

# Unilever Reduces Costs with Micro Motion ELITE & F-Series Coriolis Meters

## Results

- Assured quality of final product, and enhanced health and safety
- Reduced operating costs by 17%
- Saved 10-15% in production time
- Reduced raw material waste by 1-2%
- Minimized risk of spills and environmental issues



## Application

Precision measurement of silicone feedstock used in the manufacture of shampoo products.

## Customer

Unilever is an international manufacturer of foods, personal and household care products. The Gebze production facility in Turkey is one of the world's largest manufacturing locations for detergent, household and personal care products.

## Challenge

As part of a major investment program to meet increased demand for its products, Unilever invested in a new automatic silicone mixer line for shampoo products. However, Unilever discovered that the installed flowmeters were unable to measure feedstock flow because of entrained gas in the silicone and the need to operate at a vacuum of -700 mbarg.

To ensure production could continue with the best product quality, Unilever decided to use a process of weigh scales and load cells to replace the unsuccessful flow measurement system.

The resulting handling, transport and storage of over 7000 barrels of silicone per year increased production time, operating costs, and health and safety risks. Wastage was increased because 1-2 percent of the silicone was left in the empty barrels. Equipment used to handle the barrels also increased plant energy usage and costs. Most importantly, the silicone measurement accuracy from the weigh scales was lower than expected and not sufficient to meet Unilever's exacting quality standards.

To eliminate the weighing process, Unilever required a highly accurate measurement system based on mass flow.

## Solution

Unilever had evaluated several types of Coriolis flowmeters supplied by various vendors, but these tests were unsuccessful under the extreme operating conditions. To address these issues, Emerson worked with Unilever to investigate how Micro Motion® ELITE® Coriolis

***"Our tests concluded that Emerson's Micro Motion Coriolis flowmeter are the only meters that can successfully measure silicone feedstock flow with high density bubbles."***

**Atila Bozkaya**  
Project Control & System Design



*Emerson's Micro Motion Coriolis flowmeters help Unilever enhance quality and reduce costs at major production facility in Turkey.*

flowmeters (not included in the previous evaluation) would perform in the same conditions.

Emerson's Micro Motion ELITE Coriolis flowmeters feature low-frequency flow sensors that increase flow accuracy in the presence of two-phase flow. MVD (multivariable digital) technology considerably improves the accuracy and stability of the Coriolis signals from the flow sensor. Enhanced signal processing, as well as sensor stability and design, ensures accurate measurements even under entrained gas conditions.

Emerson conducted extensive onsite tests in partnership with Unilever engineers to prove the performance of the Micro Motion ELITE Coriolis flowmeter. After the successful completion of the tests, the process of weigh scales and load cells could be eliminated, reducing operating costs by 17 percent.

Product quality has improved and production time reduced by 10-15 percent. In addition, the reduced handling of the silicone feedstock has reduced health and safety issues, and minimized the risk of accidental spills that could damage the environment.

Based on the performance of Emerson's Coriolis flowmeters, Unilever installed an additional 12 Micro Motion ELITE and F-Series Coriolis flowmeters at Gebze when the capacity of the line was increased with two more mixers. Unilever is also expanding the use of Micro Motion products to other similar harsh applications and locations. For example, a Micro Motion ELITE Coriolis flowmeter was installed at a Unilever plant in Nigeria to measure detergent slurry.

### Resources

Emerson Automation Solutions Industries  
[Emerson.com/Chemical](https://www.emerson.com/Chemical)

Micro Motion F-Series Coriolis Flow Sensor  
[Emerson.com/MicroMotionFSeries](https://www.emerson.com/MicroMotionFSeries)

Micro Motion ELITE Coriolis Flow Sensor  
[Emerson.com/ELITE](https://www.emerson.com/ELITE)

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***“Despite operating in the high vacuum of -700 mbarg, the measurement accuracy of the Micro Motion Coriolis flowmeter was maintained.”***

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