



**Eastham
Engineering**

Eastham Engineering Consultancy Pte Ltd
34 Bedok Place,
Singapore 486107
Tel: +65 8118 8664
www.easthameng.com

Jonathan Lloyd BSc (Hons) PhD CEng MIM³

Telephone: +65 9738 6255

e-mail: jonathan.lloyd@easthameng.com

Jonathan is a Metallurgist and Chartered engineer with over 25 years of broad-based expertise in the energy industry and petroleum sector. He has led (and authored reports for) a large number failure investigations and root cause analysis studies. He is highly experienced with a wide range of process and power plant equipment and technologies. Jonathan has considerable expertise investigating failures of conventional boilers and heat recovery steam generators, as well as other static and rotating equipment.

Employment History.

2015 to Present: Consulting Engineer & Director, Peritium Technologies

Jonathan set up Peritium Technologies to provide services to the energy industry. These services include failure investigation, risk based inspection, reliability centred maintenance, front-end engineering design and bid-support, and training. Jonathan provides his expertise to loss adjusters through Eastham Engineering. Jonathan is also technical director of AELCO International Pte Ltd.

2012 to 2015: SBM Offshore USA Inc., Houston TX, USA.

Package Manager responsible for project management of process packages on FPSO topsides.

2011 to 2012: Parker-Hannifin (Singapore) Pte Ltd.

Regional Business Development Manager for the Energy Products Division in Asia-Pacific.

2007 to 2011 Cameron (Singapore) Pte Ltd

International Sales Manager for Process Systems in Asia-Pacific

2006 to 2007: FMC Technologies (Singapore) Pte Ltd.

QA Manager covering the Woodside frame agreement for subsea oil production technologies.

2005 to 2006: Rolls Royce (Singapore) Ltd.

Sales Director responsible for long-term service agreements in the energy sector (mainly RB-211 based aero-derivatives).

1999 to 2005 MPT & MPT-Matcor Pte Ltd MPT, (NZ & Singapore), now part of Quest Integrity

Principal Consultant (and general management), providing consulting services in risk based inspection, reliability centred maintenance, plant life assessment and failure investigations.

1996-1999 ERA Technology (Asia) Pte Ltd ERA (now edif-ERA)

Engineering Projects Manager, responsible for large power plant and refinery life assessment projects as well as failure investigations.

1993-1996 Pacific Power International, NSW, Australia (now part of Aurecon Pty Ltd)

Metallurgist, undertaking failure investigations and remaining life assessment of seven large coal fired power stations in New South Wales

Qualifications

Doctorate (PhD), Materials Engineering, University of Wollongong - (2000).

Chartered Engineer (CEng), Institute of Engineers of the United Kingdom (1995).

Professional Member of Institute of Materials (MIMMM), Minerals & Mining (1995).

Bachelor of Science (BSc Honours) in Metallurgy & Materials Science, Cardiff University, Wales (1985).

Summary of failure investigations Jonathan has been involved with:

Boiler loss experience

Dong Feng (Riley-Stoker design u/l) 660MW Boiler - Waterwall tube failures
MHI (Combustion Engineering design u/l) 50MW Boiler - Waterwall tube failures
MHI (CE design u/l) 50MW Boiler - Superheater tube failures
MHI (CE design u/l) 50MW Boiler - Economiser tube failures
IHI (Foster-Wheeler design u/l) 500MW Boiler - Superheater tube failures
MHI 400MW Boiler -waterwall tube failures
MHI 400MW Boiler - 9Cr Superheater tube failure
Mitsui-Riley (Riley-Stoker) 300MW Boiler - Superheater tube failures
660MW IHI/Foster-Wheeler Boiler – Superheater tube failures
500MW Combustion Engineering Boiler – Superheater tube failures
660MW Combustion Engineering Boiler – Superheater tube failures
660MW Combustion Engineering Boiler – Economiser tube failures
660MW Combustion Engineering Boiler – Waterwall tube failures
20MW Deltak HRSG evaporator tube failures - co-generation facility

Other power generation loss experience

92MW, Hydro turbine (Harbin Electric)
RFCC turbo expander (Dresser Rand)
32MW ABB Steam turbine
165MW GTLR 1564/65-2 Steam turbine at Formosa Industries (Fuji Electric /Siemens)
500MW Doosan/GE Steam turbine
Emergency diesel generators (MAN Diesel)

Power plant RBI/RCM and Life Assessment/Life extension

Long term service agreements for Rolls-Royce gas turbines (RB-211 and Avon)

Level 3 asset management plans for gas turbines, steam turbines, and boilers and controls

Remaining life and condition assessment of:

- 1 x 300MW MHI Steam Turbine
- 2 x 50MW oil fired boilers (MHI-CE)
- 550MW oil + gas fired boiler (MHI-CE)
- 300MW (Mitsui-Riley oil & gas fired)
- 300MW (IHI-FW coal fired)
- 5 x 80MW (MHI drum boilers)
- 1 x 500MW (Babcock-Hitachi Supercritical)
- 2 x 660MW coal fired units (Combustion Engineering)
- 2 x 500MW coal fired units (Combustion Engineering)
- 6 x 660MW coal fired units (IHI / F-W)
- RBI program for steam pipe-work (4 x 250MW Combustion Engineering)

Competent person for the extension of boiler inspection intervals at two Singapore utilities.

Petroleum, Petrochemical and Refinery Experience

Competent person for the extension of inspection intervals for statutory equipment for several refineries and petrochemical plants in Singapore.

Failure investigation of UOP Oxy-hydrochlorination reactor at vinyl-chloride monomer plant

Steam reformer manifold cracking

Shell Turritella/Stones FPSO - Process topsides and other packages

Noble Energy, MEG Units for Leviathan FPSO – Front end engineering design study

Chevron Kuito FPSO revamp - addition of gas sweetening unit to existing FPSO

CNOOC/Husky Oil – Cameron International MEG reclamation unit

Origin Energy, Kupe project – Cameron International MEG reclamation unit

OSX FPSO – Cameron International Seawater treatment and injection module

Cameron International Produced water treatment (hydro-cyclones and flotation units)

Risk-based inspection program for Tasman Pulp & Paper Ltd

Remaining life assessment of catalytic reformer unit at Petronas Terengganu Refinery

Investigation of caustic stress corrosion cracking at NABALCO, Alumina Refinery

Root Cause Analysis of failing (FMC) subsea gas wellhead.