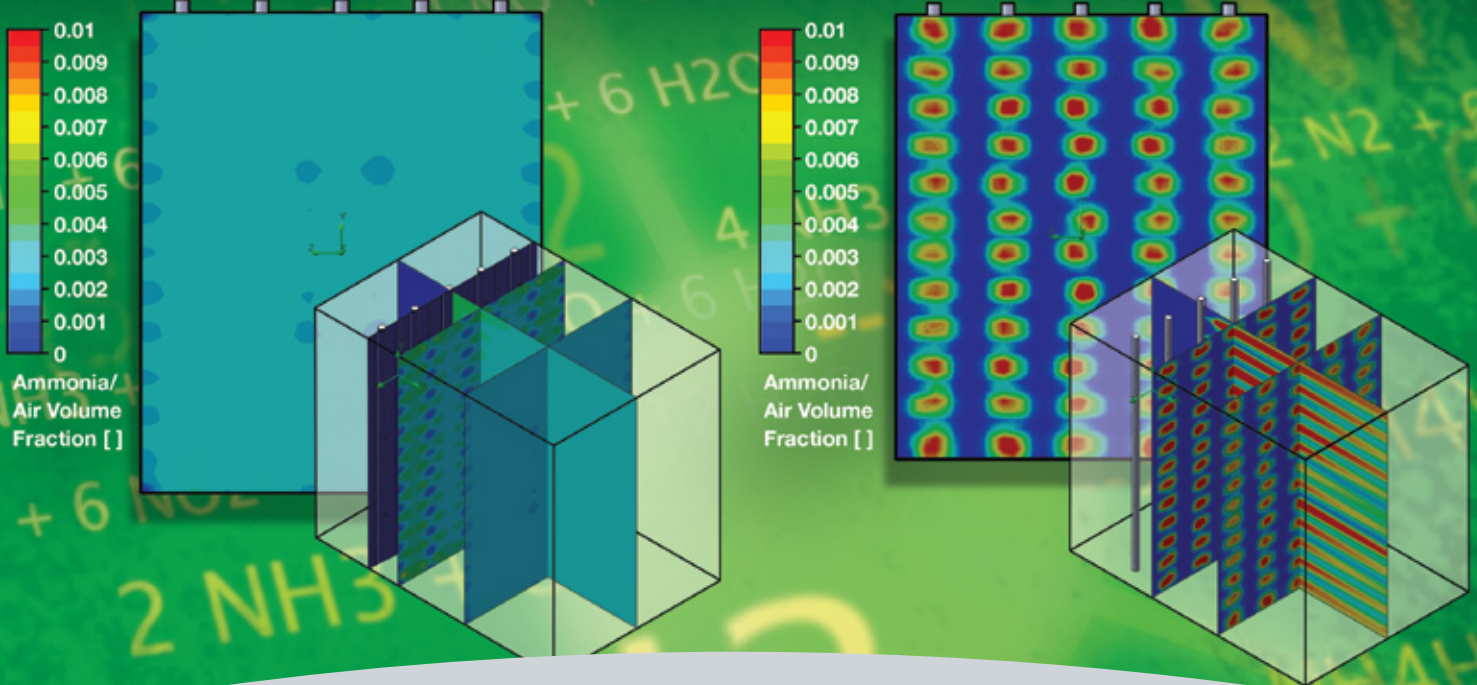


**Callidus Proprietary Design**  
3 Foot RMS 5.2%

**Typical "Drilled Pipe" Design**  
3 Foot RMS 97.6%



**CATALYST SYSTEMS UPGRADES USING ADVANCED TECHNOLOGY AND LEADING EDGE RESOURCE TOOLS.**

## Catalyst System Upgrades to Meet Emissions Standards



### Meeting the Power, Refining and Petrochemical Challenge

Callidus Technologies by Honeywell provides power, refining and petrochemical facilities with new technology to upgrade existing catalyst systems that meet the world's most challenging emission standards. Utilizing a vast array of technical tools and resources, Callidus creates customized catalyst systems that target:

- Improved emission compliance
- Improved or extended catalyst life
- Reduced operation and maintenance costs

As a world leader in combustion technology, our experience in flow and mixing for industrial combustion processes is unparalleled. When considering emission reduction, catalyst replacement or operational efficiency, Callidus Technologies offers total catalyst system upgrades and solutions.

# Catalyst System Upgrades

## Five Step Upgrade Approach

Catalyst system upgrades are developed using a five step approach which is tailored to each customer's requirements.

### On-site System Evaluation and Data Collection:

- Traverse testing in various duct locations
- Plant operating data collection
- Catalyst sample collection

### Analysis

- Computational Fluid Dynamic (CFD) modeling
- Catalyst activity analysis
- Plant operating analysis

### Suggested Action Plan

- Identify key improvement areas
- Provides alternative options and potential short term and long term implementation
- Cost benefit analysis

### Implementation

- Detailed design and fabrication
- Site installation logistics
- Turn-key or customer assisted installation

### Post Implementation Evaluation

- Follow-up traverse testing
- Post implementation data collection

## Experience

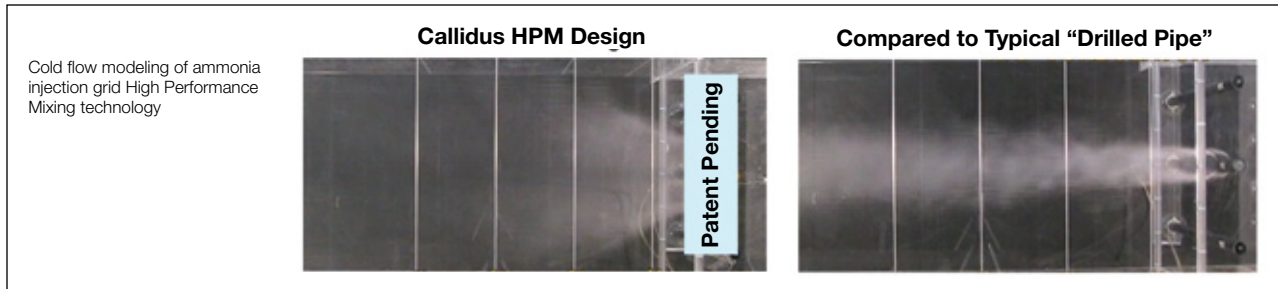
Our extensive experience with modeling systems to manage and distribute hot gas flow readily translates into high performance catalyst system design to offer total upgrade or retrofit solutions. Our field proven ammonia injection grid (AIG) technology provides high performance mixing and distribution of ammonia in SCR applications.

## Expertise

Our areas of expertise include system improvements for: SCR, CEMS, DARS, DCS. Callidus also provides equipment for new and retrofit applications such as: duct burners, ammonia vaporization and ammonia injection grids. Each catalyst system is custom designed to meet our clients individual challenge to provide the best possible long term solution.

## Closer to the Customer

To meet the needs of our customer around the world, our fabrication takes place in over 20 strategic locations, with proprietary items fabricated at our U.S. facility.



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