

Micro Motion® Flowmeters Automate Quality Control in Dough Manufacturing

RESULTS

- Eliminated need for operator sampling, saving \$25,000 per year
- Meters paid for themselves within ten and a half weeks
- Greater product uniformity
- Reduced product rejects



APPLICATION

In the manufacturing of dough for use in cakes, pastries and breads, controlling the amount of air entrainment in the raw dough can have a significant impact on the quality, uniformity and customer appeal of the final product.

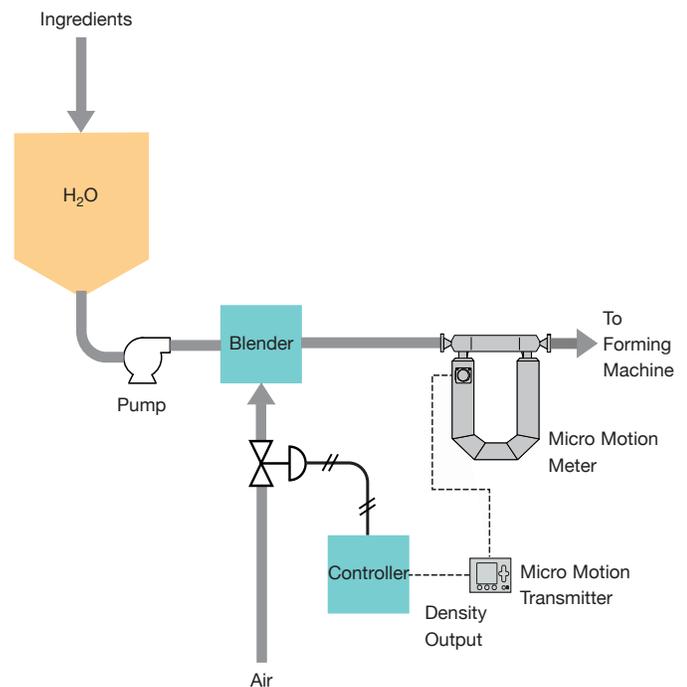
An example of the need for a uniform and consistent product is the hamburger buns manufactured for fast food restaurants. When a customer buys a hamburger at a restaurant, they expect the food (including the bun) to be the same as the time before. If it is not, the customer might go elsewhere and the bun supplier might lose business. In order to maintain uniformity in this type of product, a great deal of revenue can be lost checking on the product uniformity, performing touch-up operations, and discarding inferior products.

CHALLENGE

In one case, an air operator in a plant was required to take samples of the dough every four minutes, weigh a known volume of the material, and determine the amount of entrained air. If the readings were out of line, the operator would then adjust a valve on the air injection system. This method of operation was not only time consuming, but was also somewhat sensitive to the individual doing the sampling.

Micro Motion meter simultaneously measures density and fluid mass flow rate.

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 Process Management

SOLUTION

Plant management decided that automating the system would result in a more uniform product and free up the operator to perform other tasks. The manufacturer had successfully used Micro Motion® flow-meters in the past and decided to investigate their density monitoring capabilities.

The Micro Motion meters in this process primarily monitor the density of the dough as it passes through the air injector. The density signal is then used to control the air injection valve.

The decision to use Micro Motion meters was based on two factors:

1. Other vibrating tube, density transducers were available only in one or two sensor sizes. In a dough delivery system, taking sample streams is not practical due to the nature of the material and the chance that the sample might not be of the overall fluid density. Micro Motion offers a variety of sensor sizes, allowing full fluid stream density measurement.
2. No other vibrating tube density transducer allows the simultaneous measurement of fluid mass flow rate.

Since the installation of the Micro Motion meters, the operator who previously spent his time monitoring the dough density has been freed to perform other tasks. With a typical operator working for \$12/hour, this represents a savings of \$480 per week, yielding a pay-back period of 10.5 weeks. Additionally, plant management claimed automating the system resulted in greater product uniformity and a reduction in product rejects.

