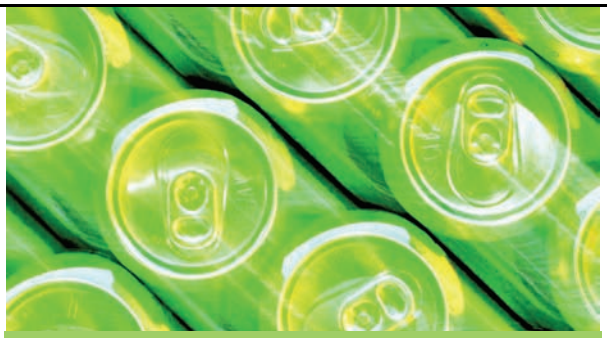
Carbonated Beverage Producer Improves Final Product Quality While Reducing Costs

BENEFITS

- Costly sampling and rework was eliminated
- Product losses during changeover reduced by 90%
- Achieved consistently higher final product quality



Accurate, in-line flow and concentration measurements eliminated the need for costly laboratory analysis.

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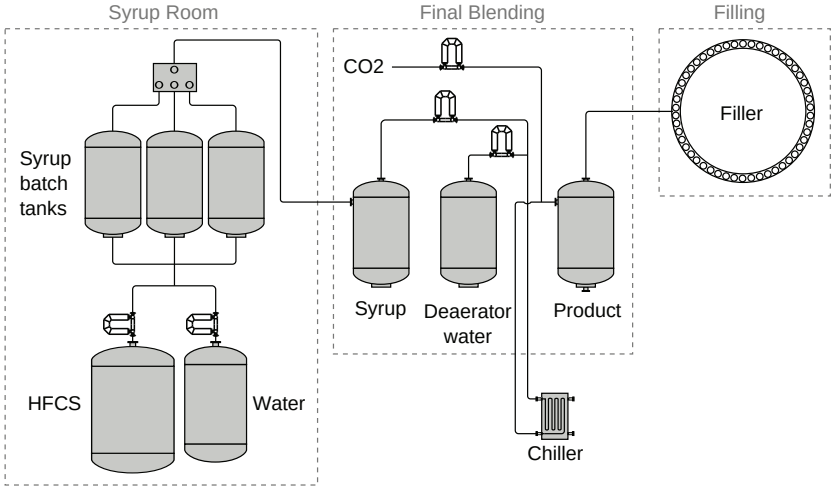
PROCESS

In carbonated beverage production, the final blending process involves combining a simple syrup (sweetener, water, and flavoring) with dearated water to make a non-carbonated drink. This blended drink is then injected with gaseous CO_2 to make the final carbonated beverage. The beverage is then sent to rotary filling machines for final consumer packaging.

CHALLENGE

A global carbonated beverage producer had historically performed final blending and carbonation on a batch basis and used pressurized mixing/storage vessels to keep the product carbonated prior to release to the filling machine. Workers would take laboratory samples from the storage tanks and analyze the drink for °Brix concentration of sugar as well as carbonation levels and other tests. Any batches that failed to meet specification had to be reworked.



This process required a large investment in pressurized tanks. The slowdowns inherent in the batching process were exacerbated by the manual testing and reworking of the batches. This resulted in an overall reduction of plant throughput.

In addition, whenever product brand changeovers occurred, the plant needed to clean all the tanks, the pipes, and the filling bowl. This process would result in the loss of up to 5 gallons of concentrated simple syrup and 30 gallons of finished

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product with each cleaning cycle. These losses were sustained in order to ensure that final product was not diluted or impacted by the cleaning agent.

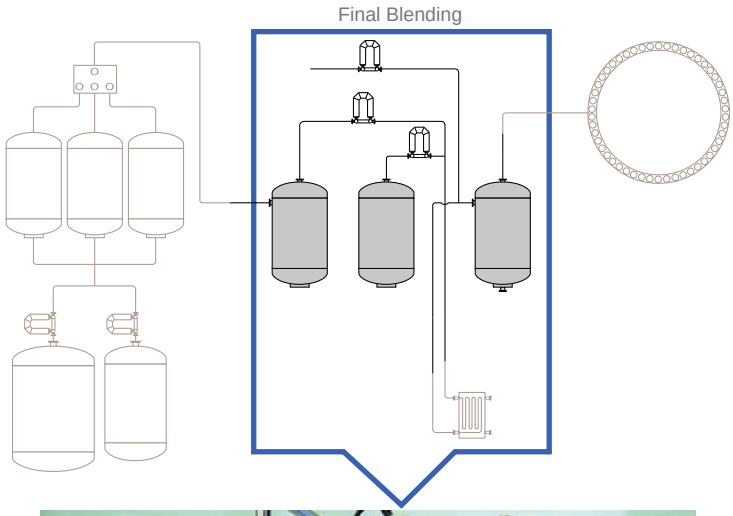
SOLUTION

The beverage producer created a new blending skid using Micro Motion® Coriolis meters. These meters were installed on the water and syrup lines. In addition to measuring the flow rate on each of these streams, the °Brix concentration of the syrup can be directly monitored by the meter in the syrup line. The signals are integrated in a PLC, and control algorithms adjust the water flow rate to achieve the target °Brix concentration for the blended product. This non-carbonated water/syrup flow then runs through an in-line mixer.

Downstream of the mixer, where CO_2 is injected, the beverage producer installed a third Micro Motion meter to measure CO_2 flow, thereby ensuring that carbonation meets final product specification. At this point, finished, carbonated product is then delivered to the filler bowls on the rotary filling machines.

Because the Micro Motion meters provide accurate, in-line flow and concentration measurements during blending, the need for costly laboratory analysis of the product in the filling bowl was eliminated. The plant experienced increased capacity and throughput by avoiding the sampling and rework inherent in their old process. Final product quality also improved—the markedly higher concentration accuracy of the Micro Motion meters, plus the consistent, reliable injection of CO_2 meant that there were far fewer filled cans out of specification.

The beverage producer saw concentrated syrup losses due to product changeover drop from 3–5 gallons to less than 1 quart, with a final product savings of up to 30 gallons with each changeover. That translates into significant yearly savings from reduced product loss.



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