

Reinhold Environmental Ltd.

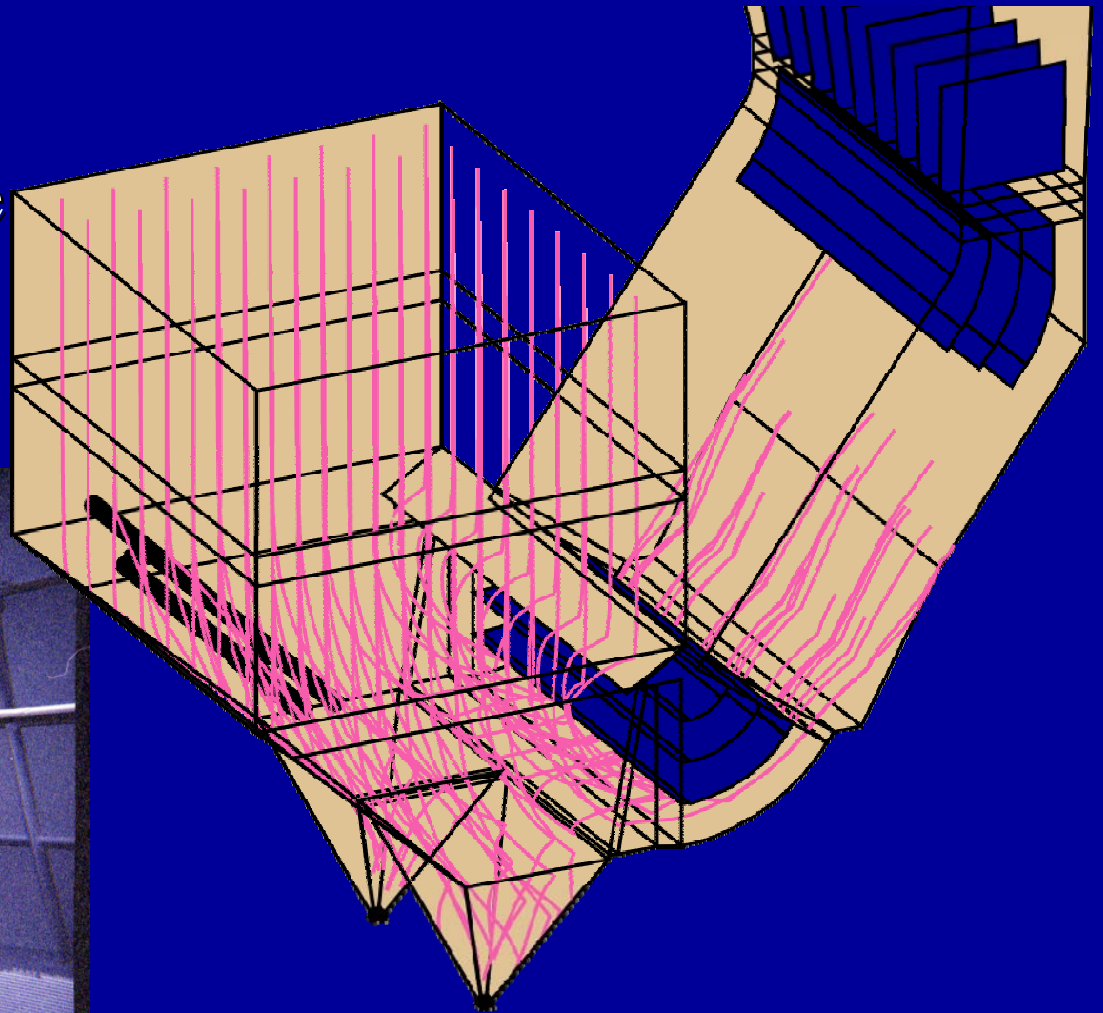
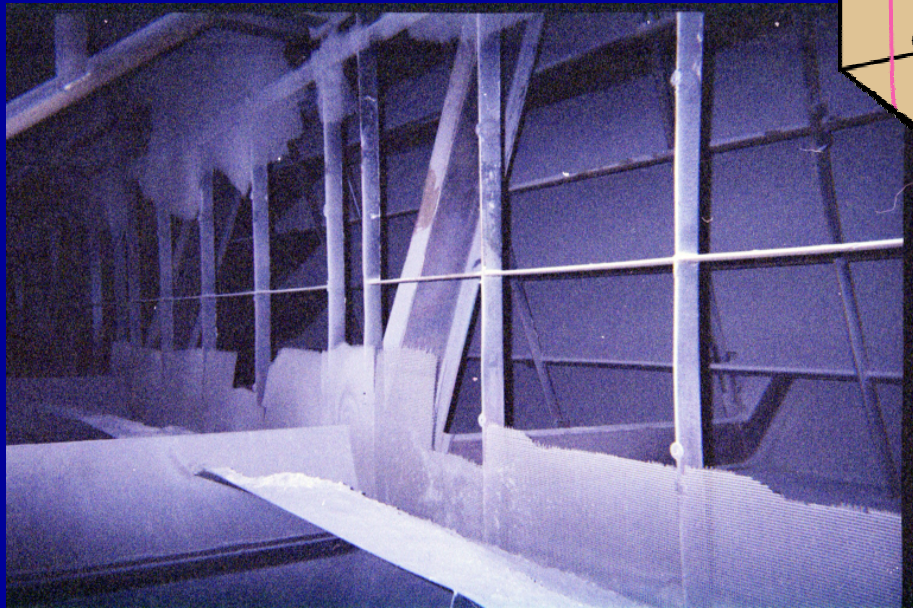


2008 NOx-Combustion Round
Table & Expo Presentation

February 4-5, 2008 in Richmond, VA

LPA Modeling and Design – Key Points

- ❖ Ash capture statistics in hoppers
- ❖ LPA screen erosion
- ❖ LPA screen pluggage
- ❖ Pressure drop



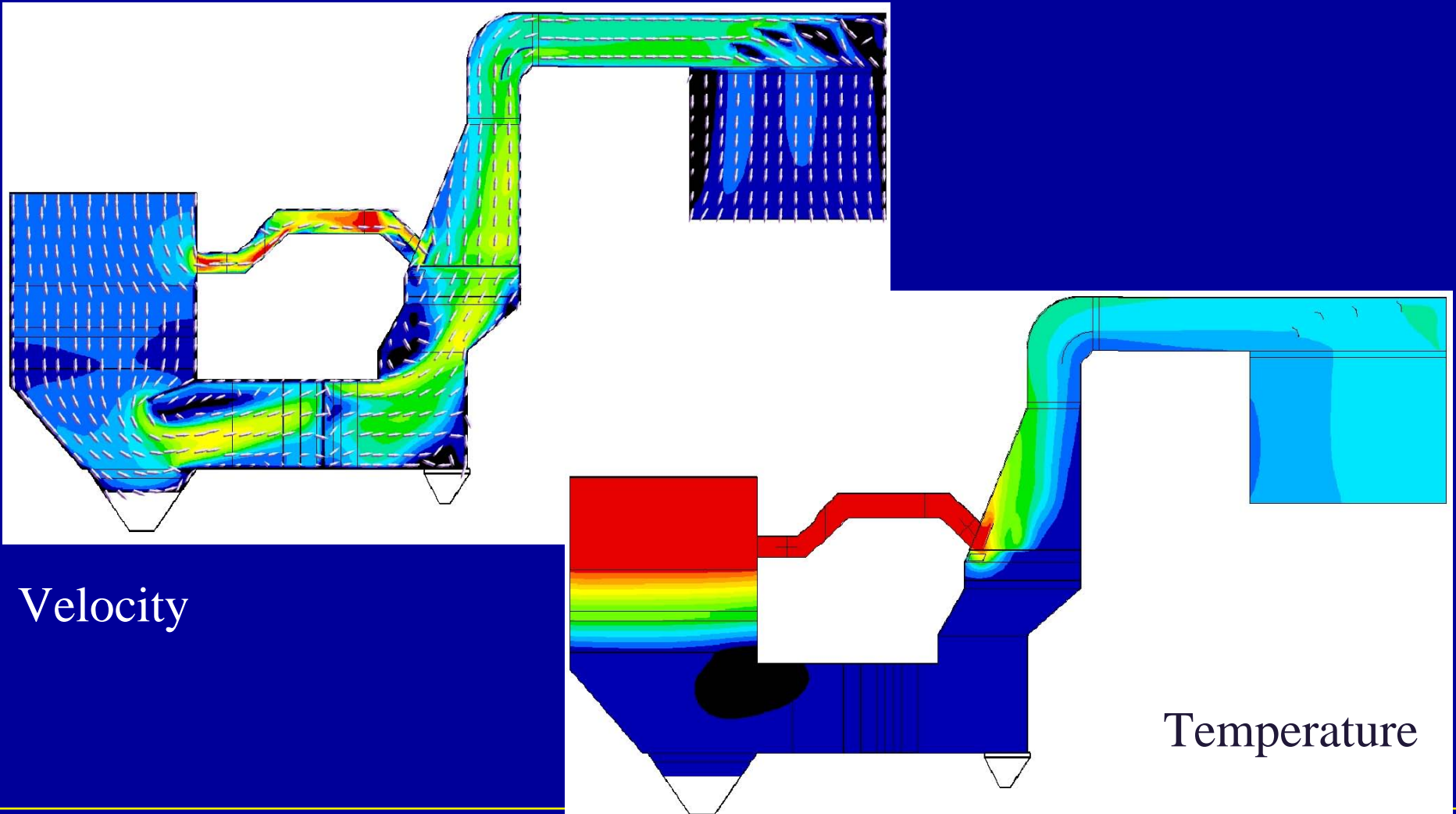
Model Accuracy

- ❖ Data for detailed correlation between models and actual plant operations is unfortunately limited
 - Detailed traverses at catalyst often not performed
 - Data in ductwork sometimes available
 - Tend to go by industry experience on whether catalyst performance goals are met
- ❖ In cases where CFD and physical models are both used, predictions are often within engineering tolerances (~10-20%), but not always
- ❖ Further analysis is needed and is in progress



Case Study – Existing Midwest SCR

- ❖ Baseline CFD model indicates ΔT at catalyst ± 75 °F



Velocity

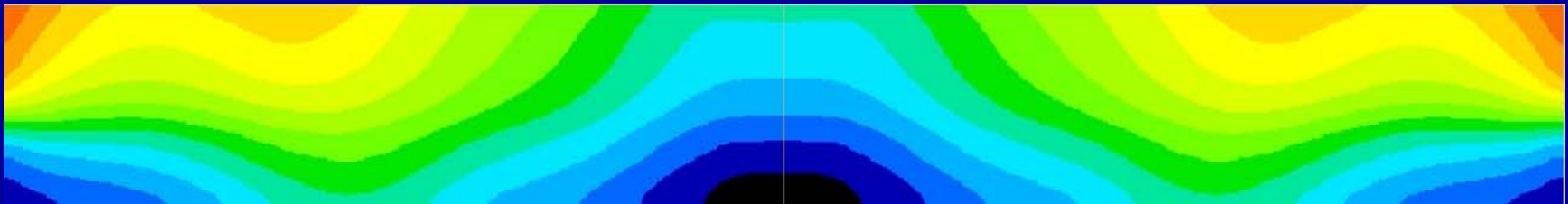
Temperature

Case Study – Existing Midwest SCR

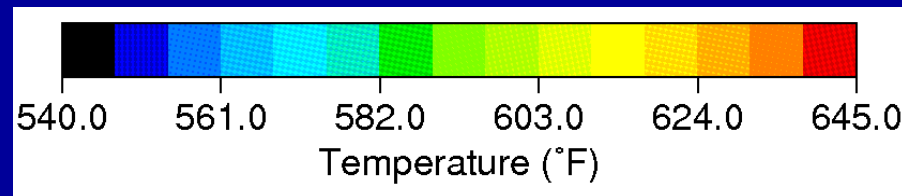
- ❖ CFD model correlation with low load field data



Measured temperatures, horizontal duct at reactor inlet



CFD temperature prediction



Conclusions

- ❖ Gas flow patterns have significant impact on the performance of SCRs
- ❖ Analysis and design tools include physical and CFD flow modeling
- ❖ Models are used to optimize the design of flow control devices to achieve fluid dynamic goals
 - Ductwork, turning vanes, baffles
 - Mixers, injection systems
 - LPA mitigation baffles, screens, and hoppers



Questions?

