



**Working for Power, Process & Oil
& Gas industry worldwide**



Newsletter - March 2023

This Newsletter contains information on ETD's recent activities. For ETD's plant inspection and condition/ life assessment services please check our website.

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Welcome to the ETD's New Staff

Dr Hong Wang

Having spent the last 14 years as a materials expert and quality manager at Engie (UK, Belgium), Hong Wei recently joined ETD as a Principal Engineer, where he builds on the prior experience and works on power plant high-temperature materials, P91 steel and superalloys (incl. TBC, MCrAlY coatings), welding, material degradation, failure analysis, condition and remaining life assessment, as well as refurbishment supports (classification of repair levels, scrap decision, selection of repair methods, delivery quality inspection, witness factory testing) for HRSGs, boilers, piping, and turbines. He will also work on materials and issues involving decarbonisation of power generation and contribute to the company's training activities.



Dr Cheng-Jung Lin

Cheng-Jung recently completed his Ph.D. in metallurgy from Imperial College, London. He first joined ETD as a part-time Project Engineer in October 2022. He became a committed full-time Project Engineer from January 2023. During the past six months at ETD, Cheng-Jung has been working on root cause failure analysis of power and process plant components. He has also been working on the UK government and UK industry funded projects IMPLANT and EASY (Electromagnetic Advanced Sensor Yoke) under the guidance of Dr David Allen of ETD who is the leader of both projects being coordinated by ETD. IMPLANT deals with the further development of the UK version of MARBN martensitic steel while EASY, using electromagnetic technology, is looking at the inspection of P91 type virgin martensitic steels for the quality checks and in-service components for long term damage.



Cheng-Jung is also ETD's metallurgy investigator for the Royce Institute funded multi-partner exploratory phase project 'TRANSFUSION' led by Dr David Allen of ETD and coordinated by ETD. This project is investigating the modification of UK's MARBN steel's chemical composition and heat treatment to reduce radiation damage when used in fusion reactors.



MIMA-3 International Conference

MIMA (Materials, Inspection, Monitoring and Assessment)

3-day In-Person International Conference on:

SUSTAINABLE POWER GENERATION

**Electricity Generation through Fossil, Nuclear and Renewables -
Materials, Inspection, Monitoring, Digitalisation &
Flexibility**

Venue: **London** (exact venue to be announced later)

Dates: **17 - 19 October, 2023**

*Announcement &
Invitation for Abstracts*

CONFERENCE OBJECTIVES

The **aim** of this conference is to provide an international platform for the exchange of knowledge, information, experience and data related to power and process plant materials, inspection, monitoring and condition/ life assessment issues. Materials and systems developers, and plant designers, fabricators, plant operators and service providers will be the prime audience of this conference. Researchers and inspection companies are also envisaged to equally benefit from this event.

Topics which have currently gained much significance such as fossil power plant flexible operation in view of the increasing intervention of the renewables, use of low or zero carbon clean fuels such as hydrogen and ammonia or a mix of such fuels with the existing fuels for use in CCGTs (for example), digitalisation of the power and process industry, the challenge of the inspection of new materials for the new generation of fission and fusion nuclear power plants, renewables and waste incineration plant and the revival of the older fossil power plants in countries such as Japan to overcome the shortage of gas due to the current crisis and reluctance to go nuclear and other such topics will be discussed during this three days international gathering.

Development of new and more advanced inspection techniques to deal with the inspection of the new generation of materials for the renewables and existing plants will be discussed to find out the best available currently.

For the Conference brochure and the Registration Form please click [here](#).



ETD's Forthcoming Seminar & Training Courses

DAMASK & ETD Seminar

Power Plant Inspection and Condition/ Life Assessment

Venue: TNBR, Selangor, Malaysia; Date: Monday 15th May 2023, 0830 - 1300h

For the full programme please click [here](#).

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Boiler Tube Damage, Failure and Life Assessment

Materials, Damage Mechanisms, Inspection, Root Cause Failure Analysis, Life Assessment and Risk Based Management

Venue: TNBR, Bangi, Selangor, Malaysia; Dates: 16-17 May 2023 (2-days)

The contents of the course would emphasise the current and latest understanding, supported by *notes* and *references* for further reading and will be accompanied with Worked Examples.

For the full programme please click [here](#).

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Online 3-days TRAINING COURSE

RCM Gen. III: Asset Performance Based Maintenance - Reliability Program Development & Implementation

Acronym: RCM Gen. III Course

Venue: Online (*from London*); Dates: 26-28 June 2023

For the programme please click [here](#).

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Three Online Life Management Foundation (LMF1, LMF2, LMF3) Courses in June and July

LMF1: Power Plant Operation, Damage & Life Assessment - 6-7 June 2023

For the programme please click [here](#).

LMF2: Understanding of Welds and Welded Component Behaviour in High Temp. Plant

13-14 June 2023

For the programme please click [here](#).

LMF3: Damage, Defect and Crack Assessment under Creep and Fatigue Conditions

3-4 July 2023

For the programme please click [here](#).

For ETD's future training courses please regularly check our website www.etd-consulting.com

We also conduct bespoke courses for the individual organizations/ industry at their site in various countries.



Based on the experience of a number of senior plant engineers and experts in the field ETD has just produced Guidelines for Fossil Power Plant Maintenance entitled:

[Evaluation of Risk Based Maintenance Procedures & Best Practice Guidelines for Power Plants](#)

This Report is now available for purchase. For further information please contact: enquiries@etd-consulting.com

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Risk-based maintenance/management (RBM) is a useful tool for understanding plant issues and potential consequences of various risks. It is necessary for plant management to know the potential risk of future incidents in various power plant areas (e.g., boiler tubes, headers, main steam line systems, steam turbines, gas turbines, etc.). Numerous methods for addressing risks in the power industry have been developed. This study critically reviews and assesses the current status of the risk-based management approach for the optimisation of maintenance in thermal power plants (both conventional and combined cycle) to understand the potential application areas, the limitations and the benefits offered by these methodologies.

The fundamental concept behind risk-based inspection, testing and maintenance is that the effort and cost devoted to these activities should in some way be regulated according to the benefit gained and that benefit should be measured in terms of the likely cost of the events which these activities are designed to avert. It is thus a cost-benefit analysis which allows various strategies to be compared.

A recommended best practice risk-based management (RBM) programme has been summarised in Section 7 of the Report. A well-developed RBM programme should include important steps such as specifying business goals and objectives, identifying all potential risks, categorising and analysing risk, evaluating and mitigating risk, and monitoring the performance of the RBM programme. The formation of a multidisciplinary team with the necessary qualifications and skills is a key step for the control and successful implementation of an RBM programme. This recommendation can be used to develop a complete RBM programme for utilities that do not have one, or to improve an existing programme.

A summary of the Report and details of its Contents can be seen [here](#)