Hot Hour Topic

New DeNOx Approaches

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New DeNOx Approaches

- Balance
- Flexibility
- Mixed Layers
Balance

- **DeNOx versus:**
  - SO2 conversion
  - Pressure drop
  - Hg oxidation

- **Typical Evaluation Factors**
  - DeNOx K - $50,000 to $80,000 per 1 m/hr
  - SO2 conversion - $150,000 to $450,000 per 0.1%
  - Pressure drop - $120,000 per 0.1 inch water
  - Hg oxidation – Normally none

**SCR Converting to “Multi-Pollutant Reduction Reactor “MPRR”**
Flexibility

- Regenerated catalyst
  - Decayed catalyst removed from unit 1
  - Cleaned based on received chemistry
  - Regenerated for future unit operating conditions

- Brokering
  - Option to sell catalyst that does not meet current operating requirements
  - Purchase new or regenerated catalyst that meets current operating requirements

Think Outside the “SCR Box”
Flexibility - Brokering

Why catalyst may not meet current operating conditions?

- **Pitch**
  - Too small (pluggage, pressure drop)
  - Too large (Low DeNOx potential)

- **Catalyst Length**
  - Too long (pressure drop, SO2 conversion)
  - Too Short (Low DeNOx potential)

- **Catalyst Type** – Normally a customer specific preference
  - Honeycomb
  - Corrugated
  - Plate

SCR Catalyst is an Asset Not a Consumable
Mixed Layers

Consider different catalyst for different layers when pluggage is a issue!

- **Top Layer**
  - Pluggage due to high ash volumes (especially boiler wall rows)
  - Pluggage due to LPA
  - Erosion resistance

- **Other Layers Balance**
  - DeNOx potential
  - SO2 conversion
  - Pressure drop

Select the “Right” Catalyst for Each Layer
Mixed Layers

Consider different catalyst for different layers when cost versus performance is an issue!

- DeNOx potential
- $\text{SO}_2$ conversion
- Pressure Drop
- Hg Oxidation

Mix Layers If It Adds “Value”
Summary

- Think of the SCR as an “MPRR”
- Think outside the “SCR Box”
- SCR catalyst is an asset not a consumable
- Select the “right” catalyst for each layer
- Mix layers if it adds value
Thank you,

Questions?

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