COAL TO GAS CONVERSION: TECHNOLOGY AND PRACTICE

August 17-18, 2016
Black and Veatch World Headquarters
11401 Lamar Avenue
Overland Park, KS

EUCI is authorized by IACET to offer 1.0 CEUs for the course.
OVERVIEW

Low natural gas prices and static coal prices have created a business opportunity for power producers to utilize significantly greater amounts of natural gas to meet their generation demand. In addition, increasingly stringent environmental regulations will require many coal-fired units to be retired or to be retrofit with emissions control equipment for continued operation on coal. This has led to a reduction in coal-fired electricity generation, with some of the coal-fired generation being replaced by natural gas-fired generation. The selection of the most advantageous option is influenced by factors such as performance, capital cost, operating cost, fuel flexibility and emissions control requirements. And in some cases the option to employ natural gas co-firing, or even a complete coal to gas conversion, can bring both reduced generation cost and lower emissions to existing coal-fired power plants.

Attendees will be able to plan and prepare for the fuel switch from coal to natural gas. They will learn how to reuse existing equipment and systems, including the steam turbine-generator, heat rejection system, electrical switchyard, controls, and plant facilities. The course will explain the process of decommissioning a plant, the regulations and legal issues concerning the switch to natural gas, and finally how to cease generation entirely at their coal-fired power plant, and to convert to gas via construction of a new simple cycle or combined cycle plant.

WHO SHOULD ATTEND

• Environmental professionals
• Power company executives
• Public utility commissioners
• Power generation engineers
• Environmental engineers
• Utility asset/investment recovery individuals
• Power project managers
• Generation facilities managers

LEARNING OUTCOMES

• Review the industry drivers that have created a market opportunity for the fuel switch to natural gas
• Explain the preparation process for fuel switch
• Discuss the market assessments of fuel cost and availability and the logistical factors for ensuring fuel delivery
• Discuss how natural gas co-firing and coal to gas conversions can impact the fuel-related equipment of the power plant
• Explain how to reuse existing plant equipment and the implications
• Discuss how to decommission coal power plant equipment and the concerns that are involved including, closing a coal yard and closures of ash ponds and landfills
• Explain the permitting and legal challenges associated with fuel conversion
• Determine when to decide to cease generation at coal-fired plants and convert to gas through construction of a new simple cycle or combined cycle facility
• Discuss openly regarding the general technical, logistical, and economical questions involving this process
AGENDA

Wednesday, August 17, 2016

8:30 – 9:00 a.m.  Registration and Continental Breakfast

9:00 a.m. – 4:30 p.m.  Course Timing

12:00 – 1:00 p.m.  Group Luncheon

Introduction to Industry Drivers
A primer and overview on the regulatory, environmental, economic, and technology factors which have created a market opportunity for natural gas co-firing and conversion at coal-fired power plants.

Coal to Gas Conversion – Planning
Preparing for a major fuel switch requires a good plan of action. This section will discuss market assessments of fuel costs and availability, long-term planning for fuel and plant upgrade costs, logistical factors for ensuring fuel delivery, and pipeline routing and siting concerns.

Boiler and Turbine Impacts, Part 1
Boilers which are designed for coal combustion may find that using gas can improve the performance of some systems, while creating limitations in others. This section will discuss how natural gas co-firing and coal to gas conversions can impact the fuel-related equipment of the power plant, especially the boiler. These boiler effects can cascade to the turbine cycle, and potential limitations in turbine efficiency will also be discussed. Solutions to address these potential problems in the boiler and turbine will be detailed.

Boiler and Turbine Impacts, Part 2
The prior discussion on boiler and turbine impacts from gas co-firing and coal to gas conversion continues, with a focus upon plant auxiliary and emissions control equipment. Mills, air fans, gas fans, air heaters, selective catalytic reduction systems, particulate control devices, flue gas desulfurization, and other equipment impacts will be addressed in this section.

Steam Turbine Repowering
The alternative of reusing the steam turbine-generator in a gas turbine-based combined cycle can require less capital than a new combined cycle plant and has the benefit of high thermal efficiency. This section will focus on reuse of existing equipment and systems, including the steam turbine-generator, heat rejection system, electrical switchyard, controls, and plant facilities. Also discussed will be impacts to plant staffing and flexibility limitations associated with reuse of existing equipment and systems for a different purpose than original design.

Decommissioning
After a coal to gas conversion a plant owner may be required to, or else desire to, decommission some or all of their coal equipment. This section will address the potential concerns for such activities as closing a coal yard, closure of ash ponds and landfills, removal of coal processing equipment and structural steel, and potential abandonment or demolition of emissions control systems.
AGENDA

Thursday, August 18, 2016

8:30 – 9:00 a.m.    Continental Breakfast

9:00 a.m. – 12:00 p.m.  Course Timing

The Regulatory Jungle
Some see a coal to gas conversion as the solution to many of the regulatory obstacles facing their coal-fired generating assets. But even a complete conversion to natural gas will require creation of a host of environmental permitting plans, site assessments, and health and safety studies. What’s more, legal challenges could be made from many different sources, from local communities unhappy with new gas pipelines to environmental groups attempting to end fossil fuel combustion. This section will give examples of these challenges and lay out a framework for dealing with them.

Replacement Options
In some cases, a plant owner may decide to cease generation entirely at their coal-fired power plant, and decide to convert to gas via construction of a new simple cycle or combined cycle gas turbine. Often times the existing coal plant site is ideal for this new plant location. This section will discuss the logistics, planning, and benefits of replacing an entire coal-fired asset with natural gas fueled generation units. Current commercial offerings and technology trends for gas turbines and reciprocating engines will be presented.

Final Notes and Adjournment
An open class discussion will be held to answer general technical, logistical, economic, and other questions posed by the audience.

INSTRUCTORS

Una Catherine Nowling / Technology Lead, Fuels / Black & Veatch
Ms. Una Nowling is a Project Manager and Senior Consultant within Black & Veatch’s global energy business, and is the Chief Engineer’s Technology Lead for fuels and combustion. She assists utilities and energy companies with fuel quality impact studies; fuel sourcing and mine planning studies; combustion and boiler operations analyses; emissions compliance; and technical and scientific training. Ms. Nowling has managed more than 80 projects in her career at Black & Veatch and continues to manage several domestic and international projects dealing with fuels and power plant performance. She is responsible for teaching and training in fuels issues and power plant operations, and she is an Adjunct Professor of Mechanical Engineering at the University of Missouri-Kansas City (UMKC) campus. Ms. Nowling is a frequent author for POWER Magazine, a syndicated newspaper technical writer, and a radio hostess on Kansas City Public Radio.

Brian C. Reinhart / Technology Assessments Manager / Black & Veatch
Brian C. Reinhart is the Technology Assessments/Technical Due Diligence service area lead within Black & Veatch’s global power business. A registered professional engineer in mechanical engineering, Mr. Reinhart has experience in air quality control, gas turbine unit additions, and plant improvements / rebuilds. He is familiar with the latest industry trends and Black & Veatch standard practices and is dedicated to providing project solutions that support clients in meeting their goals.
INSTRUCTIONAL METHODS

PowerPoint and open discussions will be used in this program.

REQUIREMENTS FOR SUCCESSFUL COMPLETION OF PROGRAM

Participants must sign in/out each day and be in attendance for the entirety of the course to be eligible for continuing education credit.

CREDITS

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EVENT LOCATION

Black and Veatch World Headquarters
11401 Lamar Avenue
Overland Park, KS 66211

NEARBY HOTELS

Sheraton Overland Park Hotel at the Convention Center
6100 College Blvd, Overland Park, KS 66211
Phone: 913-234-2100
0.2 miles from host location

Chase Suite Hotel Overland Park
6300 W 110th St, Overland Park, KS 66211
Phone: 913-491-3333
0.3 miles from host location

Hilton Garden Inn Overland Park
5800 College Blvd, Overland Park, KS 66211
Phone: 913-345-2661
0.3 miles from host location

Courtyard Kansas City Overland Park/Convention Center
11001 Woodson St, Overland Park, KS 66211
Phone: 913-317-8500
0.4 miles from host location

PROCEEDINGS

The proceedings of the course will be published, and one copy will be distributed to each registrant at the course.

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   AUGUST 17-18, 2016: US $1395
   EARLY BIRD ON OR BEFORE JULY 29, 2016: US $1195

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Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before July 15, 2016 in order to be refunded and will be subject to a US $195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of conference cancellation, EUCI’s liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices at 303-770-8800.
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