



European Technology Development

Option of attending:
In person or via Video Conference

LMF1- Two Day Training Course

**Power Plant
Operation, Maintenance,
Damage and Life Assessment**

18 – 19 February 2014

To be repeated on:

17 – 18 June 2014

Course Venue: European Technology Development Ltd
Fountain House, Cleeve Road, Leatherhead, Surrey, KT22 7LX, UK
(Just south of London)

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For Registration Form, Course Fee and hotel details in Leatherhead or central London, please see the flyer 'LMF-Courses Brief' at the ETD website.

Day 1

REGISTRATION

0900-0930h

Module 1

9.30 - 12.30h
(with coffee break)

(a) Understanding of Power Plant Operation, Maintenance, Materials and Related Issues

Knowledge of the influence of operational factors on power plant is a prerequisite for accurate life assessment. This module will review the fundamentals of boiler and turbine development and operation, maintenance, inspection and materials and damage 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
- Influence of operation on component life
- Typical high temperature corrosion mechanisms
- Selected waterside corrosion mechanisms
- Typical damage mechanisms in steam and gas turbines
- Materials property requirements
- Maintenance and inspection issues

Lunch Break

12.30 -13.30h

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-dependant (Creep, Fatigue, Corrosion) and Time-independent (Tensile, Brittle) failure modes
- Common plant failures, identification and characterisation.

Day 2

Module 3: Plant Life Management

9.30 - 12.30h
(with coffee break)

This part of the course uses the information gained from the preceding modules to establish how to develop plant life management strategies and perform remaining life assessment. Participants will be able to understand the main factors influencing component life, thereby allowing selection of the most appropriate analysis techniques for specific situations.

Specific Topics

- Life assessment principles
- Staged approach to life assessment
- Cost effective management strategies
- Standard inspection techniques (MPI, DPI)
- Special inspection techniques (Replication, Strain Measurement)

Lunch Break

12.30 to 13.30h

Module 4: Life Assessment Workshop

13.30 - 17.00h
(with coffee break)

The course will conclude with a workshop involving actual plant case studies. A life assessment approach for each of the case study components will be developed on an interactive basis. The results will be critically appraised and compared with what actually happened.

Specific Topics

- Replication and its use for assessment of creep damage
- Approach for assessing a tubular component
- Effect of tube thinning on life