Specialty Chemical Measurement Solutions

Superior flow and density measurement

EMERSON™
Process Management

“The batch reactor is the workhorse of my specialty chemical industry. Better control would improve my operation.”

Specialty chemical companies are under increasing pressure to produce a wider range of differentiated products, quickly, at a better profit margin from the same assets with fluctuating feedstock and energy costs, while meeting safety and environmental mandates, sustainability and eco-practices. Increasing flexibility, reliability and visibility while decreasing batch cycle times can help increase throughput, lower costs, and improve time-to-market, boosting your global competitiveness.

What if you could ...

Produce every batch right every time, with increased operational flexibility to satisfy even low-volume and seasonal demand, while reducing off-spec product, waste and rework?

- ✓ Direct mass measurement over wide turndowns and varying fluid properties, with onboard, real-time concentration measurement assures precise, repeatable and reproducible batch chemistry
- ✓ Cycle times are improved with Coriolis independence from fluid properties–this means that Coriolis meters are immune from frequently changing raw materials and widely varying flow rates
- ✓ Two-phase flow measurement ability increases batch chemistry accuracy, which is ideal for increasing product customization for differentiated markets
- ✓ Onboard, in-line meter verification for troubleshooting and calibration checks for facilitating batch traceability

Simultaneously increase scale-up, production and plant up-time, while lowering operation and maintenance costs?

- ✓ Facilitate first-to-market by using the same Coriolis technology as new product development moves from research and development through pilot plant to full production
- ✓ Improved customer service and responsiveness to changing market requirements in recipes and formulations
- ✓ Direct mass measurement eliminates the cost and maintenance of calibration factor changes, re-ranging equipment, and reduces the number of instruments which must be validated in the process
- ✓ Digital protocols allows efficient communication to PLC and packaging equipment

Assure the health and safety of my employees and community, and meet environmental mandates?

- ✓ Coriolis is inherently well-suited to toxic or hazardous chemicals with dramatically fewer leak points compared to traditional flow technologies
- ✓ Check existing meters in-line to assure they are safe and compliant
- ✓ Conduct process validation and SIS-proof tests while the process is running with meter in-situ
- ✓ Online concentration measurement, eliminating sample ports and potential operator exposure to hazardous chemicals, and faster product quality feedback as compared to lab analysis
- ✓ Hygienic approvals by 3-A and EHEDG, ISO-17025 accredited calibration reference systems

Process plant designers, engineers and operators worldwide are choosing Micro Motion® and Rosemount® measurement technologies to increase batch quality and reproducibility, reduce maintenance, improve safety and environmental compliance, reduce cycle time, and accurately measure fluids bought and sold.

- Measure mass and density directly over wide turndowns and changing fluid properties with a single precision multivariable device, eliminating complex inferred mass calculations – ideal for batch chemistry applications.
- Reduced maintenance due to no wearing parts.
- Determine real-time, in-line density and concentration of the fluid. No sampling!
- Improve safety via reduced leak points, elimination of impulse lines, sample points, and reduce the removal and cleaning of meters for periodic calibration.
- Meet meter verification and SIS-proof tests with in-situ meter verification.
- Highly repeatable and reproducible measurements.
- Compliant with NAMUR NE132.

Reactor Feed

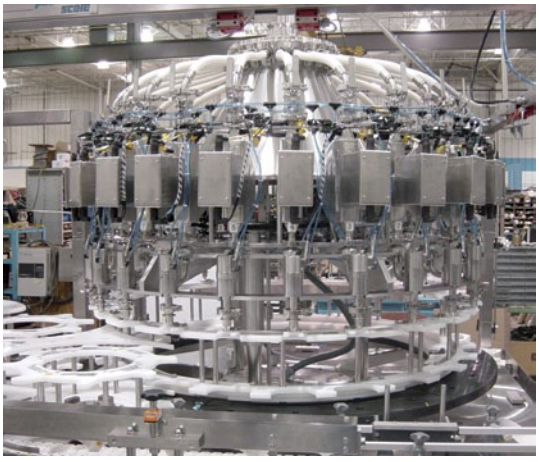
- High accuracy additions of reactants and catalysts
- Batch-from-empty
- Batch traceability
- Shortened cycle time
- Shear sensitive fluids

Research and Development, Pilot Plant

- Flow and density technology scales up to production
- Ideal technology for batch chemistry research
- Low flow measurement to gram/hour range

Filling

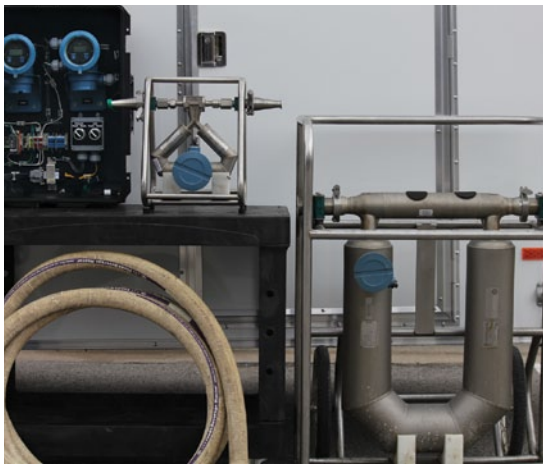
- High-speed precision filling and dosing
- Hygienic, fast and easy clean-in-place allows rapid change over
- Facilitates quality control





Calibration Cart

- ISO 9001/17025 traceable
- Smart Meter Verification



State-of-the-art global ISO/IEC17025 calibration facilities uniquely calibrate meters for both mass and density offering best measurement uncertainties of ±0.014%

Calibration/Metrology Approvals

Compliant with domestic and international standards

- Metrology (OIML R117/R137, NTEP, Measurement Canada)
- Sanitary codes (ASME BPE, FDA, EHEDG, 3-A)
- Industry standards (API, NAMUR, PED, CRN, Dual Seal, ASME B31.3/B31.1)

Specialty Chemical Applications:

- Batching & blending
- Reactor feed, catalyst addition
- Chemical recovery
- Custody transfer, product load-out
- Density/Concentration
- Mass balance
- Control of crystallizers, distillation
- Melt & polymer processing
- Nano-materials
- Safety shutdown
- Research & development, pilot-plant scale-up
- Drum & tote filling
- High-speed filling
- CIP, SIP system monitoring
- Batch traceability
- Coatings, emulsions, suspensions
- Portable master meter ISO verification
- Purge & blanketing gases
- Chilled water systems

Micro Motion® and Rosemount® Flow and Density Meters

Micro Motion® ELITE® Coriolis Flow and Density Meters	
Flow range	0.01 to 120,000 lb/min (0.35 – 3,266,000 kg/hr)
Liquid mass flow accuracy	±0.05% or ±0.1%
Liquid volume flow accuracy	±0.05% or ±0.1%
Gas flow accuracy	±0.25% or ±0.35%
Liquid density accuracy	±0.2 kg/m³, ±0.5 kg/m³ or ±2.0 kg/m³
Nominal line size	1/12" to 16" (2 to 400 mm)

Micro Motion® F-Series Coriolis Flow and Density Meters	
Flow range	6.5 to 10,000 lb/min (180 to 272,000 kg/hr)
Liquid mass flow accuracy	±0.10%, ±0.15% or ±0.20%
Liquid volume flow accuracy	±0.15% or ±0.30%
Gas flow accuracy	±0.50%
Liquid density accuracy	±0.5 kg/m³, ±1.0 kg/m³ or ±2.0 kg/m³
Nominal line sizes	¼" to 4" (6 to 100 mm)

Micro Motion® T-Series Coriolis Meters	
Flow range	3 to 3200 lb/min (82 to 87,000 kg/h)
Liquid mass flow accuracy	±0.15%
Liquid volume flow accuracy	±0.25%
Gas flow accuracy	±0.50%
Liquid density accuracy	±0.002 g/cm³ (±2.0 kg/m³)
Nominal line size	¼" to 2" (6 to 50 mm)

Micro Motion® FDM (Fork Density Meter)	
Density accuracy	±0.1 kg/m³ (±0.001 g/cc)
Density range	0-3000 kg/m³ (0-3 g/cc)

Micro Motion® Filling Mass Transmitter
Compact, integral, high-speed filling
Fills to <1 second
Automatic overshoot compensate
Compatible with ELITE CMFS, F-Series

Rosemount® 8800 Vortex Flowmeter	
Liquid flow accuracy	±0.65%
Gas flow accuracy	±1.0%
Saturated steam mass flow accuracy	±2.0%
Nominal line size	0.5" to 12" (12 to 300 mm)

Rosemount® 8700 Magnetic Flowmeter	
Liquid flow accuracy	±0.15%
Nominal line size	0.15" to 48"

See product data sheets for complete technical specifications

EMERSON WORLD-LEADING FLOW AND DENSITY

technology

SETS THE STANDARD FOR RELIABLE, REPEATABLE, HIGH PERFORMANCE MEASUREMENT

Emerson's Micro Motion and Rosemount devices are known globally in over 85 countries for quality, reliability, application expertise, and support not available elsewhere.

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