



# OPERATION AND MAINTENANCE OF PARTICULATE CONTROL EQUIPMENT AND SYSTEMS

6-9 OCTOBER 2013 | RADISSON HOTEL AT STAR PLAZA, MERRILLVILLE, IND., USA

## SUNDAY 6 OCTOBER 2013

4 p.m.  
Registration

## MONDAY 7 OCTOBER 2013

7 a.m.  
Registration and Continental Breakfast

8 a.m.  
Introduction

8:15 a.m.  
**STEEL MILL PARTICULATES: WHERE DO THEY  
COME FROM?**

*Joe Duckett, SNC-Lavalin America Inc.*  
Overview of the sources, sizes, composition and behavior of particulate emissions generated at steel mills.

9 a.m.  
**CAPTURE OF POLLUTANTS —  
THERMODYNAMICS, PLUME BEHAVIOR AND  
COLLECTION HOODS**

*Eric Anderson, consultant*  
Particulate and fume are frequently transported by buoyant plumes. Careful attention to this dynamic makes the difference between a collection hood that works and one that doesn't.

10 a.m.  
Break

10:15 a.m.  
**HEAT TRANSFER, CONTROL AND THE IMPACT ON  
SYSTEM DESIGN AND OPERATION**  
*Bill Allan, AECOM*

11 a.m.  
**FAN FUNDAMENTALS**  
*Vern Martin, Flowcare Engineering Inc.*

11:45 a.m.  
Session Review

Noon  
Lunch

1 p.m.  
**OVERVIEW OF CONTROL TECHNOLOGIES**  
*Ray Tedford, Schust Engineering Inc.*

A brief review of current filtration devices used on various emission sources.

2 p.m.  
**FILTER MEDIA AND TECHNOLOGIES**  
*Frank Fereday, W.L. Gore and Associates Inc.*

The presentation will include a full discussion of the various filter media and fabric filtration equipment (baghouses) typically used in steel applications. Various gas cooling methods and the performance of air moving equipment will also be discussed. System optimization will be covered based on field results.

3 p.m.  
Break

3:15 p.m.  
OPEN

4:15 p.m.  
**QUESTION AND ANSWER ROUNDTABLE**

6 p.m.  
Reception

## TUESDAY 8 OCTOBER 2013

7 a.m.

Continental Breakfast

8 a.m.

Announcements

8:15 a.m.

### BAGHOUSE DESIGN FEATURES PANEL DISCUSSION

Mike Allen, GE Power & Water Air Filtration; Ray Tedford, Schust Engineering Inc.; and Paul Sheehan, SNC-Lavalin/Capital Engineering

Baghouse design features, starting from the functional description through component design, will be discussed. Factors that affect process gas flow will be examined. Design considerations such as inlet and outlet geometry, valves, baffles, knockdowns and diverters will be discussed. In addition, the effect of other factors such as bag filtering (inside/outside bag, support, cake, precoat, weave and finish), cleaning, shaker, RA, pulse jet and sonic methods, and proper dust handling techniques and equipment (settling hopper geometry, fluidizers, screws, rotary valves, double dumps, air seals and debris guards) will be examined.

10 a.m.

Break

10:15 a.m.

### EMISSION CONTROL SYSTEM PANEL DISCUSSION

Bill Allan, AECOM; Eric Anderson, Renewable Energy Technologies Inc.; Vern Martin, Flowcare Engineering Inc.; and Paul Sheehan, SNC-Lavalin/Capital Engineering

This session on emission control systems will explore proper system design considerations in the areas of: system maintenance requirements and the impacts and interdependency of various system components on the operation of the system as a whole, process ventilation control (including hood geometry, gas temperature, gas velocity/composition considerations), instrumentation (temperature, pressure, position flow, composition and remote sensing), fan control (process variables, predictive/reactive control, pressure, flow, load and temperature effects), ventilation optimization (via sequencing, timed, instrumentation and feedback) and finally safeguards (personal protection, equipment protection and environmental protection). Steps to improve the operation of the baghouse system.

Noon

Lunch

12:45 p.m.

### COMPUTATIONAL FLUID DYNAMIC MODELING FOR HOOD DESIGN

Brian Bakowski, SNC-Lavalin America Inc.

Computational fluid dynamic (CFD) modeling is the process in which a three-dimensional computer model is created to study flows within a closed system. Over the last several years, CFD software and computing technology have advanced to the point where engineers can take advantage of this technology and simulate real-world conditions within a virtual world. By utilizing CFD technology, engineers can create the steel mill within a virtual world and assign variables to reflect these real-world conditions. Changes to these real-world conditions can also be modeled, such as a hood over a process which emits particulate. The hood would be modeled to include the desired geometry and volume and modifying the parameters until the desired capture efficiency was achieved, effectively "right sizing" the hood and emission control system. This presentation reviews the process and benefits of CFD modeling.

1:30 p.m.

### NOX CONTROL CASE STUDY – SLAB REHEAT FURNACE

Kevin Austin, California Steel Industries Inc.

Controlling NOx through the use of a selective catalytic reduction system (SCR) is known to be critical for compliance. However, information on maintaining these systems is often not readily available. Discussion will cover the performance as well as the trials and errors made on an SCR servicing a natural gas-fired slab reheat furnace.

2:15 p.m.

### CONTROL OF GASEOUS POLLUTANTS WITH AUGMENTED BAGHOUSE TECHNOLOGY

Anne Minga, Environmental Process Engineering and Compliance LLC

3 p.m.

Break

3:15 p.m.

### CONTROLLING PM<sub>2.5</sub> PARTICULATE MATTER EMISSIONS

4 p.m.

### BUILDING BLOCKS FOR FUTURE REQUIREMENTS

4:45 p.m.

### TRIP REPORT

6 p.m.

### MIDWEST MEMBER CHAPTER RECEPTION AND DINNER

## WEDNESDAY 9 OCTOBER 2013

8 a.m.

Continental Breakfast

9 a.m.

### PLANT TOUR OF ARCELORMITTAL BURNS HARBOR



Noon

Return From Plant Tour and Adjourn

