CAR Project Showcase
N$_2$O Abatement at Nitric Acid Plants
April 13, 2011
LSB
Baytown, TX
First listed CAR Secondary Project
El Dorado Nitrogen Project – Baytown Texas

- Dual Pressure Plant
- Secondary Abatement Catalyst
- BASF Catalyst Selection
- Typical Campaign Length: 6-9 months
- Historical Campaigns: 4/28/06 to 2/17/09
- Baseline Campaign: 11/01/09 to 6/27/10
- Project Campaign Started: 7/1/10
- Project Verifier – Ruby Canyon Engineering
El Dorado Nitrogen Project Schedule

- **Project Schedule**
  - September 2009: ClimeCo engaged to evaluate FTIR CEM and perform $N_2O$ RATA. RA exceeded Part 75 Requirements
  - November 1, 2009: Baseline campaign starts
  - December 2, 2009: CAR Protocol v1 issued
  - June 10, 2010: Baseline verification (on-site) begins
  - June 27, 2010: Baseline campaign ends
  - June 29-30, 2010: Installation of BASF catalyst
  - July 1, 2010: Project campaign begins
  - October 2010: mid campaign verification – 198,000 CRTs issued
  - May 2011: end of campaign 1 verification – 265,000 CRTs (TBI)
Installation (June 29 and June 30th)
Summary

- BASF Catalyst demonstrating an N$_2$O Destruction Efficiency (DE) greater than 85%.
- Generated approximately 450,000 CRTs from July 1, 2010 to March 21, 2011
- Project was shadowed by CAR and included a baseline verification (at ClimeCo’s request). Recommended step prior to installation of secondary catalyst.
- Excellent team effort by LSB Chemicals, CAR and Ruby Canyon.
REMC
East Dubuque, IL
First listed CAR Tertiary Project
**Advisory Services**
- Technology Review / Selection
- CEM analysis, Part 75 Consulting
- Financing alternatives evaluation

**Project Development**
- CAR project development
- Engineering (via partnership)
- Project management and monitoring
- Project finance structuring

**Monetization**
- Commercialization of CRTs
- Hedging strategies
- Top-notch trading through global partner
• REMC Project NAP 1 – East Dubuque, Illinois
  - Medium Pressure Plant
  - Tertiary Abatement
  - CRI Catalyst
  - Typical Campaign Length: 4 months
  - Historical Campaigns: not required
  - Baseline Campaign: Simultaneous to Project
  - Anticipated Start Date: 7/1/11
  - Project Verifier – TBD
• **Project Schedule**

  - May 2010- : ClimeCo engaged to evaluate CEMs and perform technology assessment (secondary vs. tertiary)
  
  - May through December, 2010: Technology evaluation, financial investment structuring, Joint Development Agreement (JDA) development
  
  - December 21, 2010: JDA executed, engineering and system fabrication commences
  
  - March 21, 2011: Construction drawings issued
  
  - April, 2011: Construction to commence
  
  - July 1, 2011: Anticipated project start-up
REMC – First US Tertiary Project

REMC – NAP 1 CAR Project
N₂O Tertiary Abatement

New piping - transporting tailgas to and from catalyst

New equipment and piping

N₂O Tertiary Catalyst

Ammonia Converter
Summary

- ClimeCo served as Project Manager for all engineering, N\textsubscript{2}O monitoring, and CAR development services.
- Process from initiation of advisory work to system start up – 14 months.
- First verification planned for January 2012 for vintage 2011.
- Excellent team effort by Rentech and our project partners O’Brien & Gere and CRI
The Low Carbon Technology Company

William Flederbach
Executive Vice President
Phone: (305) 962-1008
E-mail: wflederbach@climeco.com

Miami Tower, 100 Southeast Second Street, 36th Floor
Miami, FL 33131
Tel: 305 299 1188 – Fax: 305 704 3822 – info@climeco.com