



APPLICATION SPOTLIGHT

Fruit & Vegetable Processing Plant Utilizes Coriolis Meters



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APPLICATION:

A southeastern US processing company produces a variety of dried natural vegetable flavorings for several national food brands. An important step in the manufacturing process is measuring the Brix or sugar content of the juice concentrate to ensure appropriate amounts are drawn from raw vegetables and not left to waste.

During processing, raw vegetables are washed then blanched in preparation for grinding to extract juice concentrate. Once removed from vegetables, the juice is processed through a second wash to remove any carryover (such as dirt, sand, stones, etc.) then heated to produce a mixture of water and sugar or Brix. Spent grindings derived from the extraction process are dried and supplemented with vitamins and mineral to be made into animal feed, a secondary by-product.

As different raw ingredients become seasonally available, the process changes. For example, celery has a much lower sugar extraction level because of its water content than sugar beets. While the mechanics of extraction remain basically the same, the concentration of the “sugars” can vary among different vegetables from 2% to 20%.

Previously, final product was weighed at the end of the production process, which was several steps after the sugar extraction process. At this point, no corrective actions could be taken to improve process efficiency. To improve yield and ensure greater final product consistency,

the company needed an automated process that monitored Brix during rather than at the end of the production cycle.

PRODUCT SUPPLIED:

- TRICOR Coriolis Model TCMP Mass Flow Meter
- TCD 9100 Transmitter





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CHALLENGE:

Previously, the manufacturer could not calculate the concentration of juice extracted from vegetables until weighing the product after water extraction, resulting in quality issues as too much juice is left in the grindings and product inconsistency in the sugar concentration of different batches of the end product. Manufacturing needed an automated process to monitor sugar concentrations during and not after production.

SOLUTION:

AW-Lake designed an automated sugar monitoring system consisting of a TRICOR Coriolis Model TCMP Mass Flow Meter and TCD 9100 Transmitter with a display that calculates sugar concentrations during production, providing real-time feedback to operators.

After the grinding process, juice concentrate passes through a TRICOR Coriolis Model TCMP Mass Flow Meter that monitors several process variables including mass flow, sugar content and density. The meter was mounted on the outlet line from the extractor.

The TCMP Mass Flow Meter outputs data to the TCD 9100 Transmitter that uses juice sugar weight in pounds/cu foot x sugar concentration in % to determine produced pounds. The meters help to maintain a consistent percentage of Brix or sugar content derived from different vegetables for a more consistent maximum output and less waste. A Brix program is saved on tables within the Transmitter so operators can easily set up new process parameters to accommodate new vegetables with less complication than when using other mass flow meters.

TECHNICAL ADVANTAGES:

The Coriolis Model TCMP Mass Flow Meter with TCD 9100 Transmitter automates the Brix monitoring process, eliminating the need for manual sampling and weighing the end product as a means of quality control. The process also decreases energy usage by reducing demand on the dryer as higher amounts of solids in process concentrates require less water extraction.

