

Reinhold Environmental Ltd.



2007 NOx Round Table & Expo
Presentation

February 5-6, 2007 in Cincinnati, OH



Combustion and Fuels Impacts on Post Combustion NOx Controls

Tony Facchiano

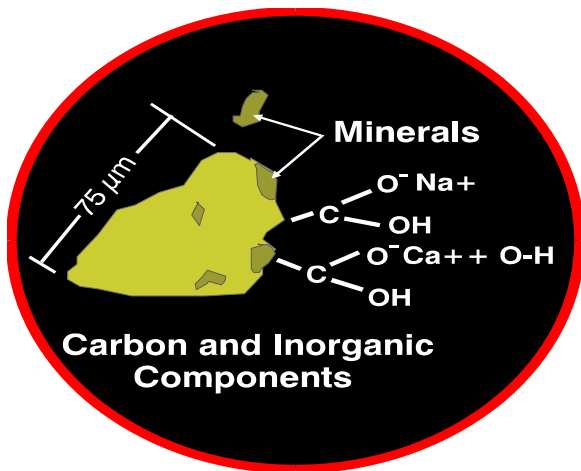
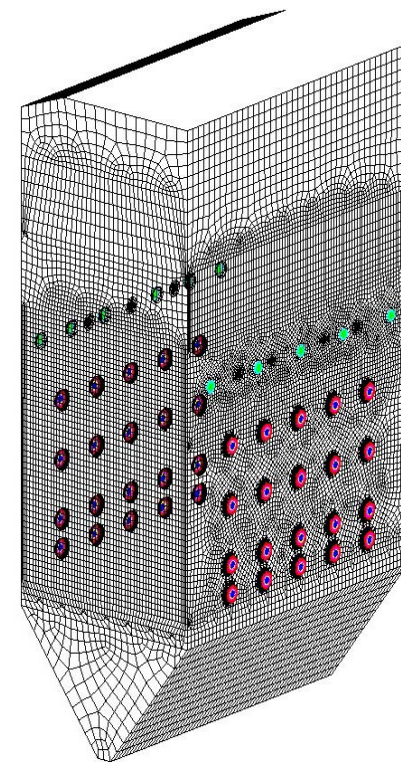
EPRI Program Manager

Presented at:

Reinhold NOx Round Table

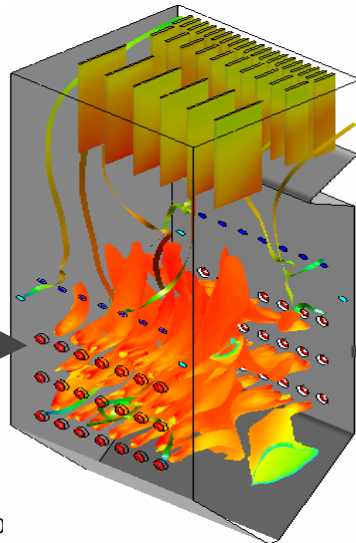
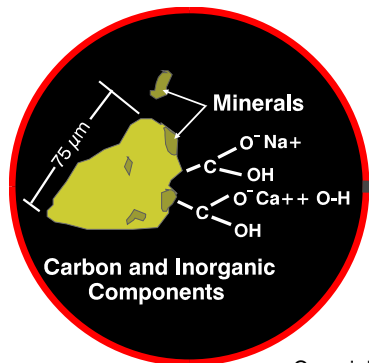
Cincinnati, Oh

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Combustion and Fuels Impacts on Post Combustion NOx Controls

- What Inlet Gas Parameters Impact SCR Performance?
 - NOx level (lower NOx in = lower NOx out)
 - Distribution:
 - NOx/NH3
 - Gas velocity
 - Gas Temperature
 - Gas and Ash constituents:
 - Large particle ash
 - %S (SO3, ABS)
 - Ca / Ar



Combustion and Fuels Impacts on Post Combustion NOx Controls

- How are these parameters impacted by boiler operation and fuel properties?
- What are the economic and performance trade-offs?
 - Level of combustion staging
 - Tighter fuel specs
 - Fuel / air balancing
 - Utilization of optimizers
- How will these trade-offs be impacted in the future by ricketing emissions levels?
 - Future value of NOx credits
 - Minimize stack NOx vs. outlet NOx set point



Impacts of Fuel Quality on Achievable NO_x

| Unit # | Coal Type | NO_x (lb/MBtu) | CEMS Reference |
|---------------|----------------------------|-------------------------------------|-----------------------|
| 1 | PRB | 0.100 | 3Q 2002 |
| 2 | Low S Texas Lignite | 0.170 | 3Q 2002 |
| 3 | Low S Eastern Bit | 0.255 | 3Q 2002 |
| 4 | Low S Eastern Bit | 0.272 | 3Q 2001 |
| 5 | Med S Illinois | 0.237 | 3Q 2002 |
| 6 | Med S Illinois | 0.305 | 2Q 2001 |

SCR Fuels Issues: “First Use” Fuels

- **Issue:** Quantify catalyst deactivation as f (fuel properties)

Solution:

- Develop and deploy “mini reactor” at member sites prior to SCR deployment
- Assess long term potential for catalyst deactivation

