Boilers are considered to be part of the critical and essential production facility in Oil and Gas, Utility and Marine industries. A failure in the system may translate to sizeable loss time, production and costs, not neglecting the importance of life and safety at stake.

This 3-day interactive training / workshop introduces the fundamentals and methodologies of failure analysis and the basic knowledge of solving and preventing failures in boiler system. This will help to identify the basic modes and root causes of a failure including the understanding of the macro and micro aspects of failures of engineering components. The workshop also seeks to introduce the concept and implementation of risk-based inspection (RBI) for boiler system, in order to optimise the through-life economic performance of the equipment whilst ensuring prescribed safety and regulatory requirements are met.
WHO SHOULD ATTEND

The course is designed for various types of disciplines that includes Engineers, Inspectors, Safety Executives, Maintenance, Engineering, Process and Production Operators and Quality Assurance of Boiler system and related components in Power Plants and Utility Facilities. It is basically appropriate for those whose work involve maintenance, trouble-shooting, inspection and prevention of failures and who aim to operate their plant or facilities at optimal efficiency with high level of safety and reliability.

COURSE OBJECTIVES

The training provides participants with the following knowledge that are specific to Boiler System and related components:

1. Introduction to fundamentals and methodologies of failure analysis.
2. Understanding failure modes and root causes.
3. Introduce the concept and implementation of risk-based inspection (RBI)
4. Theoretical and practical knowledge through case studies.

COURSE OUTLINE

Failure Analysis

- Introduction & Course Objectives
- Fundamentals of Failure Analysis
- Materials of Construction
- Degradation Mechanisms
- Failure of components (such as tubes, vessels, drums)
- Case Studies

Risk-Based Inspection

- Introduction, Purpose, Roles and Responsibilities
- Risk Assessment concepts
- Types of RBI assessment
- Probability of Failure (PoF) analysis
- Consequence of Failure (CoF) analysis
- Risk Determination
- Inspection Planning
ABOUT THE TRAINERS

MATCOR has extensive expertise and experience in the fields of failure analysis and risk-based inspection (RBI). The trainers have been involved in over 3,000 failure investigation and condition assessment cases in a wide spectrum of industries, and also served as expert witness for many litigation and claim cases.

In combination, the trainers possess more than 50 years of experience contributing to the industry for various organizations including major international oil and gas companies, power plants, FPSO operators, national oil companies, aerospace industries, marine, building and construction, and the Statutory sectors.

**HO BEE LEONG** has more than 20 years of experience in the international oil and gas (onshore and offshore), marine, shipbuilding and repair industries providing engineering consultancy, asset integrity, materials/corrosion expertise, welding and failure investigations.

He has previously held positions as Principal Consultant with DNV, as Corrosion/Inspection Manager in Shell Seraya Singapore and Integrity Manager in BW Offshore. He has also stationed in Vietnam where he helped set up Asset Integrity Management systems for BP and PetroVietnam offshore and onshore facilities. To date, he has also performed more than 30 RBI studies for the oil, gas, power and petrochemical industries.

He graduated from the National University of Singapore with Masters of Materials Science and Engineering and Bachelor of Engineering Degree, Mechanical (Honours). His professional certifications include API 510, 570 & 653, AWS CWI and NDT, with more than 15 years’ hands-on experience as an API Authorized Inspector. He has also conducted materials related courses such as failure analysis, corrosion engineering, heat treatment and metallurgy; and API public trainings for regionally and also in-house for Petronas, Chevron Indonesia, Shell, and BP etc.

**Er. LIAM KOK CHYE** has close to 30 years of consulting experience in failure analysis, forensic engineering, and condition assessment of a wide spectrum of industries covering the oil and gas, pharmaceutical, construction, manufacturing, aerospace and marine etc. He also served as expert witness for many litigation and claim cases, including being a Special Referee to the High Court. He is actively involved in the assessment of lifting equipment and boiler / furnaces for fitness-for-purpose service and life extension cases.

He graduated from National University of Singapore with a Bachelor of Mechanical Engineering (Honours) degree and a Masters of Engineering degree (focusing on corrosion). He is also registered as a professional engineer since 2006. The experience and knowledge in this specialized field that he has gained is shared through contribution of papers and presentations in seminars, conferences and courses.