

# Increased Drum Filling Productivity, Safety and Reliability with Micro Motion Flowmeters

## RESULTS

- Increased productivity and safety by eliminating manual procedures
- Provided ability to check product quality
- Reduced maintenance and downtime
- Accuracy unaffected by changing process conditions



## APPLICATION

One of the most common practices in the specialty chemicals industry is to transport liquid materials in disposable drums and reusable tote bins. In many cases, intermediate and raw materials are also packaged this way for use within a plant. End products are also packaged this way.

The manufacturer must load materials using a custody transfer approved device to ensure that its customers receive the expected amount of material and to meet contractual or regulatory requirements. A mechanical scale or load cell device has typically been used to measure materials on a weight basis. As containers are filled with product, the weight-based amount is totaled and subtracted from the manufacturer's inventory.

A typical filling station consists of a scale positioned beneath a filling spout. A valve is used to start and stop flow. An operator positions an empty drum on the scale, fills it, and then moves the drum manually onto a pallet. Usually, these drums weigh between 400 and 500 pounds.

## CHALLENGE

Scales present problems with productivity, safety, and reliability. A typical loading procedure requires a lot of manpower, which can slow the amount of time it takes to fill drums.

Due to the heavy weight of filled drums, the manual procedure can result in operator injuries.

Because scales are mechanical devices with many moving parts, the reproducibility of their performance diminishes as system components wear down. To combat the continuous measurement drift, weigh scales must be protected from rough loading and

*Drums can be emptied and refilled more often, resulting in increased productivity.*



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unloading and meticulously maintained and calibrated. Additionally, the scales can be damaged by chemicals spilled during loading and unloading and even the solutions used to wash them down.

## SOLUTION

Micro Motion® Coriolis mass flowmeters are approved by weights & measures regulatory agencies in many countries. Because the meters measure mass directly, they can measure many different fluids regardless of changes in environmental conditions or product composition.

With a Micro Motion mass flowmeter, drums do not have to be positioned on a scale platform. A single operator can position several empty drums on a pallet. Using a flexible hose, the operator can fill each drum and then transport the entire pallet with a fork truck. By reducing the loading time, the supply tank can be emptied and refilled more often, resulting in increased plant throughput. In addition, manpower has been reduced, and the safety hazards that are posed by full drum handling can be eliminated.

By totalizing the Micro Motion mass flow signal in the meter's transmitter, an automatic valve can be controlled to deliver

uniform and accurate drum filling can be ensured. Another advantage of the Micro Motion alternative is the ability to check product quality by using density measurement from the meter. Density can be measured with an accuracy of  $\pm 0.0005$  g/cc.

Micro Motion delivers a total filling solution that eliminates accuracy problems, reduces maintenance, plus increases safety and productivity. The direct mass flow measurement technique offered by Micro Motion has proved to be successful in drum filling applications.

