

MIMA-4 Int. Conference

MIMA - Materials, Inspection, Monitoring and Assessment

Decarbonisation of Power Generation

Use of low/no carbon fuels in new and existing fossil power plants and their flexible operation in conjunction with the renewables and nuclear plants

MIMA-4

Venue: Institute of Materials, Minerals & Mining, 297 Euston Road, London
www.iom3.org

Dates: 23-25 June 2025

Conf. Programme + Registration Form



SPONSORS

Matelect, UK www.matelect.com	Mazur Energy, Poland
	JUS Consortium (Japan, UK, Singapore)

CONFERENCE OBJECTIVES

The **aim** of this international conference is to provide an international platform for the exchange of knowledge and experience related to various power generation plant issues including their decarbonisation, materials, inspection/ monitoring, safe operation and condition/life assessment. The main theme is how to make power generation more sustainable and reliable.

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, digitalisation of the power industry, the challenge of the fabrication and inspection of newly developed materials for the new generation of fission and fusion nuclear power plants and for wind turbines will be discussed in this three day event.

CONFERENCE FORMAT/ ORGANISATION / PRESENTATION TIMES

The Conference will principally consist of **presentations of 25 mins. each**, including about 3 mins. for questions/answers. **Keynote presentations** will be of **35 mins. duration including about 3 mins. of questions/answers**.

WHO SHOULD ATTEND?

Plant operators, owners, designers, fabricators, inspection companies and service providers will be the prime audience in this conference. It is also envisaged that other organisations such as research institutes and universities will equally benefit from this experience and the information exchange.

SUBMISSIONS

Proceedings: ETD will aim to provide the presentations to the attendees before the start of the conference to make sure that the attendees get maximum benefit from the conference.

All Submissions (& Technical Enquiries to):

Dr Ahmed Shibli ashibli@etd-consulting.com

Tel: +44 1372 363 111 Mob/ Cell/ WhatsApp: +44 788 109 7730

Administration Related Enquiries (including registration) to:

enquiries@etd-consulting.com

SUBMISSION OF PAPERS (OPTIONAL)

Arrangements are being made for the publication of a Special Issue of an international journal. As this Conference is aimed at industry, **submission of papers is optional** but those which are submitted will be considered for publication in this Special Issue.

POSTER PAPERS

These are welcome either on A4 or A3 paper sheets or larger formats that can be put on the display boards to be provided in the Reception area.

For more information please write to: enquiries@etd-consulting.com

Conference Technical Committee

Prof John Oakey, Cranfield University, UK Chairman	Mr Damien Charman, Apave, Australia
Dr Ahmed Shibli, ETD, UK, Coordinator	Mr Steven Stultz, Combined Cycle Journal, USA
Dr David Allen, ETD, UK	Eng. Eur. Staf Huysmans, Belgium
Dr Cem Selcuk, ETD, UK	Dr D Simandjuntak, Anglia Ruskin University, UK
Dr N Tsurui, KMTL, Japan	Dr Andreas Klenk, MPA Stuttgart, Germany
Dr M Yaguchi, CRIEPI, Japan	Dr Qiang XU, School of Computing and Engineering, University of Huddersfield, UK
Mr Robert Shandro, CETIM-Matcor, Singapore	

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Conference Organising Committee

Dr Cem Selcuk, ETD, UK	Mrs Lita Williams, ETD, UK

The Organiser

European Technology Development (ETD)

ETD is an independent UK based engineering, consulting and R&D company specialising in high temperature plant inspection and life assessment /extension, maintenance, materials and engineering issues in power generating and petrochemical/process plant. ETD has, in the past, organised various international workshops/ courses/ conferences in the UK, Europe, USA, Canada, South Africa, Japan, Korea and other countries of Asia, mainly on the issues dealing with power and process plant life assessment/ extension, high temperature plant materials, plant component safety and durability, performance of in-service welds, power plant cycling, risk-based maintenance (RBM), Reliability Centred Maintenance (RCM), probabilistic life and crack assessment, weld repairs etc.

The company has been leading and co-ordinating a number of large cutting edge international industry projects (supported by the industry from North America, Japan, Europe and elsewhere or by the UK government and European Commission) on issues related to the assessment and improvement of high temperature plant performance, materials and design, maintenance and inspection strategies, and the development of innovative inspection techniques. The company has carried out/ participated in leading edge projects on P91 and P92 weld repairs, long term creep rupture data generation, crack assessment, integrity issues and has carried out studies of P/T91 performance in plant worldwide.

The company has developed its own unique equipment (in collaboration with other industry) such as a portable spark erosion machine for 'boat sampling', a portable AFM for early-stage creep cavitation damage detection in P91/ P92 components, a precision portable hardness tester called 'Smart Sleeve'.

Further information on ETD, its consulting services, full plant inspection and life assessment, training courses offered and other activities can be seen at: www.etd-consulting.com

CONFERENCE PROGRAMME

DAY – 1

Monday 23 June 2025

0930 – 1745h

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Introduction to the Conference (0930 - 0940h)

- *Conference Introduction:* Dr A Shibli, ETD, Conference Coordinator
 - *Conference Theme:* Prof J Oakey, Cranfield University, Conference Chairman
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SESSION 1: Hydrogen & Low/ No-Carbon Fuels for Power Generation

(0940 – 1330h)

Chairman:

Paper 1-1 [Keynote](#) (0940-1015h)

The role of gas turbines to support the energy transition

John Oakey, Cranfield University, UK

Paper 1-2 (1015-1040h)

Metallurgical and mechanical perspective in hydrogen implementation

Gouenou Girardin¹, Daniella Guedes¹, Aishwarya², Yoga Sugama Salim², Robert Shandro²

(1)Centre Technique des Industries Mécaniques - France

(2)CETIM-MATCOR, Singapore

Paper 1-3 (1040-1105h)

Use of hydrogen as the fuel mix with natural gas in CCGTs - Technical and Cost Issues

Hong-Wei Wang, Ahmed Shibli, Nicholas Smith

European Technology Development (ETD), Leatherhead, Surrey, UK

Paper 1-4 (1105-1130h)

Material testing in pressurized H₂-atmosphere – autoclave testing capabilities & initial results

Christian Ullrich¹, Dominik Wanning¹, Wolfgang Tillmann²

¹VGB Energy Service GmbH, ²Technical University Dortmund, Germany

Coffee Break 1130 – 1200h (30 mins.)

Paper 1-5 [Keynote](#) (1200-1235h)**Creating commercially viable dispatchable net zero power through hydrogen fuel adoption***Jeffrey Benoit, Vice President – Clean Energy Solutions, PSM – A Hanwha Company, USA*Paper 1-6 (1235-1300h)**Bulk hydrogen: From production challenges to the role of contaminants on turbomachinery life***Joy Sumner, Reader in Energy Materials and Head of Centre for Energy Engineering School of Water, Energy and Environment, Cranfield University, UK*Paper 1-7 (1300-1325h)**Application of electrical potential drop (E-PD) for the detection of hydrogen induced damage in metallic materials***Adam Wojcik, University College, London; Alberto Santos, Mathew Waitt, Matelect, UK***LUNCH 1325 – 1425h (1hr)****SESSION 2: Fossil Power Plant Flexible Operation****(1425 – 1745h)****Chairman:**Paper 2-1 [Keynote](#) (1425-1500)**Advanced lifetime estimation for cyclic operation of GKM Unit 9 using real operational data and batch specific material data***Andreas Klenk, Ankmatt, Stuttgart; Klaus Metzger, Grosskraftwerk Mannheim (GKM); Maximilian Friedrich, MPA Stuttgart; Gerhard Maier, Fraunhofer IWM, Freiburg, Germany*Paper 2-2 (1500-1525h)**Power plant boiler / HRSG flexible operation – Technical issues***David Robertson, European Technology Development (ETD), Leatherhead, Surrey, UK*Paper 2-3 (1525-1550h)**Fossil power plant flexible operation – Cost and Performance analysis***Sarah Hiew, European Technology Development (ETD), Leatherhead, Surrey, UK***Coffee Break 1550 – 1620h (30 mins.)**

Paper 2-4 [Keynote](#) (1620-1655h)

Power plant flexible operation – Implications for steam turbines and boiler auxiliaries
Saravana Bavan, Power Plant Consultant, UK

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Paper 2-5 (1655-1720h)

Reducing the risk of boiler tubes failure due to Sigma Phase embrittlement in power plants using advance predictive analysis dashboard digitalization

Yeoh Ceh Hsing, Tenaga Nasional Berhad, TNB, Malaysia

Paper 2-6 (1720-1745h)

The role of effective operation, maintenance and reliability in the decarbonisation of power plants

Nadeem Ahmed, ETD Principal Consultant, Qatar



SESSION 3: Innovations in High Temp. Plant Technologies (0900 – 1050h)Chairman:Paper 3-1 [Keynote](#) (0900-0935h)**Can we safely design future high temperature power plant?***David Allen, Impact PowerTech, UK*Paper 3-2 (0935 -1000h)**Creep-resistant fiber-jacketed pipes for high-temperature applications***Maximilian Friedrich, Andreas Klenk, Stefan Weihe, Materials Testing Institute (MPA)**University of Stuttgart, Germany*Paper 3-3 (1000 -1025h)**Refractory metals for high temperature applications***David Rowe, Cedar Metals, Essex, UK*Paper 3-4 (1025 -1050h)**Recycled metal powder for additive manufacturing of components***Sarinova Simandjuntak, Anglia Ruskin University, Chelmsford, UK**Hisham Al Hadidi and Mayank Anand, Department of Marine Engineering, Military Technological College, Muscat, Oman*

Coffee Break 1050 – 1120h (30 mins.)

SESSION 3A: Welding and Small Scale Testing

(1120 – 1310h)

Chairman:Paper 3-5 [Keynote](#) (1120-1155h)**On-Stream robotic welding, present and future technologies***Eirik Belland, Effee Induction AS, Norsk Maritimt Kompetansesenter, Borgundvegen Ålesund, Norway*Paper 3-6 (1155-1220h)**Soni Shape Laser update: latest developments from the cutting edge of laser welding, excited by ultrasound with Beam shaping***Phil Carr, Carrs Welding, Kettering, UK*

Paper 3-7 (1220-1245h)

Orbital friction welding: a new process for joining end to end profiles: pipes for energy

industry and high temperature applications

Stuart Jackman, Jackweld, Claygate, London, UK

Paper 3-8 (1245-1310h)

Advanced small-scale testing methods for enhancing the safety of power plant components

Daniel Omacht, UTMdev s.r.o., Ostrava-Vitkovice, Czech Republic

LUNCH 1310 – 1410h (1 hr)

SESSION 4: Innovations in High Temp. Plant Inspection & Life Assessment

(1410 – 1745h)

Chairman:

Paper 4-1 *Keynote* (1410-1445h)

Remaining life assessment using latest small sample technique

M. Yaguchi¹, S. Komazaki²

¹ *Central Research Institute of Electric Power Industry, Yokosuka-shi, Japan*

² *Kagoshima University, Kagoshima-shi, Japan*

Paper 4-2 (1445-1510h)

Formation of JUS (Japan, UK, Singapore) Consortium – joint effort in innovation in plant sampling and quantitative life assessment

Ahmed Shibli, European Technology Development (ETD), Leatherhead, Surrey, UK

M Tsuru, KMTL, Kobe; Masatsugu Yaguchi, CRIEPI, Tokyo, Japan

Robert Shandro, CETIM, Singapore

Paper 4-3 (1510-1535h)

Latest in power and process plant inspection

Damien Charman, Apave, Australia

Coffee Break 1535 – 1605h (30 mins.)

Paper 4-4 [Keynote](#) (1605-1640h)

Assessment of arc spray coatings on boiler tubes for life extension - an actual case study by İzdemir Enerji Elektrik Üretim A.Ş.

*Yusuf Civelek, Maintenance Manager; Fikri Erbey Polat, Boiler Maintenance Chief Engineer
İzdemir Enerji Elektrik Üretim A.Ş., Turkey*

Paper 4-5 (1640-1705h)

Developments in the use of electrical potential drop (E-PD) for long-term continuous monitoring of structures and industrial plant

Adam Wojcik, Alberto Santos, Mathew Waitt, Matelect; Ahmed Shibli, ETD, UK

Paper 4-6 (1705-1730h)

Modelling long term creep lifetime and extrapolation method

Joan LU and Qiang XU, School of Computing and Engr., University of Huddersfield, UK

Paper 4-7 (1730-1755h)

Innovations in inspection and integrity assessment of P91 components including aberrant microstructures

Ahmed Shibli, Joshua Ramsay, European Technology Development (ETD), Leatherhead, Surrey, UK

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END of DAY 2

SESSION 5: Carbon Capture, Nuclear Fusion and Net Zero Developments

Chairman:

Paper 5-1 [Keynote](#) (0900-0935)

Materials issues for transcritical CO₂ cycles

Kumar Patchigolla, Professor of Decarbonisation, Teesside University, UK

Paper 5-2 (0935-1000h)

Novel boronated “BRAFM” high temperature materials development for fusion energy – The “TRANSFUSION-2” project

David Allen (ETD); Jack Haley (UKAEA); Russell Goodall, Liam Hardwick (University of Sheffield); Peter Barnard (MPI); Carl Slater (Warwick University), UK

Paper 5-3 (1000 -1025h)

Fusion energy: it is closer than you realise

Steve Lawler, Frazer-Nash Consultancy (FNC), Surrey, UK

Coffee Break 1030 – 1100h (30 mins.)

Paper 5-4 [GUEST SPEAKER](#) (1100 - 1125h)

The vital role of Hydrogen: UK Government’s Perspective

Harry Brazier, Department of Energy Security and Net Zero, UK Government

Paper 5-5 [Keynote](#) (1125-1200h)

Approaching the Energy Transition: An Oil and Gas Industry Perspective”

Paul Choate, Choate Technology Services Ltd., Cambridge, UK

Paper 5-6 (1200-1225h)

HyPER - the development of sorbent-enhanced steam methane reforming with CO₂ capture for low-cost hydrogen

John Oakey, Cranfield University, UK

Paper 5-7 (1225-1250h)

Autonomous ice protection and de-icing of wind turbine blades

Martyn Wimshurst, MIET, Consultant, London, UK

Lunch 1250 – 1330h

Paper 5-8 [Keynote](#) (1330-1405h)

PinkH2 technology: Zero-carbon Hydrogen production- onsite-on demand- no external electricity needed

Dave Thomas, CEO, PinkH2, Bristol, UK

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Paper 5-9 (1405-1430h)

The design and thermal modelling of a small scale supercritical hydrogen production reactor

Liam Butler, Purifire Labs., Cambridge, UK

Paper 5-10 (1430-1455h)

Material challenge for decarbonised energy generation – thermal conductivity prospective

Vladimir Vishnyakov, Inomorph Ltd., Huddersfield, UK

Paper 5-11 (1455-1520h)

Cyber security challenges in power generation

Hania Nadeem, Consultant, Qatar

Closing Remarks – 1520 -1530h

REGISTRATION FORM

Please complete and email to: enquiries@etd-consulting.com

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Decarbonisation of Power Generation

Materials, Inspection, Monitoring and Assessment (MIMA-4)

Venue: Institute of Materials, Minerals & Mining, 297 Euston Road, London
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Dates: 23 - 25 June 2025

Registration Fee: Please put 'x' in the relevant box and show the total payment.

Fee is to be paid in GB Pounds. (all those attending in-person events held in the UK need to pay 20% VAT).

Overseas delegates attending online are exempt from VAT payment.

Fee to be paid is shown in bold.

	Reduced Fee (Until 19 May 25)	x	Full Fee (From 20 May 2025)	x
Conference Delegates	£500+100 VAT = £600		£550+£110 VAT = £660	
Conference Presenters	£400+£80 VAT = £480		£400+£80 VAT = £480	
Delegates (part-time)	£200 +£40 VAT= £240		£225 +£45 VAT= £270	
Day rate	(+£50 for boat trip+dinner)			
Students (with or without poster papers)	£200 +£40 VAT= £240		£200 +£40 VAT= £240	

Please show here no. of attendees x £ **Total Amount Payable =** £

(For part time attendees please show which days + boat cruise & dinner, if applicable).

The Conference Registration Fee covers the organisation of the Conference, the provision of the conference Presentations in electronic format, lunches, coffee/ tea during the breaks, and a boat trip on the River Thames, including the conference dinner on the boat.

How to Pay: When paying please quote reference 'MIMA-4 Conf.' and the ETD invoice number (if this was issued):

1) By bank to bank transfer to: European Technology Development Ltd.
(ETD bank account details will be provided on request)

2) Credit Cards: Payment information will be provided on request.

When registering, please state here how you paid or intend to pay:

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Delegate/ Speaker Details

Name:	Job Title (optional):
Company:	Address:

Please email the Registration Form and any enquiries, to: enquiries@etd-consulting.com

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