

COAL TO GAS CONVERSION 101

November 30, 2017
Black & Veatch Offices
11401 Lamar Avenue
Overland Park, KS



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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 retrofitted 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, controls, and plant facilities. The course will explain the regulations and legal issues concerning the switch to natural gas and how to cease generation entirely at their coal-fired power plant, including conversion to gas via construction of a new simple cycle or combined cycle plant.

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
- Explain the permitting and legal challenges associated with fuel conversion
- Discuss openly regarding the general technical, logistical, and economical questions involving this process

WHO SHOULD ATTEND

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

COURSE INSTRUCTOR

Una Nowling

Technology Leader, Black & Veatch Corporation

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.

AGENDA

THURSDAY, NOVEMBER 30, 2017

- 8:30 – 9:00 am** **Registration and Continental Breakfast**
- 9:00 – 10:00 am** **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.
- 10:00 – 10:45 am** **Coal to Gas Conversion – Planning for Success**
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. It will also discuss in detail the potential maintenance, availability and reliability impacts to coal boilers which not only must switch from coal to gas, but may enter new load-following or deep cycling modes of operation, including increased numbers of starts and stops.
- 10:45 – 11:00 am** **Morning Break**
- 11:00 am – 12:00 pm** **Boiler Island and Turbine Impacts**
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.
- 12:00 – 1:00 pm** **Group Luncheon**
- 1:00 – 2:00 pm** **Plant Auxiliary and Emissions Equipment Impacts**
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.
- 2:00 – 2:45 pm** **Steam Turbine Repowering and New Gas Turbine Construction**
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. However, sometimes constructing a new gas turbine is a better option, whether in simple-cycle or combined-cycle configuration. 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.
- 2:45 – 3:00 pm** **Afternoon Break**
- 3:00 – 4:00 pm** **Navigating 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.

REQUIREMENTS FOR SUCCESSFUL COMPLETION

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

INSTRUCTIONAL METHODS

A combination of case studies and power point presentations will be used in this course.

EVENT LOCATION

Black & Veatch

11401 Lamar Avenue
Overland Park, KS 66211

NEARBY HOTELS

Sheraton Overland Park Hotel at the Convention Center

6100 College Blvd
Overland Park, KS, 66211
913-234-2100
0.2 miles to event location

Hilton Garden Inn Overland Park

5800 College Blvd
Overland Park, KS, 66211
913-345-2661
0.3 miles to event location

Courtyard Kansas City Overland Park/Convention Center

11001 Woodson St.,
Overland Park, KS, 66211
913-317-8500
0.4 miles to event location

Hyatt Place Kansas City/ Overland Park/Metcalf

6801 W 112th St
Overland Park, KS, 66211
913-451-2553
0.5 miles to event location

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REGISTRATION
to register [CLICK HERE](#) or

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Please make checks payable to: "PMA"

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PLEASE REGISTER

- BOTH CONDUCTING TEST BURNS FOR POWER PLANTS AND COAL TO GAS CONVERSION 101 COURSES**
 NOVEMBER 28-30, 2017: US \$2195,
 Early bird on or before November 10, 2017: US \$1995

- COAL TO GAS CONVERSION 101 COURSE ONLY**
 NOVEMBER 30, 2017: US \$995,
 Early bird on or before November 10, 2017: US \$895

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CREDIT CARD INFORMATION

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OR Enclosed is a check for \$ _____ to cover _____ registrations.

Substitutions & Cancellations

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 October 27, 2017 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 course 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 (201) 871-0474.