



## 3-days On-Line International Conference

**MIMA-2** (2<sup>nd</sup> MIMA Conference)

# High Temperature Plant Materials, Inspection, Monitoring & Assessment

Conference Acronym: MIMA-2

Venue: On-Line (from London)    Dates: 11 – 13 October 2022

## *PROGRAMME & Registration Form*



**SPONSORS:** For opportunities please write to: [enquiries@etd-consulting.com](mailto:enquiries@etd-consulting.com)



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## CONFERENCE OBJECTIVES

The **aim** of this international 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, operators and services providers will be the prime audience in this conference. It is also envisaged that other organisations such as researchers and inspection companies will equally benefit from this experience/ information exchange.

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## CONFERENCE FORMAT/ ORGANISATION / PRESENTATION TIMES

The on-line Zoom conference principally consists of 32 full-length presentations each of 20 mins. presentation plus 5 mins. questions/answers, except the last four presentations in the Plenary Session which will be of 30 mins. presentation plus 5 mins. questions/answers.

During a presentation only the speaker will have his/her mike and video on. However, during the Conference opening and other group discussions at the end of each day all attendees will be welcome to have their videos on but will be requested to keep their mikes muted to avoid background disturbance/noise. Those who wish to make a comment/ask questions can click on the 'raise hand' symbol at the bottom of the Zoom screen and the Discussion Leader will ask him/her to unmute his/her mike and speak. This will mean that all attendees will be able to see each other and be involved in group discussions, as in a normal/traditional conference.

During the question/answer time at the end of a presentation, the Session Chairperson will ensure that only one questioner is able to speak at a time, while all other attendees, except the questioner and the presenter, will remain muted.

*The Conf. will start every day (UK times) at 0800h and finish between 1400 and 1430h, the last half an hour devoted to the general discussion and participation by all delegates. However, you are advised to log in at about 0745h each day for introduction to the day's proceedings.*

## WHO SHOULD ATTEND?

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

## DEADLINES

**PRESENTATIONS:** To be sent to ETD by: **20<sup>th</sup> September 2022.**

## SUBMISSIONS

**Proceedings:** ETD will aim to provide the presentations to the attendees at least one week 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](mailto:ashibli@etd-consulting.com) Tel: +44 788 109 7730

**Administration Related Enquiries to:** [enquiries@etd-consulting.com](mailto:enquiries@etd-consulting.com)

## SUBMISSION OF PAPERS (OPTIONAL)

Arrangements have been made for the publication of a Special Issue of the journal 'Materials at High Temperature'. 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.

# CONFERENCE PROGRAMME

UK times throughout

**DAY – 1**      Tuesday 11<sup>th</sup> October 2022      0800 – 1430h      (UK time)

## **INTRODUCTION TO THE CONFERENCE**      (0800 - 0815h)

*Katherine Asvegren, VPI, UK (Conference Chairman)*  
*Dr Ahmed Shibli, ETD, UK (Conference Coordinator)*  
*Fiona McHugh, ETD, UK (Conference Organiser)*

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## **SESSION 1: HIGH TEMPERATURE MATERIALS ISSUES**      (0815 – 1125h)

### Paper 1-1 (0815 -0840h)

**Role of inclusions on degradation in creep life and rupture ductility of ferritic power plant steels**

*Fujio Abe, National Institute for Materials Science (NIMS), Tsukuba, Japan*

### Paper 1-2 (0840 -0905h)

**Development and manufacture of IBN1 MarBN steel wrought pipe for advanced high temperature application**

*Steve Roberts, Goodwin Steel Castings; Steve McCoy, Special Metals Wiggin; Martin Strangwood, Uni. of Birmingham; Mark Jepson, Loughborough Uni.; Paul Robb, Doosan Babcock; Scott Lockyer, Uniper Technologies Limited; Zhuyao Zhang, Lincoln Electric Europe; and David Allen, European Technology Development, UK*

### Paper 1-3 (0905 -0930h)

**Project HOWEFLEX- MarBN rotor qualification for load flexible application**

*T-U Kern, Siemens Energy GmbH*

*B Donth, Saarschmiede GmbH*

*U Langer, GE Power*

*G Maier, Fraunhofer Institute for Mechanics of Materials, IWM Freiburg*

*M Schwienheer, Institute of Materials Technology, TU Darmstadt*

*Germany*

**COFFEE BREAK 0930 – 0945h** (15 mins.)

Paper 1-4 (0945 -1010h)

**Multi-component alloying element effects on solidification segregation in cast IBN1-based CSEF steels**

*M Strangwood, University of Birmingham, UK*

Paper 1-5 (1010 -1035h)

**Normalising temperature selection for creep performance of advanced high temperature alloy IBN1**

*W Philpott, M.A.E. Jepson, R. Maclachlan, Loughborough University, UK*

Paper 1-6 (1035 -1100h)

**Experience of P93 manifold welding under real fabrication conditions**

*P de Smet, K Tang, M Bok, Siemens Energy Heat Transfer Technology B.V., The Netherlands*

Paper 1-7 (1100 -1125h)

**Development of INCONEL alloy 740H and its application to supercritical CO<sub>2</sub> power plant**

*Steve McCoy, Special Metals Wiggin, UK*

<b>LUNCH / DINNER BREAK 1125 – 1210h (45mins.)</b>
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**SESSION 2: PLANT LIFE ASSESSMENT**

(1210 – 1430h)

Paper 2-1 (1210-1235h)

**Prediction of long-term creep life based on short-term data of used Grade 91 steels**

*M Yaguchi, CRIEPI, Japan*

Paper 2-2 (1235 -1300h)

**The new Italian standard about life assessment of martensitic steels - first results of experimental validation activity of XRD by testing P91 and P92 samples from interrupted uniaxial creep tests**

*Andrea Tonti, Pietro De Blasi, INAIL, Italy*

Paper 2-3 (1300-1325h)

**Residual life assessment of critical piping systems**

*Bhaskara Santosh Kumar Pudipeddi, DGM (PE - Mechanical), NTPC, India*

*Vineet Kumar - Manager (PE- Mechanical), NTPC, India*

Paper 2-4 (1325-1350h)

**Real-time creep remnant life prediction for fired heaters**

*H Othman, H Chik, NH Kamaruzaman, PETRONAS Group Technical Solutions, Malaysia*

**[GENERAL DISCUSSION – Materials & Life Assessment Issues \(1400-1430h\)](#)**

**WELCOME & INTRODUCTION TO DAY-2**

(0800 - 0815h)

**SESSION 3: PLANT INSPECTION AND MAINTENANCE**

(0815 - 1430h)

**Paper 3-1 (0815 -0840h)****DX (digital transformation) of boiler maintenance***Shigemitsu Kihara and Toshiaki Yoshida, Best Materia Co., Tokyo, Japan***Paper 3-2 (0840 -0905h)****Risk-based maintenance for steam turbines and generators***Pascal Decoussemaeker, GE, Switzerland***Paper 3-3 (0905 -0930h)****Evaluation of various risk-based maintenance procedures and recommendations for best practises***Feroza Akther, European Technology Development, Leatherhead, Surrey, UK*

<b>COFFEE BREAK 0930 – 0945h</b> (15 mins.)
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**Paper 3-4 (0945 -1010h)****Risk based inspection and integrity management of HRSG headers and manifolds***David Tuey, RWEnpower, UK***Paper 3-5 (1010 -1035h)****Inspection of pipelines with varying cross sections using a combined multidisciplinary and robotized solution.***Alfredo LAMBERTI, ENGIE Laborelec, Belgium***Paper 3-6 (1035-1100h)****Possible microstructural resistant factors in P91 steel to the magnetic domain wall motion of electro-magnetic inspection method***Yasushi Hasegawa<sup>1</sup>, Noriyuki Ishii<sup>1</sup>, Masayuki Kodama<sup>2</sup>, Akito Kunieda<sup>3</sup>, Kazuyuki Shimizu<sup>3</sup>, Yasuhiro Kamada<sup>3</sup>.**1: Nippon Steel Technology Co. Ltd.**2: Nippon Steel Corporation**3: Iwate University, Japan*

<b>COFFEE BREAK 1100 – 1115h</b> (15 mins.)
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Paper 3-7 (1115 -1140h)

**Inspecting the un-inspectable – A review of a project delivering a new inspection technique on complex geometries**

*John Trelawny – Technical Lead Specialist Inspections – Uniper Technologies Limited, Integrity and Inspection Solutions Department, Uniper, UK*

Paper 3-8 (1140 -1205h)

**The Electromagnetic Advanced Sensor Yoke (“EASY”) project for the inspection of P91/P92 components in high temperature plant**

*John W Wilson, Anthony J Peyton – University of Manchester  
David J Allen, Andrew Merrison, Ahmed Shibli –  
European Technology Development, Leatherhead, Surrey, UK*

<b>LUNCH / DINNER BREAK 1205 – 1250h</b> (45 mins.)
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Paper 3-9 (1250 -1315h)

**Electric potential drop surface mapping for creep damage evaluation in P91 steel welds**

*Adam Wojcik, Alberto Santos, Mathew Waitt, Matelect  
Ahmed Shibli, David Allen, European Technology Development, UK*

Paper 3-10 (1315 -1340h)

**Robotics applied to inspection of infrastructure - examples of internal and external pipe inspection**

*Paulo Debenest, HiBot, Japan*

Paper 3-11 (1340 -1405h)

**Development and use of software ‘Quartz Project’ - Plant inspection management system**

**‘Quartz’** – A web-based Inspection Management Solution developed for maintaining records over the pre- and in-service life of a plant asset.

*John Stephenson, Gorken Bayten, IntegrityNDT, UK*

**GENERAL DISCUSSION – (1405-1430h)**



**Introduction to Day-3**

(0800 – 0815h)

**SESSION 4: COMPONENT DAMAGE & FAILURE**

(0815 – 0930h)

Paper 4-1 (0815 -0840h)**Real time damage monitoring software (RTDMS)***Aron Abolis, Warwick Payten, ALS Global, Australia*Paper 4-2 (0840 -0905h)**Analysis of component failures for power and petrochemical industries – examples from recent experience***David Robertson, European Technology Development, Leatherhead, Surrey, UK*Paper 4-3 (0905 -0930h)**CrackFit: A software for crack assessment in pressure vessels and turbines***Feroza Akther, Baginda Affendy, European Technology Development, Leatherhead, Surrey, UK**Stuart Holdsworth, EMPA, Switzerland***COFFEE BREAK 0930 – 0945h** (15 mins.)**SESSION 5: POWER PLANT FLEXIBILITY ISSUES**

(0945 – 1100h)

Paper 5-1 (0945 -1010h)**Predicting high temperature component integrity in turbines required for flexible operation - evaluating assessment effectiveness***Stuart Holdsworth, Empa: Swiss Federal Laboratories for Materials Science & Technology, Switzerland*Paper 5-2 (1010 -1035h)**Cavitation during creep-fatigue loading***Rolf Sandström, Materials Science and Engineering, KTH Royal Institute of Technology, Stockholm, Sweden*Paper 5-3 (1035 -1100h)**Use of filming chemistry to improve corrosion protection of flexible operated power plants***Manfred Jansen, Anodamine, The Netherlands**Adrian Baily, VPI, UK***LUNCH / DINNER BREAK 1100 – 1130h** (30 mins.)

**SESSION 6: PLENARY SESSION** (1130 – 1430h)  
*(30 minutes presentation + 5 minutes discussion)*

Paper 6-1 (1130 -1205h)

**Life assessment of high temperature plant – The role of materials design data**  
*David J Allen, European Technology Development, Leatherhead, Surrey, UK*

Paper 6-2 (1205 -1240h)

**Life evaluation and research subjects for safe service of 9Cr steels used in UCS power plants**  
*Koichi Yagi, Meilin Wang and Yonghao Lu; National Center for Materials Service Safety, University of Science & Technology Beijing, China*

**COFFEE BREAK 1240 – 1255h** (15 mins.)

Paper 6-3 (1255 -1330h)

**HRSG design challenges: materials and mechanical integrity**  
*Ian J. Perrin, Triaxis Power Consulting, LLC., USA*

Paper 6-4 (1330 -1405h)

**Activities to advance residual life evaluation techniques for highly aged power plant boiler materials in Japan**  
*Isamu Nonaka, Tohoku University, Japan*

**DISCUSSION & CLOSING REMARKS 1405-1430h**

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## Conference Technical Committee

Katherine Asvegren, VPI, UK, <b>Chairman</b>	Prof Peter Mayr, Technical Uni. Munich, Germany
Dr Ahmed Shibli, ETD, UK, <b>Coordinator</b>	Steven Stultz, Combined Cycle Journal, USA
Dr David Allen, ETD, UK	Dr Stuart Holdsworth, EMPA, Switzerland (Guest Editor, Special Conf. Issue)
Dr Andrea Tonti, INAIL, Italy	Dr S Kihara, Best Materia, Japan
Dr Gunther Merckling, RTM Breda, Italy	Dr M Yaguchi, CRIEPI, Japan
Prof K-B Yoon, Chung Ang University, Korea	Rod Vanstone, Consultant, UK
Prof Scott Lockyer, Uniper Technologies, UK	Prof. em. EurIng. Staf Huysmans, ENGIE Laborelec, Belgium

## Conference Organising Committee

Dr Ahmed Shibli, ETD, UK	Fiona McHugh, ETD, UK
Dr David Allen, ETD, UK	Feroza Akther, 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 all type of power generating and petrochemical/ process plant. ETD has, in the past, organised various international workshops/courses/conferences in the UK, Europe, USA, Canada, Japan, Korea and Asia mainly on the issues such as: 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 Centered 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 weld repairs, crack assessment, integrity issues and has carried out studies of P/T91 performance in plant worldwide. Further information about ETD, its projects, life assessment courses offered and other activities can be seen at: [www.etd-consulting.com](http://www.etd-consulting.com)

# REGISTRATION FORM (Please email)

MIMA-2

## International On-Line Conference *High Temperature Plant:* **Materials, Inspection, Monitoring and Assessment (MIMA-2)**

**Dates:** 11 – 13 October 2022

**Registration Fee:** Please put 'x' in the relevant box and show the total payment.  
*Fee is to be paid in GB Pounds.*

	<b>Reduced Fee</b> (Until 12 Sep. 22)	x	<b>Full Fee</b> (From 13 Sep. 22)	x
<b>Conference Delegates</b>	£200		£250	
<b>Conference Presenters</b>	£150		£150	
Please show here (no. of attendees <input type="text"/> x £ <input type="text"/> ): <b>Total Amount Payable =</b> <input type="text"/>				

**Conference Registration Fee** covers: Organisation of Conference, Provision of the Conference Presentations.

**How to Pay:** *When paying please quote reference 'MIMA-2 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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