



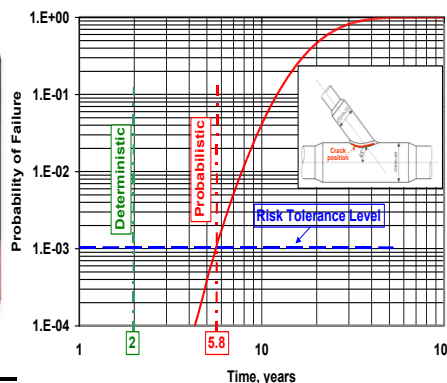
2-day On-Line International Conference

High Temperature Plant Materials, Inspection, Monitoring & Assessment

Conference Acronym: 'MIMA' Conference

Venue: On-Line (from London) Dates: 27 – 28 October 2020

FINAL PROGRAMME & Registration Form



On-line International Conference - MIMA



ETD Consulting, 5 Axis Centre, Cleeve Road, Leatherhead, Surrey, KT22 7RD, UK

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www.etd-consulting.com BS EN ISO 9001: 2015 Certified VAT No: 733600853

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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. Due to Covid-19 such exchange has become prohibitive during 2020 resulting in the cancellation of many international conferences and thus limiting access to and exchange of knowledge, data and discussions on many new and exciting developments over the last few years. 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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ON-LINE CONFERENCE FORMAT

This on-line 2-day conference will consist of between 15 to 18 presentations each day (30 to 36 in total), each of 25-minute duration. All presentations will be pre-recorded and made available to the conference registrants via the web link that will be emailed to the conference registrants two weeks before the Conference starts, so that registrants will have plenty of time to listen to papers of interest before the Conference itself. On the day of the conference each presenter will discuss the salient points of his/her presentation for 5 mins. and will answer any questions for 5 minutes. **This means that each presenter will only get a maximum time of 10 minutes including the question/ answer time and full presentations will not be made during the conference itself.**

Conference registrants will be able to send their questions by email in advance to the presenters via the conference organiser at: enquiries@etd-consulting.com Questioners will be able to discuss their question with each presenter after their 5-minute presentation. The session moderator will ensure that only one questioner is able to speak at a time, when all other attendees except the questioner and the presenter will be muted.

There will be a total of six sessions, three sessions will be held on Tuesday 27th and the same number on Wednesday 28th October. Each session will be of one-hour duration, consisting of 6 presentations. Each day three one-hour sittings/sessions will be held with a 15-minutes break after each one-hour sitting.

For Europe and Asia/ Far East: The presentations will be held in the morning, London time: (0750-0900h); (0915-1015h) and (1030-1130h).

For North America: The full conference proceedings, including questions and answers, will be recorded and sent to those who could not attend the live sessions.

PAPER SUBMISSIONS

Submission of full Papers: This is optional but presenters are encouraged to submit papers. We have agreed with the publishers to publish a *Special Issue* of the journal “*Materials at High Temperature*” by the end of the year 2020 or early 2021. We will therefore encourage you to submit your paper as soon as possible or at least soon after the conference.

All Technical Enquiries to:

Dr Ahmed Shibli ashibli@etd-consulting.com Tel: +44 788 109 7730

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

CONFERENCE COMMITTEE

Dr Ahmed Shibli, ETD, UK	Mr Damien Charman, IRISNDT, Australia
Dr David Robertson, ETD, UK	Mr Steven Stultz, Combined Cycle Journal, USA
Dr David Allen, ETD, UK	Dr Stuart Holdsworth, EMPA, Switzerland
Dr Andrea Tonti, INAIL, Italy	Dr Y Hasegawa, Nippon Steel Technology Corporation., Japan
Mr William (Bill) Moore, ETD Consultant, UK	Dr D Simandjuntak, Uni. of Portsmouth, UK
Dr Andreas Klenk, MPA Stuttgart, Germany	Mr A Antonatos, Public Power Co., Greece
Prof S-T Tu, ECUST, Shanghai, China	Dr F Abe, NIMS, Japan
Prof K-B Yoon, Chung Ang University, Korea	Prof Y Yoshioka, Tohoku University, Japan
Prof Scott Lockyer, Uniper Technologies, UK	Prof F Masuyama, Kyushu Tech. Ins., Japan
Dr A Kanaya, IHI Power Systems Co., Japan	Mr Toby Lockwood, IEA Clean Coal, UK
Dr Qiang Xu, Huddersfield University, UK	Dr Malgorzata (Maggie) Wiatros-Motyka, IEA Clean Coal, UK

All times shown are London winter times

CONFERENCE PROGRAMME

(Live Presentations)

INTRODUCTION TO THE CONFERENCE

Dr Ahmed Shibli, ETD, UK

(0750 - 0800h)

SESSION 1: MATERIALS – MARBN STEELS FOR HIGH TEMP. PLANT

(0800 - 0900h)

Session Chairman: Dr David Allen, ETD, UK

Paper 1-1 (0800 -0810h)

Alloy Design of MARBN for Boiler and Turbine Applications at 650°C

Fujio Abe, M Tabuchi and S Tsukamoto, National Institute for Materials Science (NIMS), Japan

Paper 1-2 (0810 -0820h)

Development of UK MARBN Steel ‘IBN1’ for Advanced Power Plant Applications

David Allen, European Technology Development, Leatherhead, Surrey, UK

Paper 1-3 (0820 -0830h)

Casting, Welding and Forging of MARBN Components

R Hanus, J Steiner, voestalpine Giesserei Linz GmbH, Linz, Austria

S Baumgartner, voestalpine Böhler Welding Austria GmbH, Kapfenberg, Austria

R Krein, D Kreuzer-Zagar, O Trunova, voestalpine Böhler Welding Germany, Hamm, Germany

G Zeiler, voestalpine BOEHLER Edelstahl GmbH & Co KG, Kapfenberg, Austria

A Nitsche, Institute of Joining and Assembly, Technische Universität Chemnitz, Germany

Paper 1-4 (0830 -0840h)

Experiences in the Manufacture of Large MARBN Steel Castings to the UK ‘IBN1’ Specification

Steve Roberts, Goodwin Group, UK

Paper 1-5 (0840 -0850h)

Development of the matching filler metal for MARBN – new advanced creep resisting alloys for thermal power plant

Zhuyao Zhang and Vincent van der Mee, Lincoln Electric, Europe

Paper 1-6 (0850 -0900h)

Intergranular Rupture in the Heat Affected Zone of Welds on a Recently Developed IBN-1 MARBN Steel After Short-Term Creep Exposure

X Xu, J. Guo, D. Allen, M.A.E. Jepson, R.C. Thomson, Loughborough University, UK

COFFEE BREAK 0900 – 0915h

SESSION 2: INSPECTION

(0915 - 1015h)

Session Chairman: Dr David Allen, ETD, UK

Paper 2-1 (0915 -0925h)

Inspection in the Post Digital Era

Ignacio Marcelles, Esmeralda Cuevas, Juan Azcue, Eva Frutos, Inspection & Testing Services Direction, Tecnatom, s.a, Spain

Paper 2-2 (0925 -0935h)

Ultrasonic Phased Array Total Focussing Method – Is this the Inspection Solution

John Trelawny - Uniper Technologies Integrity and Inspection Solutions Dept., Uniper, UK

Paper 2-3 (0935 -0945h)

The Development of Electromagnetic (EM) Sensor Technique for Creep Damage Detection and Assessment

John Wilson, Tony Peyton, University of Manchester, UK

David J Allen, Ahmed Shibli, European Technology Development (ETD), UK

Yasushi Hasegawa, Nippon Steel Technology Corporation, Japan

Paper 2-4 (0945 -0955h)

Corrosion Detection and Monitoring Using a Low Power Wireless Sensor Network

Simandjuntak S, School of Mechanical and Design Engineering, University of Portsmouth, UK

Ahuir-Torres JI, General Eng. Research Institute, John Moores University of Liverpool, UK

Bausch N, Farrar, A, School of Energy and Electronics Eng., University of Portsmouth, UK

Thomas B, Avonwood Developments Ltd, Bournemouth, UK

Muna J, Avanti Communications, London, UK

Paper 2-5 (0955 -1005h)

Heat Recovery Steam Generator (HRSG) Inspection Tools

Frank Neil, TesTex, USA

Paper 2-6 (1005 -1015h)

To Travel Hopefully... In Search of the Instant Creep Test

John M Brear, John Brear – Plant Integrity, Abergefryn, Capel Seion, Drefach, Llanelli, SA14 7BP, UK

COFFEE BREAK 1015 – 1030h

**SESSION 3: PLANT CRACKING / FAILURES, EFFICIENCY &
FLEXIBILITY**

(1030 - 1130h)

Session Chairman: Feroza Akther, ETD, UK

Paper 3-1 (1030 -1040h)

High Temperature Creep-Fatigue Damage Development in Ni-Alloy/Steel Dissimilar Metal Welds

Stuart Holdsworth, EMPA, Switzerland

Paper 3-2 (1040 -1050h)

Life Assessment and Failure Analysis of Boiler/HRSG Components – Examples of ETD’s Recent Experience

David Robertson, European Technology Development (ETD), UK

Paper 3-3 (1050 -1100h)

Power Plant Design and Management for Unit Cycling

Malgorzata Wiatros-Motyka, Toby Lockwood, IEA Clean Coal Centre, UK

Paper 3-4 (1100 -1110h)

Power Plant Cost & Performance Analysis When Operating in Base Load and Flexible Mode

Ahmed Shibli, European Technology Development (ETD), UK

Paper 3-5 (1110 -1120h)

A Technology Roadmap for High-Efficiency, Low Emissions (HELE) Coal-Fired Power Generation

Toby Lockwood, IEA Clean Coal Centre, UK

Paper 3-6 (1120 -1130h)

Novel Creep Crack Growth Modelling in SEN(T) Geometries of 316H Stainless Steel

Jorge de Andres, David W. Dean†, Catrin M Davies**

**Department of Mechanical Engineering, Imperial College London, UK*

†EDF Energy, Barnwood, Gloucester, UK

END -- OF -- DAY-1

DAY - 2

INTRODUCTION TO THE DAY-2 CONFERENCE

Dr Ahmed Shibli, ETD, UK

(0750 - 0800h)

SESSION 4: WELDMENTS & MONITORING

(0800 - 0900h)

Session Chairman: Dr David Robertson, ETD, UK

Paper 4-1 (0800 -0810h)

Mitigation of High Temperature Hydrogen Attack (HTHA) in Refineries and Petrochemical Plants

Abdou Kermad, Metallurgist, METALERGON LTD, Great Bookham, UK

Paper 4-2 (0810 -0820h)

Remote Asset Health Monitoring for Process Safety

C Buque, M Kafkas, TUV SUD Group, Division Industry, Germany

A Cano TUV SUD Group, Division Industry, Spain

Paper 4-3 (0820 -0830h)

Electrical Potential Drop for Monitoring Creep Damage in High Temperature Pressure Vessels

Matthew Waitt, Alberto Santos, Matelect Ltd.; Adam Wojcik, University College London

Ahmed Shibli, ETD Ltd. UK

Paper 4-4 (0830 -0840h)

Creep Strain Measurement Technique on P91 to Monitor Abnormal Material Conditions for End of Life Assessment

Christian Ullrich, Peter Körner, VGB PowerTech Service GmbH, Germany

Paper 4-5 (0840 -0850h)

Transition from TP321H to P91 - Implications and solution

Alexandros Antonatos, Public Power Co, Greece

Paper 4-6 (0850 -0900h)

The Influence of Creep Damage on Electrical Resistance Measurements

Edmund Jones, Mechanical Engineering Department, Imperial College London, UK

COFFEE BREAK 0900 – 0915h

SESSION 5: MATERIALS - DEGRADATION, DAMAGE AND LIFE
ASSESSMENT

(0915 - 1015h)

Session Chairman: Dr Stuart Holdsworth, EMPA, Switzerland

Paper 5-1 (0915 -0925h)

Stress Corrosion Cracking in T24 - Evaluation of the Damage Mechanism

Christian Ullrich, VGB PowerTech Service GmbH, Germany

Paper 5-2 (0925 -0935h)

Applicability of Hardness Methodology for Estimating Creep Deformation and Residual Life of Wrought Ni-based Superalloys

S Oinuma, R Takaku, Y Nakatani, Toshiba Energy Systems & Solutions Corporation, Yokohama, Japan

M Takeyama, Tokyo Institute of Technology, Tokyo, Japan

Paper 5-3 (0935 -0945h)

Creep Degradation in Reformer Tube Made of Manaurite Steel After 17000 hours Operated at 980°C

Suraya M N, TNB Research; Badrol A, Darmask Sdn Bhd; Hashim O, Juliana K and Siti Syazwani, Petronas Berhad, Malaysia

Paper 5-4 (0945 -0955h)

Creep Life Estimation by Crystal Misorientation Frequency Distribution Diagram Transition at Both Base Metal and HAZ of the Martensitic Creep Resistant Steel for High Temperature Plant

Hasegawa Y, Nippon Steel Technology Corporation, Japan

Kumagai H, Kawazoe F, Okushima M, Furuya H, Kodama M, Nippon Steel Corporation, Japan

Paper 5-5 (0955 -1005h)

Planning of Steam Turbine Maintenance Based on Forecasting of Degradation Processes and the Associated Operational Risk

Andrzej Rusin, Martyna Tomala, Silesian University of Technology, Department of Power Engineering and Turbomachinery, Konarskiego Gliwice, Poland

Paper 5-6 (1005 -1015h)

Development of Oxide Scales on the Inner and Outer Surfaces of Reformer Tubes Made of 25Cr-35Ni-Ti-Nb Steel after 17000hours of Service Exposure

Suraya M N, TNB Research; Badrol A, Darmask Sdn Bhd; Hashim O, Juliana K and Siti Syazwani, Petronas Berhad, Malaysia

COFFEE BREAK 1015 – 1030h

SESSION 6: RBI, RCM & STRESS ANALYSIS

(1030 - 1130h)

Session Chairman: Dr Ahmed Shibli, ETD, UK

Paper 6-1 (1030 -1040h)

Introduction to the Software and an Example of the Execution of Boiler RBI

Shigemitsu Kihara, Hiroyasu Matsuda, Toshiaki Yoshida and Akio Fuji, Best Materia Co., Tokyo, Japan, Daisuke Kobayashi, IMC Co., Tokyo, Japan

Paper 6-2 (1040 -1050h)

Risk Based Maintenance and Performance Optimisation of Power Plants

Feroza Akther, European Technology Development (ETD), UK

Paper 6-3 (1050 -1100h)

Creep Damage Constitutive Equations: The Modelling of Grain Boundary Cavitation and Rupture

Zhongyu Lu, Department of Informatics, School of Computing and Engineering, University of Huddersfield, UK

Qiang Xu, Department of Engineering and Technology, School of Computing and Engineering, University of Huddersfield, UK

Paper 6-4 (1100 -1010h)

Investigation of Modelling the Minimum Creep Strain Rate of P91 Over a Wide Range of Stress

S Feng, Y Wu, Q Xu, Department of Informatics, School of Computing and Engineering, University of Huddersfield, UK

Paper 6-5 (1110 -1120h)

Benefits of Asset Management and RCM Implementation in Power Generation

Syed Nadeem Ahmed, F Akther, European Technology Development (ETD), UK

Paper 6-6 (1120 -1130h)

FE Analysis of Stress Field in Steam Pipeline Component

Bing Lin, Simandjuntak, S, School of Mechanical and Design Engineering, University of Portsmouth, UK

Affendy B, Robertson D, European Technology Development (ETD), Surrey, UK

SESSION 7: RBM, CRACKING AND MODELLING

NON-LIVE SESSION

(Please note that due to the lack of time these pre-recorded presentations will not be discussed “live” on the conference day)

Paper 7-1

A Mechanistic Through-Process Modelling Framework for High Temperature Creep: Towards Prediction of Type IV Failure in 9Cr Steel Weldments

Richard A. Barrett, Mechanical Engineering, College of Science and Engineering, National University of Ireland, Galway, Ireland

Paper 7-2

‘CRACKFIT’ – A Defect Assessment Tool for Boilers/ Pressure Vessels, Piping & Turbines

Baginda Affendy, European Technology Development (ETD), UK

Paper 7-3

Creep Rupture Modelling of P92 Alloy Based on the Concept of Grain Boundary Cavitation

Xuming Zheng¹, Zhongyu Lu² and Qiang Xu¹

¹Department of Engineering and Technology, School of Computing and Engineering, University of Huddersfield, UK

²Department of Informatics, School of Computing and Eng., University of Huddersfield, UK

Paper 7-4

Initial Calibration of Creep Cavitation Model for 316H Steel

Xuming Zheng¹, Zhongyu Lu² and Qiang Xu¹

¹Department of Engineering and Technology, School of Computing and Engineering, University of Huddersfield, UK

²Department of Informatics, School of Computing and Eng., University of Huddersfield, UK

Paper 7-5

The Method for the Determination of Creep Cavitation Model Based on Cavity Histogram

Xuming Zheng¹, Xin Yang¹, Zhongyu Lu² and Qiang Xu¹

¹Department of Engineering and Technology, School of Computing and Engineering, University of Huddersfield, UK

²Department of Informatics, School of Computing and Eng., University of Huddersfield, UK

Paper 7-6

Investigation of the design of the creep damage constitutive equations for lower stress level

By Yuandi Wu, Shenhao Feng and Qiang Xu

Department of Informatics, School of Computing and Eng., University of Huddersfield, UK

REGISTRATION FORM (Please email)

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

Dates: 27 – 28 October 2020

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

Fee is to be paid in GB Pounds.

	Reduced Fee (Until 25 Sep. 20)	x	Full Fee (From 26 Sep. 20)	x
Conference Delegates	£200		£250	
Conference Presenters	£150		£200	
Please show here (no. of attendees x £): Total Amount Payable = £				

Conference Registration Fee covers: Organisation of Conference, Recording & Provision of Presentations and Conf. Proceedings.

How to Pay: *When paying please quote reference ‘ETD-MIMA 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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All Registration & Payment enquiries to: enquiries@etd-consulting.com

Delegate/ Speaker Details

Your **title** and **name:**

Company:

Job Title (optional):

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