Reinhold Environmental Ltd.

2010 NOx-Combustion Round Table & Expo Presentation

February 8 & 9, 2010 Chattanooga, TN

FUEL TECH®

Technologies to enable clean efficient energy™

SNCR ADVANCEMENTS

NOx Round Table Conference
February 9, 2010
Chattanooga, TN

Kevin Dougherty – VP Marketing

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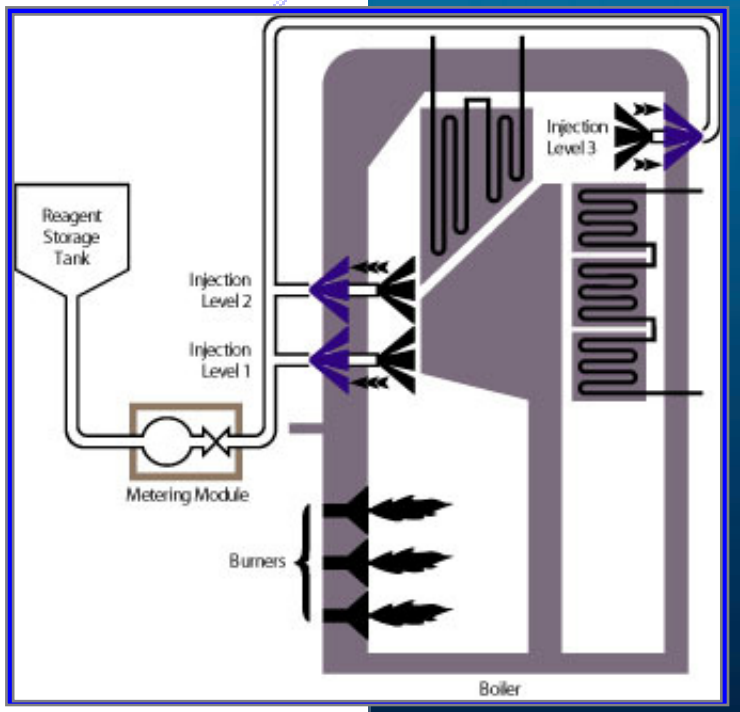
SNCR Technology Options: NOxOUT® and HERT™ Injection

- Over 500 Systems Installed Worldwide
- Injection of Urea Reagent in Upper Furnace
  - NOxOUT® - Low Energy, High Momentum Droplets
  - High Energy Reagent Technology™ HERT™ - High Energy, Low Momentum Droplets
  - In-Furnace Gas Phase Reactions between NH_3 & NOx
- Process Reaction Temperature Range: 1600°F to 2200°F
- NOx Reduction: 30-70%



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Two Aqueous Urea Injection Techniques

- NOxOUT
  - Air atomized injector
  - High momentum droplets
- HERT
  - Mechanically atomized
  - High velocity carrier air
  - Smaller droplets than NOxOUT

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SNCR Performance

- Temperature Window for Optimal NOx Reduction
- Combustion Impact on SNCR Performance
  - Non-Optimized Combustion
    - Reduced SNCR Performance – Effect of CO
    - Combustion Re-Optimization
    - Variations in Combustion Process may require conservative SNCR approach to control ammonia slip
- Injection Technology and Design is Critical
  - Modeling and Experience are key to performance
  - Technology Options for Maximum Flexibility

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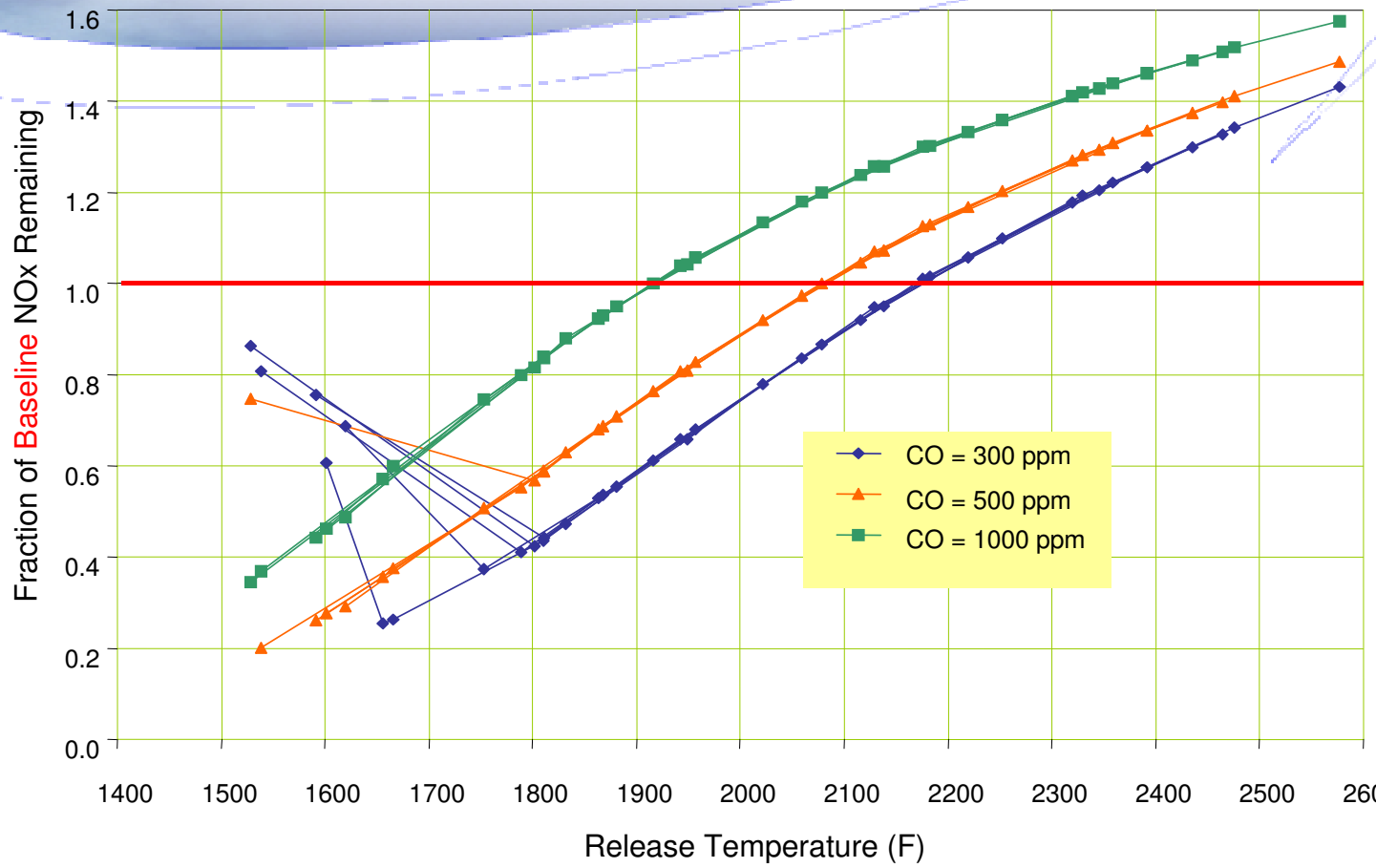
Effect of CO Concentration on SNCR Performance



Note: Higher CO Levels Increase the Rates of NH2 Formation and NH3 Oxidation to NO; Effective NOx Reduction Window for Process is Shifted to a Lower Temperature

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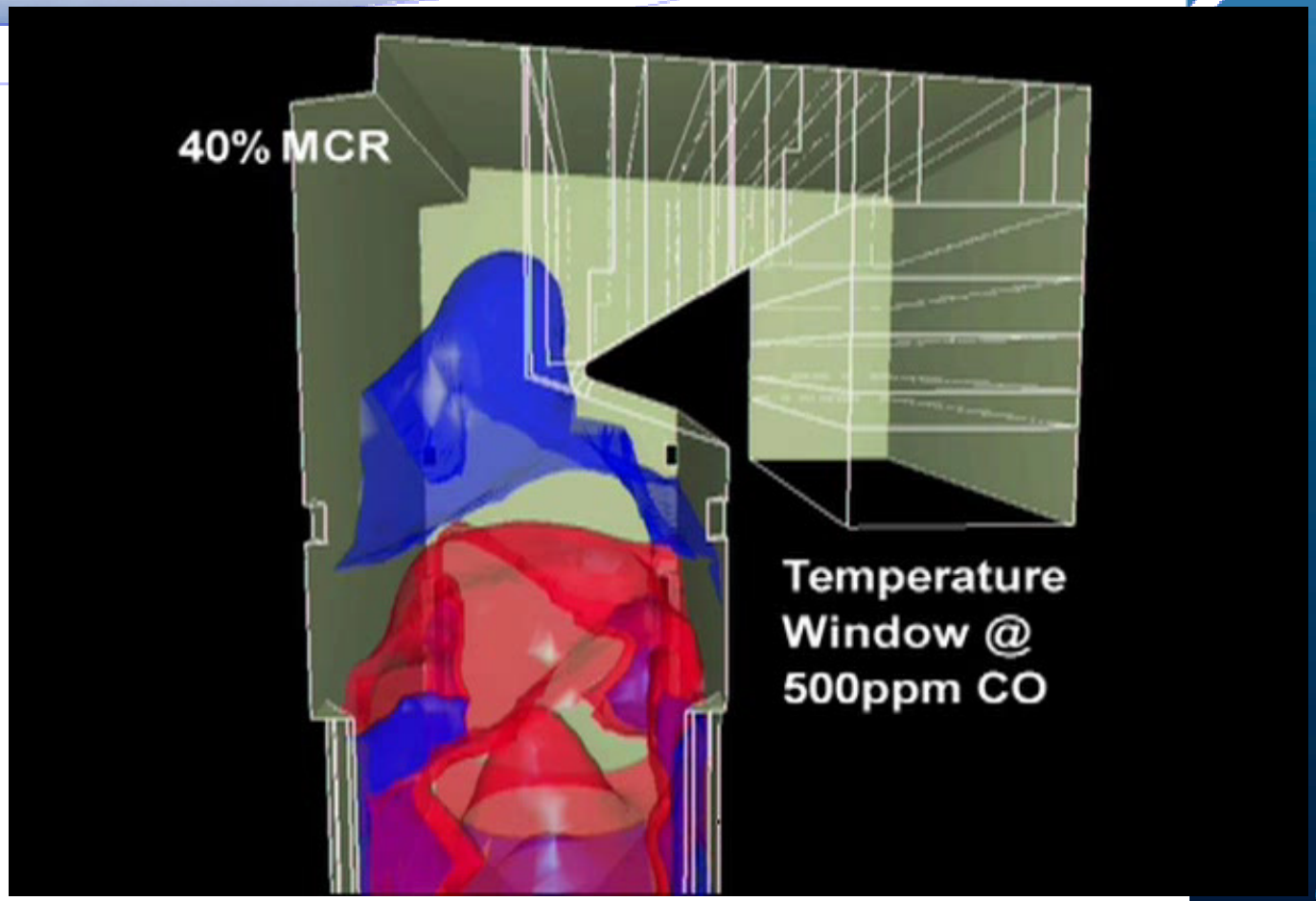
Effect of CO Concentration



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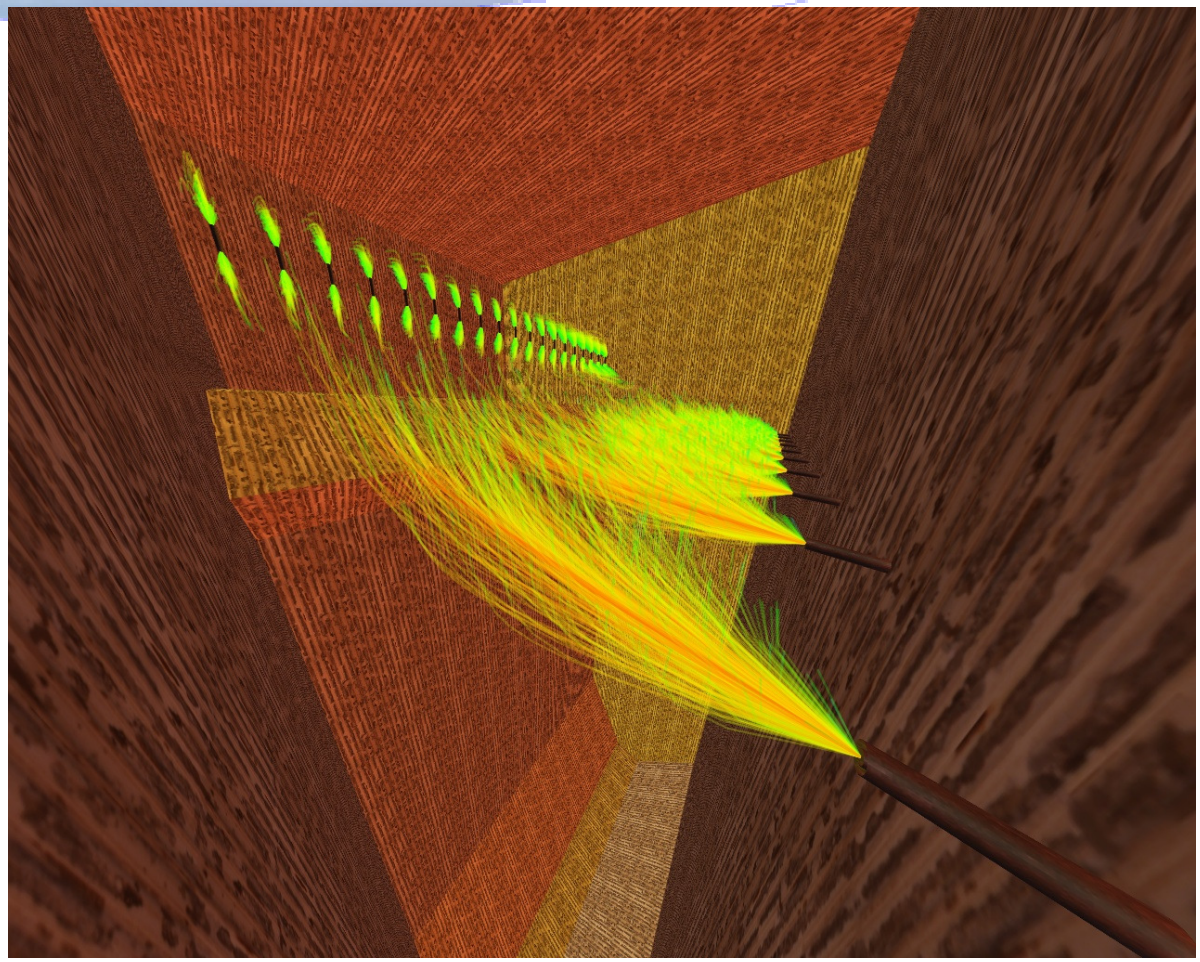
NOxOUT Injection



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