

; FINAL AGENDA !

**AFRC 2014 Industrial Combustion Symposium
September 7-10, 2014, Hyatt Regency Hotel
1200 Louisiana Street, Houston, Texas**



Sunday, September 7, 2014

6:00-8:00 PM Welcome Reception/Registration sponsored by Great Southern Group

Monday, September 8, 2014

7:30-8:30 AM Continental Breakfast sponsored by Jerry Lang Combustion Consulting, Inc.

8:30-9:00 AM Opening Remarks

**Philip Smith – AFRC Chairman
Jim Seebold – AFRC 2014 General Chairman**

9:00-10:00 AM IFRF Update

Tomasz Klajny – Executive Director, International Flame Research Foundation

10:00-10:30 Coffee Break sponsored by Zeeco, Inc.

**10:30-12:00 Mini-TOTeM: *Are the Band-Aids Ready? Open Critique of the Flare Provisions in EPA's RTR Refinery Rule Proposal*
Keynote Presentation – Scott Evans, Clean Air Engineering
Discussion Moderator – Jim Seebold, AFRC 2014 General Chairman
Link to EPA Proposal: <http://www.epa.gov/ttn/atw/petrefine/20140515fr.pdf>**

12:00-1:00 Buffet Lunch sponsored by GBA Corona

Session Chair: Joseph Smith, Laufer Energy Chair and Professor of Chemical Engineering at University of Missouri Science and Technology

1:00-1:30 Emissions Testing of Pressure Assisted Flare Burners; Vance Varner – Dow Chemical Company; Zach Kodesh – John Zink Hamworthy Combustion

1:30-2:00 Hydrogen and syngas flares-comparison between experimental data and model predictions; Derek Miller – Air Products

2:00-2:30 CFD Prediction of Visible Flame Height for Pressure-assisted Flares; Mike Henneke, Shirley Chen & Kevin Leary – John Zink Hamworthy Combustion

2:30-3:00 Achieving Environmental Compliance through Proper Destruction Efficiency of Low-Profile Flare Systems; Joseph Smith – Systems Analyses & Solutions, Inc.; Scot Smith – Zeeco, Inc.

3:00-3:30 Coffee Break sponsored by Zeeco, Inc.

3:30-4:00 Emissions Estimation Methodologies for Industrial Flares; Kevin Marr, Nicolas Ponchaut, & Harri Kytomaa – Exponent, Inc.

4:00-4:30 Modeling CO and Estimating Combustion Efficiency with Flamelet-Generated Manifolds in Flares; Anchal Jatale, Muhammad Sami, Stefano Orsino & Philip Smith – Ansys, Inc. & University of Utah

4:30-5:00 Combustion Efficiency of Flares and the Effects of Wind; John H. Pohl, Energy International; Nicholas R. Soelberg, Idaho National Laboratory; James G. Seebold, Chevron (retired)

5:00-6:00 AFRC Business Meeting

Tuesday, September 9, 2014

7:30-8:30 AM Continental Breakfast sponsored by University of Utah Institute for Clean & Secure Energy

**Session Chair: Gene H. Irrgang, Global Product Manager, Oxidation Technologies –
Linde Engineering North America Inc.**

8:30-9:00 Evaluation of Electric Power Generation from Sugar Cane Waste; John H. Pohl – Energy Int'l; William N. Gilfillan – Queensland Univ. of Tech.; Terry J. Dixon – Dixon Solutions

9:00-9:30 Oxygen Enhanced Biomass Combustion; Yuan Xue, Hwanho Kim, Kenneth Kaiser, Steven Owen & Dale Tree – Air Liquide & Brigham Young University

9:30-10:00 Oxy-Fuel Combustion with preheated Oxygen-Natural gas (HeatOx) for small and medium size glass furnaces; Taekyu Kang – American Air Liquide, Inc.

10:00-10:30 Coffee Break sponsored by Zeeco. Inc.

10:30-11:00 Oxy-Coal Power Boiler Simulation and Validation Through Extreme Computing; P. Smith, J. Thornock, Y. Wu, S. Smith, B. Isaac: The University of Utah, and P. Chapman, D. Sloan, D. Turek, Y-M. Chen, A. Levasseur: Alstom Power

11:00-11:30 Oxy-fuel Combustion in the Claus Process and Using CFD Modeling in Burner Design Optimization--Xiaoping Tian, Andrew Richardson, Bernhard Schreiner-Linde Engineering North America, Inc.

11:30-12:00 Efficient and Reliable Use of the "Bottom of the Barrel" for Steam/Power Generation; Bob Schrecengost, Ed Henry, Tracy Midgley, Olaf Stallmann, Frank Verneti, Wei Zhang, & Carl Edberg; Alstom Power

12:00-1:00 Buffet Lunch sponsored by Linde

**Session Chair: Mike Henneke, Director. Computational Fluid Dynamics –
John Zink Hamworthy Combustion**

1:00-1:30 Know the Secret of Fired Heater Design and Operation with Ultra Low NOx Burner; Sultan Ahamad, Rimon Vallavanatt; Bechtel Corp.

**1:30-2:00 Low NOx Retrofit on an Existing Heater with a Small Radiant Section;
Tom Gilmartin – BP; Kurt Kraus – Callidus**

2:00-2:30 LoTOx for NOx Reduction; Naresh Suchak, Andrew Richardson, Frank Fitch and Gene Irrgang – Linde Engineering North America, Inc.

2:30-3:00 PM Emission Factors: Past, Present, and Future; Karen N.T. Olson – Zephyr Environmental Corporation

3:00-3:30 Coffee Break sponsored by Zeeco. Inc.

**3:30-4:00 Practical Flameless Combustion; Rex K. Isaacs, Seth A. Marty & Jonathon Barnes –
Zeeco, Inc.**

4:00-4:30 Flameless Combustion Safety; William C. Gibson, Marianne Zimola – Great Southern Group

4:30-5:00 My 60-year History of Fuel Dilution Technology; Jerry Lang – JLCC, Inc.

6:00-8:00 Banquet sponsored by John Zink Hamworthy Combustion

Wednesday, September 10, 2014

7:30-8:30 AM Continental Breakfast sponsored by Heat Transfer Research, Inc.

Session Chair: Kurt Kraus, Director, Global Combustion R&D – UOP Callidus

- 8:30-9:00** **Chemical Looping Combustion-Research for Power and Process Heat Applications; Geo. A. Richards, Ron Breault, Ranjani Siriwardane – US Dept. of Energy, NETL**
- 9:00-9:30** **Use of CFD in Evaluation Pyrolysis Furnace Design; Bradley Adams, Marc Cremer – Reaction Engineering International**
- 9:30-10:00** **Development and Demonstration of a Fuel-Flexible Burner for Fired Heaters; Jamal Jamaluddin – Shell Global Solutions (US) Inc.; Charles Benson, Roberto Pellizzari – etaPartners; Seth Marty, Thomas Young, Rex Isaacs – Zeeco, Inc.; Joseph Renk – USDOE**
- 10:00-10:30** **Coffee Break sponsored by Zeeco, Inc.**
- 10:30-11:00** **Evaluating the NO_x Performance of a Steam Generator for Heavy Oil Production: Impact of Combustion System Design; J.N. Thornock, J.P. Spinti, M. Hradisky, Phil Smith – University of Utah; B. Coleman, N. Brancaccio, S. Storslett – Chevron U.S.A., Inc.; J. Nowakowski T. Robertson – Fives North American Combustion, Inc.**
- 11:00-11:30** **Modelling of Combustion, NO_x Emissions and Radiation of a Natural Gas Fired Glass Furnace; George Mallouppas, Yongzhe Zhang & Rajesh Rawat – CD-adapco**
- 11:30-12:00** **Impact of High-Emissivity Coatings on Process Furnace Heat Transfer; Bradley Adams, Martin Denison, John Olver – Reaction Engineering International, Emissheield**
- 12:00-1:00** **Buffet Lunch sponsored by UOP Callidus**
- Session Chair: Philip Smith – AFRC Chairman; Professor, Dept. of Chemical Engineering; Director, Institute for Clean and Secure Energy; Director, Carbon Capture Multidisciplinary Simulation Center; University of Utah**
- 1:00-1:30** **Demonstrated Implementation of Detailed Chemistry into CFD Simulations for Tailored Commercial Evaluation of Industrial Combustion Equipment – M.A. Cremer, D.H. Wang, B.R. Adams – Reaction Engineering International**
- 1:30-2:00** **Advanced Design Optimization of Combustion Equipment Using Sculptor with CFD Tools; Joseph D. Smith, Zachary P. Smith, Mark Landon – Systems Analyses and Solutions, Inc., Optimal Solutions Software**
- 2:00-2:30** **Objectives for Optimizing Combustion Systems in Refinery and Petrochemical Applications; Kurt Kraus – UOP Callidus**
- 2:30** **Adjourn**

AFRC 2014 INDUSTRIAL COMBUSTION SYMPOSIUM

HYATT REGENCY HOUSTON, SEPTEMBER 7-10, 2014



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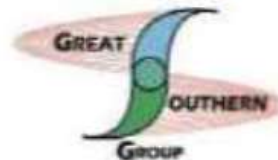
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