



Coal Combustion Inc.
Understanding the business of coal

**Registration for Two-Day Coal Combustion for
Power Plant Operators Class**

Versailles, KY October 18-19, 2017

Class: Coal Combustion for Plant Operators
Date: October 18-19, 2017
Location: Versailles, KY

Class Time: 8:30am to 4:30pm
Registration Fee: \$1,199.00

Name: _____
Title: _____
Company: _____
Address: _____
Address: _____
City, ST ZIP: _____
Phone: _____
Email: _____

Check, Visa, MasterCard or American Express
Card Number: _____
Expiration Date: _____ Security Code: _____
Billing Address: _____
Zip Code _____
Signature: _____

Please forward form to Rod at:
rod_hatt@coalcombustion.com
or Fax: (859) 873-0252



Class Outline

Coal Quality Introduction

- Coal
- Moisture, Ash, Volatiles, Sulfur, Btu/lb
- Sizing, Slagging

Now we follow coal through the plant and examine how coal quality interacts with equipment performance, maintenance, and cost.

Wet Coal

- Causes
- Measurements
- Solutions

Dusty and Spontaneous Combustion

- Minimizing and controlling dust
- Clean up procedures
- Spontaneous Combustion potential
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Combustion Process

- Coal Rank
- Air to fuel ratios
- Balancing furnaces
- Balancing burners
- NO_x formation
- CO analysis

Pulverizers

- Basic operation
- Adjustments
- Coal Quality Impacts
- Low Btu
- High Ash
- Reject material
- High Moisture



- Concern for fires
- Impact of high air flow
- Impacts on flame, NO_x and SLAG

Boiler Efficiency and Heat Rate Variables

- Boiler Efficiency vs. Excess Oxygen
- Moisture and Hydrogen Impacts
- Higher vs. Lower Heating Value
- Exit Gas Temperatures
- Steam Temperature Impacts on Heat Rate
- Carbon and CO Losses

Ash Deposits - Introduction

Types of Ash Deposits

- Wall Slag
- Superheater Slag
- Convection Pass Fouling
- Low Temperature Deposits

Causes of Ash Deposits

- Fuel Related
- Equipment Related
- Design Related

Coal Testing

- The ASTM Fusion Temperature Test.
- Ash Levels
- Slagging and Fouling Indices.

Elemental loading

- Pounds of iron per million Btu
- Pounds calcium, sodium, and other elements
- Slagging with Bituminous Type Ash - High Iron
- Ash Chemistry
- Base to acid ratio, Slagging Index = Dry sulfur x B/A
- Iron squared term



Soot Blowing

- Minimizing slags with combustion.
- Controlling slag with soot blowers
- Preventative blowers - IR
- Reactive blowers IK
- Other soot blowing, air heater, SCR

How Slags and other Ash Deposits Cause Tube Leaks

- Furnace Corrosion
- High Temperature Corrosion
- Erosion
- Erosion and particle size and velocity

Pollution Control

- Ammonia Slip and NOX SCR
- Air Heater Pluggage and Leakage
- Pollution control equipment basics
- Particulate
- SO₂
- Mercury
- SO₃

Summary and Exam