Hot Topic Hour

Activated Carbon – Status Update

4/12/12
Who is Norit Activated Carbon?

- Wholly owned subsidiary of Norit NV, a world leader in purification technology.

- Worldwide leader in activated carbon technology, for nearly 100 years.

- Engineering and fabrication of activated carbon handling equipment and systems.

- Pioneers in the use of activated carbon in flue gas for Mercury Reduction.
Norit Americas Statistics

• 2 plants in Marshall, TX and Pryor, OK
• 1 joint venture plant in Bienfait, SK
• 10 production lines
• Terminal operations in Sauget, IL
• Capacities:
  • Up to 180 Million Pounds coal based carbons
• 335 Employees
• Energy efficient generating 90% of our own power
Approaches to Mercury Removal

- Gold Catalyst
- Coal Blending
- Fuel Additives
- MerScreen Fixed Bed - EPRI
- Granular Activated Coke – $\text{SO}_x$
- Selective Catalytic Reduction/Wet Scrubbing – $\text{NO}_x$, $\text{SO}_x$
- Non-Activated Carbon Sorbents
- Activated Carbon Sorbents
Activated Carbon Status and Trends

• Leading technology for mercury removal from flue gas.
• Supplying requirements to the majority of units subject to consent decrees or state regulations.
• New products have been developed for low rank fuels and non-interference with power generation fly-ash sales into the cement business.
• Optimization of currently installed systems and product application to individual systems is currently very active.
• New products in development for specific applications, such as interference from sulfur compounds in the flue gas.
Overview - DARCO Hg-LH EXTRA

- Created for use in challenging applications in the flue gas market
- Produced using Norit’s new patent-pending process.
- Improved oxidative capability resulting in faster adsorption kinetics
- Superior working capacity in baghouse applications and higher efficiency in ESPs.
Full Scale Injection – IL Plant (~500 MW)

- Fuel Source:
  - Powder River Basin

- Mercury Removal Measurements:
  - Coal-to-stack (EPA Method 30B)

- Process Equipment:
  - Particulate control: ESP
  - PAC injection downstream (315 F) and upstream (775 F) of air preheater

- Flue Gas Parameters:
  - Gas flow rate: 1.9 Mmacfm
Mercury Removal Results

Average coal-to-stack mercury removal (%)

PAC injection rate (lb/MMacf)

- DARCO Hg-LH
- DARCO Hg-LH EXTRA
- DARCO Hg-LH EXTRA (Upstream APH)
DARCO EXTRA Summary

- Norit used its new patent-pending technology to develop DARCO Hg-LH EXTRA for use in challenging applications in the flue gas market.

- DARCO Hg-LH EXTRA:
  - has demonstrated improved performance compared to the industry benchmark.
  - can potentially reduce carbon injection rates by as much as 20-50% in challenging flue gas applications.
  - has become an important part of our optimization partnership with our customer base.
purification for life