

# Micro Motion® Mass Flowmeters Enable the Fiber Industry to Process PET Continuously

## RESULTS

- Reduced process variability resulting in increased throughput
- Reduced inventory and capital costs
- Improved quality control
- Eliminated secondary pressure and temperature equipment needed to infer mass flow
- Reduced product waste



## APPLICATION

A company manufactures polyethylene terephthalate (PET). This process involves mixing ethylene oxide, ethylene glycol, dimethyl terephthalate, and three intermediate products. Each of these components and the end product can be produced in a separate batch process. However, continuous processing is significantly more efficient and provides greater control of product quality.

## CHALLENGE

The reactions that produce each of the intermediate products and the end product PET require a precise mass balance of each component. Reactions resulting in ratio errors as small as 2% produce an unusable product. Therefore, component feeds must be precisely controlled by mass.

In addition, the catalyst slurry that is injected into the reactions for the three intermediate products is likely to vary in concentration. To ensure the correct mass balance, the solids content of the slurries must be monitored and their feed rates adjusted accordingly.

In a continuous process, components cannot be weighed into the reaction. Volumetric flowmeters can be used with a flow computer to infer mass flow by compensating for process temperature and pressure, but these measurements must be made separately, and each one introduces uncertainty.

*Micro Motion flowmeters replace flowmeters and a densitometer, enabling the switch from batch to continuous processing.*

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Variability in solids content must also be compensated, requiring an in-line densitometer. The resulting measurement is not reliable enough for continuous processing in this application.

**SOLUTION**

The company replaced its volumetric meters and densitometer with Micro Motion® Coriolis flowmeters. Coriolis flowmeters are ideally suited to the continuous processing of PET since they measure mass flow directly. Micro Motion flowmeters are also an excellent choice to control the oxygen and ethylene feeds. Micro Motion flowmeters can be used for controlling each of the critical flow rates without additional instrumentation.

Coriolis flowmeters, which offer an integrated enhanced density application, measure process density directly. Therefore, the company can continuously monitor the solids content of the catalyst slurries to ensure that the correct concentration is dispensed.

Micro Motion flowmeters can be used to control each of the critical flow rates without additional instrumentation. The company was able to eliminate the densitometer, as well as the volumetric flowmeters.

As a result of the application of Micro Motion meters, the process was able to run more consistently. The increased product throughput and elimination of product waste quickly demonstrated the ROI required to justify the implementation of a Micro Motion solution.

