AGENDA
AFRC 2015 Industrial Combustion Symposium
September 9–11, 2015
Historic Fort Douglas Officers Club
University of Utah, Salt Lake City, Utah

Wednesday, September 9, 6:00-8:00 PM
Registration – University Guest House
Welcome Reception – Pierre Lassonde House

Thursday, September 10
7:00-8:00 Breakfast (University Guest House)
7:30-5:00 Registration (Fort Douglas Officers Club next door to the University Guest House)
8:30-9:00 Opening Remarks (Convene in the historic Fort Douglas Officers Club)

Philip Smith – AFRC Chairman

Session Chair: Keith Herbert, Technology Manager – Flares, Callidus Technologies

9:00-9:30 Adventures in Flaring: The Story EPA Didn't Tell You; Scot Evans, Clean Air Engineering, Inc.
9:30-10:00 A Discussion of Concerns if Refinery Flare Rules are applied to the Chemical Industry; Troy Boley, SAGE Environmental Consulting, L.P.
10:00-10:30 Coffee Break
10:30-11:00 How to Measure Flare Vent Gas Composition and Net Heating Value: A Review of Existing Instrumentation; Dan Pearson, Clean Air Engineering, Inc.
11:00-11:30 Application of CFD to model Air-Assisted Industrial Flares under low-Btu, low-Flow Rate Conditions; Anchal Jatale, Ansys, Inc.
11:30-12:00 Physical Testing of a Multi-point Ground Flare Burner Utilizing Low Btu Flare Gas; Matthew Martin, Callidus Technologies LLC
12:00-1:00 Lunch (Heritage Commons)
1:00-1:30 Emission Testing of Sonic Velocity Flares Validates High Destruction Efficiency; Scot Smith, Zeeco
1:30-2:00 Considerations When Specifying Multipoint Ground Flares; Ian Fischer, Fired Equipment, ExxonMobil Engineering, Baytown, TX
2:00-2:30 Radiation Effects on Surrounding Structures from Multi-Point Ground Flares; Joseph D. Smith, Systems Analyses and Solutions, Owasso, Oklahoma

Session Chair: Joe Colannino, Chief Technology Officer, ClearSign Combustion Corp.

2:30-3:00 4 Rules of Fired Heater Operation; Charles Baukal, John Zink Company, LLC
3:00-3:30 Coffee Break
3:30-4:00 Flameless Heater Performance: Two Years of Operation; Bill Gibson, Marianne Zimola, Great Southern Group
4:00-4:30 Duplex Technology: A Novel Approach to Combustion Performance Enhancement in Refinery Process Heaters; Roberto Ruiz & Joe Colannino, ClearSign Combustion Corp.
4:30-5:00 New Firing Pattern in Heaters provide Uniform Heat Transfer; Ashitosh Garg, Furnace Improvements
5:00-6:00 AFRC Business Meeting
7:00-9:00 Banquet (Natural History Museum)
**Friday, September 11**

7:00-8:00 Continental Breakfast (University Guest House)

**Break-Out Session 1**

**Fort Douglas Officers Club**

**SOUTH CONFERENCE ROOM**

Session Chair: Dave Schalles, Secretary, AFRC; VP-Technical Services, Bloom Engineering Company

8:30-9:00 Performance of Low and Ultra-Low NOx Burners Firing Hydrogen-Enriched Syngas in a Refractory Lined Furnace; Chris Ballance, Georgia Institute of Technology

9:30-10:00 Air staged double swirl low NOx LPG burner; A.M. Elbaz; King Abdullah University of Science & Technology

10:00-10:30 Coffee Break

10:30-11:00 Validation and Prediction of Ultra-Low NOx Burner Performance using Computational Fluid Dynamics; Sandeep Alivandi, Gas Technology Institute

11:00-11:30 Ultra Low NOx Conventional and Regenerative Burner Retrofits; Mathew Valancius, Bloom Engineering Company, Inc.

11:30-12:00 Mesh Resolution Issues for CFD Analysis of Gas-fired Process Furnaces; Paula Sun, Mike Henneke, John Zink Hamworthy Combustion

12:00-1:00 Lunch (Heritage Commons)

**Break-Out Session 2**

**Fort Douglas Officers Club**

**SOUTH CONFERENCE ROOM**

Session Chair: Chuck Benson, Treasurer, AFRC; Managing Partner, etaPartners LLC

1:00-1:30 Heater Recirculation Pattern Analysis and Burner Spacing Optimization; Addison Cruz, Matthew Martin, Kurt Kraus; Callidus Technologies, LLC

1:30-2:00 Autoignition Characteristics of Silane-Oxygen-Diluent Mixtures in a Practical Burner; Bradley Ochs, Georgia Institute of Technology

2:00-2:30 Multipoint Water Quenched Probe for Spatially Averaged Hot Gas Sampling in Industrial Combustors; Bradley Ochs, Georgia Institute of Technology

2:30-3:00 Opportunities for the next generation of optical boiler diagnostics; Charles E.A. Finney, Oak Ridge National Laboratory

3:00-3:30 Coffee Break

3:30 Adjourn
Friday, September 11
7:00-8:00 Continental Breakfast (University Guest House)

Break-Out Session 3
Fort Douglas Officers Club
NORTH CONFERENCE ROOM

Session Chair: Phil Smith, Chairman, AFRC; Professor, Dept. of Chemical Engineering, Univ. of Utah

8:30-9:00 A Study of Flameless Combustion Behavior of Pulverized Coal Preheated by Circulating Fluidized Bed; Ziqu Ouyang, Chinese Academy of Sciences

9:00-9:30 Pilot-Scale Investigation of Heat Flux and Radiation from and Oxy-coal Flame; Andrew Fry, University of Utah

9:30-10:00 A validation/uncertainty quantification (V/UQ) analysis for a 1.5 MW oxy-coal furnace; Oscar Diaz-Ibarra, University of Utah

10:00-10:30 Coffee Break

10:30-11:00 Effects of coal blends on formation mechanisms of ash aerosol and ash deposits during air and oxy-Combustion; Zhonghua Zhan, University of Utah

Session Chair: Jordan Loftus, Technical Secretary, AFRC; Chairman, AFRC (1981-1995); Texaco (Retired)

11:00-11:30 My History working with the IFRF; John Pohl, Energy International

11:30-12:00 Experimental study on preheating and combustion characteristics of semi-coke in 0.2MW pilot; Jianguo Zhu, Chinese Academy of Sciences

12:00-1:00 Lunch (Heritage Commons)

Friday, September 11
Break-Out Session 4
Fort Douglas Officers Club
NORTH CONFERENCE ROOM

Session Chair: Jordan Loftus, Technical Secretary, AFRC; Chairman, AFRC (1981-1995); Texaco (Retired)

1:00-1:30 Development of a Sub-Surface Burner Technology for In-Situ Heating; Fatemeh Baabazadeh Shareh, University of Utah

1:30-2:00 Continuous Online Monitoring of Maximum Fireside Tube Skin Temperature in a Depropanizer Reboiler; Philip Smith, CRSim

2:00-2:30 Flame Safety and the Parameters that Affect Them; John Pohl, Energy International

2:30-3:00 Lower Dimensional Model for Modeling the Heat Transfer and Detailed Reactions Inside Long Channels; Anchal Jatale, Ansys, Inc.

3:00-3:30 Coffee Break

3:30 Adjourn
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