



European Technology Development

**Option of attending:**

**In person or via Video Conference**

## **LMF2 - Two Day Training Course**

**Understanding of Welds and Welded  
Component Behaviour in High Temperature Plant**

20 –21 February 2014

*To be repeated on:*

19 –20 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

### **Module 1: Introduction to Component Failure**

9.30 - 12.30h  
(with coffee break)

This module will start with the introduction of global deterioration of plant components operating under creep and / or creep-fatigue conditions. It will then discuss crack initiation in components with and without pre-existing defects. This will be followed by the discussion of creep crack growth and failure criteria. Finally an overview of the general approach for defect assessment will be given and illustrated by case studies from power plants.

#### **Specific Topics**

- Global Deterioration
- Crack Initiation
- Crack Growth
- Failure Criteria
- Component Assessment Methodologies
- **Case studies**

#### **Lunch Break**

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12.30 -13.30h

### **Module 2: Understanding Welds**

13.30 - 17.30h  
(with coffee break)

The joining of components and parts of components by welding is a fundamental element to component fabrication and plant construction. The complexity of weld structures will be examined both from design and fabrication perspective and most influential factors such as welding procedures, weld microstructure, heat affected zone etc. will be discussed.

#### **Specific Topics**

- Metallurgy of Welds
- Welding Techniques
- Material Properties Variations
- Component Design Aspect

## Day Two

### **Module 3: Assessment of Welded Components**

9.30 - 12.30h  
(with coffee break)

Service experience shows that most problems / failures in power plant components are associated with welds. Hence this module will focus on understanding the factors that influence weld performance and adversely affect the remaining life of welded components. Emphasis will be put on the assessment of defective welds including inspection.

#### **Specific Topics**

- Service Experience
- Inspection Aspects
- Defects in Welds
- Analysis of Welds

#### **Lunch Break**

----- 12.30 -13.30h

### **Module 4: Life Assessment Workshop**

13.30 - 17.00h  
(with coffee break)

The aim of this workshop is to introduce a general approach for assessing welded / complex components. The application of this approach will be illustrated through solving practical plant problems. Sensitivity analysis on input data, particularly the variation in material properties of the various weldment constituents, will be carried out to highlight the level of their influence on life assessment.

#### **Specific Topics**

- Assessment of a high temperature Piping System/ vessel