

# Reinhold Environmental Ltd.

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2008 NOx-Combustion Round  
Table & Expo Presentation

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*February 4-5, 2008 in Richmond, VA*

# PREPARING FOR SCR YEAR ROUND OPERATIONS



## FACILITATORS

Ken Fast – American Electric Power

Mark Thomas - Duke Energy

## PANELISTS

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Ed Healy – Southern Company

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# HOUSEKEEPING

- ▶ Group Discussion not a Lecture
- ▶ All INPUT and QUESTIONS are valuable!!!

- ▶ TWO BASIC QUESTIONS

- What are the challenges of year round operation?
- What can be done to meet these challenges?



# SCR YEAR ROUND OPERATIONS

- ▶ Some SCRs have already begun year round operation
- ▶ Others ran in Winter months for ERCs
- ▶ Beginning 1/1/2009 All SCRs in service year round.

# GENERAL CLASSIFICATION OF Year Round Operation CHALLENGES

1. Winterization
2. Accessibility for Maintenance & Inspections
3. Redundancy of Subsystems
4. Problems from Associated Equipment/Systems
5. Fleet Dispatch Restrictions
6. (Other i.e. Long-term Operational Issues)??



# 1. SCR WINTERIZATION ISSUES

- ▶ Reagent Storage, Delivery & Injection
- ▶ SCR Reactor Box & Connecting Ductwork
- ▶ Instrumentation
- ▶ SCR Impacts from Related Equipment during Cold Weather Operation.

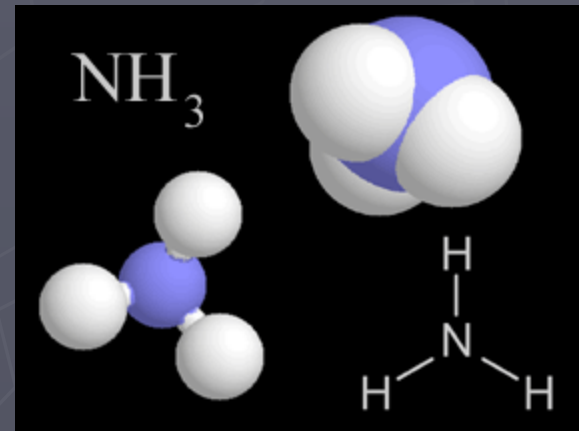
## 2. ACCESSIBILITY ISSUES

- ▶ Catalyst Replacement Schedule
- ▶ Catalyst Sampling
- ▶ Inspections (for Pluggage, Erosion, etc)
- ▶ Repairs to Internal Components & Structure



# 3. REDUNDANCY

- ▶ NH<sub>3</sub> Forwarding Pumps
- ▶ Urea to Ammonia Conversion Systems
- ▶ NH<sub>3</sub> Vaporizers
- ▶ Dilution Air Heating
- ▶ Instrumentation
  - NO<sub>x</sub> Analyzers
  - Slip & ABS Probes
- ▶ Other



## 4. Problems from Related Equipment & Systems

### ▶ Large Particle Ash

- Causes include: coals, deslagging, boiler operation, etc
- Accumulates over time blocking catalyst area
  - ▶ Result is SCR RP deteriorates at rate faster than indicated by catalyst activity deactivation.
- Year Round Operation = Less Opportunity to inspect & clean
- Requires LPA Screen addition or other changes
- May require change in catalyst type or pitch

## 4. Problems from Related Equipment & Systems (continued)

- ▶ APH Fouling Limits SCR Removal
  - Caused by combination of ABS & SO<sub>3</sub> acid deposition
  - Worse in winter with lower cold end average temperatures
  - Worse with deteriorating APH cleaning, seals, etc
  - APH Problems Often Blamed on SCR
  - Increased APH ABS & SO<sub>3</sub> Tolerance = Increased SCR NO<sub>x</sub> Removal

# 5. FLEET DISPATCH RESTRICTIONS

- ▶ Multiple Units with MOT restrictions
  - Shoulder Season SCR Operation a concern
  - Worse with High Sulfur Coals from FGD retrofit
  - Will worsen if Gas Side Economizer Bypass Hampered from Ash Layout
  - May require SCR operation below MOT followed by ABS 'burn off'
  - May require SO<sub>3</sub> mitigation upstream of SCR

# Concerns and Troubleshooting

- ▶ Questions and concerns.
- ▶ Group discussion of possible resolutions.

