



SECOND WORLD CONGRESS ON CONDITION MONITORING

MARINA BAY SANDS, SINGAPORE

2-5 DECEMBER, 2019



Day 1

2nd December 2019

Monday

TIME	PROGRAMME		
	<i>Melati Junior Foyer</i>		
08:00 - 08:45	Registration		
	<i>Melati Junior</i>		
09:00 - 09:45	Opening Ceremony		
	<i>Melati Ballroom</i>		
09:45 - 10:30	Exhibition Opening		
10:30 - 11:00	Coffee		
	<i>Melati Junior</i>		
11:00 - 11:45	Keynote Presentation Be careful what you wait for <i>Prof. Andrew Ball</i>		
	<i>Melati Junior</i>		
11:45 - 12:30	Keynote Presentation The advantages of using measured transmission error as a tool for gear diagnostics <i>Prof. Robert Randall</i>		
12:30 - 14:00	Lunch		
	Condition Monitoring Technologies and Applications	Advanced Condition Monitoring Methodologies	Guided Waves for CM/NDT
	<i>Orchid Room 4201A & B (A)</i>	<i>Orchid Room 4301A & B (B)</i>	<i>Orchid Room 4302 (C)</i>
	Session Chair: Qingbo He	Session Chair: Andrew Ball	Session Chair: Lars Schubert
14:00 - 14:20	Mo.A.1 Gearbox condition monitoring using sparse filtering and parameterized time-frequency analysis Shiyang Wang (043)	Mo.B.1 Scanning an Acoustic Field to Locate a Fault in a Pneumatic Braking System Mark Sherstan (130)	Mo.C.1 Mode switchable guided elastic wave transducer based on piezoelectric fibre patches Bernd Koehler (029)
14:20 - 14:40	Mo.A.2 Rotating Machinery Fault Diagnosis with Weighted Variational Manifold Learning Li Quanchang (039)	Mo.B.2 Remote Physical Inspection with Contact Sensors and Sampling Using an Unmanned Aerial Vehicle Mark Sherstan (132)	Mo.C.2 Guided ultrasonic waves in glass laminate aluminium reinforced epoxy Marcel Rennoch (009)
14:40 - 15:00	Mo.A.3 Fault Diagnosis of Single Stage Bevel Gearbox by Energy Operator and J48 Algorithm Somnath Sarangi (056)	Mo.B.3 Fleet-oriented pattern mining combined with time series signature extraction for understanding of wind farm response to storm conditions Jan Helsen (121)	Mo.C.3 How temperature variations affect the propagation behaviour of guided ultrasonic waves in different materials Marcel Rennoch (010)
15:00 - 15:20	Mo.A.4 An Efficient Multi-scale Based Multifactorial Analysis Method to Extract Weak Signals for Gearbox Fault Diagnosis Yan Ruqiang (123)	Mo.B.4 Fault Diagnosis of notching machine based on embedded sensors and machine vision Ching-Yuan Chang (149)	Mo.C.4 Lamb wave propagation of S0 and A0 modes in unidirectional CFRP plate for condition monitoring: Comparison of FEM simulation with experiments Subin Kim (161)
15:20 - 15:40	Mo.A.5 Standard development and application on acoustic emission condition monitoring of amusement device Zhang Junjiao (163)	Mo.B.5 Stereovision-Based Automatic Crack Detection for 3D Bridge Inspection Po Ting Lin (150)	Mo.C.5 Transducer arrangement for baseline-free damage detection methods with guided waves Lars Schubert (037)
15:40 - 16:00	Coffee		
	Condition Monitoring Technologies and Applications	Structural Health Monitoring	Automation and AI for CM/NDT
	<i>Orchid Room 4201A & B</i>	<i>Orchid Room 4301A & B</i>	<i>Orchid Room 4302</i>
	Session Chair: Robert Randall	Session Chair: Edmund Liew	Session Chair: Christopher Lane
16:00 - 16:20	Mo.A.6 Abrasive Wear Condition Monitoring in an Axial Slurry Pump Brian Fleck (128)	Mo.B.6 Detection of a micro crack on a rotating steel shaft using noncontact ultrasonic modulation measurement Hoon Sohn (030)	Mo.C.6 Automation for NDE and Condition Monitoring: Opportunities and Challenges Christopher Lane (148)
16:20 - 16:40	Mo.A.7 Pipeline Leak Detection Techniques and Systems: Comparative Assessment of Pipeline Leak Detection Methods Mark Sherstan (131)	Mo.B.7 Theoretical analysis of scattering amplitude calculation of torsional wave on a pipe Jaesun Lee (012)	Mo.C.7 AI for automated NDT evaluation Peter Chow (145)
16:40 - 17:00	Mo.A.8 Experimental validation of the blade excitation in a shaft vibration signals Vojtech Vasicek (066)	Mo.B.8 Lamb wave excitation using a flexible photo-acoustic transducer for structural health monitoring Wei Li (063)	Mo.C.8 Source location of Acoustic Emission for anisotropic material utilizing artificial intelligence Yoshihiro Mizutani (091)
17:00 - 17:20	Mo.A.9 Fault classification of Polymer Electrolyte Membrane Fuel Cell System Based on Empirical Mode Decomposition Yousif Yahia Ahmad Abuker (112)	Mo.B.9 Mode selectivity and frequency dependence of guided waves generated by piezoelectric wafer transducers in rebars embedded in concrete Ye Lu (096)	Mo.C.9 Leveraging on IoT for Condition Monitoring as Operation Excellence Keith Kee
17:20 - 17:40	Mo.A.10 A novel method of PEM fuel cell fault diagnosis based on signal-to-image conversion Zhongyong Liu (108)	Mo.B.10 Nonlinearity Study of Damaged Spring Materials Using Guided Wave Jeongnam Kim (162)	Mo.C.10 Enhancing bearing signature using Minimum Entropy Decomposition to determine bearing faults in a Permanent Magnet Motor Surendra Suri Ganeriwala (083)
17:40 - 18:00	Mo.A.11 Condition Monitoring of Water lubricated Axial Piston Pump Georg Herborg		



SECOND WORLD CONGRESS ON CONDITION MONITORING

MARINA BAY SANDS, SINGAPORE

2-5 DECEMBER, 2019



Day 2

3rd December 2019

Wednesday

TIME	PROGRAMME		
	Melati Junior Foyer		
	Registration		
	Melati Junior		
	Keynote Presentation		
08:00 - 08:45	Assessment of RC Bridge Decks with Active/ Passive NDT <i>Prof. Tomoki Shiotani</i>		
	Melati Junior		
	Keynote Presentation		
09:00 - 09:45	In situ condition monitoring of high-speed rail tracks using diffuse ultrasonic waves: from theory to applications <i>Prof. Zhongqing Su</i>		
09:45 - 10:30	Coffee		
10:30 - 11:00	Condition Monitoring for Bearings <i>Orchid Room 4201A & B (A)</i> Session Chair: Jorge Yebra	Railway Inspection and Monitoring <i>Orchid Room 4301A & B (B)</i> Session Chair: Zhongqing Su	Advanced Condition Monitoring and Diagnostics for Smart Systems <i>Orchid Room 4302 (C)</i> Session Chair: Esko Juuso
11:00 - 11:20	Tu.A.1 Understanding bearing performance to facilitate identification of the failure cause Dario Rodriguez (138)	Tu.B.1 Wheel-rail contact forces monitoring based on space fixed-point strain of wheel web and DIC technology Wang Xiaochao (002)	Tu.C.1 Integrated performance analysis and risk management for industrial devices and machinery in varying operating conditions Esko Juuso (072)
11:20 - 11:40	Tu.A.2 Relevance of integrating lubrication as an integral part of Condition Based Maintenance David Antonelli (139)	Tu.B.2 Wireless strain sensors for dynamic stress analysis of rail steel structural integrity John Pang (016)	Tu.C.2 Seismic Risk Evaluation by Fragility Curves using Metamodel Methods Hezhen Yang (098)
11:40 - 12:00	Tu.A.3 New Bearing Technology - Fiber Optic Sensing Lars Kahlman (140)	Tu.B.3 Reliability Centred Maintenance (RCM) assessment of rail wear degradation John Pang (018)	Tu.C.3 Estimation of in-plane strain field using computer vision to capture local damages in bridge structures Jothi Saravanan Thiyagarajan(134)
12:00 - 12:20	Tu.A.4 A two-stage learning model for wayside acoustic fault detection of wheel-bearing Fang Liu (114)	Tu.B.4 A study of Atmospheric Corrosive Environment in the North East Line Tunnel Aaron Goh (034)	Tu.C.4 Fault tolerant actuation architectures for Unmanned Aerial Vehicles Mohamed Ismail (152)
12:20 - 12:40	Tu.A.5 Condition Monitoring on-board systems applied for reliable maintenance extension Of safety critical railway wheel-set bearings Victor Martinez (144)	Tu.B.5 Fatigue crack growth monitoring using Acoustic Emission: A case study on railway axles Ms Andra Stancu (089)	Tu.C.5 Towards certifiable fault-tolerant actuation architectures for UAVs Mohamed Ismail (155)
12:30 - 14:00	Lunch		
14:00 - 14:20	NDT/SHM Technologies and Applications <i>Orchid Room 4201A & B (A)</i> Session Chair: Tomoki Shiotani	CM/NDT Technologies and Applications <i>Orchid Room 4301A & B (B)</i> Session Chair: Zhongqing Su	Signal Processing: Fault Diagnosis for Complex System Monitoring <i>Orchid Room 4302 (C)</i> Session Chair: Nadine Martin
14:00 - 14:20	Tu.A.6 Application of Ultrasound Thermometry to Condition Monitoring of Heated Materials Ikuo Ihara (115)	Tu.B.6 Purpose and Practical Capabilities of the Metal Magnetic Memory Method Mohd Noor Baharin (041)	Tu.C.6 Blind source extraction of cyclostationary signals for machine diagnostics Dany Abboud (090)
14:20 - 14:40	Tu.A.7 Weld Inspection of Piping Elbow Using Flexible PAUT Probe Ikkeun Park (118)	Tu.B.7 Measurement of axial force of bolted structures based on ultrasonic testing and metal magnetic memory testing Siqi Yang (033)	Tu.C.7 Detection and localization of a gear fault using automatic continuous monitoring of the modulation functions Xavier Laval (051)
14:30 - 15:00	Tu.A.8 Laser Ultrasonic Imaging of Wavefield Spatial Gradients for Damage Detection Michael Todd (109)	Tu.B.8 Development and Application of Inner Detector in Drilling Riser Auxiliary Lines Based on Magnetic Memory Testing Xiangyuan Liu (038)	Tu.C.8 Multi-harmonic demodulation for instantaneous speed estimation using maximum likelihood harmonic weighting Cedric Peeters (050)
15:00 - 15:20	Tu.A.9 Development of an impedance-based condition monitoring system for paint breakdown Mohammad Roshun Paurobally (159)	Tu.B.9 Defect recognition and classification techniques for multi-layer tubular structures in oil and gas wells by using pulsed eddy current testing Hang Jin (004)	Tu.C.9 A Variational Bayesian approach for order tracking in rotating machines Dany Abboud (008)
15:20 - 15:40	Tu.A.10 Diagnosing intermittent faults through nonlinear analysis Samir Khan (032)	Tu.B.10 Study on Fatigue Damage of Automotive Aluminum Alloy Sheet Based on CT Scanning Yali Yang (006)	Tu.C.10 Reconstructing Speed from Vibration Response to Detect Wind Turbine Faults Kun Marhadi (031)
15:40 - 16:00	Coffee		
16:00 - 16:20	Recent Advances on Anomaly Detection for Industrial Application <i>Orchid Room 4201A & B (A)</i> Session Chair: Jean-Yves Tournet	Ultrasonic Characterisation for Material and Defects <i>Orchid Room 4301A & B (B)</i> Session Chair: David Fan	Signal Processing: Fault Diagnosis for Complex System Monitoring <i>Orchid Room 4302 (C)</i> Session Chair: Nadine Martin
16:00 - 16:20	Tu.A.11 A data-driven approach to anomaly detection and health monitoring for artificial satellites Takehisa Yairi (022)	Tu.B.11 Ultrasonic Tomography for Corrosion Mapping and Crack Characterization Zheng Fan	Tu.C.11 Non-regular sampling and compressive sensing for gearbox monitoring Dany Abboud (049)
16:20 - 16:40	Tu.A.12 Robust linear regression and anomaly detection in the presence of Poisson noise using Expectation-Propagation Yoann Altmann (067)	Tu.B.12 Characterization of Subsurface Defects in Selective Laser Melted fabricated parts using Laser Ultrasonic Technique Xingfang Cai	Tu.C.12 Change detection in smart grids using dynamic mixtures of t-distributions Allou Same (095)
16:40 - 17:00	Tu.A.13 Spacecraft Health Monitoring using a Weighted Sparse Decomposition Barbara Pilastré (005)	Tu.B.13 Three-dimensional ultrasonic imaging of surface breaking defects based on elastic reverse time migration Abhishek Saini	Tu.C.13 Unbalance detection and prediction in induction machine using recursive PCA and Wiener process Antoine Picot (014)
17:00 - 17:20	Tu.A.14 When Anomalies Meet Aero-elasticity: An Aerospace Industry Illustration of Fault Detection Challenges Philippe Goupil (015)	Tu.B.14 Subsurface Material Characterization with High Temperature Inhomogeneity Lei Hu	Tu.C.14 Automatic Fault Diagnosis in Wind Turbine Applications Dhany Saputra (035)
17:20 - 17:40	Tu.A.15 Anomaly Detection with Discrete Minimax Classifier for Imbalanced dataset or Uncertain Class Proportions Cyprien Gilet (060)	Tu.B.15 Elastic surface wave modelling in the presence of material anisotropy and prestress Peng Zuo	Tu.C.15 Blade monitoring in turbomachines using strain measurements Dany Abboud (007)
17:40 - 18:00	Tu.A.16 A Comparative Study of Statistical-based Change Detection Methods for Multidimensional and Multitemporal SAR Images Anmar Mian (053)		Tu.C.16 Measuring Effectiveness of Descriptors to Indicate Faults in Wind Turbines Dhany Saputra (036)
18:00 - 20:00	Welcome Reception		



SECOND WORLD CONGRESS ON CONDITION MONITORING

MARINA BAY SANDS, SINGAPORE

2-5 DECEMBER, 2019



Day 3

4th December 2019

Wednesday

TIME	PROGRAMME		
	<i>Melati Junior Foyer</i>		
08:00 - 08:45	Registration		
	<i>Melati Junior</i>		
09:00 - 09:45	Opening Ceremony		
	<i>Orchid Room 4201A&B and 4202</i>		
	Keynote Presentation		
09:45 - 10:30	A Research of the Appropriate Guided Wave Mode Selection for Structural Health Monitoring on Containment Liner Plate in the Nuclear Power Plant <i>Prof. Younho Cho</i>		
10:30 - 11:00	Coffee		
	<i>Orchid Room 4201A&B and 4202</i>		
11:00 - 11:45	Keynote Presentation Acoustic emission monitoring on mechanical and electrical equipment <i>Prof. Gong-tian Shen</i>		
11:45 - 12:30	Keynote Presentation Industry 4.0: why machine learning matters? <i>Prof. Tat-Hean Gan</i>		
12:30 - 12:40			
12:40 - 14:00	Lunch (Lunch talk by Olympus at Orchid Room 4303)		
	Applied Digitalisation for Industries <i>Orchid Room 4201A&B (A)</i>	Acoustic Emission Monitoring on Mechanical and Electrical Equipment <i>Orchid Room 4301A&B (B)</i>	Signal Processing and Modeling of Complex Systems <i>Orchid Room 4302 (C)</i>
	Session Chair: Tat-Hean Gan	Session Chair: Gongtian Shen	Session Chair: Giovanni Iarricco
14:00 - 14:20	We.A.1 Digital Twin of a Windfarm machinery for Condition Monitoring Tat-Hean Gan (059)	We.B.1 Acoustic Emission Monitoring for Bending Failure of Laminated Glass Ran Liu (061)	We.C.1 Analysis of Unbalanced Magnetic Pull in a multi-physic model of induction machine with an eccentric rotor Xiaowen Li (075)
14:20 - 14:40	We.A.2 Development of a Patrol System Using Augmented Reality and 360-degree Camera Osaki Keni (079)	We.B.2 The Study of Acoustic Emission Technology in Suspected Leakage Monitoring of Atmospheric Tank Floor He Yan (153)	We.C.2 Efficiency and durability of spur gears with surface coatings and surface texturing Giovanni Iarricco (160)
14:40 - 15:00	We.A.3 SKF Smart Edge 4.0 Senthil Vel R.S (141)	We.B.3 Monitoring Method of Stress State of Tubular Tower Bin Hu (058)	We.C.3 Gas-leak source identification by inverse problem analysis of infrared measurement data Daiki Shiozawa (097)
15:00 - 15:20	We.A.4 Specific small digital-twins for turbofan engines Jerome Lacaille (065)	We.B.4 Fault diagnosis of pitch system bearings on wind turbine based on acoustic emission method Guang-hai Li (054)	We.C.4 Three-dimensional reconstruction of leaked gas cloud image based on computed tomography processing of multiple optical paths infrared measurement data Masaki Uchida (088)
15:20 - 15:40	We.A.5 IoT-Web-Based Integrated Wireless Sensory Framework for Non-Destructive Monitoring and Evaluation of On-Site Concrete Conditions Abraham Olaniyi (087)	We.B.5 Acoustic Emission Signal Characteristics of Defects in Truss Structures Zhanwen Wu (151)	We.C.5 Interference of Variable Frequency (VFD) on Rotating Machinery Fault Diagnosis Surendra Suri Ganeriwala (084)
15:40 - 16:00	Coffee		
	<i>Orchid Room 4301A&B and 4302</i>		<i>Orchid Junior Room 4312</i>
16:00 - 18:00	Springer Workshop		ISCM Meeting
18:00 - 18:30			
18:30 - 22:00	Gala Dinner		



SECOND WORLD CONGRESS ON CONDITION MONITORING

MARINA BAY SANDS, SINGAPORE

2-5 DECEMBER, 2019



Day 4

5th December 2019

Thursday

TIME	PROGRAMME			
	<i>Melati Junior Foyer</i>			
08:00 - 08:45	Registration			
	<i>Orchid Room 4201A&B and 4202</i>			
09:00 - 09:45	Keynote Presentation Reflections on vibration based maintenance on rotating machinery under variable operating conditions <i>Prof. Stephan Heyns</i>			
	<i>Orchid Room 4201A&B and 4202</i>			
09:45 - 10:30	Keynote Presentation Parameterized Time-Frequency Analysis for Condition Monitoring <i>Prof. Qingbo He</i>			
10:30 - 11:00	Coffee			
	Condition Monitoring Technologies and Applications	Thermographic Testing Technologies and Applications	Acoustic and Ultrasonic Testing Applications	
	<i>Orchid Room 4201A&B</i>	<i>Orchid Room 4301A&B</i>	<i>Orchid Room 4302</i>	<i>Orchid Room 4203</i>
	Session Chair: Stephan Heyns	Session Chair: Andrew Ngo	Session Chair: Edmund Liew	
11:00 - 11:20	Th.A.1 On-line monitoring of rotor-stator rub in steam turbines Jindrich Liska (071)	Th.B.1 Non-destructive testing for heat damaged composites Chun Yong, Andrew Ngo (104)	Th.C.1 Phased Array Ultrasound and Total Focusing Method for the detection and sizing of HTHA and HIC in critical pressurized components Duncan Murray (086)	
11:20 - 11:40	Th.A.2 Novel higher order spectral technologies for condition monitoring and NDT L. Gelman, A. Ball	Th.B.2 Feasibility study of infrared thermography technique for paint thickness non-uniformity inspection Vinod Kumar S/O Sivaraja (105)	Th.C.2 Ultrasonic guided waves in unidirectional fiber-reinforced composite plates Jaesun Lee (135)	
11:40 - 12:00	Th.A.3 Induction Motor Fault Analysis using Vibration and Motor Current Signature Surendra Suri Ganeriwala (082)	Th.B.3 Research on the Detecting Method of Motor Running State of Amusement Device Based on Infrared Thermography Technology Junjiao Zhang (113)	Th.C.3 Low-velocity impact detection in composites by combination of guided wave mixing and mixing frequency peaks count technique Weibin Li (136)	APFNDT Board Meeting
12:00 - 12:20	Th.A.4 Using a Degradation Progression Signature (dP/P) to Linearize Condition-Based Data to Improve the Accuracy of Prediction Information James Hofmeister (124)	Th.B.4 Experimental Analysis on Fault Prediction of AC-contactor by Infrared Thermography Yue Yu (110)	Th.C.4 Tooth Cut Fault Identification in Fixed-axis Gearbox Using Acoustic Emission Hit-based Features and Decision Trees Alexander Prosvirin (146)	
12:20 - 12:40	Th.A.5 Implementation of Instantaneous Power Spectrum Analysis for Diagnosis of Three Phase Induction Motor Faults under Mechanical Load Oscillations; A case Study Sayedsajjad Mani (001)	Th.B.5 Special Online Vibration Application – Determination of lengths variation of stretch on chains Sven Fleischer	Th.C.5 Research on acoustic multi-source identification of tank bottom corrosion based on all-region monitoring Feng Qiu (040)	
12:40 - 14:00	Lunch			
	Condition Monitoring for Bearings	Inspection and Monitoring Guidelines		
	<i>Orchid Room 4201A&B</i>	<i>Orchid Room 4301A&B</i>	<i>Orchid Room 4302</i>	<i>Orchid Room 4203</i>
	Session Chair: Stephan Heyns	Session Chair: Edmund Liew		
14:00 - 14:20	Th.A.6 Defect Severity Measurement in Rolling Element Bearings Iain Epps (044)	Th.B.6 Research on Evaluation Method of Safety Integrity for safety-related electric control system of Amusement Ride Ran Liu (085)		
14:20 - 14:40	Th.A.7 Understanding the Influence of the Load Zone on the Vibrations Excited by Discrete Faults in Rolling Element Bearings Iain Epps (045)	Th.B.7 Study on warning system of transportable pressure equipment from regulatory perspective Zhanwen Wu (111)		
14:40 - 15:00	Th.A.8 Bearing anomaly detection based on generative adversarial network Jun Dai (042)	Th.B.8 Quality Control of Materials and Traceability Muthuramalingam Balakrishnan (003)	Certification Workshop	APFNDT Workshop
15:00 - 15:20	Th.A.9 Bearings Fault Diagnosis in Electromechanical System using Transient Motor Current Signature Analysis Sivakumar Nadarajan (073)	Th.B.9 Ultrasonic Testing of Anchor Bolts Denise Tong (119)		
15:20 - 15:40	Th.A.10 Prognostic of rolling element bearings based on early stage developing faults Mehdi Behzad (092)	Th.B.10 Intelligent Monitoring Systems with use of smart data and IIoT interface Sven Fleischer		
15:40 - 16:00	Coffee			
16:00 - 17:00	Collection of certificates			