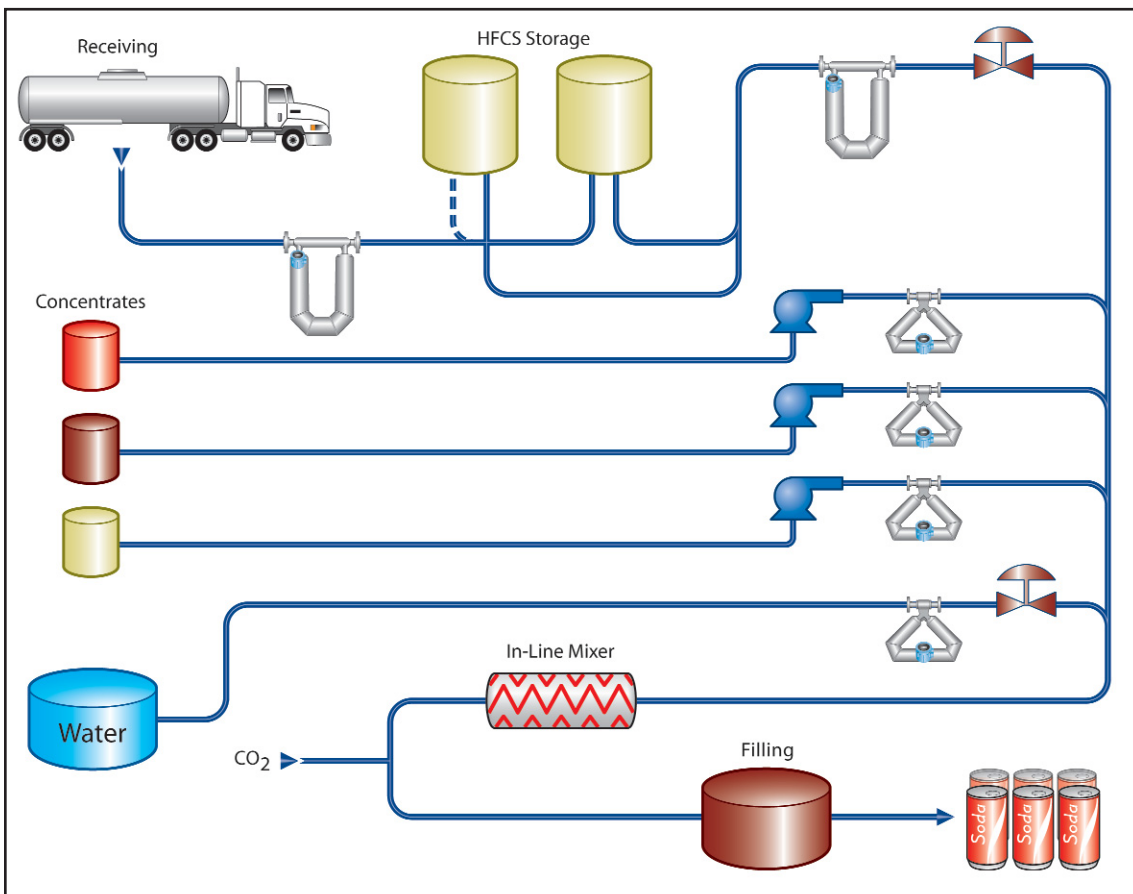
Global soft drink, including juice, consumption is at an all time high with demand expected to continue as new markets are opened and new products introduced.

To meet this growing demand, major soft drink producers are continuously challenged to reduce waste, increase throughput, minimize raw material inventories and improve quality.

Continuous blending of soft drinks and juices can vary from simple, syrup concentrate blended with water to more complex systems involving multi-ingredient drinks. The more involved systems will typically offer CO₂ injection, metering of sugar syrups, citric acids, and various additives and are capable of handling multiple recipes.

Accurate on-line °Brix density is a key measurement for controlling high fructose corn syrup (HFCS) blend rates, essential to achieving end product °Brix targets. These blending solutions or skids are usually pre-engineered, packaged and sold around the world by OEMs and engineering houses which focus on many aspects of beverage processing such as blending, filling, pasteurizing etc.

These and other solution providers are challenged to find improved ways of meeting the stringent performance criteria required by the soft drink industry.



Soft Drink Blending Diagram

The challenges to the soft drink blending are detailed on the next page.

Customer Challenges Overview

The OEM primary requirements are for excellent liquid and gas flow measurement accuracy, density accuracy (°Brix), turndown, repeatable performance under changing flow/temperature conditions and reliability. Secondary requirements include compactness and cleanability, both CIP and caustic wash down.

Juice concentrate or soft drink syrup can be highly viscous and, depending on temperature required by product recipe, can span a wide viscosity range.

In addition, the wide turndown required for multi-recipe systems and maintenance free operation makes it all but impossible to use traditional flow metering technologies.

°Brix density reading is a critical measurement needed for blending skids as changing raw material composition can impact final product quality. Accurate blending of multiple syrup concentrations is the key to blending skid performance. Maintaining quality assurance has traditionally been done through grab sample and laboratory analysis which can increase off-spec product and waste depending on sample period vs. throughput.

Customer Process Challenge #1 – Accurate, Reliable Liquid and Gas Measurement

Challenge: With expensive raw material costs and high volumes, OEMs must not only engineer skid solutions for flexibility but must demonstrate performance over time and under harsh conditions. OEMs are often held accountable to their performance specifications and there is little room for error. Unreliable or underperforming equipment will reflect back on the OEM and may cause unwanted manufacturing downtime or product waste for the end-user resulting in expensive service time/cost for the OEM.

Customer Process Challenge #2 – Sensor & Transmitter Compactness

Challenge: Space in any manufacturing production line is at a premium and OEMs must design compact skids that integrate seamlessly into the overall process. Having multiple outputs and digital communication protocols packaged for control room or panel mount, facilitate wiring to PLCs.

Improving Process Efficiency

Recommended Product Solution

Challenge #1 – Accurate, Reliable Measurement

Customer Challenge: Accurate measurement of liquids, gases and density over wide turndown.

Solution: Micro Motion ELITE Coriolis meters very accurately measure the mass flow of liquids, gases and density of all feed streams used in the blending skid.

Unlike traditional flow technologies, variations in density and flow rates have no effect on Coriolis. With its non-intrusive design and clean-in-place (CIP) cleaning on-the-fly change overs can be accomplished faster than ever before.

No need to adjust the factory zero and true immunity from field affects ensures trouble free and quicker start-ups.

On-line meter verification detects deviation from calibration and helps to ensure quick troubleshooting and minimizes downtime.

Micro Motion ELITE Family

- ELITE Performance
 - Standard
 - +/- 0.1% Liquid flow accuracy
 - 0.0005 g/cc Density
 - +/- 0.35% Gas accuracy
 - Enhanced
 - +/- 0.05% Liquid flow accuracy
 - 0.0002 g/cc Density
 - +/- 0.35% Gas accuracy
- No need to zero
- Immunity from field effects
- Entrained air capability
- On-line meter verification
- Above specs meet or exceed typical blending skid performance specs.
- New enhanced ELITE specs allow customers to further tighten existing skid specs thereby reducing waste and improving yields.



Challenge #2 – Sensor & Transmitter Compactness

Customer Challenge: Space is a premium on complex multi-stream blending skids. Minimizing or eliminating components can help reduce skid size, weight and cost.

Solution: The Micro Motion 1500 and 2500 Din Rail transmitters eliminate the need for bulky integral transmitters and provide tidy, compact mounting away from the harsh process environment.

Using the Direct Connect barrier and signal conditioner allows customers to eliminate the need for transmitters all together, further reducing cost and maximizing space. An RS-485 Modbus signal provides all the process measurement registers required in addition to a plethora of diagnostic information.

Having multiple outputs and digital communication protocols in a Din Rail package simplifies wiring to PLCs and reduces wiring costs.

Micro Motion 2500 Transmitter and Direct Connect

- True OEM solutions only offered by Micro Motion.
- Micro Motion 1500/2500 Din Rail mounted transmitter can reduce wiring costs since 115/230 VAC power does not have to be run to the sensor.
- Due to its small footprint, the Micro Motion 1500/2500 is an ideal OEM solution for skids with limited space.
- Using the Direct Connect barrier eliminates the need for a transmitter when using Modbus RS-485 output, thereby reducing overall cost.



Resources and References:

Micro Motion Food & Beverage Application Note, Micro Motion Improves Soft Drink Blending AN-00690

Micro Motion Food & Beverage Application Note, Continuous Fructose Blending AN-00468

Micro Motion Food & Beverage Application Note, Batch Blending Efficiency & Quality AN-00470

Article Reprint: Flow Forum: Can you afford not to use Coriolis? NL-00469

F&B Article Reprint: Flow Meters make the perfect Blend AR-00763