WASTE TO ENERGY
PLANT OPERATIONS

23 - 25 APRIL 2012, BANGKOK, THAILAND – 2nd run in Asia!

Expert Course Faculty

BOB MILLARD

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WASTE TO ENERGY PLANT OPERATIONS
23 - 25 APRIL 2012, BANGKOK, THAILAND

Course Overview

The objective of this 3 day training course is to provide a fundamental understanding of the engineering principles associated with the design and operation of the plant items and supporting systems incorporated in a waste to energy power plant.

A basic technical knowledge is assumed, but the trainer will explain the basic concepts behind the operation of plant items, in addition to their detailed function. Presentation of the course will be through a combination of lectures, presentations and group activities.

Course Learning Outcome

At the end of the course participants will have gained a thorough understanding of the design, processes and operations of a waste to energy plant. They will be able:

- Understand the technologies of waste to energy plants, their economic and environmental impacts.
- Appreciate the principal plant components of a typical waste to energy plant, and understand their function and operation.
- Explore the chemical composition of non-recyclable waste, the resultant products of combustion and their treatment.
- Identify normal plant operating parameters, operating limits and environmental limits

Who Should Attend

The course is intended for existing operations staff, or those aspiring to be in an operational role in a waste to energy power station. The course will also be useful to maintenance staff who require a fuller understanding of the processes involved in waste to energy plant operations.

Unique Features with powerEDGE Training

- Pre-Course Questionnaire to help us focus on your learning objectives
- Detailed Course & Reference Manual for Continuous Learning and Sharing
- Practical Exercises & Case Examples to better understand the principles
- Limited class size to ensure One-to-One Interactivity
- Assessment at the end of the course to help you develop a Personal Action Plan

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Course Outline

Waste to Energy Background

- Economic
- Environmental
- Technical

Waste to Energy process

- Waste handling and processing
- Combustion
- Steam generation
- Power generation
- Flue gas treatment
- Residual waste disposal
- Plant operation

Plant description

Furnace and Gas Path

- Combustion theory
- Fuel and flue gas chemical composition
- Flue gas treatment, NO_x, sulphur, VOC and particulate reduction
- Furnace and gas path layout and the function of all plant items
- Flue gas environmental limits

Boiler Steam and Water Circuits

- Basic thermodynamics;
- Heat transfer theory
- Boiler layout
- Safety valves
- Steam conditions
- Efficiency

Steam Turbine

- Turbine blading
- Steam system and control valves
- Emergency stop valves
- Overspeed protection
- Lubricating oil system
- Drains system
- Bled steam system
- Gearbox drives
- Turbine operation, run up and uniform metal warming

Alternator & Electrical Equipment

- Basic electrical theory
- Alternator layout
- Switchgear
- Transformer types
- Power factor correction
- UPS system
- Emergency diesel generator

Water Treatment Plant

- Chemical composition of raw water
- Basic chemical reactions
- Filters, cation, anion and mixed beds
- In service and regeneration cycles
- Neutralisation water usage
- Chemical storage handling and safety

Auxiliaries

- Turbine by-pass system
- Condenser
- Vacuum raising equipment
- Feed heating
- Compressed air system

Plant operation

- Modes of operation
- Environmental & economic considerations

Your Expert Faculty
BOB MILLARD

Bob's main career was working as an operations engineer with the C.E.G.B. (later National Power), culminating as a Shift Charge Engineer at Aberthaw Power Station in South Wales. In addition to carrying out shift operational and maintenance duties, he also gained experience commissioning new plant and co-ordinated major overhauls.

Since leaving National Power, he has worked as a contractor, mainly for Aztec Technical Services in the following fields:

Waste management – Non recyclable waste incineration to produce steam and electricity - Fortum (O&M) UK Ltd. This training included sessions describing thermodynamics and boiler plant, electrical theory and practice , water treatment chemistry and plant, steam turbine theory and plant band auxiliaries.

Flue gas desulphurisation by seawater absorption; theory and plant description - National Power at Aberthaw.

Biomass; storage, milling and combustion - National Power at Aberthaw.

Power station efficiency – Ironbridge Power Station

Bob has written comprehensive instructions for the following companies on plant operating, maintenance, safety and management instructions. These instructions now form part of their local procedures. In the case of Alstom, they are part of their Global procedures.

- Barking CCGT power station
- Barry CCGT Station (Centrica)
- Uskmouth coal fired power Station (Alstom)
- Ineos CHLOR hydrogen fired boilers at Runcorn chemical works for Alstom.

In the cases of Uskmouth, Barking and Barry power stations, these instructions satisfied insurance company requirements.

Bob has also been employed as the lead electrical commissioning engineer at the National Power Cogen power station within Dow Corning Chemical works at Barry, South Wales and successfully commissioned the combined steam turbine/ CCGT plant. He was responsible for setting up the original maintenance programme and contracting manufacturers and specialists to carry out this programme for Rolls Royce at their Bristol and Exeter CCGT power stations.

Bob has worked broad in Botswana (shift charge engineer); Libya (asst shift charge engineer); Phillipines (shift charge engineer); and Thailand (safety rules training) and have trained Nigerian engineers in Britain on CCGT theory and plant layout.

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REGISTRATION FORM

	Early Bird Ends 1 Dec 2011	Normal	Savings
3 Day Programme	SGD $2199	SGD $2399	SGD $200

4 ways to Register

- ☐ **Online:** www.poweredgeasia.com
- ☐ **Email:** info@poweredgeasia.com
- ☐ **Phone:** (65) 6747 0775
- ☐ **Fax:** (65) 67478737

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COMPANY DETAILS

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- ✓ LNG Fundamentals
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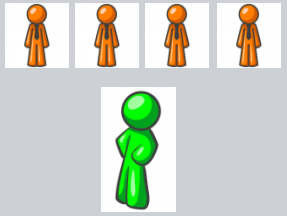

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