

Introduction to Clean Coal Technology

An essential guide to the technologies that are transforming the coal-fired power generation industry – 3rd session in Asia!

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CLEAN COAL
GLOSSARY
ONLINE!

22 – 24 April 2013, Singapore

Fully Revised and Updated for 2013!!

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“The program is useful for my area of work” Genteng Sanyen Power

“Very informative. I learnt a lot” Tenaga Nasional Berhad

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“Teaches us the basic fundamentals of the different clean coal technologies” Aboitiz Power Corporation

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“Good exposure on the new technology” Jimah O & M Sdn Bhd

“Good speaker, sufficient materials on clean coal technology, great location” Tenaga Nasional Berhad

Expert Course Faculty Leader
Dr. Andrew W. Cox

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About This Training Course

This intensive three-day course will examine the main drivers and objectives behind the introduction and development of clean coal technologies [CCTs].

The course will concentrate on clean coal technologies in the power generation sector - although some of the technologies can also be utilised by other sectors which utilise coal.

The main types of coal-fired generation plant will be assessed in detail. These are power plants that are currently operational, being commissioned or planned.

The course will critically examine and concentrate on the following key technologies:

- **Supercritical/Ultracritical pulverised fuel plants** - the dominant technology for new coal-fired plants [particularly in China and India];
- **fluidised Bed Combustion [FBC] plant** – particularly Circulating Fluidised Bed Combustion plants - which an increasing number of companies and utilities are adopting to burn coal and other solid fuels;

Plus

- **Integrated Gasification Combined Cycle [IGCC] plant;**
- **Other New and Evolving Technologies** - including Oxy-fuel Combustion.

Examples of these technologies will be provided for existing and planned power plants in the Asia/Pacific Regions.

The course will also thoroughly examine the key markets for coal-fired power plants – particularly China, India and other Asia/Pacific countries.

The latest global and regional forecasts for the coal markets and new coal-fired plant will be provided for the period up to and beyond 2020.

Who Should Attend

This training course will illustrate how the power utility and coal mining industries are leveraging on new technology in clean coal power generation. Technical and non-technical professionals who require an introduction to the current and future coal combustion technologies will find this course useful for their projects and future collaborations. This course is broad based to give you an insight into the exciting new developments that are currently shaping the coal and power generation industries and markets.

The following professionals from utilities companies, coal producers, coal technologies companies, consultancies, regulators, financial institutions and governments will find this training course useful:

- Power Engineering Professionals
- Energy R & D Executives
- Process Engineers
- Environmental Managers
- Attorneys/General/Senior Counsel
- Executives in Emissions and Clean Air Initiatives
- Plant Developers and Project Managers
- Coal Mining Executives
- Asset Management and Risk Managers
- EPCIC Executives
- Community and Governmental Affairs
- New investment or capital funding executives

3 Day Course Outline

Other key topics and themes that will be examined in detail throughout the course:

Coal-fired power station economics

This section will include a detailed review of several key issues:

- How are project costs developed
- What are the key issues affecting project costs
- Examples of capital cost learning curves
- How coal-fired plants compare to other electricity generation technologies

Technologies to improving coal qualities

This section will examine the technologies available to improve the quality of coal used in power plants.

- These technologies can range from basic screening and washing of run-of-mine coals – through to advanced coal cleaning techniques.
- Particular attention will be paid to the technologies available for minimising the high ash content of coals – and also thermal processing/drying of high moisture coals.
- The markets for these technologies will be examined and technical data for key coal producing regions and markets [such as India and Indonesia] will be provided.

Operational problems at power plants caused by Coal Qualities

- The key qualities of coal as a fuel will be examined in detail – together with the technological options available to minimise these problems.

Coal handling and storage issues

- What are the key problems with the handling and storage of coal [including health and safety issues] - and where do they occur in plants.
- What technologies are available to plant operators to minimise coal handleability and storage problems.

Slagging, fouling and corrosion problems in coal combustion plants

- This section will examine in detail how serious these issues can become in coal-fired plant.
- The locations in plant will be identified where slagging, fouling and corrosion can occur.
- In addition, the technologies will be assessed which are currently available to minimise related plant outages and associated operating costs.
- The latest research findings on these issues will also be presented.

Co-firing plant with biomass and other fuel sources

- The main drivers behind the use of biomass and other fuels in coal-fired plant.
- The key technical challenges of handling, storing and utilising biomass and other fuel sources with coal.
- Best practices will be provided on how to successfully operate these plants.
- Recent incidents at power plants co-firing with biomass – such as fires – will be examined in detail.

Emissions from power plants

- What are the key challenges for coal-fired plant operators? Emissions can have local, regional or global impacts.
- Stricter national and international emission standards are envisaged for the key emissions from coal-fired plant.

Particulate emissions from coal-fired plants

- Impacts of particulate emissions from coal-fired power plant.
- The technologies employed to minimise particulate emissions will be examined in detail – including electrostatic precipitators; fabric filtration systems; cyclones and mechanical/inertial collecting systems; plus other systems employed by international plant operators.

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Sulphur dioxide [SO₂] emissions from coal-fired plant

- Environmental impacts of SO₂ emissions – including acid deposition.
- Main types of flue gas desulphurisation [FGD] technologies currently in use globally.
- Costs of FGD technologies.
- Other technologies and options available to minimise SO₂ emissions – including: use of low sulphur coal, use of additives in boiler systems, plus fuel switching.

Reduction of Nitrogen Oxides [NO_x]

Emission levels from existing and planned coal-fired plant – and which technological options are available to reduce them - including:

- Low NO_x burners
- Over Fire Air + Reburn technologies
- Selective Catalytic Reduction [SCR]
- Selective Non-Catalytic Reduction [SNCR]

Short Review of the key issues concerning Carbon Dioxide [CO₂] Emissions from coal-fired plant

- CO₂ emission levels from different types of coal-fired plant – plus comparisons with gas-fired plant and other generation technologies.
- Options for reducing CO₂ emissions – including Carbon Capture and Storage [CCS] technologies will be briefly outlined.

Other harmful emissions from coal-fired plant

- These emissions include Mercury compounds.
- International emission regulations covering these emissions will be examined.
- The technological options for capturing these emissions from the flue gas/waste streams will be reviewed.

Waste disposal issues

- The main types/volumes of solid and liquid wastes produced by coal-fired plants will be examined in detail.
- Case studies will show how these waste material streams can be disposed of safely - or sold as useful by-products.

Opportunities for further improvement in the operation of coal-fired power plants

- The new generation of coal-fired power plants are adopting computer models, expert systems and advanced operating systems. They are an essential component of clean coal technologies.
- These systems and products will be described in detail – with case studies – and background information about the companies developing and marketing the systems. Available data on potential cost savings to plant operators will be provided.

TESTIMONIALS FROM PAST PARTICIPANTS

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Your Expert Course Trainer: DR. ANDREW COX

Since May 1995 Dr Cox has been an independent energy and environmental consultant. He specialises in consultancy work in the coal and energy sectors in the United Kingdom and throughout the world.

Recent consultancy work has involved project and background studies covering climate change issues, economic appraisals and evaluations of coal to liquids technologies, surface coal mining projects, and a global market survey of virtual reality training systems in the mining sector.

Dr Cox was Editor of the monthly newsletter *UK Coal Review* from 1991 to 1999. The newsletter examined all aspects of the UK coal sector – including: coal production in underground and surface mines; UK power station sector; coal imports and transportation; corporate and related policy developments.

In 2000 Dr Cox co-authored a book *Digging Up Trouble* [with Huw Beynon and Ray Hudson, published by Rivers Oram Press] – which examined the environmental, social, economic and political issues surrounding the UK opencast coal sector.

Since the late-1980s Dr Cox has written or contributed to a wide range of energy and environmental publications – with recent papers and articles dealing with clean coal technologies, the development of coal to liquid technologies, carbon capture and storage, and second generation biofuels.

Recent articles, papers and reports have covered a wide range of topics - including:

- International Clean Coal Projects;
- Reviews of the Indian and Chinese Coal Sectors,
- Drax Power Station; Coalbed Methane;
- Coal Liquefaction Technologies and Project Developments;
- Future of Global Oil Supplies;
- Climate Change Policies; Sustainability and Carbon Neutral Cities,
- Offshore Renewable Energy Systems;
- Energy efficiency developments – including equipment and technology developments – Low Energy Housing, Energy Efficiency in Data Centres and other buildings.

His academic qualifications include:

- Doctorate in Chemical & Process Engineering from the University of Newcastle upon Tyne, UK, Thesis title: "Future Strategies for Coal in the United Kingdom"
- MSc Degree Course: Environmental Technology (Energy Policy Option) Imperial College, University of London
- BSc (Hons) Degree Course: Human Environmental Science King's College, University of London

Dr Cox is also a Visiting Lecturer at Imperial College London.

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REGISTRATION FORM

	Early Bird Ends 22 FEB 2013	Normal	Savings
3 Day Programme	SGD 2,599	SGD 2,799	SGD 200

ATTENDEE DETAILS

Name Job title

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COMPANY DETAILS

Organisation name Industry

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