

15TH INTERNATIONAL CONFERENCE ON ENGINEERING STRUCTURAL INTEGRITY ASSESSMENT (ESIA15) + 2019 INTERNATIONAL SYMPOSIUM ON STRUCTURAL INTEGRITY (ISSI 2019)

8–9 MAY 2019 / CONFERENCE PROGRAMME

DAY 1			
Session	Time	Presentation	Speaker(s)
Opening	08:30	Registration	
	09:30	Welcome	Paul Woollin (TWI, UK)
	09:45	Conference Introduction	Dr Brian Tomkins (Chairman, FESI, UK) Prof Shantung Tu (Chairman, CSIC, China)
Session 1	Keynote Presentations ¹ / Chair Brian Tomkins (Lecture Rooms 1 and 2)		
	10:00	1.1 Residual stresses in mega- and micro-engineering: modelling, measurement and control	Shantung Tu (East China University of Science and Technology, China)
	10:30	1.2 Challenges of corrosion effects on structural integrity in LWR nuclear steam supply systems	Peter Scott (ex-CEA, France)
Refreshments	11:00		
	11:30	1.3 Probabilistic data mining for damage diagnosis of aircraft structures	Shenfeng Yuan (Nanjing University of Aeronautics and Astronautics, China)
	12:00	1.4 Deconvoluting micro-, meso- and macromechanical stress contributions to creep deformation	David Knowles (Royce Institute, UK)
Lunch	12:30		
Session 2.1	Fatigue ¹ / Chair Shuxin Li (Bourne Room)		
	13:30	2.1.1 Characterisation of fatigue damage around an interior micro-defect	Mingliang Zhu (East China University of Science and Technology, China)
	13:50	2.1.2 Critical study on the sensitivity of corrosion fatigue crack growth rate to cyclic waveform and microstructure in marine steel	Victor Igwemezie (Cranfield University, UK)
	14:10	2.1.3 The effects of specimen size on fatigue behaviour and mechanism of FV520B-I in a very high-cycle regime	Ming Zhang (Qilu University of Technology (Shandong Academy of Sciences, China)
	14:30	2.1.4 A cloud-based fatigue analysis tool with interactive Neuber's rule	Daniel Kujawski (Michigan University, USA)
Refreshments	14:50		

DAY 1 continues →

DAY 1 (contd)			
Session	Time	Presentation	Speaker(s)
Session 2.2	Creep and Creep–Fatigue¹ / Chair Ramesh Chandwani (Lecture Room 1)		
	13:30	2.2.1 Performance evolution and life prediction of HR3C austenitic steel in high-temperature service	Jinhua Shi (Suzhou Nuclear Power Institute, China)
	13:50	2.2.2 Creep-fatigue life assessment of hydrogenation reactor shells manufactured of 2.25Cr-1Mo steel using the linear matching method framework	Zhiyuan Ma (Strathclyde University, UK)
	14:10	2.2.3 Investigation of a novel design for steam transfer pipes in high-temperature power plant	Martyn Pavier (University of Bristol, UK)
	14:30	2.2.4 Modelling and optimised design of a novel coated steam dual pipe system for use in advanced ultra-supercritical power plant	Xiaofeng Guo (Inner Mongolia University of Science and Technology, China; and University of Nottingham, UK)
Refreshments	14:50		
Session 2.3	Welded Structures and Codes, Standards and Procedures¹ / Chair Dean Deng (Lecture Room 2)		
	13:30	2.3.1 Predicting welding distortion in thin-plate steel structures using elastic FEM based on inherent strain theory	Wei Liang (Chongqing Jiaotong University, China)
	13:50	2.3.2 An analysis method for combining crack initiation and crack growth models in welded structures	Rob Plaskitt, Andrew Halfpenny, and Robert Cawte (HBM Prenscia, UK)
	14:10	2.3.3 Controlling of the welding residual stress and distortion of ultra-thick tube sheet in EO reactor: FEM analysis	Luyang Geng (Nanjing Tech University, China)
	14:30	2.3.4 Calibration of the parameters of double ellipsoid heat source model for multi-pass welding simulation	Bin Yang (China University of Petroleum, East China, China)
Refreshments	14:50		
Session 2.4	Materials, Fracture, and Monitoring¹ / Chair John Sharples (Abington Room)		
	13:30	2.4.1 The oxygen boost diffusion behaviour of refined grain of titanium	Yunfei Jia (East China University of Science and Technology, China)
	13:50	2.4.2 A model for the yield strength of 316 stainless steels	Qingrong Xiong (University of Manchester, UK)
	14:10	2.4.3 Effect of PZT arrays on positioning precision of delamination defect in FRP vessel	Biao Xiao (East China University of Science and Technology, Shanghai Institute of Special Equipment Inspection and Technical Research, China)
	14:30	2.4.4 A real-time calculation approach of EAC crack growing length in slow strain rate test based on EPFEM	Shuai Wang (Xi'an University of Science and Technology, China)
Refreshments	14:50		

DAY 1 (contd)			
Session	Time	Presentation	Speaker(s)
Session 3.1	Fatigue ² / Chair Rob Plaskitt (Bourne Room)		
	15:20	3.1.1 Shear plastic strain accumulation at inclusion in fatigue loading	Shuxin Li (Ningbo University, China)
	15:40	3.1.2 Thermomechanical fatigue crack growth testing	Jennifer Nicholls and Peter Gill (Wood plc, UK)
	16:00	3.1.3 Fatigue property deterioration induced by microstructural degradation using small coupons from service turbine blades	Yongsheng Fan (Beihang University, China)
	16:20	3.1.4 Effect of surface gradient nanostructure on fatigue crack initiation and propagation behaviour of industrial pure zirconium	Conghui Zhang (Xi'an University of Architecture and Technology, China)
End of DAY 1	16:40		
Session 3.2	Creep and Creep–Fatigue ² / Chair Wenchun Jiang (Lecture Room 1)		
	15:20	3.2.1 Creep design methods of components at elevated temperatures in nuclear power plants: a review and comparisons	Cheng Gong (East China University of Science and Technology, China)
	15:40	3.2.2 Low-cycle fatigue and creep-fatigue behaviour of alloy 617 at high temperature	Brian Daniels (Wood plc, UK)
	16:00	3.2.3 Experiment and numerical analysis of creep crack growth of surface cracks in P92 steel at 630°C	Jianfeng Wen (East China University of Science and Technology, China)
	16:20	3.2.4 Fatigue properties of titanium alloy at elevated temperature	Nu Yan (Wuhan Textile University, China)
End of DAY 1	16:40		
Session 3.3	Welded Structures and Codes, Standards and Procedures ² / Chair Peter Flewitt (Lecture Room 2)		
	15:20	3.3.1 The R6 fracture procedure: an overview and summary of recent developments	Chris Aird (EDF Energy)
	15:40	3.3.2 Residual stresses, mechanical properties and microstructure in thick duplex stainless steel weld joint	Yu Wan (China University of Petroleum, East China, China)
	16:00	3.3.3 Modelling residual stress in power-beam welds	Graeme Horne (Frazer Nash Consultants)
	16:20	3.3.4 The mechanical properties of dissimilar metal welded joint (SA508-52M-316L) obtained by indentation test	Kaishu Guan (East China University of Science and Technology, China)
End of DAY 1	16:40		

DAY 1 (contd)			
Session	Time	Presentation	Speaker(s)
Session 3.4	Materials, Fracture, and Monitoring ² / Chair Yunfei Jia (Abington Room)		
	15:05	3.4.1 A simple approach to obtain material mechanical property in local zone of structures	He Xue (Xi'an University of Science and Technology, China)
	15:25	3.4.2 Propagation of the fundamental shear horizontal wave through the junction of two solid surfaces	Jiu Hong Jia (East China University of Science and Technology, China)
	15:45	3.4.3 The fracture of steels	John Campbell (Birmingham University UK)
	16:05	3.4.4 Quantum-dots based materials for temperature sensing: effect of cyclic heating-cooling on fluorescence	Weiling Luan (East China University of Science and Technology, China)
	16:25	3.4.5 Highly sensitive colour-change indicator and its application on welding joints of stainless steel in nuclear power plant	Jie Zhao (Dalian University of Technology, China)
End of DAY 1	16:45		

The Conference Dinner will be held on Wednesday, 8 May 2019 in Newnham College, Sidgwick Avenue, Cambridge CB3 9DF			
Evening	19:00	Pre-Dinner Drinks	
	19:30	Dinner Commences	

DAY 2			
Session	Time	Presentation	Speaker(s)
Session 4	Keynote Presentations ² / Chair Sujun Wu (Lecture Rooms 1 and 2)		
	09:00	4.1 Some aspects on safety of Chinese nuclear reactors	Qing Mao (CTO for GDA, China General Nuclear Power Corporation, China)
	09:30	4.2 Advances in ultrasonic imaging of non-destructive testing	Bruce Drinkwater (University of Bristol, UK)
	10:00	4.3 Development and challenges of key electronic manufacturing chain equipment	Sheng Liu (Wuhan University, China)
Refreshments	10:30		
	11:00	4.4 Progress on structural health monitoring for life management of composite air frames	Ferri Aliabadi (Imperial College London, UK)
	11:30	4.5 Quantification of notch bluntness effect on ductile fracture: numerical study	Yunjae Kim (Korean University, South Korea)
Lunch	12:00		

DAY 1 continues →

DAY 2 (contd)			
Session	Time	Presentation	Speaker(s)
<u>Session 5.1</u>	Fatigue ³ / Chair Peter Flewitt (Bourne Room)		
	13:00	5.1.1 Imitation modelling and testing for durability assessment of GTE disk with operation damage	Valery N Shlyannikov (Kazan Scientific Center, Russia)
	13:20	5.1.2 A fracture mechanics-based fatigue life prediction model for a nickel-based superalloy	Didi Yang (Beihang University, China)
	13:40	5.1.3 Effect of mean stress on fatigue life of welded joints under variable amplitude loading	Xu Liu (TWI, UK)
Refreshments	14:20		
<u>Session 5.2</u>	Creep and Creep–Fatigue ³ / Chair Jiangfeng Wen (Lecture Room 1)		
	13:00	5.2.1 Quantification of the discontinuity of creep cracks and its effects	Michael D Jones (Imperial College London, UK)
	13:20	5.2.2 Creep deformation behavior and microstructure evolution of 20Cr-32Ni-1Nb stainless steel	Xiaofeng Guo (Inner Mongolia University of Science and Technology, China; and University of Nottingham, UK)
	13:40	5.2.3 Virtual testing of components sensitive to hydrogen assisted damage	Emilio Martínez Pañeda (Cambridge University, UK)
	14:00	5.2.4 Constraint effect on creep crack growth properties in terms of two typical nickel-base superalloys	Kun Zhang (East China University of Science and Technology, China)
Refreshments	14:20		
<u>Session 5.3</u>	Welded Structures and Codes, Standards and Procedures ³ / Chair Brian Tomkins (Lecture Room 2)		
	13:00	5.3.1 Theoretical and experimental study of failure mode transition in aluminum alloy load-carrying fillet welds	Ping Wang (Harbin Institute of Technology, China)
	13:20	5.3.2 Modelling of electron beam welding for advanced nuclear reactors	Yongle Sun (University of Manchester, UK)
	13:40	5.3.3 Research on the residual stress around an indentation after automatic ball indentation test	Jia Liu (Shandong University, China)
	14:00	5.3.4 UK programme on codes, standard and procedure needs for SMR and Gen IV reactors: phase 1 output	Peter James (Wood plc, UK)
Refreshments	14:20		
<u>Session 5.4</u>		Materials, Fracture, and Monitoring ³ / Chair Conghui Zhang (Abington Room)	
	13:00	5.4.1 Influence of temperature gradient and damage in thermal protection structure about elastic wave propagation	Chong Cheng (Nanjing University of Aeronautics and Astronautics, China)

DAY 2 (contd)			
Session	Time	Presentation	Speaker(s)
Session 5.4 contd			
	13:20	5.4.2 Critical crack dimension determination based on different stress intensity factor calculation methods for pipeline integrity management	Jiaxi Zhao (Nanjing Tech University, China)
	13:40	5.4.3 Fracture toughness testing at high speed and low temperature	Philippa Moore (TWI, UK)
	14:00	5.4.4 An improved probability ellipse imaging algorithm based on guided waves for pressure vessel	Mingliang Zhu (East China University of Science and Technology, China)
Refreshments	14:20		
Session 6.1	Creep and Creep–Fatigue ⁴ / Chair John Sharples (Lecture Room 1)		
	14:40	6.1.1 An improved creep-fatigue life model involving the cyclic softening/hardening and stress relaxation effect	Xiaocheng Zhang (East China University of Science and Technology, China)
	15:00	6.1.2 Creep crack growth analysis and life assessment of aero-engine recuperator	Pengpeng Liao (East China University of Science and Technology, China)
	15:20	6.1.3 Comparing various techniques for quantification of creep cavities	S He, TL Martin, and PEJ Flewitt (University of Bristol, UK)
Final Summary	16:00	Dr Brian Tomkins (Chairman, FESI) and Prof Shantung Tu (Chairman, CSIC)	
Session 6.2	Welded Structures and Codes, Standards and Procedures ⁴ / Chair Jiaxi Zhao (Lecture Room 2)		
	14:40	6.2.1 Numerical simulation of welding residual stress and deformation in dissimilar metal set-in nozzle joint	Dean Deng - Chongqing University, China
	15:00	6.2.2 Influence of the randomness on welding residual stress and deformation in dissimilar metal welded joints of nuclear power plants	Shuai Wang - Xi'an University of Science and Technology, China
	15:20	6.2.3 Performance study of design code rules for simplified elastic plastic fatigue analysis under combined primary and secondary stresses	David Clarkson (Strathclyde University) and Cristopher Bell (Rolls-Royce)
	15:40	6.2.4 A reinforcing method on weld joint to avoid cracking during local heat treatment for huge pressure vessels	Yun Luo (China University of Petroleum, East China, China)
Final Summary	16:00	Dr Brian Tomkins (Chairman, FESI) and Prof Shantung Tu (Chairman, CSIC)	
Session 6.3		Materials, Fracture, and Monitoring ⁴ / Chair Ramesh Chandwani (Abington Room)	
	14:40	6.3.1 The study on diffusion behaviour in 316L/BNi-2 brazed joints	Han-Yang Ma (East China University of Science and Technology, China)
	15:00	6.3.2 Research on a method to derive the dynamic fracture toughness (J _{Id}) by automatic ball indentation test	Jirui Cheng (Shandong University, China)

DAY 2 (contd)			
Session	Time	Presentation	Speaker(s)
Session 6.3 contd			
	15:20	6.3.3 Effect of ceramic coat stiffness on thermal shock resistance of plasma-sprayed thermal barrier coatings	Jibo Huang (East China University of Science and Technology, China)
	15:40	6.3.4 Assessment of subsequent high temperature tensile properties of P92 steel under various prior creep-fatigue interaction loadings	Wei Zhang (Nanjing Tech University, China)
Final Summary	16:00	Dr Brian Tomkins (Chairman, FESI) and Prof Shantung Tu (Chairman, CSIC)	

/ FESI CORPORATE MEMBERS /

