FLOW SOLUTIONS GUIDE
COAL-FIRED POWER MEASUREMENT SOLUTIONS

HELPING GLOBAL POWER PRODUCERS PROVIDE CLEAN RELIABLE ELECTRICITY

GLOBAL EXPERIENCE
LOCAL KNOWLEDGE
SAFETY
ENVIRONMENT
EFFICIENCY
ALLOCATION
RELIABILITY
As a member of the Instrument and Controls team it’s your job to run the plant as cost effectively and smoothly as possible. There are many challenges you face every day including plant safety, meeting environmental regulations, keeping unplanned outages to a minimum, improving your plant’s heat rate and minimizing custody transfer disputes. Problematic process measurement points add to the challenge as well.

Your measurement technology must keep pace, assisting in meeting these challenges. An example of this is when older flow measurement technologies fail to provide outputs effective in precise control or fail prematurely in harsh environments.

<table>
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<th>What if you could...</th>
<th>Realize in-the-field improvements...</th>
<th>With Emerson Flow Technologies, Systems and Services...</th>
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</table>
| Improve your measurement uncertainty and operational flexibility | • Provide the tools needed to improve thermal cycle efficiency with more accurate heat rate calculation  
  • Provide an in-line flow & viscosity reading to optimize liquid fuel combustion efficiency  
  • Assurance you are getting the materials you paid for with accurate, traceable and accredited fiscal transfer devices | ✓ Advanced flow measurement technology and software  
 ✓ Diagnostics to detect gas in liquids and oil/water contamination  
 ✓ Improved accuracy and efficiency while reducing GHG |
| Achieve cost-effective environmental compliance           | • Accurately measure urea/ammonia for injection into stack gas to reduce NOx pollution, while minimizing NH3 ‘slip’  
  • Eliminate nuclear sources and associated paperwork from your plant while maintaining tight lime slurry solids control  
  • Accurately measure hard-to-handle molten sulfur flows to the sulfur burner | ✓ Predictive diagnostics provide remote insight into unit performance  
 ✓ Reliable injection control  
 ✓ Reduce reagent waste |
| 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 H2 cooling system is getting flow of pure H2  
  • Provide accurate and reliable measurements in hard-to-handle slurry mixtures | ✓ Field-proven, reliable technology designed for your power plant  
 ✓ Remotely accessible diagnostics  
 ✓ Lifecycle services for ongoing support  
 ✓ Alarm management |

“Increasing the average efficiency (of coal-fired power plants in the US) from 32.5% to 36% reduces U.S. GHG by 175 Mmt/year.”
COAL-FIRED POWER PLANT OPTIMIZATION
Emerson’s Flow Technologies, Systems & Services Guide

CUSTODY TRANSFER - LOADING / UNLOADING

- Improve fiscal accuracy and throughput compared to conventional metering, gauging and weigh scale processes
- Bi-directional 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

Bulk ammonia custody transfer
- Make sure that you get what you are paying for
- Validate mass transfers and product quality (Micro Motion Coriolis Meter)

Ammonia density at the storage tanks
- Assure proper concentration prior to use (Micro Motion Fork Density Meter)

Ammonia Injection
- Assure proper mass flow of ammonia or urea for injection to Optimize NOx conversion, minimize "slip" and reduce chemical costs (Micro Motion Coriolis Meter)

Mass Balancing
- In U2A systems maximize hydrolyzer efficiency (Micro Motion Coriolis Meter)

FLUE GAS DESULPHURIZATION

Eliminate nuclear source on plant site
- Replace nuclear density meters with fork density meters – Reduce maintenance, paperwork and safety concerns (Micro Motion Fork Density Meter)

Lime slurry density at the storage tanks
- Assure proper concentration prior to use (Micro Motion Fork Density Meter)

Lime slurry injection
- Assure accurate injection rates to optimize scrubber performance (Rosemount Magmeter)

Lime slurry density at the injection site
- Verify correct slurry solids during injection to prevent plugging or ineffective scrubbing (Micro Motion Fork Density Meter)
Emerson’s Flow solutions deliver what you need

FLOW TECHNOLOGIES
Using the best fit-for-purpose flow technology, leveraging field-proven best practices, and utilizing inherent device data ensures early insight and enhances the performance of critical process units.

FLOW SYSTEMS
Utilizing best-in-class technology, proven system design processes and practices, and global project support enhances measurement system operational effectiveness and capital efficiency.

FLOW SERVICES
Partnering for a broad range of maintenance, reliability, and performance services assures long-term asset sustainability and performance.

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