

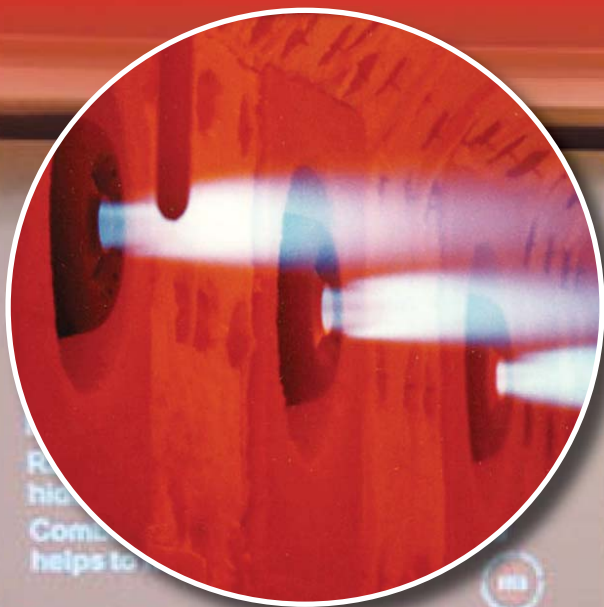


Tuesday & Wednesday  
**Sept. 27 & 28, 2011**

Omni William Penn Hotel  
Pittsburgh, PA

Industrial  
Heating  
Equipment  
Association  
Presents:

# 42nd Annual Combustion Seminar and Exhibition



**REGISTER NOW ONLINE, [www.ihea.org](http://www.ihea.org) !**



Presented by :  
Industrial  
Heating  
Equipment  
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42nd  
Annual  
Combustion  
Seminar  
and  
Exhibition

## Introduction

IHEA's 42nd Annual Combustion Seminar will be held **September 27 & 28**, at the Omni William Penn in Pittsburgh, PA. Long the industry's premier seminar for industrial process heating professionals, this two day event offers attendees the chance to learn the latest in combustion technology and visit with industry suppliers during a tabletop exhibition the first day. Enrollment is limited and registrants will be accepted on a first-come, first-served basis.

## Who Should Attend

The IHEA Combustion Seminar is designed for persons responsible for the operation, design, selection and/or maintenance of fuel-fired industrial process furnaces and ovens.

## What Will Be Presented

The IHEA Combustion Seminar is comprised of 18 sessions designed to provide complete, non-commercialized exposure to:

- ✓ chemistry and efficiency of combustion
- ✓ types of industrial burners available and how they are applied for efficient operation
- ✓ supply and control of the fuel and air for these systems including piping design and valve selection
- ✓ flame safety requirements of combustion systems
- ✓ process and ratio controls with exposure to micro-processor equipment
- ✓ furnace pressure controls for operation and efficiency improvements
- ✓ preheated combustion air and furnace recuperators
- ✓ NO<sub>x</sub> and other emissions: what causes them and how to minimize them
- ✓ Infrared process heating overview and applications

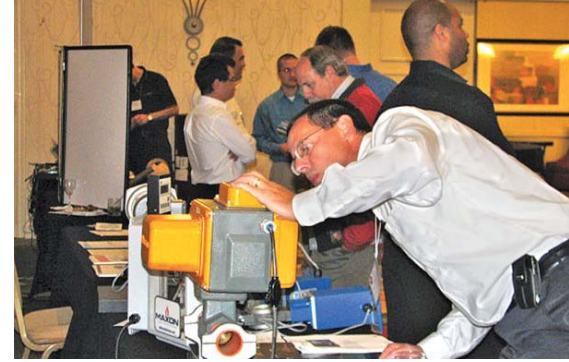
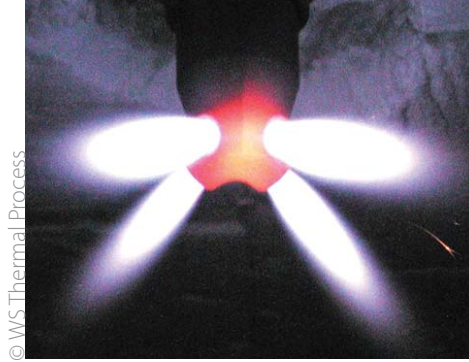
## Who You Will Meet

The IHEA Combustion Seminar Faculty is a select group of specialized engineers involved in the design and manufacture of combustion equipment.



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## Table Top Exhibits

In addition to the seminar material, representatives from combustion and industrial heating equipment suppliers will be present to discuss their line of products, systems and technology during a reception/table top exposition on Tuesday, September 27, from 4:30 p.m. to 6:00 p.m.

## Seminar Fees

\$660 for IHEA Members  
\$810 for non-members

## Multiple Registration Discount

For companies sending more than one person to the seminar, each additional registrant will receive a \$125 discount. In order to receive the discount, you **MUST** register all attendees at the same time on-line.

The fee includes tuition; all seminar handout materials in both hard copy format and on a flash drive; Reception with Tabletop Exhibition on Tuesday; and luncheons & refreshment breaks on Tuesday and Wednesday. Upon completion of the course, seminar attendees are awarded a certificate.

## Seminar Location

Omni William Penn Hotel  
530 William Penn Place, Pittsburgh, Pennsylvania 15219

## Hotel Reservations

Reservations must be made by September 2nd to receive the IHEA group rate. The Omni William Penn Hotel is offering a discounted group rate of \$179 per night. Hotel reservations can be made on-line when you register.

**You must make your reservations through IHEA to obtain the discount rate.**

## Questions?

Call IHEA at 859-356-1575

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# COURSE OUTLINE

## Tuesday, September 27, 2011

### **SESSION 1: Fundamentals of Combustion**

Terminology, combustion chemistry, characteristics of different fuels and how they burn, proper fuel/air ratio, combustion limits, flame temperature, flame geometry and operational applications.

### **SESSION 2: Burners and Flame Retention**

Discussion of nozzle mix and premix burners, burner performance, including turn down, stability and excess air.

### **SESSION 3: Combustion Air Blowers/Fluid Flow**

Discussion of blower types, construction, performance, fan laws, sizing and selection. Fluid flow in combustion systems, including relationships used for equipment sizing.

### **SESSION 4: The Basics of IR**

How it works, characteristics, temperature & wave length, types of IR heaters, different types of absorption.

### **SESSION 5: Radiant Tube Burner Technology & Application**

Theory, construction, application and maintenance of radiant tube burners for combustion systems.

### **SESSION 6: Fuel/Air Ratio Control**

Atmospheric premix (proportional, mechanical I & II), ratio regulator, linked valves and control.

### **SESSION 7: Flame Safety and Sequence Control**

Discussion of the function and the need for flame monitoring equipment, technique for flame detection and the features of flame safety equipment.

### **SESSION 8: Combustion System Safety**

A comparison will be made of the requirements of the various regulating bodies (I.e. IRL, FM, NFPA). Hardware and alternative system design considerations will also be included (particular emphasis on gas trains). Analyses will be made of specific applications and case histories

### **SESSION 9: Workshop Problem and Solution**

A typical combustion-sizing problem will be presented for analysis by the participants.

## Wednesday, September 28, 2011

### **SESSION 10: Enhanced Combustion Efficiency**

Descriptions of equipment, examples of applications and performance effects of recuperative and regenerative systems for thermal processes.

### **SESSION 11: Oxygen Enriched Combustion**

The efficiencies and fuel savings aspects of both oxy-fuel and oxygen enriched combustion will be discussed. Hardware and systems design considerations in handling oxygen (with an emphasis on safety) will also be included. Specific applications will be analyzed.

### **SESSION 12: Furnace and Process Controls**

The application process controls, with emphasis on furnace and combustion systems controls to optimize efficiency, product quality and productivity.

### **SESSION 13: Optimizing Combustion Systems Performance**

A typical manufacturing plant using melting, heating and heat treating furnaces and boiler is used as an example to illustrate how to organize and implement an energy use optimization program, designed to reduce total operating costs. Each furnace and department is evaluated to show how energy conservation techniques, scheduling and operating practice improvements increase productivity, decrease costs and often reduce energy use. The overall impact on NO<sub>x</sub> and CO<sub>2</sub> emissions is tracked.

### **SESSION 14: IR Applications**

Processes/applications that have been successful utilizing IR (energy reduction, quality improvement, increased throughput, etc.)

### **SESSION 15: Heat Application – Low Temperature**

Discussion of combustion systems used on various industrial heating applications where convection is the primary method of heat transfer.

### **SESSION 16: Heat Application – High Temperature**

Optimizing heat transfer of furnace combustion systems by relating current burner types and resultant flames to a number of industrial heating configurations.

### **SESSION 17: Combustion Systems & NO<sub>x</sub>**

The mechanisms and variables that influence NO<sub>x</sub> formations, its environmental impact and control techniques are described. Key topics include: flame temperature, combustion control, burner design, process variables and post combustion control of emissions.

### **SESSION 18: Round Table Discussion, Combustion System Maintenance**

To complete the seminar's comprehensive coverage of combustion systems, time is allocated for an open discussion of practical furnace maintenance activities. Participants will have an opportunity to ask questions and share experiences and concerns with the other attendees.

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# COURSE HOURS & FACULTY

## TUESDAY, September 27

Registration	7:30 a.m. – 8:00 a.m.
Morning Session	8:00 a.m. – 12:15 p.m.
Luncheon Break	12:15 – 1:15 p.m.
Afternoon Session	1:15 p.m. – 4:30 p.m.
Reception/Tabletop Displays	4:30 p.m. – 6:00 p.m.

## WEDNESDAY, September 28

Morning Session	8:00 am – Noon
Luncheon Break	Noon – 1:00 p.m.
Afternoon Session	1:00 p.m. – 3:45 p.m.

## FACULTY

The faculty is a select group of prominent engineers involved in the design and manufacture of industrial combustion equipment.

- Combustion Seminar Chairman – Timothy S. Lee**, General Sales Manager,  
**Maxon Corporation – A Honeywell Company**
- Scott Anderson**, Engineering Manager, **Eclipse, Inc.**
- Michael J. Binni, P.E.**, Combustion Solutions Engineer, **Bloom Engineering Company, Inc.**
- Tony Fennell**, Midwest District Manager, **Bloom Engineering Company, Inc.**
- Fred Fuhrman**, Controls Engineer, **Hauck Manufacturing Company**
- Bruce Mickelson**, Senior Product Manager, **Honeywell, Inc.**
- Steve Mickey**, Engineering Manager, **W.S. Thermal Process Technology**
- John Podach**, Application Sales Manager, **Fostoria Process Equipment - a Div. of TPI Corp.**
- Joseph Pomykala**, Engineer, **Maxon – A Honeywell Company**
- Dennis Quinn**, Burner Business Group Engineering Manager,  
**Fives North American Combustion, Inc.**
- Bob Sanderson**, Engineer, **Eclipse, Inc.**
- Joel Watts**, Process Engineer, **Alabama Power Co.**
- Paul Wisneiski**, Regional Sales Manager, **Fireye Inc.**
- Glen Zdolshek**, Engineer, **Maxon – A Honeywell Company**
- Low Ziller**, Engineer, **Maxon – A Honeywell Company**

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# Combustion Tabletop Exhibitors

The following companies will participate in a Tabletop Exposition on Tuesday, September 27, from 4:30 – 6:00 PM.

You will be able to discuss products, systems and technology with suppliers while enjoying a reception.

(as of July 28, 2011; check our website for new exhibitors as they sign on for a table - [www.ihea.org](http://www.ihea.org))

## **Bloom Engineering, Pittsburgh, PA**

Bloom Engineering custom designs, manufactures and services combustion equipment and controls. The booth features Bloom's Low NO<sub>x</sub> Burner Solutions, Regenerative Heating Systems and Enviro Helper Oxygen Monitoring System. Exhibit will also include burner models and other products for heat processing.

## **BNP Media, Pittsburgh, PA**

*Industrial Heating & Process Heating Magazines*

Two leading thermal processing publications will be on display. *Industrial Heating* covers 1000°F and above. *Process Heating* covers 1000°F and below.

## **Eclipse, Inc., Rockford, IL**

Eclipse is the single source supplier for industrial process heating products, systems and services. We will be showcasing ultra high efficiency furnace burners, packaged burners, oxy-fuel burners and controls technology.

## **Elster Kromschroder, Lebanon, PA**

Elster Kromschroder manufactures a complete line of equipment for thermal process solutions for industry. Their industry leading products and service are coupled with advanced process controls featuring KromSchroder control technology.

## **Fireye Inc., Derry, NH**

Fireye will display process combustion flame safeguard controls and combustion efficiency controls.

## **Fives North American Combustion, Inc., Cleveland, OH**

Fives North American Combustion is one of the foremost suppliers of combustion systems worldwide, offering a comprehensive array of products, process controls, and engineering services. Product literature will be available with information on obtaining a copy of their industry standard series of combustion handbooks.

## **Fostoria Process Equipment, a Division of TPI Corp., Gray, TN**

Fostoria designs and manufactures electric and gas infrared and convection oven systems and control systems for many thermal processing applications, including finishing, thermoforming, laminating, dehydrating, etc.

## **Furnace Parts LLC, Cleveland, OH**

Furnace Parts is the leader in the manufacturing of industrial thermocouples and temperature sensors – including Types E, J, K, N, T, R, S and B. Thermocouples are NIST traceable and calibrated to AMS 2750D, BAC 5621K and CQI-9 specifications.

## **Industrial Heating Equipment Association (IHEA)**

IHEA, the national trade association of designers and manufacturers of industrial furnaces and ovens, combustion equipment, infrared equipment, process controls and other components for industrial furnaces and ovens, is the sponsor of the 2011 Combustion Seminar. Information on IHEA's members will be available along with Resource Pocket Guides and distance learning programs.

## **INEX Inc., Holland, NY**

The INEX display features high temperature creep and corrosion resistant advanced composite (silicon/silicon carbide) radiant tubes for atmosphere furnaces, including U-tubes, flanged, open & closed ended and finned versions.

## **Karl Dungs, Inc., Blaine, MN**

Karl Dungs, Inc. will be displaying a variety of combustion control products including safety valves, regulators, pressure switches, flame safety, etc. designed for use on Industrial Process Heating equipment.

## **Maxon – A Honeywell Company, Muncie, IN**

The global supplier of industrial burners, valves, and complete combustion systems for successful heating solutions. Maxon will display SMARTLINK® MRV Electronic Ratio Valves that provides advanced ratio control through a high degree of precision, repeatability and durability and the new SMARTLINK meter, one of the only self-checking flow meters in its class.

## **SCC Inc., Elk Grove Village, IL**

SCC Inc. supplies Siemens combustion control products, including gas and oil shut-off valves and actuators, modulating control motors and linkageless air/fuel control systems.

## **Selas Heat Technology Company LLC, Montgomeryville, PA**

Selas Heat Technology Company LLC and its subsidiary Pyronics Inc. have combined to offer global combustion customers a "World of Combustion Solutions." Selas will continue to develop customer driven new products to serve the market based on the 114 year history of the company.

## **Surface Combustion, Inc., Maumee, OH**

Manufacturer of thermal processing equipment and systems. Display will feature standard (Allcase®, vacuum, generators), special and auxiliary equipment.

## **Vulcan Infrared Industrial Ovens, Portsmouth, RI**

Catalytic infrared curing technology will be on display.

## **WS Thermal Process Technology, Inc., Elyria, OH**

REKUMAT® C radiant tube burner with integrated heat exchangers providing maximum efficiency with minimal NO<sub>x</sub> emissions.