Coal Combustion Inc.
Understanding the business of coal

# Fuel Flexibility & Test Burns
## 2023 Class Outline

This workshop will cover three important areas key to help you expand your coal specifications.

**Plant Design, Design Fuels, and Equipment limits**
**Using Engineering to Calculate Coal Quality Impacts**
**Designing and Conducting Successful Test Burns**

### I. Plant Design and Design Fuels and Equipment Limits

The design of the original boiler, fuel delivery, pollution control equipment, and yard layout were based on the original intended fuel quality and consistency.

This section explores the original design and the modifications made to the unit, what margin was built in, and how changes in fuel specifications can impact performance, maintenance, and cost of operating plant equipment including:

**Coal Unloading and Handling**
**Bunkers, Silos, and Feeders**
**Pulverizers**
**Boiler**
**Burners**
**Soot blowing, Slag Removal**
**Temperature Control**
**SCR and Post Combustion NOx Reduction**
**Air Heater – Pluggage, Leakage, Performance**
**ESP and Baghouse**
**Carbon Injection**
**SO3 Control**
**Ash Disposal**

### 2. Engineering Calculations and Coal Quality Computerized Evaluations

There is a strong correlation between coal specs and the performance of plant equipment. This section will review what calculations are available, how to use them, and how well they perform.

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**Coal Handling - Material Tonnage, Wet Coal, Spontaneous Combustion**
**Pulverizers – Material Flow, Milling Capacity, Drying Capacity, Velocity**
**Boiler Efficiency**
**Slagging, Fouling, and Ash Deposits**
**Erosion and Corrosion**
**Pollution Control**
**Ash Quality**

There will be a discussion on where to get coal quality information for use as input.
Data and quality sources include: core hole, shipments, composites, historical trends
It is important to understand where the quality data is derived, and how it is presented.

How to present the results for best communication and understanding

## 3. Designing and Conducting Successful Test Burns

Expanding and defining specs using models and test burns is the preferred method of expanding fuel supplies. The coal quality calculations should guild the test burn concerns, but please remember many important parameters can't be accurately modeled

Test Burns

Designing a test burn could include the aspects:

**What are areas of concern?**
**What are definable measurable parameters that will define success or failure?**
**How will these be measured?**
**Who is responsible for data collection, and unexpected operational issues?**
**Who grades the test?**
**Who will prepare Final Report?**

It is recommended that you start conservatively, gain confidence, and minimize risk

**This two day class will provide a sound understanding of how coal quality impacts plant performance, how to estimate it, and how to quantify impacts at your plant.**