



Regina, Saskatchewan

AGENDA

12th Meeting of the International Post-Combustion CO₂ Capture Network

29th September – 1st October 2009
Regina Inn Hotel, Regina, Canada

Organised by
IEA Greenhouse Gas R&D Programme



Hosted by
University of Regina



Sponsored by
Babcock & Wilcox
RWE
University of Regina
IPAC-CO2



ITC
SaskPower
HTC Pureenergy
Doosan Babcock Energy
Stantec



Stokes Research Inc
Saskatchewan Ministry of Energy and Resources



Stokes Research Inc.





28th September 2009 : Time TBC

Evening Reception, Regina Inn Hotel

Day 1 : 29th September 2009

9.00 Session 1 – Welcome and Sponsors

Welcome on behalf of the IEA Greenhouse Gas R&D Programme – John Topper

Post Combustion Capture Research by the University of Regina and the International Test Centre for CO₂ Capture (ITC): Pilot Plant Studies and Economic Evaluations - P Tontiwachwuthikul, R Idem & D Gelowitz, Univ of Regina

9.40 Sponsors presentations – Chair Paitoon Tontiwachwuthikul

SaskPower's Carbon Capture Demonstration Projects; Michael J. Monea, Vice-President, Integrated Carbon Capture & Storage

Update on the State of the Art B&W RSAT™ Pilot Plant & Development Activities; Rouyu Zhang, B&W, USA

HTC Purenergy & Doosan Babcock Energy Post Combustion CO₂ Capture Technology, Design and Integration Approach; Lionel Kambeitz, HTC Purenergy, Canada

Coffee Break (20 minutes)

Session 2 – Fundamental Studies – Chair Paul Feron and Mike Monea

11.00 Concentrated piperazine: Degradation, Modelling and Pilot Plant Results; Gary Rochelle, Univ Texas, USA

11.25 Accurate Screening of Candidate Solvents by the Wetted Wall Column; Xi Chen, Univ Texas, USA

11.50 IFP Solutions for Lowering the Cost of Post-Combustion Carbon Capture from HiCapt+ to Demixing Solvents and Future Steps; Eric Lemaire and Ludovic Raynal, IFP, France

12.15 Interactions of CO₂ with Aqueous Amine Solutions—the Molecular View; Marcel Maeder et al, Univ of Newcastle and CSIRO, Australia

12.40 Group Photograph followed by Lunch break

14.00 Ionic Liquids for Post Combustion CO₂ Absorption; David Wappel et al, Univ of Leoben, Austria

14.25 Latest Research on Fundamental Studies of CO₂ Capture Process Technologies at the Process Systems Laboratory, University of Regina; R Idem, P Tontiwachwuthikul, and D Gelowitz, Univ of Regina

Session 3 – Pilot Plant Work and Scale Up – Chair Gary Rochelle & Kevin McCauley

14.50 First Results from the Start up of a Post Combustion Pilot Plant at Niederaussem; Peter Moser et al, RWE Power, Germany and Christine Foerster and Torsten Stoffregen, Linde, Germany

15.15 Post-Combustion Capture Pilot Plant Operation in Australia and China; Paul H.M. Feron, Energy Transformed Flagship, CSIRO Energy Technology, Newcastle, Australia

15.40 Afternoon Coffee Break (20 minutes)

16.00 Integration of Cansolv CO₂ Capture with Coal-Fired Power Plants Using Supercritical Boilers; P E Just, Cansolv, Canada, and Yasaman Mirfendereski and Frank Geuzebroek, Shell, Netherlands

16.25 Status of European CO₂ Technology Test Centre Mongstad; Gelein de Koeijer, StatoilHydro, Norway

16.50 Evaluation of Process Improvements in Pilot Scale Activities Under the EU CESAR Project; Jacob Knudsen, Dong, Denmark

17.15 END DAY 1

Group Workshop Dinner scheduled for evening. Time & Venue TBC



Day 2 – 30th September

Sponsors Presentations – Chair John Topper

- 09.00 CCS and Climate Change Research in Canada; [Malcolm Wilson, Univ of Regina](#)
- 09.10 Statement by [Janice Stokes, Stokes Research Inc.](#)
- 09.20 Post-Combustion Capture Development Programme of RWE—A Group-Wide Approach to Implementing Technology; [Hotchkiss, Whitehouse, Moser and Schmidt](#)
- 09.45 Impacts of Post Combustion CO₂ Capture on Plant Performance—A Case Study; [Chris van Driel, Anindo Dey, David Cameron, Stantec, Canada](#)

Session 3 – Cont'd

Pilot Plant Work and Scale Up – Chair Peter Douglas & Malcolm Wilson

- 10.10 ECO₂ Ammonia Based Post Combustion Capture Trials at the R E Burger Plant in Ohio; [Chris McLarnon, Powerspan, USA](#)
- 10.35 Chilled Ammonia—Update on Joint Investigations by Alstom and EPRI; [Sean Black, Alstom, USA](#)

Coffee Break (20 minutes)

- 11.15 Development of Amine Absorbents for Post Combustion Capture; [Ji Hyun Lee, Korea Electric Power Institute, Korea](#)
- 11.40 The Hazelwood/H₃ Capture Demonstration Project; [Geoff Stevens, Univ of Melbourne, Barry Hooper, CO2CRC and Tony Innocenzi, International Power, Australia](#)

Session 4 - Modelling and Plant Studies – Chair Lionel Kambeitz & Richard Hotchkiss

- 12.05 Design Considerations of Post Combustion CO₂ Capture Process During Part Load Operation of Coal Fired Power Plant; [Sebastian Linnenberg, Jochen Oexmann and Alfons Kather, Hamburg Univ of Technology, Germany](#)
- 12.30 Lunch break
- 13.50 Optimised Integration of Post Combustion CO₂ Capture Process in Greenfield Power Plants; [Jochen Oexmann, Imo Pfaff, Sebastian Linnenberg, Alfons Kather, Hamburg Univ of Technology, Germany](#)
- 14.15 Retrofitting Post Combustion Capture to Existing Power Plants; [Jon Gibbins, Mathieu Lucquiaud, Jia Li and Hannah Chalmers, Imperial College, UK](#)
- 14.40 Dynamic Simulation and Control of MEA Absorption Processes for CO₂ Capture from Fossil Fuel Power Plant; [Noorlisa Harun, Peter L. Douglas, Eric Croiset, Luis Ricardez-Sandoval, Atchariya Chansomwong, University of Waterloo, Canada](#)
- 15.05 Modelling of Relationships Among Key Parameters in CO₂ Capture Process; [Christine Chan et al, Univ of Regina, Canada](#)
- 15.30 Coffee Break
- 15.50 Development of a Calcium Based CO₂ Capture Process for Coal Fired Plants; [Sven Unterberger et al, EnBW and Univ of Stuttgart, Germany](#)
- 16.15 Impacts of Carbon Capture on Power Plant Emissions; [Ram Narula and Harvey Wen, Bechtel Power, USA](#)

Session 5 – Commercial and Other – Chair – Jon Gibbins & Janice Stokes

- 16.40 MHI's Recent Post Combustion CO₂ Capture Achievements and Developments; [Hiroshi Tanaka, Masaki Iijima and Ronald Mitchell, MHI, Japan](#)
- 17.05 Pilot Plant Approaches for Scale Up of CO₂ Capture Processes using Amine Solvents; [Aboudheir and Elgarni, HTC Pureenergy, and Tontiwachwuthikul and Idem, Univ of Regina, Canada](#)



Wrap Up Session

17.30 Wrap Up—What and Where Next; [John Topper](#), IEA GHG

17.45 Workshop closes

Poster Session

- P1** Steady State and Dynamic Modelling for a Hybrid Approach to Post Combustion Capture; [Peter Stephenson](#) (RWE npower), [Jing Tian](#) (RWE npower), [Stevan Jovanovich](#) (BOC Linde) and [Xiaoping Tian](#) (BOC Linde)
- P2** Withdrawn
- P3** Are Solid Sorbents a Viable Option for Post Combustion CO₂ Capture; [Sharon Sjostrom](#), ADA Environmental Solutions, USA
- P4** Using Fundamental Advanced Thermodynamics to Model CO₂ Capture Using Aqueous Ammonia; [Victor Darde](#)^{1, 2}, [Kaj Thomsen](#)¹, [Willy J.M. van Well](#)² and [Erling H. Stenby](#)¹, ¹Dept of Chemical & Biochemical Engineering, Technical University of Denmark, ²Chemical & Materials Department, DONG Energy Power, Denmark
- P5** Research Highlights in Post Combustion CO₂ Capture; [Amr Henni](#), Saudi Aramco- R&DC Centre-Dhahran, Saudi Arabia
- P6** Post Combustion Capture-Ready Options and Barriers; [Adina Bosoaga](#), Mott McDonald, UK
- P7** A Pilot Plant Study for CO₂ Capture by Aqueous Ammonia Applied to Blast Furnace Gas in Iron and Steel Making Process; [Je Young Kim](#), [Kunwoo Han](#), and [Hee Dong Chun](#), Research Institute of Industrial Science & Technology, Republic of Korea
- P8** Recent Development of CO₂ Capture Technology; [Takashi Nojo](#), [Yasuyuki Yagi](#) and [Masahiko Tatsumi](#), Kansai Electric Power
- P9** Murphree Efficiency for Calculating Column Height in CO₂ Absorption from Atmospheric Gas Using Amines; [Lars Erik Oi](#), Norway
- P10** Post Combustion Carbon Capture Technologies Pilot Plant Trials on a Coal Fired Power Station; [Scholes et al](#) CO2CRC, Australia
- P11** Studies on Corrosion Inhibitors for Amine Based Solvents for CO₂ Absorption from Power Plant Flue Gases containing CO₂, O₂ and SO₂; [Kladkaew](#), [Saiwan](#), Thailand with [Idem](#) and [Tontiwachwuthikul](#), ITC Regina, Canada
- P12** Oxidation Inhibitors for Aqueous MEA Solutions used in a Post-Combustion CO₂ Capture Process; [Pierre-Louis Carrette et al](#) IFP, France
- P13** Preliminary Screening for Optimum CCS Plant Design; [Walid ElMoudir](#), Univ of Regina and [HTC Pureenergy Inc](#), [Raphael Idem](#), University of Regina, and [Ahmed Aboudheir](#); [HTC Pureenergy Inc](#), Canada
- P14** An Architectural Framework for Developing Intelligent Applications for the Carbon Dioxide Capture Process; [C. Luo](#), [Q. Zhou](#), [C.W. Chan](#), University of Regina, Canada
- P15** HiCapt+ : A Step Forward for Industrial Post-Combustion CO₂ Capture in Flue Gases; [Laurent Normand](#), [PROSERMAT](#), France, [Eric LEMAIRE](#), IFP, France, and [Christian Streicher](#), [PROSERMAT](#), France
- P16** Environmental Impact of Atmospheric Fugitive Emissions from Amine Based Post Combustion CO₂ Capture; [Moetaz I. Attalla](#), [Merched Azzi](#), [Phil Jackson](#), [Dennis Angove](#), Energy Transformed Flagship, CSIRO Division of Energy Technology, Australia
- P17** 3D Visualization of the Carbon Capture Units; [S. Guo](#), [C.W. Chan](#), [P. Tontiwachwuthikul](#), University of Regina, Canada
- P18** New Developments in Post-Combustion Capture Models in the IECM; [Peter Versteeg](#), Carnegie Mellon University



- P19** Sensitivity Study on Bed Height of Amine-CO₂ Absorption Process; [Anothai Setameteekul, HTC Pureenergy, Canada](#)
- P20** Sensitivity and Optimization Study of Amine Based CO₂ Capture Process; [Salim Kadiwala, Ahmed Aboudheir, HTC Pureenergy, Canada](#)
- P21** Pilot Plant Study on CO₂ Capture Using Simulated NGCC Flue Gas and Formulated Solvent; [Aihua Yang, Anothai Setameteekul, Salim Kadiwala, Ahmed Aboudheir, HTC Pureenergy, Canada](#)
- P22** Reduction of the Energy Penalty of a Coal-Fired Power Plant by using a Novel Solvent together with an Improved CO₂ Capture Process for Post-Combustion Capture and Compression; [Irene Bolea, Centro de Investigación de Recursos y Consumos Energéticos \(CIRCE\), Universidad de Zaragoza, Spain, Teerawat Sanpasertparnich, Raphael Idem, Paitoon Tontiwachwuthikul, David deMontigny, and Phairat Usubharatana, International Test Centre for CO₂ Capture, University of Regina, Canada](#)
- P23** Vapour-liquid equilibria determination of CO₂-H₂O-amine systems; [Danlu Tong, Martin Trusler, Geoffrey Maitland, Jon Gibbins, Paul Fennell, Imperial College, London, UK](#)

Visits to the University of Regina and ITC Facilities

These will take place on Monday 28th in the afternoon and the morning of Thursday 1 October. There will be multiple visits with 15 people maximum in each group.