

Annual NETL CO₂ Capture Technology for Existing Plants R&D Meeting

SHERATON STATION SQUARE HOTEL
PITTSBURGH, PA
MARCH 24-26, 2009

TUESDAY, MARCH 24, 2009 - GRAND STATION I AND II

7:00 a.m. **Registration - GRAND STATION III FOYER**
Continental Breakfast - GRAND STATION III AND IV

SESSION 1

OPENING/OVERVIEW

8:00 a.m. **Introduction**
Lynn Brickett, Director, Existing Plant Division
U.S. DOE/NETL

8:05 a.m. **Opening Remarks**
Scott Klara, Director, Strategic Center for Coal
U.S. DOE/NETL

8:15 a.m. **Overview of DOE/NETL CO₂ Capture R&D Program**
Jared Ciferno, Technology Manager, Existing Plants Program
U.S. DOE/NETL

8:40 a.m. **EPA's CO₂ Separation & Capture Research Program**
Nick Hutson, U.S. Environmental Protection Agency

POST-COMBUSTION SORBENT BASED CAPTURE

9:00 a.m. **"Development of a Dry Sorbent-Based Post Combustion CO₂ Capture Technology for Retrofit in Existing Power Plants"** – Progress Update
Project NT43089
Thomas Nelson, RTI International

9:30 a.m. **"CO₂ Removal from Flue Gas Using Microporous Metal Organic Frameworks"** – Progress Update
Project NT43092
Annabelle Benin, UOP LLC, A Honeywell Company

10:00 a.m. **BREAK - GRAND STATION III AND IV**



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SESSION 2

Moderator: *Andrew O'Palko*, U.S. DOE/NETL

POST-COMBUSTION SORBENT BASED CAPTURE- CONT'D

- 10:20 a.m. **“Metal Monolithic Amine-Grafted Zeolites for CO₂ Capture Power Plants”** – Progress Update
Project NT43086
Steven Chuang, University of Akron
- 10:50 a.m. **“Low-Cost Sorbent for Capturing CO₂ Emissions Generated by Existing Coal-Fired Power Plants”** – Project Overview
Project NT0005497
Jeannine Elliott, TDA Research, Inc.
- 11:20 a.m. **“Development of Novel Carbon Sorbents for CO₂ Capture”** – Project Overview
Project NT0005578
Marc Hornbostel, SRI International
- 11:50 a.m. **LUNCH - REFLECTIONS**

SESSION 3

Moderator: *David Lang*, U.S. DOE/NETL

POST-COMBUSTION SORBENT BASED CAPTURE- CONT'D

- 1:20 p.m. **“Evaluation of Solid Sorbents as a Retrofit Technology for CO₂ Capture from Coal-Fired Power Plants”** – Project Overview
Project NT0005649
Sharon Sjostrom, ADA-ES, Inc
- 1:50 p.m. **NETL Office of Research and Development Sorbent Based CO₂ Capture Research** – Progress Update
Henry Pennline and James Hoffman, U.S. DOE/NETL - ORD

POST-COMBUSTION SOLVENT BASED CAPTURE

- 2:30 p.m. **“Ionic Liquids: Breakthrough Absorption Technology for Post-Combustion CO₂ Capture”**
– Progress Update
Project NT43091
Edward Maginn, University of Notre Dame
- 3:00 p.m. **“Novel High Capacity Oligomers for Low Cost CO₂ Capture”** – Project Overview
Project NT0005310
Teresa Grocela, GE Global Research
- 3:30 p.m. **BREAK - GRAND STATION III AND IV**

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SESSION 4

Moderator: *Evan Granite*, U.S./DOE/NETL

POST-COMBUSTION SOLVENT BASED CAPTURE - CONT'D

- 3:50 p.m. **“Reversible Ionic Liquids as Double-Action Solvents for Efficient CO₂ Capture”** – Project Overview
Project NT0005287
Charles Eckert, Georgia Institute of Technology
- 4:20 p.m. **“Development and Evaluation of a Novel Integrated Vacuum Carbonate Absorption Process”**
– Project Overview
Project NT0005498
Yongqi Lu, Illinois State Geologic Survey, University of Illinois at Urbana-Champaign
- 4:50 p.m. **“Developing Chemical Additives for Aqueous Ammonia to Reduce CO₂ Capture Cost”** – Project Overview
Ted Chang, Lawrence Berkley National Laboratory
- 5:20 p.m. **ADJOURN**
- 5:30 -7:00 p.m. **RECEPTION / POSTER SESSION - GRAND STATION III AND IV**

WEDNESDAY, MARCH 25, 2009 - GRAND STATION I AND II

- 7:00 a.m. **Registration - GRAND STATION III FOYER**
Continental Breakfast - GRAND STATION III AND IV

SESSION 5

Moderator: *Charles Miller*, U.S. DOE/NETL

ADVANCED OXY-COMBUSTION PROCESSES

- 8:00 a.m. **“Coal Direct Chemical Looping Retrofit to Pulverized Coal Power Plants for In-Situ CO₂ Capture”** – Project Overview
Project NT0005289
Fanxing Li, Ohio State University
- 8:30 a.m. **“Alstom’s Chemical Looping Combustion Prototype for CO₂ Capture from Existing Pulverized Coal-Fired Power Plants”** – Project Overview
Project NT0005286
Herb Andrus, Alstom Power, Inc.
- 9:00 a.m. **NETL Office of Research and Development Chemical Looping Research** – Progress Update
William Rogers, U.S. DOE/NETL - ORD

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9:40 a.m. **“Oxygen Transport Membrane Based Oxycombustion for CO₂ Capture from Coal Power Plants”** – Progress Update
Project NT43088
Maxwell Christie, Praxair, Inc.

10:10 a.m. **BREAK - GRAND STATION III AND IV**

SESSION 6

Moderator: *Mike Mosser*, U.S. DOE/NETL

10:30 a.m. **“Power Systems Development Facility”** – Project Overview
Project NT0000749
Larry S. Monroe, Southern Company

OXY-COMBUSTION SYSTEM TESTING AND EVALUATION

11:00 a.m. **“Development of Cost Effective Oxy-Combustion Technology for Retrofitting Coal-Fired Boilers”** – Progress Update
Project NT42747
Hamid Farzan, Babcock & Wilcox Power Generation Group

11:30 a.m. **“Oxygen-Fired CO₂ Recycle for Application to Direct CO₂ Capture From Coal-Fired Power Plants”** – Progress Update
Project NT42430
Thomas Gale, Southern Research Institute

12:00 p.m. **LUNCH - ADMIRAL ROOM**

SESSION 7

Moderator: *Robert Patton*, U.S. DOE/NETL

1:30 p.m. **“Characteristics of Oxy-Combustion Impacts in Existing Coal-Fired Boilers”** – Project Overview
Project NT0005288
Bradley Adams, Reaction Engineering International

2:00 p.m. **“Jupiter Oxycombustion and Integrated Pollutant Removal for the Existing Coal Fired Power Generation Fleet”** – Progress Update
Project NT42811
Brian Patrick, Jupiter Oxygen Corporation

2:30 p.m. **“Oxy Combustion Boiler Development for Tangential Firing”** – Project Overview
Project NT0005290
Armand Levasseur, Alstom Power, Inc

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3:00 p.m. **BREAK - GRAND STATION III AND IV**

SESSION 8

Moderator: *Tim Fout*, U.S. DOE/NETL

OXY-COMBUSTION COMPONENT ANALYSIS

3:20 p.m. **“Oxy-Combustion Boiler Material Development”** – Project Overview
Project NT40005262
Archie Robertson, Foster Wheeler North America Corp.

3:50 p.m. **“Near Zero Emissions Oxy-Combustion Flue Gas Purification”** – Project Overview
Project NT0005341
Minish Shah, Praxair, Inc.

4:20 p.m. **“Gas Purification Utilizing SO_x/NO_x Reactions during Compression of CO₂ Derived from Oxyfuel Combustion”** – Project Overview
Project NT0005309
Kevin Fogash, Air Products and Chemicals, Inc.

SYSTEMS ANALYSIS

4:50 p.m. **“Systems Analysis of California’s Greenhouse Gas Emission Performance Standard”** – Project Overview
Eric Grol, U.S. DOE/NETL - OSAP

5:20 p.m. **ADJOURN**

5:30 -6:30 p.m. **Posters available for viewing**

THURSDAY, MARCH 26, 2009 - GRAND STATION I AND II

7:00 a.m. **Registration - GRAND STATION III FOYER**
Continental Breakfast - GRAND STATION III AND IV

SESSION 9

Moderator: *E. David Huckaby*, U.S. DOE/NETL

SYSTEMS STUDIES AND MODELING EFFORTS

8:00 a.m. **“Evaluation of CO₂ Capture and Sequestration Using Oxyfuels with AMIGA Economic Modeling”** – Progress Update
FWP 49536
Richard D. Doctor, Argonne National Laboratory

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- 8:30 a.m. **“U.S. DOE/NETL Office of Research and Development Oxyfuel Combustion Research”**
– Progress Update
E. David Huckaby and Gordon Holcomb, U.S. DOE/NETL - ORD
- 9:10 a.m. **“Cost Reduction and R&D Strategies for Advanced Oxyfuel Technologies”** – Progress Update
Michael Matuszewski, U.S. DOE/NETL - OSAP
- 9:40 a.m. **BREAK - GRAND STATION III AND IV**

SESSION 10

Moderator: *José Figueroa, U.S. DOE/NETL*

POST-COMBUSTION MEMBRANE BASED CAPTURE

- 10:00 a.m. **“Membrane Process to Capture CO₂ from Power Plant Flue Gas”**
– Progress Update
Project NT0005312 and NT43085
Tim Merkel, Membrane Technology and Research
- 10:30 a.m. **“Development of Biomimetic Membranes for Near Zero PC Power Plant Emissions”**
– Progress Update
Project 07NT43084
Michael Trachtenberg, Carbozyme, Inc.
- 11:00 a.m. **“CO₂ Capture Membrane Process for Power Plant Flue Gas”** – Project Overview
Project NT0005313
Lora Toy, RTI International

CO₂ COMPRESSION

- 11:30 a.m. **“CO₂ Compression Using Super Sonic Shock Wave Technology”** – Progress update
Project NT42651
Aaron Koopman, Ramgen Power Systems
- 12:00 p.m. **“Novel Concepts for the Compression of Large Volumes of CO₂”** – Progress Update
Project NT42650
J. Jeffrey Moore, Southwest Research Institute
- 12:30 p.m. **Closing Comments**
Jared Ciferno, Technology Manager, Existing Plants Program, U.S. DOE/NETL
- 12:45 p.m. **ADJOURN**