

COMDEM™ 2017

30th International Conference Condition Monitoring and Diagnostic Engineering Management

Conference Handbook and Abstracts

Edited by:

Prof Ian Sherrington
Dr Ahmed Onsy
Prof Raj Rao

Organised by:



Condition Monitoring and Diagnostic Engineering Management

- COMADEM 2017

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First edition - June 2017

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Welcome to COMADEM 2017

It is our great pleasure to welcome all delegates to this milestone 30th International conference on condition monitoring and machine diagnostics in the form of COMADEM 2017.

This year the Organising Committee have decided to locate COMADEM at two venues in the North West of England. The historic industrial city of Preston which was at the heart of the industrial revolution in Britain in the 18th century and the quiet town of Grange-Over-Sands in Cumbria with its picturesque views and seaside location.

COMADEM 2017 aims to provide the best environment possible for delegates to be drawn away from their everyday commitments to focus, think and discuss in detail the fascinating issues facing engineers in today's rapidly developing world. These challenges include demands to reduce costs, increase productivity, reduce risk and improve quality. We hope that COMADEM 2017 provides a suitably convivial atmosphere to share knowledge and ideas on these matters.

We wish you a hugely successful and enjoyable COMADEM 2017.

COMADEM 2017 Conference Chairs

Ian Sherrington
Prof I Sherrington

Ahmed Onsy
Dr Ahmed Onsy

Raj Rao
Prof Raj Rao

Conference Committee Members

Conference Chairs

Prof Ian Sherrington (Director of the Jost Institute for Tribotechnology)

Dr Ahmed Onsy (Academic Lead Mechanical and Maintenance Engineering)

Prof Raj Rao (Director COMADEM International)

Advisory Panel

Dr. David Baglee University of Sunderland, UK

Dr. Fengshou Gu University of Huddersfield, UK

Dr. Brian Shaw Newcastle University, UK

Dr. Ling Wang University of Southampton, UK

Organizing Committee (University of Central Lancashire)

Prof Edward Smith

Prof Bogdan Matuszewski

Prof Lik Kwan Shark

Dr Hadley Brooks

Dr Darren Ansell

Dr Gonzalo Garcia

Dr Wei Quan

Dr Martin Varley

Dr Yu Zhou

Dr. Nathalie Renevier

Conference Management (University of Central Lancashire)

Elizabeth Roberts – UCLan Conference Officer

Ghazanfar Ali – Graduate Intern

COMADEM 2017 Conference Partners:



Institution of Mechanical Engineers



Center for Intelligent Maintenance Systems



The European Lubricants Industry Magazine



MFPT Society



COMADEM



University of Maryland CALCE



PHM Prognostics Health Management Society



University of Huddersfield



Cranfield University, IVHM, Boeing



Aeronautical and Mechanical Testing Centre

About the Jost Institute for Tribotechnology

The Jost Institute was formed in 2002 with support of Professor H. Peter Jost who is widely acknowledged as the founder of the subject of tribology. The Institute activities include undergraduate / Postgraduate degree teaching, short course training, conference operation and industrial research / consultancy. The Institute also provides administrative support for the International Tribology Council (ITC).

Key themes for research activity at the Jost Institute include:

- Measurement of tribological variables (lubricant film thickness, friction, wear, lubricant leakage, etc.)
- Fluid film lubrication
- Condition monitoring and intelligent maintenance
- Tribotronics
- Surface engineering

The Institute has a strong focus on Maintenance and offers a range of taught undergraduate and postgraduate awards for full time or part study:

- BEng (Hons) Mechatronics and Intelligent Machines (Top Up)
- BEng Mechanical Maintenance (Top up)
- MSc Maintenance Engineering
- MSc Mechatronics and Intelligent Machines
- MSc Intelligent Maintenance Engineering

If you would like to discuss opportunities for study or research collaboration, or would like information on other matters, please feel free to contact the Institute Director, Professor Ian Sherrington.

Telephone: +44 (0)1772 893322
Email: isherrington@uclan.ac.uk
Web: www/uclan/triboltechnology

About COMADEM International



Prof. Raj Rao, Founder of COMADEM and COMADEM International

The philosophy of Condition Monitoring and Diagnostic Engineering Management (COMADEM) is to continuously improve and enhance the quality, reliability, safety, availability, maintainability and performance of all assets (both physical and human) for as long as possible and to derive maximum benefits with minimum risk. This means continuous knowledge discovery, generation and dissemination and proactively and holistically managing all assets. Its aim is to bring industries and academia to work in harmony with a view to shape our future and create value for the benefit of all mankind.

COMADEM's Mission Statement: To totally commit ourselves to provide the best possible care and services in the interdiscipline of Condition Monitoring and Diagnostic Engineering Management to all our valued customers, who seek our advice and expertise in order to continuously improve performance and to add value to their assets. Also, to provide continuous education, training, R&D, by offering the most up-to-date and the best available tools, techniques, strategies and human resources available at our disposal.

Publishing Activities:

- Publishers of the International Journal of COMADEM
- Publishers of COMADEM Conference proceedings and technical books

Consultants in: Higher Education Development, Asset Maintenance Management, Engineering/Product Design/R&D, Research & Development, Collaborative University – Industry partnership, Winners of the DTI SMART Award 1995.

Areas of Excellence: Proactive Integrated Maintenance Management, Root Cause & Failure Analysis of Industrial Assets, Environmental and Energy Management Audit, Application of IT to solve industrial problems, R&D in leading edge technology, Providers of Higher Education & Training Programs, Organisers of successful, International Congresses & Exhibitions, Publishers of Journals and Technical Books

Plenary Speaker details

Plenary Session One – Monday 10th July 2017

Keynote Address:

Prof Mike Barnes

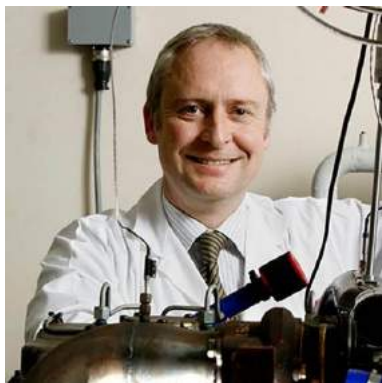


Professor Mike Barnes is a Professor in the Power Conversion group in the School of Electrical and Electronic Engineering. He graduated with the BEng and PhD degrees from the University of Warwick, Coventry, UK in 1993 and 1998 respectively, where he was also a research associate and then lecturer. He joined the University of Manchester Institute of Science and Technology (UMIST, now the University of Manchester) in 1997 as a lecturer in power electronics, and has developed research interests in High Voltage DC Transmission, Offshore Wind Energy and Flexible AC Transmission Systems. He is an Associate Editor of the IEEE Transactions on Energy Conversion. Mike's research in the School of Electrical and Electronic Engineering is in the field of electrical energy conversion and power electronics. Mike's current research focuses on using high-current high-voltage semiconductor circuits to reduce electrical power consumption and/or improve the use of renewable energy generation. At present the main focus of his research is to use advanced systems models, coupled with intelligent control of these power electronic converters, to achieve reductions in size and cost of power electronics systems in off-shore wind applications, smart grids and High-voltage DC transmission.

Plenary Session Two - Tuesday, 11th July 2017

Keynote Address: The Monitoring of Gear Deterioration Using Vibration Demodulation Techniques

Prof Andrew Ball



Professor Andrew Ball is a Professor of Diagnostic Engineering and Pro Vice Chancellor for Research & Enterprise. Graduating from the University of Leeds in 1987, Andrew attained a first class honours in Mechanical Engineering, his degree having been sponsored by BICC Electronic Cables. Andrew went on to work for Ruston Gas Turbines and then gained a sponsorship from WM Engineering and the Royal Navy, enabling him to join the Total Technology Scheme at the University of Manchester, from which he graduated in 1991 with a PhD in Machinery Condition Monitoring. Over the 25 years that he has been an academic, Andrew has established the largest independent plant maintenance and diagnostics research group in the world. The Centre for Efficiency and Performance Engineering aims to advance the scope and sensitivity of machinery fault detection and diagnosis and of plant performance and emissions monitoring. The philosophy is to use routine instrumentation where possible, to apply sophisticated signal processing, to develop non-intrusive on-line techniques and to focus upon incipient faults with the intention of predicting future behaviour. The group is recognised internationally for its specialism in Machinery condition monitoring, fault detection and diagnosis, Signal processing, feature extraction and pattern recognition, Vibro-acoustic and vibro-impact analysis, Model based and predictive methods, Sensor development & novel measurement, Non-intrusive parameter estimation.

Plenary Session Three - Wednesday, 12th July 2017

Keynote Address: Discovering the symptomatic impulses for rolling bearing fault detection

Prof Jing Lin

Professor Jing Lin is the Director of Sha'anxi Key Laboratory of Mechanical Product Quality Assurance and Diagnostics. Jing Lin, received the B.Sc., M.Sc. and PhD degrees in mechanical engineering respectively in 1993, 1996 and 1999, all from Xi'an Jiaotong University, Xi'an, Sha'anxi Province, China. He was a postdoc and a research associate from July 2001 to August 2003, respectively, at the University of Alberta, Edmonton, AB, Canada, and the University of Wisconsin – Milwaukee, Milwaukee, WI, USA. From September 2003 to December 2008, he was working as research scientist at the Institute of Acoustics, Chinese Academy of Sciences under the sponsorship of the Hundred Talents Program of Chinese Academy of Sciences. He obtained the Distinguished Young Scholar Funding from National Natural Science Fund in 2011 and won the State Natural Science Award in 2013. From January 2009 to present, he is working as a professor at School of Mechanical Engineering, Xi'an Jiaotong University, Xi'an, Sha'anxi Province, China. He is now the Changjiang Distinguished Professor, The Ministry of Education of China. His research field includes machinery condition monitoring, fault diagnosis and prognosis, vibration analysis and non-stationary signal processing.

Plenary Session Four – Thursday, 13th July 2017

Keynote Address: Application of Machine Learning for Machine Monitoring

Prof Bogdan Matuszewski



Professor Bogdan Matuszewski is a professor of computer vision in the Faculty of Science and Technology at the University of Central Lancashire and head of the Computer Vision and Machine Learning Research Group at the School of Engineering. His research interests include use of Bayesian methodology for modelling, tracking, and recognition; deformable models, variational, and partial differential equation-based methods for image analysis applied to data registration, segmentation, and interpretation; and biomedical and industrial applications of computer vision and machine learning.”

Instructions to Presenter and Sessions Chairs

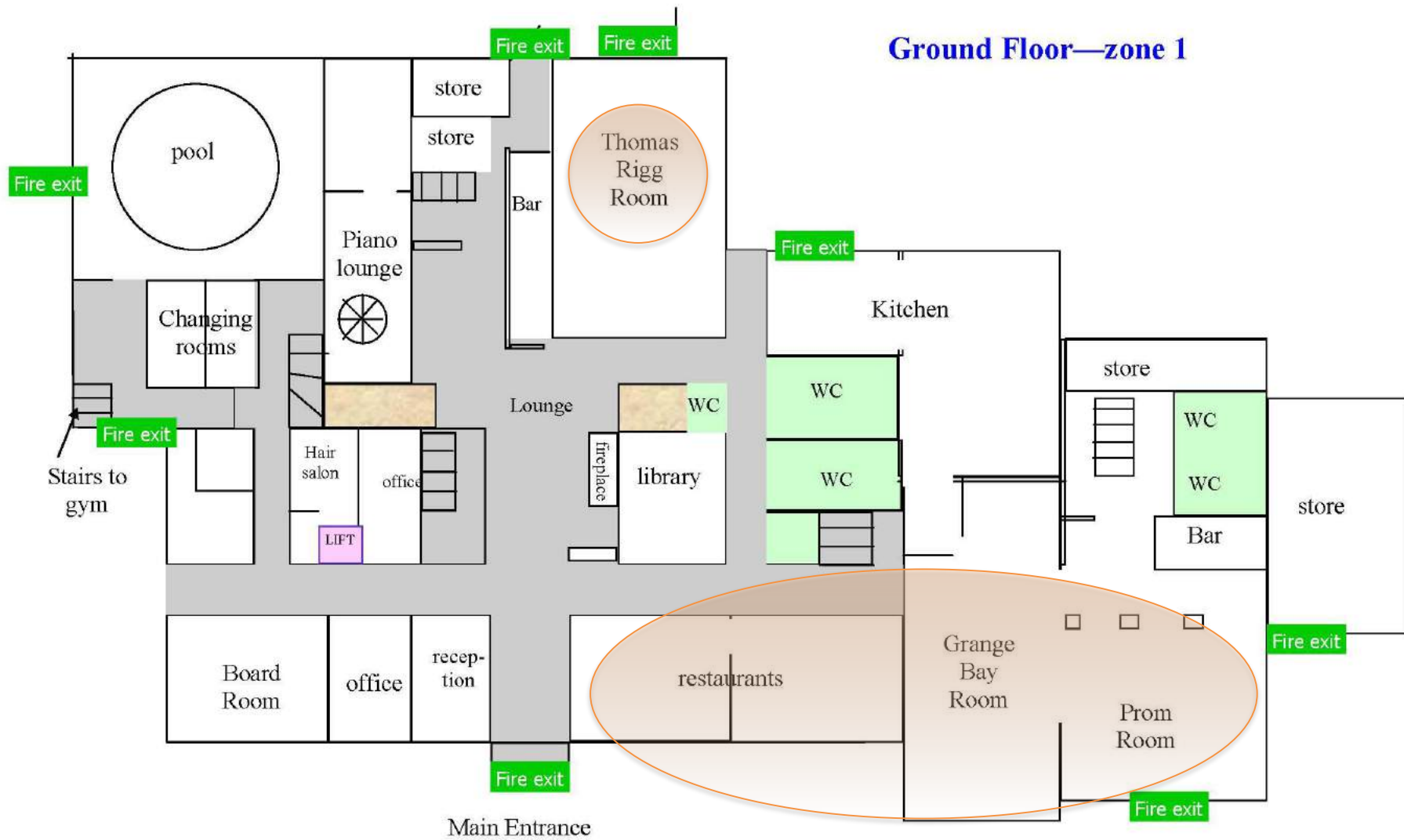
Presenters

Please go to the room where your presentation is to be made about 20 minutes before the session starts so that you can transfer your Powerpoint slides on to the presentation laptop and meet your session chair to discuss how you will be introduced before your paper is presented

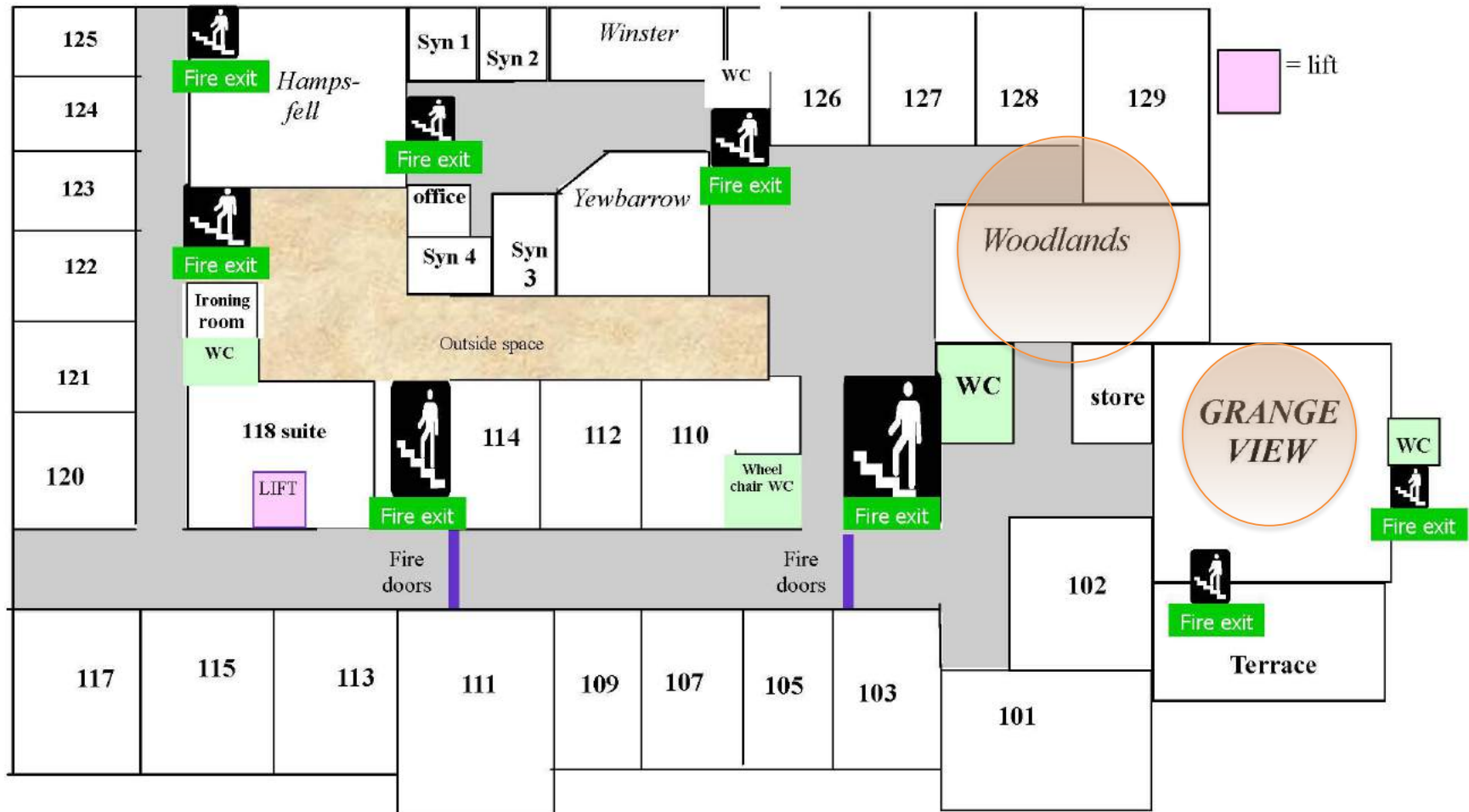
Session Chairs

Please go to the room where you will be chair of your session about 20 minutes before the session starts so that you can meet the presenters in your session chair to discuss how they would like to be introduced prior to presenting their paper.

Plan of the Conference Centre



First Floor—zone 2



Second Floor—Zone 3



Draft Presentation Programme

Tuesday, 11th July 2017The Grange Hotel, Grange over Sands, Cumbria

Time / Room	Grange View		
9.15 – 10.15	Plenary Presentation Professor Andrew Ball “The Monitoring of Gear Deterioration Using Vibration Demodulation Techniques”		
10.15 – 10.30	Company presentations		
10.30 – 11.00	Morning break		
11.00 – 12.40	Thomas Rigg Modelling Analysis and Optimisation	Grange View Sensor Technology and Damage Detection	Woodlands Monitoring, Diagnosis, Prognosis and Health Management
11.00 – 11.20	“The Impact of Maintenance Duration on the Downtime of an Offshore Wind Farm - Alternating Renewal Process” <i>H. Seyr, A. Barros, M. Muskulus</i>	“Monitoring of Water Contamination in Gearbox Lubricant Based on Vibration Analysis” <i>F. Khaldoon, Fengshou Gu, Andrew D Ball</i>	“Wind Turbine Fault Detection By Monitoring Its Performance Using High-Resolution SCADA Data” <i>Elena Gonzalez, Julio J Melero</i>
11.20 – 11.40	“Condition Monitoring of High-Sided Tractor-Trailer Units under Gusty Crosswind Conditions” <i>Abubaker Abdulwahab, Rakesh Mishra</i>	“Weak Fault Diagnosis of Bearings Using a Cyclic Deconvolution Method by combining SMHD with MEDA” <i>Yonghao Miao, Ming Zhao, Jing Lin, Jianming Wang</i>	“Estimation Method Of Static Contact Wire Height By Using Contact Force On Commercial Line” <i>Takayuki Usuda and Mitsuru Ikeda</i>
11.40 – 12.00	“Improved Multiwavelet Denoising using Local Sliding Window for Multi-fault Detection of Rotating Machinery” <i>Jing Yuan, Jianhua Zhao, Ying Wei, Yu Zhou</i>	“Quantitative Detection of Steel Surface Cracks Based on Eddy Current Pulsed Thermography” <i>Jiaojiao Ma, Xiaoyu Xu, Dong Zhen, Hao Zhang, Zhanqun Shi</i>	“Feature Selection For Remaining Useful Life Prediction Of Spur-Bearings” <i>Kerman Lopez de Calle, S. Ferreiro, E. Konde, I. Bravo, A. Arnaiz</i>
12.00 – 12.20	“Contributions of Structural Health Monitoring to the Reliability of an Offshore Fixed Platform” <i>E. Etebu and M. Shafiee</i>	“Cluster-based Thresholding of Phased Array Ultrasound for Anomaly Detection in Weld Inspection” <i>Bryan Cassels, Lik Kwan Shark, S. J. Mein, Andrew Nixon, Ray Turner</i>	“Active Lubricant Condition Monitoring” <i>Jesvin George, Ahmed Onsy</i>

12.20 – 12.40	<p>“Experimental and Simulation Study on Impact Faults and Vibration Characteristics of Gear Box”</p> <p><i>H. Zhipeng, G. Tao, W. Hui, W. Chen</i></p>	<p>“A Novel Two-Stage Approach to On"-Site Condition Monitoring”</p> <p><i>V. Leavers</i></p>	
12.40 – 13.40	Lunch break		
13.40 – 15.00	<p>Thomas Rigg Modelling Analysis and Optimisation</p>	<p>Grange View Sensor Technology and Damage Detection</p>	<p>Woodlands Monitoring, Diagnosis, Prognosis and Health Management</p>
13.40 – 14.00	<p>“Fault Detection Method Based on the Condition Indicators of Compressive Sampling for the Gearbox in Helicopter”</p> <p><i>Zhe Cheng, Niaoqing Hu, Lun Zhang</i></p>	<p>“Influence Of Instrument Channel Uncertainties On Monitoring System”</p> <p><i>Pablo Rodolfo Crubellier</i></p>	<p>“Incipient Fault Diagnosis And Monitoring System For Planetary Gear Train”</p> <p><i>Linghan Gao, Liming Wang, Yimin Shao, Lei Yin, Minggang Du, Yang Yang, Cao Zheng</i></p>
14.00 – 14.20	<p>“Planetary gearbox diagnosis based on Morlet wavelet filter and time synchronous averaging”</p> <p><i>Xiaoqiang Xu, Ming Zhao, Jing Lin, Chang Yan, Jun Zhou, Jianming Wang</i></p>	<p>“Detecting Bearing Faults Using Ensemble Average Autocorrelation Based Stochastic Subspace Identification”</p> <p><i>Yuandong Xu, Pieter A Van Vuuren, Xiaoli Tang, Fengshou Gu, Andrew Ball</i></p>	<p>“Spline Wavelet Based Filtering For Denoising Vibration Signals Generated By Rolling Element Bearings”</p> <p><i>Jarno Kansanaho, K Saarinen, T. Kärkkäinen</i></p>
14.20 – 14.40	<p>“Advanced Prognosis Method for Circuit Breaker Condition Monitoring”</p> <p><i>Niya Chen, RongRong Yu, Jiayang Ruan, Xin Zhang</i></p>	<p>"Theoretical Elucidation Of Pass Frequency For Multi-Flaws In A Roller Bearing And Precise Diagnosis Method Using Decision Tree And Support Vector Machine"</p> <p><i>Yuto Mizushima, Liuyang Song, Shyohei Ota, Peng Chen</i></p>	<p>“Fault Diagnosis Of Early-Stage Spalling Fault Based On A Hybrid Approach”</p> <p><i>Liming Wang, Yimin Shao, Minggang Du, Yang Yang, Fang Guo, Zheng Cao</i></p>
14.40 – 15.00	<p>“Application of Stochastic Resonance and Variational Mode Decomposition in Rolling Bearing Fault Diagnosis”</p> <p><i>Jianqiao Wang, Shuai Chen, Chao Zhang, Liming Deng, Juan Hu</i></p>	<p>“Online Tool For Early Failure Detection On Rolling Bearings”</p> <p><i>Oscar Garcia Peyrano, Matias Marticorena, Danilo Babaglio, Martin Garrett</i></p>	<p>“Bogie Speed Estimation and Signal Source Separation via Rail Vibration Analysis”</p> <p><i>Fengshou Gu, Yuandong Xu, Fulong Liu, Andrew D. Ball</i></p>
15.00 – 15.30	Afternoon refreshments		
15.30 – 16.50	<p>Thomas Rigg</p>	<p>Grange View</p>	<p>Woodlands</p>

	End User Applications & Maintenance in Industry	Sensor Technology and Damage Detection	Monitoring, Diagnosis, Prognosis and Health Management
15.30-15.50	<p>“Wind Turbine Bearing fault detected with IAS combined with Harmonic Product Spectrum”</p> <p><i>André Hugo, Khelf Ilyes, Leclère Quentin</i></p>	<p>“Combining Model-based Monitoring and a Physics of Failure Approach for Wind Turbine Failure Detection”</p> <p><i>J. Tautz-Weinert, S. J. Watson</i></p>	<p>“Condition Monitoring Of Guiding Systems By Means Of Model-Based Virtual Sensors”</p> <p><i>Mikel Gonzalez, Oscar Salgado, Jan Croes, Bert Pluymers, Wim Desmet</i></p>
15.50-16.10	<p>“A Comparison Of Architectures And Evaluation Metrics For Streaming Machine Learning Algorithms In Industry 4.0 Applications”</p> <p><i>Carl Berry, Geoff Hall, Bogdan Matuszewski, Lik-Kwan Shark</i></p>	<p>“On The Feasibility Of Inferring The Applied Mechanical Loading Of A Conveyor System Test Rig From Monitored System Parameters”</p> <p><i>Owen Gebler, Ben Hicks, Andrew Harrison, Matt Barker</i></p>	<p>“A Kernel Fisher Discriminant Framework Based on Kernel Entropy - Component Analysis for Fault Diagnosis of Rolling Bearings”</p> <p><i>Hongdi Zhou, Tielin Shi, Wuxing Lai, Guanglan Liao</i></p>
16.10-16.30	<p>“Measurement Uncertainty When Thermal Effects On A Machine Tool Using Non-Contact Displacement Transducers”</p> <p><i>S Gorton, S Fletcher, D Clough, A P Longstaff</i></p>	<p>“Assessing Uneven Milling Cutting Tool Wear using Component Measurement”</p> <p><i>Zinah J Ahmed, Paul W. Prickett, Roger I. Grosvenor</i></p>	<p>“Drill Bit Wear Monitoring Based On Vibration Signal Analysis”</p> <p><i>Hamed Rafezi, Ferri Hassani</i></p>
16.30-16.50	<p>“Condition Monitoring Programme For Argentinian Research Reactors Based On Vibration Measurements”</p> <p><i>Fernando Gabriel Orge</i></p>	<p>“Potential Use Cases of LWIR Cameras for Automation and Process Monitoring”</p> <p><i>B. Eichentopf, R. Baltes, N. Fietz, K. Nienhaus</i></p>	<p>“Detection and Diagnosis of Reciprocating Compressor Faults Based on Modulation Signal Bispectrum Analysis of Vibrations”</p> <p><i>U. Haba, K. Brethee, O. Hassin, F. Gu, A. Ball</i></p>
16.50 – 18.30	Break		
18.30 – 22.00	Social event – Barbeque at Lakeland Motor Museum		

Wednesday 12th July 2017[The Grange Hotel, Grange over Sands, Cumbria](#)

Time / Room	Grange View		
9.15 – 10.15	Plenary Presentation Professor Jing Lin “Discovering the symptomatic impulses for rolling bearing fault detection”		
10.15 – 10.30	Company presentations		
10.30 – 11.00	Morning break		
11.00 – 12.40	Thomas Rigg Modelling Analysis and Optimisation	Grange View End User Applications & Maintenance in Industry	Woodlands Monitoring, Diagnosis, Prognosis and Health Management
11.00 – 11.20	“A Novel Technique to Reduce Measurement Errors due to Flow –Sensor Interactions in Multi-Sensor Conductivity Probes” <i>Dlir Albarzenji, Rakesh Mishra</i>	“Effect of Manufacturing Method of a Centrifugal Fan Hub on its Heat Dissipation Characteristics” <i>James Swinton, Taher Eshaafi, Taimoor Asim, John Irons, Rakesh Mishra</i>	“Prognosis of Gears Reaming Life Using Adaptive Monitoring Techniques” <i>Ahmed Onsy</i>
11.20 – 11.40	Experimental Model-Based Approach to Integrated Prognostic and Health Management of a Non-Linear Liquid Level System” <i>Ali A G Al-Khafaji, Roger I Grosvenor</i>	“Effect of Surface Roughness on the Aerodynamic Performance of an Articulated Truck-Trailer Assembly” <i>Kuldip Ubbi, Taimoor Asim, Rakesh Mishra</i>	“Monitoring Shaft Fatigue Failures Using Online Monitoring Techniques” <i>Ahmed Abufarouk, Ahmed Onsy, Ian Sherrington</i>
11.40 – 12.00	“Monitoring Gear Surface Failure using Acoustic Emission Model Based System” <i>Ahmed Onsy</i>	“Abrasive spur gear wear prediction model: utilization of the statistical design of experiment” <i>S. Raadnuj, K Wangveera</i>	“An Intelligent Maintenance System for Driverless Cars” <i>Jephin Philip, Ahmed Onsy, Martin Varley</i>
12.00 – 12.20	“Effects of the Fluid Film on the Frequency Response Function of the Structure of Journal Bearings” <i>Y. Kang, H Zhang, Dongzhen, Z. Zhi, F Gu</i>	“Degradation-based preventive maintenance policy for railway transport systems” <i>Fateme Dinmohammadi, B. Alkali, M. Shafiee</i>	“Condition Based Maintenance of Industrial Gearboxes by 24/7 Monitoring of Oil Quality, Oil Aging and Additive Consumption: Identification of Critical Operation Conditions and Determination of the Next Oil Exchange” <i>M. Mauntz, J. Peuser</i>
12.20 – 12.40	“Misalignment identification Based on Dynamic Time Warping for Planetary Gearbox” <i>Z. Shen, H. Li, D. Zhen, H. Zang, Z. Shi, F Gu</i>	“Condition based maintenance decision making: A practical approach for marine vessels” <i>L. G. Huber, S. Kunz, M. Dettling</i>	“Value Based Management In Centrifugal Compressors Maintenance” <i>X. Liang, F Duan, D. Mba, I Bannett</i>

12.40 – 13.40	Lunch break		
13.40 – 15.00	Thomas Rigg Advanced Signal Processing and Big Data	Grange View End User Applications & Maintenance in Industry	Woodlands Monitoring, Diagnosis, Prognosis and Health Management
13.40 – 14.00	“Enhanced phase waterfall plot method for identifying weak harmonics” <i>Jingsong Xie, Yanyang Zi, Wei Cheng, Xiaoqian Li, Wenxiang Ding</i>	“Research on Spectrum Components of Planetary Gearbox Vibration Signals by Dynamic Modelling and Filtering” <i>Lun Zhang, Niaoqing Hu, Fengshou Gu, Zhe Cheng</i>	“Pneumatic Liquid Automatic Balancer For High-Speed Rotating Machinery” <i>Pan Xin, Zhu Qun-xiong, Wu Hai-qi, Gao Jin-ji</i>
14.00 – 14.20	“Bearing Fault Feature Detecting Based On Nonlocal Means Denoising” <i>Yanxue Wang, Shuilong He, Suofeng Zhang</i>	“Research of optimal placement of Sensor for Wind Turbine based on Immune Algorithm” <i>Zhongyue Song, Haiyang Li, Hao Zhang, Dong Zhen, Zhanqun Shi</i>	“Active Condition Monitoring System for micro-scale helical gearboxes” <i>Sanchit Chandile, Ahmed Onsy</i>
14.20 – 14.40	“The Influence Of B-Value Distribution In Damage Evaluation Of Structural Material Based On AE Parametric Analysis” <i>M. T. I. Khan, S. Tsurumaru and R. Hidaka</i>	“A Review of Methods for Condition Monitoring of Large, Slow-rotating Bearings” <i>M. Hemmer, T. I. Wang, K. g. Robbersmyr</i>	“The Impact of Effective Prognostic Techniques (Predicting Remaining Useful Life) on Successful Implementation of Total Productive Maintenance in the Power Industry” <i>Abdulla Alseiri, Peter Farrell</i>
14.40 – 15.00	“A Self-Adaptive AE Signal Classification Method On Energy Domain” <i>Yong Zhou, Da Wang, Li Lin</i>	“Design and Development of a Multipurpose Test Rig for Intelligent Lip Seals” <i>W. Sinzara, H. Brooks, I. Sherrington, A. Onsy, E. H, Smith M. J. Yanez, L. Marquez</i>	“Fault Diagnosis of a Polymer Electrolyte Membrane Fuel Cell Using Bayesian Network” <i>L. Mao, L. Jackson, B. Davies</i>
15.00 – 15.30	Afternoon refreshments		

15.30 – 16.50	Thomas Rigg Advanced Signal Processing and Big Data	Grange View Maintenance Engineering / Risk, Safety Assessment and Management	Woodlands Monitoring, Diagnosis, Prognosis and Health Management
15.30-15.50	<p>“The Way Cyber Physical Systems Will Revolutionise Maintenance”</p> <p><i>Erkki Jantunen, Unai Gorostegui, U. Zurutuza, F. Larrinaga, M. Alnano, G. Di Orio, P. Malo C. Hegedus</i></p>	<p>“Research and Application of Risk Based Reliability Centered Maintenance Decision-making information System in a Nitrogen Fertilizer Plant”</p> <p><i>Qingfeng Wang, Huaqing Wang, Jinji Gao, Lidong He, Xingguo Lei</i></p>	<p>“Weighted Narrowband Envelope Spectrum and its Application to Bearing Fault Diagnosis”</p> <p><i>J. Duan, T. Shi, J. Xuan, H. Zhou</i></p>
15.50-16.10	<p>“Nuisance attribute projection based channel compensation technique and its application in bearing performance degradation assessment”</p> <p><i>Huiming Jiang, Jin Chen, Guangming Dong</i></p>	<p>“The role of ISO 55000 Standard in Asset Integrity”</p> <p><i>Ibifuro Ithemgbulem, David Baglee, Alan Wheatley</i></p>	<p>“Study on Feature Extraction of Bearing Incipient Weak Fault Based on Dictionary Learning”</p> <p><i>G. Dong, J. Chen, H. Yuan</i></p>
16.10-16.30	<p>“Dynamic State Recognition Using CNN-RNN Processing Pipeline”</p> <p><i>E. R. Anas, B. J. Matuszewski</i></p>	<p>“How Can SMES Adopt a New Method To Advanced Maintenance Strategies? A Case Study Approach”</p> <p><i>David Baglee, Unai Gorostegui, Erkki Jantunen, Pankaj Sharma, Jaime Campos</i></p>	<p>“A Brief Rule Based Expert System for Fault Diagnosis of Marine Diesel Engines”</p> <p><i>Xiaojian. Xu, Ximping Yan, Chenxing Sheng, Chenqing Yuan, Dongling Xu, Jianbo Yang</i></p>
16.30-16.50		<p>“The role of cultural development when improving maintenance practice in the automotive supply chain”</p> <p><i>Derek Dixon, Kenneth Robson, David Baglee, Alan Wheatley</i></p>	<p>“Model-Based Voltage and Current (MBVI) Systems – A Relatively New Approach to Condition Monitoring, Diagnosis, Prognosis and Health Management; What it is, How I Works and Why it is a Natural Fit with Industrie 4.0”</p> <p><i>G Walker, P Upsall</i></p>
17.10-17.30		<p>“Research on the Data Management Software Development of Hazard and Operability Analysis”</p> <p><i>F. Wang, Y. Guan, Q. Hou, L Shi</i></p>	
17.30 – 18.30	Break		
18.30 – 22.00	Buffet dinner on Lakeland steamer		

Thursday 13th July 2017

[University of Central Lancashire, Preston](#)

Time/ Room	
9.00	Buses from hotel to UCLan
10.00	Morning refreshments
10.30	Plenary Presentation Professor Bogdan Matuszewski “Application of Machine Learning for Machine Monitoring” (Greenbank Lecture Theatre)
11.30	Award presentation and closing ceremony
12.00	Lunch
13.00	Departure

Social Event 11th July 2017 Barbecue at the Lakeland Motor Museum and Café Ambio

<https://www.lakelandmotormuseum.co.uk/>



Propose Programme:

18.30	Delegates arrive at museum for private tour and complimentary	Arrival drinks
19.30	Barbeque served in the café and, weather permitting, on the river	Terrace
23.00	Depart	

Arrival drinks

The arrival drinks will be served in the foyer of the museum, a choice of red, white or rose wine and elderflower presse will be offered.

Bar

The bar will be on a cash basis, but a voucher system could be used if you wish to give any complimentary drinks, offering a selection of wines, beers, limited spirits, mixers and soft drinks.

The Barbecue

The barbecue will be cooked outside by chefs, with delegates collecting the food from the barbecue area and finding their seats in the restaurant or terrace. All meat will be Al Hall and vegetarian dishes cooked on a separate barbecue.

Beef and lamb sausages, Traditional beef burgers, Cajun spiced chicken fillet, Tuna with ginger and chilli marinade, Charred Haloumi(v), Mediterranean, vegetables(v), Couscous and vegetable salad, Classic coleslaw, Tossed salad, Spanish rice salad

Welcome

Special events, celebrations, corporate functions and evening cruises - a cruise on Windermere is perfect for any occasion.

Give your guests a trip to remember on board a private boat whilst enjoying the finest views of the Lakeland Fells.

Planning your private charter



Our 'steamer' fleet

Our iconic 'steamers' are available to hire during the summer months from 7pm onwards for a minimum of 2 hours



MV Teal

The Teal is one of the largest of our traditional 'steamers' and has been carrying passengers on Windermere since 1936. The ship has three decks that include a refreshment bar, licensed bar, view stations, centrally heated saloons and toilets. All facilities excluding toilets and licensed bar are wheelchair accessible on this boat. The outdoor promenade top deck is perfect for entertainment and a dancefloor area.

Capacity

- With catering/entertainment: around **180 people**
- Without catering/entertainment: around **220 people**

Cost

- Prices vary with time of day - see price sheet below.

 photos online



MV Swan

The sister ship to the Teal joined the fleet in 1938 and is identical except for internal furnishings, layout and lower deck windows. The ship has three decks that include a refreshment bar, licensed bar, view stations, centrally heated saloons and toilets. All facilities excluding toilets and licensed bar are wheelchair accessible on this boat. The outdoor promenade top deck is perfect for entertainment and a dancefloor area.

Capacity

- With catering/entertainment: around **180 people**
- Without catering/entertainment: around **220 people**

Cost

- Prices vary with time of day - see price sheet.

 photos online



MV Tern


Our oldest 'steamer' has been operating since 1891 and has a design based upon a Canadian Canoe. Often referred to as our most beautiful 'steamer' it includes 2 decks both indoors and outdoors. Passenger facilities include a licensed bar and refreshments, a centrally heated saloon and toilets. Unfortunately the facilities on this boat are not wheelchair accessible.

Capacity

- With catering/entertainment: around **80 people**
- Without catering/entertainment: around **100 people**

Cost

- Prices vary with time of day - see price sheet.

 photos online