

Micro Motion® Flowmeters Automate Air Injection into Cake Mix to Improve Consistency and Reduce Costs

RESULTS

- Eliminates operator manual sampling
- Saves manpower cost
- Payback on meters in under 3 months
- Improves product uniformity, reduces reject rate



APPLICATION

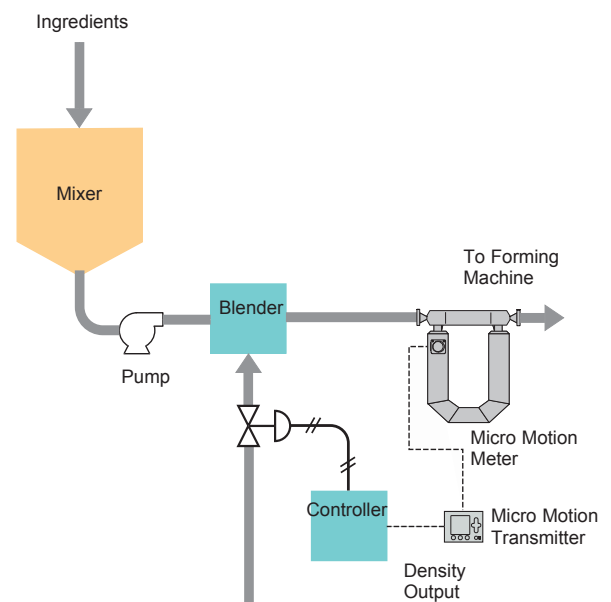
In the preparation of cake mixtures, or dough for use in pastries and breads, controlling the amount of air entrainment in the basic mix can have a significant impact on the quality, uniformity and customer appeal of the final product.

Customers expect product consistency, whether the product is a jam filled sponge cake or a bun for a burger. Additionally better consistency allows the manufacturer to reduce the tolerance – and therefore the excess product supplied, which reduces costs. To maintain uniformity can be costly, in quality control checks, subsequent operator intervention, and in rejection of inferior products.

CHALLENGE

In one cake manufacturing plant, an operator was required to take samples of the mix every four minutes, weigh out a known volume of the material, and calculate the amount of air entrained. If out of specification, the operator would adjust the air valve on the injection system appropriately. This procedure was time consuming, and somewhat sensitive to the care taken by the operator doing the sampling.

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SOLUTION

The management decided that automating the system would provide better control, and save costs. Micro Motion® multi-variable flowmeters had been successfully used previously in controlling water injection into jam, to produce a uniform density of fill, so they were applied to the cake mixes.

The meters were placed to monitor the density of the mix as it is delivered to the processing machines; the density signal being used in a control loop driving a mass flow controller on the air line. This delivers the air to an injector, upstream of the density measurement.

Micro Motion multi-variable flowmeters were used because:

1. Other in-line densitometers are available in one size only, not large enough to take the whole delivery stream. Micro Motion units are available in many sizes, capable of measuring the full flow.
2. No other in-line densitometer allows the simultaneous measurement of mass flow and product density, allowing control of both the quantity and quality of the cake mix dispensed, based on measurements from the single instrument.

Since the installation of the Micro Motion multi-variable flowmeters, the required operator time on this line has been reduced significantly: the resultant cost savings gave the 3-month payback. Additionally raw material costs have been reduced, because the product is more consistent, and can be produced closer to specification. There has also been a reduction in product rejects.

