



STEEL MILL COMBUSTION AND THERMAL SYSTEMS

14-16 OCTOBER 2014
SHERATON INNER HARBOR HOTEL
BALTIMORE, MD., USA

ABOUT THE COURSE

The goal of the seminar will be to give the students the basic knowledge and operating background to assess and understand the condition of their equipment. The students will also be given exposure to the latest techniques for upgrade and optimization of their systems. The relationship of hardware and controls will be highlighted. Case studies and hands-on equipment samples will be provided to complement theoretical analysis. The thermal systems to be discussed include: reheat furnaces, batch and continuous annealing systems, continuous galvanizing systems, boilers, and ladle/tundish preheaters.

WHO SHOULD ATTEND

This training seminar is designed for supervisors, engineers and technicians who are directly involved in the operation, maintenance, design or installation of combustion equipment. Other attendees that would benefit from this seminar include risk managers, safety personnel, utility personnel who manage fuels utilization, purchasing personnel who procure fuels, and environmental engineers and managers who are responsible for air quality.

SCHEDULE OF EVENTS

TUESDAY, 14 OCTOBER 2014

4 p.m.

Registration

6 p.m.

Welcome Reception

WEDNESDAY, 15 OCTOBER 2014

7 a.m.

Registration and Continental Breakfast

8 a.m.

Fundamentals of Combustion

Shailesh Gangoli, Air Products & Chemicals Inc.

Presentation will cover a general overview of key process variables in steel mill combustion operations, and their role and implications on process efficiency, productivity and product quality. This presentation will serve as an introduction of topics that will be covered in detail in the course.



8:45 a.m.

Burner Fundamentals

Ben Gatto, Hauck Manufacturing Co.

9:30 a.m.

Break

9:45 a.m.

Precise Flow Measurement for Optimized Combustion

Ron Davis, FCX Performance

Discussion of various flow technologies preferred for fuel and air and the importance of precise flow measurement in optimizing combustion.

10:30 a.m.

Pipe Flow and Piping Systems

Jared Kaufman, Tenova Core

The session covers the basic aspects of pipe flow and piping systems as they relate to combustion systems. Covered in this session are the relationship between pressure and flow, fluid considerations, pressure losses, and flow piping and distribution.

11:15 a.m.

Blowers and Fans

Daniel Banyay, Robinson Fans

Presentation of the proper specification and selection of fans for combustion systems. Topics will include aerodynamic performance/control, mechanical design and sound.

Noon

Lunch

1:15 p.m.

Combustion Safety Standards, Burner Management Systems

Bruce Mickelson, Honeywell International Inc.

Overview of NFPA 85, 86 and 87 application standards. Overview of burner management systems.

2 p.m.

Combustion Control Components

Dan Michael, Nucor Steel-Indiana

An interactive discussion about common combustion safety and control components. Will include a hands-on session.

2:45 p.m.

Hands-On Materials

Hardware will be placed on the table for attendees to examine and discuss.

3:15 p.m.

Combustion System Troubleshooting & Maintenance

Mark Kampe, CEC Combustion Safety

The importance of regular combustion system maintenance, inspection and testing is reviewed. Additionally, the presentation will cover periodic burner tuning and the recognition of common combustion hazards.

4 p.m.

Environmental Emissions

Steve Pisano, Bloom Engineering Co.

This session will define and discuss NO_x, as well as review the many factors that influence its generation in a combustion process. Current technologies that reduce NO_x emissions will be discussed, in addition to process conditions that affect these emissions. Finally, carbon dioxide and greenhouse gas emissions will be covered, as they relate to steel combustion systems.

5 p.m.

Reception

THURSDAY, 16 OCTOBER 2014

7 a.m.

Continental Breakfast

8 a.m.

Combustion Sensors and Diagnostics

Jim Ward, Gerdau

This presentation will discuss the importance of process variables such as temperature, pressure and composition, and their implication on overall effectiveness of the process. Furthermore, measurement techniques (for these process variables, e.g., temperature) and effective usage of the sensors will be discussed. Practical examples will be provided to encourage discussion and learning.

8:45 a.m.

Role of Refractory in Reheat Furnaces

Greg Odenthal, ITC - International Technical Ceramics LLC

This session provides a discussion on the role of refractory as it pertains to the steel reheat process, the most commonly used materials and key factors to consider when selecting the proper materials. An overview will be given on how refractory affects energy and ways to reduce energy costs. Also discussed will be recommendations on maintaining furnace refractory maximizing process efficiency and production.

9:30 a.m.

Break

9:45 a.m.

Thermal Recovery in Industrial Heating Applications

Michael Cochran, Bloom Engineering Co.

As a way to improve furnace efficiency, there are several approaches to thermal recovery in industrial furnace applications. This presentation introduces and compares two of the most popular approaches: recuperation and regeneration, and explores the relative merits and potential deficiencies of each approach.

10:30 a.m.

Oxyfuel Combustion

Gregory Buragino, Air Products & Chemicals Inc.

Oxygen is necessary for combustion, and by enriching air with more oxygen or with 100% oxy-fuel combustion, there are benefits which can be realized, such as improved thermal efficiency, lower fuel consumption, reduced emissions and higher productivity. This presentation also addresses the common concerns of adopting oxy-fuel combustion.

11:15 a.m.

Computational Tools for Combustion

Brian Kelly, Hauck Manufacturing Co.

Presentation of modern tools for solving/investigating/calculation of common combustion related areas and problems.

Noon

Lunch

1 p.m.

Combustion Case Studies

Brian Kelly, Hauck Manufacturing Co.; Kurt Johnson, ArcelorMittal USA Research Laboratories; Dan Michael, Nucor Steel-Indiana

1:45 p.m.

Energy Efficiency & Economics

Kurt Johnson, ArcelorMittal USA Research Laboratories

An overview of how to evaluate combustion system efficiency will be presented, including the use of software tools and other resources. Various methods to improve efficiency will be examined and compared using several case studies to illustrate viable approaches to identifying and justifying an improvement project. The session will include recuperation, regenerative systems, oxy-fuel applications and other heat recovery methods.

2:30 p.m.

Break

2:50 p.m.

Course Review and Open Discussion

REGISTRATION FEES

Advance registration by 2 September 2014: Member US\$695; Non-member US\$910. Registration fee after 2 September 2014: Member US\$795; Non-member US\$1010.

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COMPANY DISCOUNT

Three or more individuals from the same facility attending any one seminar can receive a 10% discount per person. All registrations must be received together along with payment to qualify for the discount. Not applicable with any other discount.