

Great Lakes Chemical Corporation

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"We will be recommending the Foxboro CFT50 to our clients for batching applications where entrained air is an issue. This is a significant extension of Coriolis capability."

Roger Marsden,
Director of Westmeade Services
Limited (technical support),
Great Lakes Chemicals

Foxboro Coriolis Meter Solves Case of 'Disappearing' Product

by Invensys Operations Management

Goals

- Achieve accurate flow measurement at the beginning and end of batch runs.

Challenges

- Achieving accurate flow measurements between the metered inputs and the outputs, blending and pH balancing the batch, and pumping it into a storage tank, while maintaining correct measurements.

Solutions and Products

- Foxboro Measurement & Instruments.

Results

- Reduced material loss;
- Ensured product quality through accurate flow measurement;
- Increased productivity through faster batch processing;
- Improved cost accountability of material;
- Eliminated costly process modifications.

Manchester, United Kingdom – Chemtura Corporation, with 2009 sales of \$2.5 billion, was formed in 2005 with the merger of Crompton Corporation and Great Lakes Chemical Corporation. Our history – which includes Crompton & Knowles Corporation, Uniroyal Chemical Corporation and Witco Corporation – reflects more than 100 years of growth and innovation.

Chemtura has approximately 4,600 employees in research, manufacturing, sales and administrative facilities in every major market of the world.

We are a leading global supplier of plastic additives, including flame retardants; a leading manufacturer of pool and spa products; a global leader in seed treatment and miticides in the agricultural market; the largest component supplier to the lubricants industry; and a top global producer of urethane polymers.

Flow Measurement Challenges

Achieving accurate flow measurement at the beginning and end of batch runs is a common problem in industries ranging from chemical to food processing.

Typically, the flow meter starts empty, suffers the 'hit' from the onset of process fluid, meters the bulk of the fluid, and then encounters slugs and two-phase flow at the end of the batch.

While no flowmeter technology performs especially well in these conditions, Coriolis meters, which are most accurate when full of fluid, are especially vulnerable to start and end conditions.

At the Great Lakes Chemical facility in Manchester, UK, operations personnel were having particular trouble with a batch line that makes a variety of water treatment chemicals for heating systems and desalination.

The application involves combining three feeds into a tank, blending and pH balancing the batch, and pumping it into a storage tank using a traditional Coriolis meter to measure flow.

With some batches, the product needs to be filtered when it is pumped from the tank, which reduces the flow and increases metering problems.

According to Roger Marsden, Director of Westmeade Services Limited (technical support), *"We had huge discrepancies between the metered inputs and the output, and it was clear that the Coriolis meters were not 'seeing' the entire product passing through. Depending on the flow rate, up to 200 kg of product was missing. And in situations where the product had to be filtered, as much as a 1000 kg went unmeasured."*

"We have other clients with similar problems, and we pride ourselves in supporting the latest technology. Upon learning of the Foxboro CFT50 digital Coriolis flowmeter, we arranged a trial," continues Roger Marsden.

Comparison Flowmeter Test

The Foxboro CFT50 was installed in series with the existing meter on the outlet to properly compare performance.

A chart recorder was used to capture data, with a two-second update time. Figures 1 and 2 show the start and end of a typical batch, as well as the two mass flow readings.

The Foxboro CFT50 density reading is shown to indicate the percentage of air in the fluid.

Figure 1 shows that prior to the onset of flow, both meters had a zero reading, while the density reading indicated that the meters were 'wet and empty.'



Foxboro CFT50 digital Coriolis flowmeter.

Figure 1: Start of batch

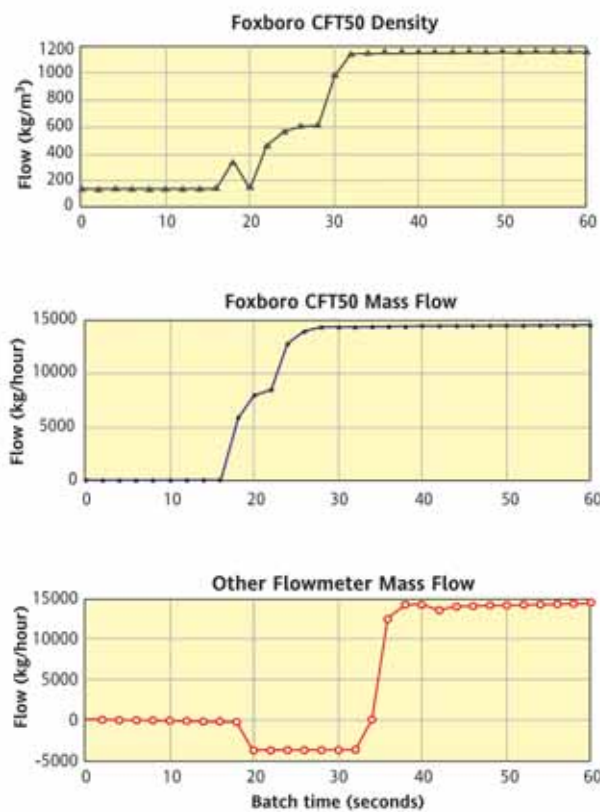
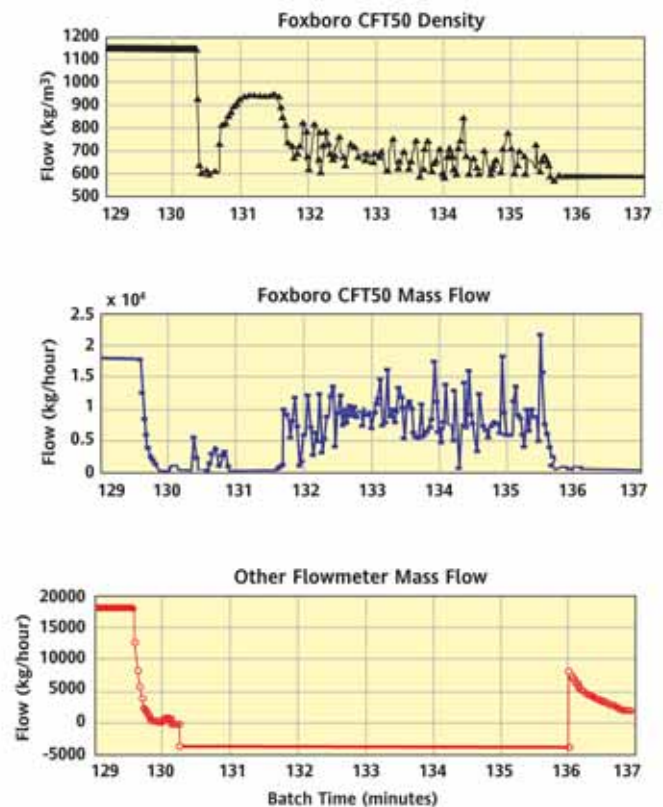


Figure 2: End of batch



Start and end of a typical batch.

Once the flow began, at 18 seconds, the CFT50 started to measure immediately, whereas the other meter required some 16 seconds to register the flow, allowing approximately 4 kg of material to pass through unmetered.

Once the batch was in full flow, the two meters matched each other.

Figure 2 shows that at the end of the batch, both meters registered the drop in flow at 130 minutes, but as the flow tubes drained the other meter stalled.

It failed to register the final blow-through of product.

Accurate Results and Cost Savings

Great Lakes have drawn the obvious conclusions.

Mark Wilkinson, I+E manager (instrumentation and evaluation), said: *"Based on proven performance, we now trust the CFT50, so the other meter will be pulled out."*

"We will be recommending the CFT50 to our clients for batching applications where entrained air is an issue. This is a significant extension of Coriolis capability," added Roger Marsden.

This document was realized thanks to the support of: Great Lakes Chemicals.