

Two one-day Training Courses

Power Plant Operation, Maintenance & Materials Issues (2 July)
Power Plant Long & Short Term Preservation (3 July)

Dates: 2 – 3 July 2018

Venue: The Institute of Materials, Minerals and Mining (IOM3), 297 Euston Road,
Central London, UK (www.iom3.org)

Who We Are

ETD Consulting is a UK based engineering advisory and consulting company specialised in high temperature plant life assessment, maintenance, materials and other engineering issues in power generating and chemical processing plants. ETD has experience organising workshops, courses and conferences in the UK, Europe, North America and Asia, on issues such as: plant life assessment, high temperature plant materials, component safety and durability, in-service weld performance, power plant cycling and risk based maintenance (RBM) in power and petrochemical plants.

Further information about ETD, its consulting projects for power and process plants and its plant NDE inspection and life assessment services can be seen at:

www.etd-consulting.com



*This course will be followed by an
optional 3-day Conference:*

**‘Power Plant Operation &
Flexibility’**



The Institute of Materials,
Minerals and Mining

Co-Sponsor of the Conference

TRAINING FOR SUCCESS

TRAINING FOR SUCCESS

Registration & Welcome 0900 – 0930h

Presenters: Mr. William (Bill) Moore, Consultant, UK
Dr. David Robertson, Lead Metallurgist, ETD, UK

Module 1: Understanding of Power Plant Operation, Maintenance & Materials Issues:

0930 – 1300 hrs (with 30 minutes break)

Knowledge of the influence of operational factors on power plant is a prerequisite for a good plant performance, availability, reliability and profitability. This module will review the fundamentals of boiler and turbine development and operation, maintenance and inspection issues. It will cover a range of power systems and will include both steam and gas turbine operation and related problems.

Specific Topics

- Review of design and operation of boilers, piping and turbines
- Maintenance and inspection issues
- Influence of operation on component life

Lunch Break

13.00 -14.00h

Module 2: Materials and Damage Mechanisms

14.00 - 17.30h (*with 30 minutes break*)

A key element for successful plant life management is to have a fundamental understanding of the type of damages occurring at high temperature that affect the performance of materials and thus influence the life of components. The factors that control material properties such as strength, toughness, creep and fatigue are examined and illustrated with common plant problems.

Specific Topics

- Effect of failures on plant availability and importance of failure analysis
- Materials performance and metallurgy
- Damage mechanisms
- Time-dependent (Creep, Fatigue Creep-Fatigue Interaction) and Time-independent (Tensile, Brittle) failure modes
- Common plant failures, identification and characterisation.

Power Plant Short and Long-Term Preservation

3 July 2018

Registration & Welcome 0900 – 0930h

Presenters: Mr. William (Bill) Moore, Consultant, UK
Dr. David Robertson, Lead Metallurgist, ETD, UK

In recent years, the increasing contribution of renewables has been forcing both the Combined Cycle (CCGT) and Conventional Power Plant (CPP) units to be operated in flexible mode or to shut down from a few days to longer periods of several months or more. Failure to apply proper preservation/ lay-up techniques during the shutdown period can result in serious corrosion damage to the boiler/HRSG, turbine and many other power plant components. It is important when planning a shutdown to consider the whole unit and not just the obvious components such as the boiler/ HRSG. These other parts of the unit can include, for example, **fuel systems, rotors, generators, condensers, feed water systems, cooling water systems, water treatment plant and water storage, transformers, switchgear** etc. Furthermore, the preservation treatment can be different for short term or long term shut down and the how quickly the plant needs to be available at any one time. Some of these issues will be discussed in this course.

Module 1: Lay-up Procedures for Conventional and CC Plant Components

0930 – 1300 hrs (with 30 minutes break)

Specific Topics

- Corrosion issues during plant short and long-term shut down
- ‘Wet’ and ‘dry’ lay-up procedures & techniques for Conventional and CC plants
- Issues of partially drained plant and their lay-up techniques
- Pre-Commissioning plant storage

Lunch Break

13.00 -14.00h

Module 2: Monitoring, Maintenance and Case Studies

14.00 - 17.00h (*with 30 minutes break*)

Specific Topics

- Pourbaix Diagram and passivation of different power plant metals and alloys
- Lay-up monitoring and maintenance
- Case studies

Speakers Profiles

Dr David Robertson, Lead Metallurgist, ETD Consulting, UK



Experience

Dr Robertson has over twenty years experience of materials used in the power, petrochemical and other industries. Since 2004, Dr Robertson has been working for ETD Consulting on projects related to high-temperature plant integrity and life assessment, materials and welding issues, and root cause failure analysis. Through his work, Dr. Robertson has gained extensive experience of the materials used and damage/ failure mechanisms in high-temperature plants. He also has considerable experience in examination and interpretation of metallographic replicas and microstructures in order to assess metallurgical damage and degradation (creep cavitation, spherodisation, corrosion etc).

Education: Dr. Robertson gained his qualifications in metallurgy at the Imperial College, London.

Mr. William (Bill) Moore, Consultant, UK



Experience

A Chartered chemist, engineer and scientist. Mr. Moore has over 40 years in-depth experience of water chemistry, chemical cleaning, corrosion, materials, metallurgy, plant design/operation and engineering - and is an expert in: metallurgical, chemical and mechanical investigation of failures in power, steam and refinery plant. He has extensive experience of applying chemistry, engineering and metallurgical principles to improve plant service life, assessing and costing the remnant life of power, study of plant component suffered from contamination, steam and refinery plant and loss adjustment investigations, arbitration and litigation claims. Mr. Moore has worked as Group Head Chemist in the past for major companies such as Powergen Plc & CEGB. *Mr Moore was the lead author in ETD's recently prepared **Guidelines on Power Plant Preservation**.*

REGISTRATION FORM (Please fax / email)

Training Course: Power Plant Operation, Maintenance & Materials Issues, 2 July 2018

Training Course: Power Plant Short and Long-Term Preservation, 3 July 2018

&

International Conference: Power Plant Operation & Flexibility, 4 - 6 July 2018

Registration Fee: Please put 'X' in the relevant box and show the total payment. Fee is to be paid in GB pounds (includes 20% VAT- payable by all attendees at events held in the UK).

	Reduced Fee (Until 4 June 18)	x	Full Fee (From 5 June 18)	x
<i>Course: Operation & Maintenance</i>	£400		£450	
<i>Course: Preservation</i>	£400		£450	
Conference Delegates	£450		£550	
Conference Presenters	£300		£300	
Please show here the Total Amount Payable = £				
Notes: 1) 10% reduction if attending more than one event. 2) 10% reduction if more than one delegate attending from the same organisation. 3) 20% reduction for students. 4) 10% reduction for IOM3 Members (Conference Only) ONLY ONE REDUCTION WILL APPLY				

Course Fee covers printed course notes supplied at the start of the Course, electronic (PDF) copies of the slides (provided after the course), coffee/ tea and lunches.

Conference Registration Fee covers the Proceedings, provided soon after the conference, coffee/tea, lunches, and the Conference Dinner.

How to Pay: When paying please quote reference 'ETD Conf. + Course 2018' and the ETD invoice number (if this was issued):

1) By bankers draft or bank to bank transfer to: European Technology Development Ltd.

(For payment by bank to bank transfer, account details will be supplied on request).

2) By UK bank cheque made payable to: 'ETD Ltd.'

3) Credit Card payment: Please write to enquiries@etd-consulting.com for details on how to pay by CC.

When registering, please state here how you paid or intend to pay:.....

Accommodation: On request attendees will be provided information on hotels.

Your **title** and **name:**

Position (optional):

Company:

Address:

Phone:

E-mail:

Address for Registration: Please post/ fax/ e-mail this form to: kmahoney@etd-consulting.com

ETD Ltd., Fountain House, Cleeve Road, Leatherhead, Surrey KT22 7LX, UK

Fax: + 44 1372 363 222 Tel: + 44 1372 363 111

www.etd-consulting.com