Coal-Fired Power Measurement Solutions
Superior Coriolis flow and density measurement accuracy
As a plant manager, it's your job to run the plant as cost effectively and smoothly as possible. There are many challenges you face everyday including plant safety, meeting environmental regulations, keeping unplanned outages to a minimum, improving your plant's heat rate and minimizing custody transfer disputes. Problematic flow measurement points add to the challenge as well.

Your flow measurement technology must keep pace, assisting in meeting these challenges. Older flow measurement technologies such as primary element differential pressure, turbine, or positive displacement devices, all require pressure and temperature compensation to give you mass flow, require routine calibration and maintenance, and lack the accuracy and turndown of a Coriolis meter.

What if you could ...

Improve your measurement uncertainty and bottom line profitability

- Improve energy/mass balance and thermal cycle efficiency with more accurate heat rate calculation
- Provide a robust, reliable solution that has better turndown and accuracy than existing solutions for condensate/boiler feed water flows
- Provide an in-line viscosity reading for liquid fuels
- Assurance you are getting the materials you paid for with accurate, flow devices certified for fiscal custody transfer

Meet environmental regulations and avoid noncompliance fines

- Accurately measure urea/ammonia for injection into stack gas to reduce NOx pollution, while minimizing NH3 'slip'
- Provide accurate and reliable flow measurements for a variety of services, while meeting regulations on effluent streams
- Fast in-plant calibrations on a variety of flow equipment on a mass or volume basis

Increase safety and reduce unplanned shutdowns

- Assure the proper flow and quality of lubricating oil is reaching the bearings of the turbine
- Accurately acknowledge that the H\textsubscript{2} cooling system is getting flow of pure H\textsubscript{2}
- Accurately measure hard to handle molten sulfur flows to the sulfur burner
- Provide an accurate and reliable flow measurement in hard-to-handle slurry

"Increasing the average efficiency (of coal-fired power plants in the US) from 32.5% to 36% reduces U.S. GHG by 175 MMmt/year."

Phil DiPietro (NETL) and Katrina Krulla (NETL), APR 2010
Pub: DOE/NETL-2010/1411
Custody Transfer - Loading / Unloading

- Improve fiscal accuracy and throughput compared to conventional metering, gauging, and weigh scale processes
- Bidirectional Coriolis enables greater operational flexibility
- Immunity to changing fluid or process conditions makes Emerson's Micro Motion Coriolis flowmeters ideal for multi-product loading/unloading

Boiler Applications

- Discrete liquid fuel viscosity control for combustion optimization
- Best in class measurement accuracy reduces fuel consumption uncertainty
- Precise boiler feed water and condensate mass flow measurements assure accurate performance tests
Selective Catalytic Reduction

- Meet environmental regulations and avoid noncompliance fines
- Accurately measure urea/ammonia for injection into stack gas to reduce NOx pollution, while minimizing NH3 'slip'

Coal-fired power plant applications:

- Liquid fuel / bulk chemical custody transfer
- Liquid fuel flow to the boiler for start-up
- Liquid fuel viscosity control
- Chemical and H2O flows in demin plant
- Condensate / boiler feed water flows
- Steam flow (distribution lines)
- Lube oil flow, density and viscosity (steam turbine and gas turbine)
- H2 flow, quality, and leak detection (generator)
- FGC skids (molten sulfur)
- SCR skids (ammonia injection)
- FGD skids (lime slurry injection)
- Offsite flows

MAXIMIZE PRODUCTION while keeping risk and cost to a minimum
## 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**: ±1.0 kg/m³ or ±2.0 kg/m³
- **Nominal line sizes**: ¼” to 4” (6 to 100 mm)

### Micro Motion® 7829 Viscomaster Viscosity Meter
- **Density accuracy**: ±0.001 g/cm³ (±1 kg/m³) (±0.06 lb/ft³)
- **Viscosity accuracy**: ±0.2 cSt (0.5-10 cSt); ±1 cSt (10-100 cSt)
- **Viscosity range**: 0 – 100 cSt

### Micro Motion® 3098 Gas Specific Gravity Meter
- **Gas specific gravity accuracy**: Up to ±0.1% of reading
- **Specific gravity range**: 0.1 to 3 typical

### 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

Smart Meter Verification

Coriolis flowmeters have no moving parts, and the expectation is that the meter calibration will never change. However, corrosive or erosive fluids may alter the flow tube wall thickness and change the meter’s calibration. To prevent this, Smart Meter Verification measures the meter’s mechanical characteristics to a very high accuracy. When a change in the tube’s stiffness is detected, meter verification determines whether performance remains within factory specifications.

Benefits of Emerson’s Smart Meter Verification:
• Reduced maintenance costs
• Improved availability and quality
• Improved safety, health and environment
• Reduced waste and rework
• No interruption of process measurement
• Completes in 90 seconds
• No special process requirements
• Tracks configuration against last verified configuration
• Tracks zero against last verified and factory zero

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