

OEM Utilizes Modbus to Reduce Costs and Enhance System Performance and Value

BENEFITS

- Improved response time and system performance with digital communications
- Improved first-pass yield with precision concentration measurement
- Reduced capital costs by \$3,000 per meter



APPLICATION

Some original equipment manufacturers (OEMs) of processing equipment focus on being the low bidder and put their products together using the least expensive instrumentation and controls possible. Others know that outstanding engineering, accuracy, consistency and durability have recognized value among end users and have earned reputations for building superior equipment that justifies a premium price. KHS is in that second group.

"We make fairly aggressive statements of performance for all of the equipment we build and we build a Cadillac," says Jeffery Tietz of KHS. "The way our customers justify the additional cost is consistency and accuracy."

The Wisconsin based company produces a wide range of process and packaging equipment and equips its blending equipment with Coriolis mass flowmeters. "The heart of what we do is based on mass flow," say Jody Lawson of KHS. "Volumetric flow is affected by temperature, mass is not. We use Coriolis for mass flow accuracy."

KHS's blending systems are primarily sold to beverage makers. High fructose corn syrup (HFCS) or liquefied sugar is a primary ingredient in many beverages. The sugar concentration, measured in °Brix, is a critical parameter to control in order to meet final product quality specifications.

KHS uses Coriolis meters which measure mass flow, temperature and density. "From temperature and density we can calculate percent solids of the corn syrup, which lets us control finished product °Brix," says Lawson. "The blending system can automatically compensate for variations in tank-loads or corn syrup."

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KHS designs blending skids for the beverage industry which utilize Micro Motion Coriolis meters to monitor and control blending ratios based on real-time °Brix.



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CHALLENGE

Liquid sugar and HFCS are expensive ingredients in beverages. The "sweetness" of these syrups can vary due to changing solids concentrations and if these changes are not accounted for during the blending process, final product quality will not meet specification. Real-time monitoring of Brix is needed to meet targeted Brix specifications on final product. Meeting final specification on the first pass reduces rework and maximizes plant throughput.

"Our customers are concerned about accuracy," says Tietz. "Controlling expensive ingredients like essences or staying closer to the specification-not running rich-on components like corn syrup goes right to their bottom lines."

SOLUTION

KHS uses Micro Motion ELITE® Coriolis Meters with MVD™ Direct Connect™ to control the blending system using Modbus communications. Prior to using MVD Direct Connect, each flowmeter had a transmitter mounted in the control cabinet. The transmitters fed a pulsed input through an interface card to a PLC. Temperature and density signals were also brought in through cards. "The new technology lets us eliminate the transmitters, the cards, and the special nine-wire cable from the sensor to the transmitter," says Lawson. "We now use a smaller rack and we're able to decrease the cabinet size."

Lawson uses ProLink II by Micro Motion to set up the meters. "All we have to do is apply 24 VDC over two wires and connect two wires for the Modbus signal. We use the ProLink II software, go online with the meter and assign an address," he says. "All the configuration data is programmed in the meter; we just assign an address." In addition, the MVD Direct Connect approach reduces engineering hassles. "It makes my job a lot easier by streamlining things. I don't have to worry about scaling-it gives me real-time data in engineering units. I can look at the meter and see what it sees."

The rapid updates and digital signals also add accuracy. Tietz says, "In the meter's optimum range, where we design them to run, MVD Direct Connect is 100% more accurate."

But regardless of how accurate an instrument is or how elegant the engineering, no company can afford to use equipment that doesn't contribute its share to ROI. For KHS, MVD Direct Connect simply saves money, Lawson says. "Cost savings are terrific, about \$2,500-3,000 per meter installed, by eliminating the transmitter and interface cards, reducing the cabinet size and simplifying the wiring."

Emerson Process Management

Micro Motion Americas

Worldwide Headquarters
7070 Winchester Circle
Boulder, Colorado USA 80301
T: 800 522 6277
T: +1 (303) 527 5200
F: +1 (303) 530 8459

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