



2011 AFRC Combustion Symposium
September 18-21, 2011
Hyatt Regency Hotel
Houston, Texas

Sunday, September 18, 2011

6:00-8:00 PM *Welcome Reception/Registration*

Monday, September 19, 2011

7:30-8:30 AM *Breakfast*

8:30-8:45 AM *Opening Remarks*

Philip Smith- AFRC Chairman

Industrial Flares Colloquium

Session Chair: James G. Seebold Chevron Corporation (retired)

8:45-9:45 AM *Combustion Efficiency of Industrial Flares Revisited-
-The current status of this multivariate, multiphysics,
multichemistry morass and what to do about it* *James G. Seebold, Chevron (ret)*

9:45-10:45 AM *Insights from Passive FTIR Flare Performance Tests* *Scott Evans, Clean Air Engineering*

10:45-11:00 AM *Break*

11:00-11:30 AM *Estimating Maximum Steam Assist Rate for
Arbitrary Flare Gas Mixtures* *Peter Gogolek, CanmetENERGY,
Natural Resources Canada*

11:30-12:00 PM *Combustion of Mixtures: A Modified IFC Approach* *Gary R. Mueller, Shell Global Solutions
(US) Inc.*

12:00-1:00 PM *Lunch*

1:00-2:00 PM *A Technology for Measuring the Combustion
Efficiency of Industrial & Field Flares (integrating
measurements and simulations)* *Philip Smith, University of Utah*

2:00-2:30 PM *High-Fidelity Modeling of Flare Combustion and
Emission Detection* *Raphael Panfili, Spectral Sciences, Inc.*

2:30-3:00 PM	<i>Passive FTIR Procedures for Measurement of Combustion Efficiencies</i>	<i>Robert L. Spellicy, Industrial Monitor & Control Corporation</i>
3:00-3:15 PM	<i>Break</i>	
3:15-4:15 PM	<i>TCEQ 2010 Flare Study</i>	<i>Russ Nettles/Danielle Nesvacil, Texas Commission on Environmental Quality</i>
4:15-4:45 PM	<i>Accurate and Reliable Flare Testing Methods</i>	<i>Zach Kodesh, John Zink Company, LLC</i>
4:45-5:15 PM	<i>Statistical Correlation of Flame Properties with Combustion and Destruction Efficiency Methods</i>	<i>John H. Pohl, Energy International</i>
5:15 PM	<i>Adjourn Meeting</i>	
6:00-8:00 PM	<i>Banquet</i>	

Tuesday, September 20, 2011

7:30-8:30 AM	<i>Breakfast</i>	
	Industrial Flares Colloquium, cont.	
8:30-9:00 AM	<i>CFD Analysis of a Ground Flare System: Wind and Fence Effects on Air Supply Behavior and Thermal Radiation</i>	<i>Mike Henneke, CD-adapco</i>
9:00-9:30 AM	<i>Flares in Refineries & Chemical Plants--Industry Standards & US Emissions Regulations</i>	<i>Paul D. Eichamer, ExxonMobil (Ret.) and Fired Equipment Engineering</i>
9:30-10:00 AM	<i>Acceptable Parameters for Steam Assisted Flares at Turndown</i>	<i>Tom Farmer, Zeeco, Inc.</i>
10:00-10:30 AM	<i>Break</i>	
10:30-11:00 AM	<i>Multiphase Transient Flow Analysis to Evaluate the Design of a Flare Liquid Seal</i>	<i>Joseph D. Smith, Systems Analyses & Solutions, Inc.</i>

11:00-11:30 AM	<i>Open Ground Flare Systems--Historical review of a recent project from the concept to the commissioning, passing through R&D activities</i>	<i>Enrico Giovanardi, Hamworthy Combustion, Italy</i>
11:30-12:00 PM	<i>U.S. EPA Flare Activity Overview</i>	<i>Brian Dickens, U.S. EPA-Region 5</i>

Conclusion of Industrial Flares Colloquium

12:00-1:00 PM

Lunch

Burner Session

Session Chair: Richard Waibel, John Zink

1:00-1:30 PM

Flame Configurations in an Annular Swirling Flow

Christopher W. Foley, Aerospace Engineering, Georgia Tech

1:30-2:00 PM

Turbulent Flame Speeds of High H₂ Mixtures

Prabhakar Venkateswaran, Georgia Tech

2:00-2:30 PM

Numerical and Experimental Investigation of Synthetic Biogas Pulse Combustion

Mohammad Soleimani Dinani, Mechanical Engineering, Universiti Teknologi, Malaysia

2:30-3:00 PM

A Comparative Study of Gray and Non-Gray Methods of Computing Gas Absorption Coefficients and its Effect on the Numerical Predictions of Oxy-fuel Combustion

Muhammad Sami, ANSYS Inc.

3:00-3:30 PM

Predicting Stability Limit of a Burner firing Non-Conventional Gas

Peter Gogolek, CanmetENERGY

3:30-4:00 PM

Break

4:00-6:00 PM

AFRC Business Meeting

Wednesday, September 21, 2011

7:30-8:30 AM

Breakfast

Burner Session, cont.

8:30-9:00 AM

Ultra-low NO_x Burner Arrangements in Furnace Revamps: Utilization of CFD Modeling to Prevent and Mitigate Adverse Furnace Flow Patterns

Jaime Erazo, John Zink Company, LLC.

9:00-9:30 AM	<i>Beyond Le Chatelier--Upper and Lower Flammability Limits for Gas Mixtures Including N₂ and CO₂</i>	<i>Peter Gogolek, CanmetENERGY</i>
9:30-10:00 AM	<i>NAR Radiant Flux Measurements in Pilot-scale IFRF-NFA Burner Operating in a High CO₂ Environment</i>	<i>O.B. Ramadan, CanmetENERGY</i>
10:00-10:30 AM	<i>Break</i>	
10:30-11:00 AM	<i>Investigation of the Spray Characteristics of a Twin Fluid Atomizer Using LSI and PDA</i>	<i>Stephane Daviault, Dept. of Mechanical and Aerospace Engineering, Carleton University</i>
11:00-11:30 AM	<i>Development of a Modular Supplemental Burner for Optimization of Distributed Generation/Combined Heat and Power System Efficiency</i>	<i>Elliott-Sullivan Lewis, UCI Combustion Laboratory, University of California-Irvine</i>
11:30-12:00 PM	<i>Next Generation Low NO_x Boiler Burner Retrofits-Field Performance and Lessons Learned</i>	<i>Scott Reed, Zeeco, Inc.</i>

Conclusion of burner discussion

12:00-1:00 PM *Lunch*

Furnace Session Session Chair: Charles Benson etaPartners LLC.

1:00-1:30 PM	<i>EnviroMix Split Phase: Applying Flameless Combustion to Pyrolysis Cracking Furnaces</i>	<i>Simon Kretzschmar, Hamworthy Combustion Engineering, Ltd.</i>
1:30-2:00 PM	<i>Correctly Modeling and Calculating Combustion Efficiencies from Fired Equipment</i>	<i>David Schmitt, Increase Performance, Inc.</i>

Conclusion of Furnace discussion/ MEETING ADJOURNED