

COMDEM 2012

Programme

The 25th INTERNATIONAL CONGRESS on
Condition Monitoring and Diagnostic Engineering Management

**Sustained Prosperity through Proactive Monitoring,
Diagnosis, Prognosis & Management**

18 – 20 June 2012
The University of Huddersfield,
Huddersfield, UK



www.comadem2012.org

Welcome

Dear Delegates

Welcome to the 25th International Congress on Condition Monitoring and Diagnostic Engineering Management (COMADEM 2012) sponsored by The University of Huddersfield and DNV Software.

The theme of the Congress is Sustained Prosperity through Proactive Monitoring, Diagnosis, Prognosis and Management and we are delighted to have authors from more than 30 different countries coming to share their knowledge and expertise. This year's proceedings will appear in the Open Access Journal of Physics: Conference Series (JPCS), part of the IOP Conference Series and are fully citable and free to download.

Over the next three days you will have the opportunity to hear speeches by high profile experts from industry and academia as well as listen to over 130 peer-reviewed papers and view posters covering a variety of different themes including Electronic Applications, Bearing Technology, Automotive and Rail Engineering, Turbomachinery, Flow Diagnostics and Manufacturing Systems Diagnostics.

We have also created an interesting social programme that will give plenty of opportunities for informal networking and includes a visit to the National Coal Mining Museum, one of Britain's oldest working mines.

We would like to thank the authors for their dedicated work and for sharing their knowledge and expertise that continues to make COMADEM such a prestigious event. We would also like to thank the reviewers and members of the International Committee.

We hope that your visit to Huddersfield is both an enjoyable and rewarding experience and that this year's Congress will continue the COMADEM tradition of delivering significant benefit to the condition monitoring and diagnostics community worldwide.

Best wishes

Professor Rakesh Mishra
Professor Andrew Ball
Dr Fengshou Gu
Professor B.K.N Rao

Conference Organisers

Conference Chairpersons

Professor Rakesh Mishra, University of Huddersfield
Professor Andrew Ball, University of Huddersfield
Dr Fengshou Gu, University of Huddersfield
Professor B.K.N Rao, COMADEM International

Programme Committee Chairpersons

Professor Rakesh Mishra, University of Huddersfield
Dr. Fengshou Gu, University of Huddersfield
Dr. Taimoor Asim, University of Huddersfield
Dr. Ralph Rollins, University of Huddersfield
Mr Richard Crompton, University of Huddersfield

Organising Committee Chairpersons

Mr Simon McKenna, University of Huddersfield
Mrs Gwen Wood, University of Huddersfield
Mrs Liz Rees, University of Huddersfield
Mrs Marie-Claire Micuta, University of Huddersfield

Contact details

COMADEM 2012 is taking place at:

The University of Huddersfield
Quayside (level 2 Central Services Building) and Business School
Queensgate
Huddersfield
HD1 3DH

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Table of contents

	Page
Welcome	1
Conference organisers	2
Overall programme	4 - 5
Parallel sessions – Monday 18 June, am	6 - 7
Parallel sessions – Monday 18 June, pm	8 - 9
Parallel sessions – Tuesday 19 June, am	10 - 11
Parallel sessions – Tuesday 19 June, pm	12 - 13
Parallel sessions – Wednesday 20 June	14 - 15
Optional tours, workshop and lecture	16
Keynote speakers' profiles	17 – 20
Sponsors	21
Exhibitors	22 - 23
Social programme	24
Map of Huddersfield	25
Map of the University of Huddersfield campus	26

Overall programme

Sunday 17 June (Day 0)		
Time	Details	Location
17.00	Coaches depart Cedar Court Hotel for University	Outside the main hotel entrance
17.30 – 19.00	Drinks reception	Business School
19.15	Coaches depart University for Cedar Court Hotel	Wakefield Road car park

Monday 18 June (Day 1)		
Time	Details	Location
07.45, 08.10, 08.20	Coaches depart Cedar Court Hotel for University	Outside the main hotel entrance
08.00 – 09.10	Registration and refreshments	Quayside
09.10 – 09.20	Welcome to COMADEM by Professor Raj Rao	Diamond Jubilee Lecture Theatre, Business School
09.20 – 09.30	Welcome to the University of Huddersfield by Professor Andrew Ball	Diamond Jubilee Lecture Theatre, Business School
09.30 – 10.00	Keynote 1: The Escalating Need for Condition Monitoring in the Mechanical Power Transmission Industry, Graham Penning, David Brown Gears	Diamond Jubilee Lecture Theatre, Business School
10.00 – 10.30	Keynote 2: It's Time to Take a Step Back and Have a Good Look at Things, Professor Andrew Ball, University of Huddersfield	Diamond Jubilee Lecture Theatre, Business School
10.30 – 11.00	Refreshments	Quayside
11.00 – 12.20	Session 1 (parallel sessions)	Business School (BSG/19,20,21,22,23,35)
12.20 – 13.40	Lunch	Quayside
13.40 – 14.10	Keynote 3: Biofuels - a Contribution to Sustainable Development, Prof Jürgen Krahl, Coburg University	Diamond Jubilee Lecture Theatre, Business School
14.20 – 15.00	Session 2 (parallel sessions)	Business School (BSG/19,20,21,22,23,35)
15.00 – 15.30	Refreshments	Quayside
15.30 – 16.30	Session 3 (parallel sessions)	Business School (BSG/19,20,21,22,23,35)
17.00	Coaches depart University for Cedar Court Hotel	Wakefield Road car park
18.45	Coaches depart Cedar Court Hotel for National Coal Mining Museum	Outside the main hotel entrance
19.00	Coaches depart University for National Coal Mining Museum	Wakefield Road car park
19.30 – 21.30	National Coal Mining Museum tour and dinner (see page 24 for more details)	
21.30 – 22.30	Networking at the National Coal Mining Museum	
22.45	Coaches depart National Coal Mining Museum	

* See page 16 for full details of the optional workshop, visits and lecture

Tuesday 19 June (Day 2)		
Time	Details	Location
07.45, 08.10, 08.20	Coaches depart Cedar Court Hotel for University	Outside the main hotel entrance
08.00 – 09.00	Refreshments	Quayside
09.00 – 09.30	Keynote 4: Paving the Way for Integrity Management of the Future Gas Infrastructure, Dr. Menno van Os, DNV KEMA Energy & Sustainability	Diamond Jubilee Lecture Theatre, Business School
09.30 – 10.00	Keynote 5: Through-life Engineering Services: Challenges and Opportunities, Professor Rajkumar Roy, Cranfield University	Diamond Jubilee Lecture Theatre, Business School
10.00 – 10.30	Refreshments	Quayside
10.30 - 12.10	Session 4 (parallel sessions) Meeting the Needs of Energy Efficient Low Cost Housing workshop*	Business School (BSG/19,20,21,22,23,35) (BSG/34)
12.10 – 14.00	Lunch	Quayside
12.40 – 13.50	Optional visits: Tour of the Centre of Diagnostic Engineering* Tour of 3M Buckley Innovation Centre*	Please book your place at the registration desk before 9am
14.00 – 14.30	Keynote 6: Wind Turbine Inspection and Intelligent Monitoring, Professor Gui Yun Tian, Newcastle University	Diamond Jubilee Lecture Theatre, Business School
14.40 – 15.20	Session 5 (parallel sessions)	Business School (BS/G19,20,21,22,23,35)
15.20 – 15.50	Refreshments	Quayside
15.50 – 16.50	Session 6 (parallel sessions)	Business School (BS/G19,20,21,22,23,35)
17.15	Coaches depart University for Cedar Court Hotel	Wakefield Road car park
19.00	Coaches depart University for Cedar Court Hotel	Wakefield Road car park
19.15 – 23.00	Conference dinner	Cedar Court Hotel
23.00	Coaches depart Cedar Court Hotel for University	

Wednesday 20 June (Day 3)		
Time	Details	Location
07.45, 08.10, 08.20	Coaches depart Cedar Court Hotel for University	Outside the main hotel entrance
08.00 – 09.00	Refreshments	Quayside
09.00 – 09.30	Keynote 7: A Vision for Intelligent Railway Infrastructure and Operations for 2050, John Amoores, Network Rail	Diamond Jubilee Lecture Theatre, Business School
09.30 – 10.00	Keynote 8: Integration of Multiple Data Sources for Diagnosis and Prognosis: An Information Fusion Approach, Professor Diego Galar, Luleå University of Technology	Diamond Jubilee Lecture Theatre, Business School
10.00 - 10.30	Refreshments	Quayside
10.30 – 12.10	Session 7 (parallel sessions)	Business School (BS/G19,20,21,22,23,35)
12.20 – 12.40	Formal close	Diamond Jubilee Lecture Theatre, Business School
12.40 – 14.00	Lunch	Quayside
14.00 – 14.30	Refreshments	Business School
14.30 – 15.30	Professor Rakesh Mishra: “Destined to Flow” Professorial Lecture *	Diamond Jubilee Lecture Theatre, Business School

Parallel sessions – Monday 18 June am

- 08.00 Registration and refreshments
 09.10 Welcome and keynote speeches 1 & 2 (Diamond Jubilee Lecture Theatre, Business School)
 10.30 Refreshments

	BSG/19 (capacity 60)	BSG/20 (capacity 60)	BSG/21 (capacity 60)
Session 1	Session 1a: Electronic Applications – part 1	Session 1b: Bearing Technology – part 1	Session 1c: Automotive and Rail Engineering – part 1
	Chair: Andrew Ball	Chair: B K N Rao	Chair: Michael Lipsett
11.00	Tolkku – a Toolbox for Decision Support from Condition Monitoring Data	Pump Coupling and Motor Bearing Damage Detection using Condition Monitoring at DTSP	Utilization of a Hardware-In-The-Loop-System for Controlling the Speed of an Eddy Current Brake
	O Saarela, M Lehtonen, J Halme, A Aikala, K Raivio	H M Bari, A A Deshpande, P S Jalkote, S S Patil	V Kramer, R Mishra, P Brauneis, K Schmidt
11.20	Study of the Influence Factors on the Accuracy of Sound Field Reconstruction Based on Wave Superposition Method	Bearing Defect Detection and Diagnosis using a Time Encoded Signal Processing and Pattern Recognition Method	A Modern Diagnostic Approach for Automobile Systems Condition Monitoring
	R Wang, J Chen, J Q Li	S Abduslam, P Raharjo, F Gu, A Ball	M Selig, Z Shi, A Ball, K Schmidt
11.40	A New Method of Reliability Evaluation Based on Wavelet Information Entropy for Equipment Condition Identification	A Comparative Study Of the Monitoring of a Self Aligning Spherical Journal using Surface Vibration, Airborne Sound and Acoustic Emission	The Influence of Tyre Contact Patch and on the Stopping Distance of Automotive Vehicles
	Z J He, X L Zhang, X F Chen	P Raharjo, B Tesfa, F Gu, A D Ball	M Selig, A Ball, J Ash, K Schmidt
12.00		Research of Two Different Impulsive Faults of Rolling Element Bearing	Fallback Level Concepts for Conventional and By-Wire Automotive Brake Systems
		Z Jiang, C Xing, K Feng J Gao	H Retzer, R Mishra, A Ball and K Schmidt

12.20 Lunch

Parallel sessions – Monday 18 June am

Registration and refreshments	08.00
Welcome and keynote speeches 1 & 2 (Diamond Jubilee Lecture Theatre, Business School)	09.10
Refreshments	10.30

BSG/22 (capacity 60)	BSG/23 (capacity 80)	BSG/35 (capacity 40)	
Session 1d: Renewable Energy	Session 1e: Turbomachinery – part 1	Session 1f: Gear Box Diagnostics – part 1	Session 1
Chair: Yimin Shao	Chair: Xiandong Ma	Chair: Fengshou Gu	
Intelligent System for a Remote Diagnosis of a Photovoltaic Solar Power Plant	Fault Detection of Reciprocating Compressors using a Model from Principles Component Analysis of Vibrations	Optimising Sensor Location for an Enhanced Gearbox Condition Monitoring System	11.00
M A Sanz-Bobi, A Muñoz San Roque, A de Marcos, M Bada	M Ahmed, F Gu, A D Ball	H Alkhadafe, A Al-Habaibeh, S Daihzong, A Lotfi	
Experimental Research on Vibration Reduction of High-Rise Petrochemical Equipment	Fault Diagnosis using Audio and Vibration Signals in a Circulating Pump	Design of Embedded Wireless Sensor and its Soft Encapsulation for Embedded Monitoring of Helicopter Planetary Gear Set	11.20
W Hao, L D He, J Chang, W F Han, L X Wang	P Henríquez, J B Alonso, M A Ferrer, C M Travieso, G Gómez	G Qin, N Hu	
Implementation of an On-line Monitoring System for Transmitters in a CANDU Nuclear Power Plant	The Piston Compressor: The Methodology of the Real-Time Condition Monitoring	Fault Detection of Gearbox from Inverter Signals using Advanced Signal Processing Techniques	11.40
A Labbe, G Abdul-Nour, R Vaillancourt, D Komljenovic	A P Naumenko, V N Kostyukov	C Pislaru, M Lane, A D Ball, F Gu	
Solar Power Plant Performance Evaluation: Simulation and Experimental Validation	Statistical and Time Domain Signal Analysis of the Thermal Behaviour of Wind Turbine Drive Train Components under Dynamic Operation Conditions		12.00
E M Natsheh, A Albarbar	K Nienhaus, M Hilbert, R Baltes, C Bernet		

Lunch	12.20
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Parallel sessions – Monday 18 June pm

13.40 Keynote speech 3 (Diamond Jubilee Lecture Theatre, Business School)

	BSG/19 (capacity 60)	BSG/20 (capacity 60)	BSG/21 (capacity 60)
Session 2	Session 2a: Electronic Applications – part 2	Session 2b: Bearing Technology – part 2	Session 2c: Automotive and Rail Engineering – part 2
	Chair: Fengshou Gu	Chair: Andrew Ball	Chair: Michael Lipsett
14.20	Design of an Iterative Auto-tuning Algorithm for a Fuzzy PID Controller	Bearing Performance Degradation Assessment Using Linear Discriminant Analysis and Coupled HMM	Condition Management of Marine Lube Oil and the Role of Intelligent Sensor Systems in Diagnostics
	B I Saeed, B Mehrdadi	T Liu, J Chen, X N Zhou, W B Xiao	M Knowles, D Baglee
14.40	Investigation of Doppler Effects on High Mobility OFDM-MIMO Systems with the Support of High Altitude Platforms (HAPs)	Failure Diagnosis and Prognosis of Rolling – Element Bearings using Artificial Neural Networks: A Critical Overview	
	H A Mohammed, M J N Sibley, P J Mather	B K N Rao, P Srinivasa Pai, T N Nagabushana	

15.00 Refreshments

Session 3	Session 3a: Electronic Applications – part 3	Session 3b: Bearing Technology – part 3	Session 3c: Automotive and Rail Engineering – part 3
	Chair: Karsten Schmidt	Chair: B K N Rao	Chair: Crinela Pislaru
15.30	A Comparative Study of Misalignment Detection using a Novel Wireless Sensor with Conventional Wired Sensors	Online Adaptive Learning of Left-Right Continuous HMM for Bearings Condition Assessment	Optical Strain Measurement for Fault Detection in Haul-truck Tires
	L Arebi, F Gu, A Ball	F Cartella, T Liu, S Meganck, J Lemeire, H Sahli	A Kotchon, D S Nobes, M G Lipsett
15.50	Electrical Motor Current Signal Analysis using a Modulation Signal Bispectrum for the Fault Diagnosis of a Gearbox Downstream	Stability Analysis of a Turbocharger Rotor System Supported on Floating Ring Bearings	Influences of the Chemical Structure of Entrainers on the Activity Coefficients in Presence Of Biodiesel
	M. Haram. T Wang, F Gu, B.Tesfa	H Zhang, Z Q Shi, D Zhen, F S Gu, A D Ball	A Mäder, A Fleischmann, Ye Fang, W Ruck, J Krahl
16.10	Enhancement Detection of Characteristic Signal using Stochastic Resonance by Adding a Harmonic Excitation	Development of Acoustic Emission (AE) Based Defect Parameters for Slow Rotating Roller Bearings	Design of Mine Ventilators Monitoring System Based on Wireless Sensor Network
	N Hu, L Hu, X Zhang, F Gu, A Ball	K Nienhaus, F D Boos, K Garate and R Baltes	S Fu, H Song

Parallel sessions – Monday 18 June pm

Keynote speech 3 (Diamond Jubilee Lecture Theatre, Business School)

13.40

BSG/22 (capacity 60)	BSG/23 (capacity 80)	BSG/35 (capacity 40)	
Session 2d: Diagnostic Management – part 1	Session 2e: Turbomachinery – part 2		Session 2
Chair: Nalinaksh Vyas	Chair: Karsten Schmidt		
Obsolescence Risk Assessment Process Best Practice	Application of Novelty Detection Methods to Health Monitoring and Typical Fault Diagnosis of a Turbopump		14.20
F J Romero Rojo, R Roy, S Kelly	L Hu, N Hu, B Fan, F Gu		
Development of Plant Condition Measurement – The Jimah Model	A New Application of Support Vector Machine Method: Condition Monitoring and Analysis of Reactor Coolant Pump		14.40
R F Evans, M Syuhaimi, M Mazli, N Kamarudin, F M Othman	Qinghu Meng, Qingfeng Meng, W Feng		

Refreshments

15.00

Session 3d: Diagnostic Management – part 2	Session 3e: Turbomachinery – part 3		Session 3
Chair: Nalinaksh Vyas	Chair: Andrew Ball		
Criteria and Model for Assessing and Improving Information Technology Maturity within Maintenance	A Remote Condition Monitoring System for Wind- turbine based DG systems		15.30
M Kans, K Ehsanifard and A Moniri	X Ma, G Wang, P Cross, X Zhang		
TOMCAT: An Obsolescence Management Capability Assessment Framework	Improved Blade Tip Timing in Blade Vibration Monitoring with Torsional Vibration of the Rotor		15.50
F J Romero Rojo, P Baguley, N Shaikh, R Roy, S Kelly	C Liu, D Jiang		
Using Heuristic Search for Optimizing Maintenance Plans	CM & HM: a USA Perspective		16.10
T Mutanen	C Pomfret		

Parallel sessions – Tuesday 19 June am

09.00 Keynote speeches 4 & 5 (Diamond Jubilee Lecture Theatre, Business School)
 10.00 Refreshments

	BSG/19 (capacity 60)	BSG/20 (capacity 60)	BSG/21 (capacity 60)
Session 4	Session 4a: Electronic Applications – part 4	Session 4b: Bearing Technology – part 4	Session 4c: Automotive and Rail Engineering – part 4
	Chair: Niaoqing Hu	Chair: Surapol Raadnui	Chair: C K Mukhopadhyay
10.30	Partial Discharge Location using Unsynchronized Radiometer Network for Condition Monitoring in HV Substations – A Proposed Approach	Application of Phase Space Warping on Damage Tracking for Bearing Fault	CargoCBM – Feature Generation & Classification for a Condition Monitoring System for Freight Wagons in Journal of Physics: Conference Series
	JMR de Souza Neto, ECT de Macedo, JS da Rocha Neto, E G da Costa, S A Bhatti, I A Glover	B Fan, N Hu, L Hu, F Gu	C Gericke, M Hecht
10.50	Wavelet Transform Processing Applied to Partial Discharge Evaluation	The Effect of External Dynamic Loads on the Lifetime of Rolling Element Bearings: Accurate Measurement of the Bearing Behaviour	Estimation of the Friction Coefficient between Wheel and Rail Surface using Traction Motor Behaviour
	E C T Macedo, D B Araujo, E G da Costa, R C S Freire, W T A Lopes, I S M Torres, J M R de Souza Neto, S A Bhatti, I A Glover	W Jacobs, R Boonen, P Sas, D Moens	Y Zhao, B Liang, S Iwnicki
11.10	The Development of an Electronic System to Continually Monitor, Indicate and Control, 'Belt Slippage' in Industrial Friction 'V' Belt Drive Transmission Systems	Spectral Kurtosis Applied to Acoustic Emission In Bearings	Haul Truck Tire Dynamics Due to Tire Condition
	R E Brown	B Eftekharijad, M Alssayh, A Addali, D Mba	R Vaghar Anzabi , D S Nobes, M G Lipsett
11.30	Interactive Graphics on Large Datasets Drives Remote Condition Monitoring on a Cloud	Investigation into Various Techniques of Cyclic Spectral Analysis for Rolling Element Bearing Diagnosis Under Influence of Gear Vibrations	An Investigation of the Acoustic Characteristics of a Compression Ignition Engine Operating with Biodiesel Blends
	S Hickinbotham, J Austin, J McAvoy	G Dong, J Chen	D Zhen, B Tesfa, X Yuan, R Wang, F Gu, A D Ball
11.50	Smart Technique for Induction Motors Diagnosis by Monitoring the Power Factor Using Only the Measured Current	Diagnostic Evaluation of Rolling Behavior in Ball Bearings by Ultrasonic Technique	Modern Techniques for Condition Monitoring of Railway Vehicle Dynamics
	R A Shnibha, A S Albarabar	T Wakabayashi	R W Ngigi, C Pislaru, A Ball, F Gu

12.10 Lunch

Parallel sessions – Tuesday 19 June am

Keynote speeches 4 & 5 (Diamond Jubilee Lecture Theatre, Business School)
Refreshments

09.00
10.00

BSG/22 (capacity 60)	BSG/23 (capacity 80)	BSG/35 (capacity 40)	
Session 4d: Diagnostic Management – part 3	Session 4e: Manufacturing Systems Diagnostics – part 1	Session 4f: Flow Diagnostics – part 1	Session 4
Chair: Diego Galar	Chair: Yimin Shao	Chair: Nalinaksh Vyas	
An Improved Segmentation-based HMM Learning Method for Condition-based Maintenance	From Time Series Measurements to Rules of Causality	Pressure Drop in Capsule Transporting Bends Carrying Spherical Capsules	10.30
T Liu, J Lemeire, F Cartella, S Meganck	K J Raivio	T Asim, R Mishra, I Ido, K Ubbi	
Product Quality Modelling Based on Incremental Support Vector Machine	The Technique of Entropy Optimization in Motor Current Signature Analysis and its Application in the Fault Diagnosis of Gear Transmission	Magnitude and Sign Correlations in Conductance Fluctuations of Horizontal Oil Water Two-Phase Flow	10.50
J Wang, W Zhang, B Qin, W Shi	X Chen, Lin Liang, F Liu, G Xu, A Luo, S Zhang	L Zhu, N D Jin, Z K Gao, Y B Zong, L S Zhai, Z Y Wang	
Fault Tree Analysis for Maintenance Needs	Implementing Wavelet Packet Transform for Valve Failure Detection using Vibration and Acoustic Emission Signals	Optimal Design of Capsule Transporting Pipeline carrying Spherical Capsules	11.10
J Halme, A Aikala	H Y Sim, R Ramli, M A K Abdullah	T Asim, R Mishra, K Ubbi	
Valuing the Human Asset – The Impact of University Placements on Academic Performance and Graduate Employment Amongst Management Students	Investigation of AE Features in Grinding	Optimisation of a Horizontal Capsule Transporting Pipeline carrying Cylindrical Capsules	11.30
R Brooks	X Chen, A Mohamed, A Oluwajobi	T Asim, R Mishra, L Kollar, K Ubbi	
		Effect of the Length and Diameter of a Cylindrical Capsule on the Pressure Drop in a Horizontal Pipeline	11.50
		T Asim, R Mishra, A Nearchou, K Ubbi	

Lunch

12.10

Parallel sessions – Tuesday 19 June pm

14.00 Keynote speech 6 (Diamond Jubilee Lecture Theatre, Business School)

	BSG/19 (capacity 60)	BSG/20 (capacity 60)	BSG/21 (capacity 60)
Session 5	Session 5a: Electronic Applications – part 5	Session 5b: Aerospace Engineering	Session 5c: Automotive and Rail Engineering – part 5
	Chair: Niaoqing Hu	Chair: Surapool Raadnui	Chair: Michael Lipsett
14.40	A Comparison of Different Techniques for Induction Motor Rotor Fault Diagnosis	Modeling and Fault Simulation of Propellant Filling System	Emissions from Diesel Engines using Fatty Acid Methyl Esters from Different Vegetable Oils as Blends and Pure Fuel
	A Alwodai, F Gu, A D Ball	Y Jiang, W Liu, X Hou	O Schröder, A Munack, J Schaak, C Pabst, L Schmidt, J Bünger, J Krahl
15.00			Concentration Measurements of Biodiesel in Engine Oil and in Diesel Fuel
			A Mäder, M Eskiner, C Burger, W Ruck, M Rossner, J Krahl

15.20 Refreshments

Session 6	Session 6a: Electronic Applications – part 6	Session 6b: Bearing Technology – part 5	Session 6c: Automotive and Rail Engineering – part 5
	Chair: Karsten Schmidt	Chair: Niaoqing Hu	Chair: Crinela Pislaru
15.50	Modelling and Simulation of Dynamic Wheel-Rail Interaction using a Roller Rig	Electrical Pitting of Grease-Lubricated Rolling and Sliding Bearings: A Comparative Study	Developing RCM Strategy for Hydrogen Fuel Cells Utilizing On Line E-Condition Monitoring
	A Anyakwo, C Pislaru, A Ball, F Gu	S Raadnui, S Kleesuwan	D Baglee, M J Knowles
16.10	Case-Based Reasoning Combined with Statistics for Diagnostics and Prognosis	An Intelligent fault diagnosis method of Rolling Bearings based on regularized kernel Marginal Fisher Analysis	Automated Misfire Diagnosis in Engines using Torsional Vibration and Block Rotation
	T Olsson, P Funk	L Jiang, T Shi, J Xuan	J Chen, R B Randall, B Peeters, H Van der Auweraer, W Desmet
16.30	Remaining Useful Life Estimation using Time Trajectory Tracking and Support Vector Machines		A Clamping Force Measurement System for Monitoring the Condition of Bolted Joints on Railway Track Joints and Points
	D Galar, U Kumar, J Lee, W Zhao		B Tesfa, G Horler, F Al Thobiani, F Gu, A D Ball

Parallel sessions – Tuesday 19 June pm

Keynote speech 6 (Diamond Jubilee Lecture Theatre, Business School)

14.00

BSG/22 (capacity 60)	BSG/23 (capacity 80)	BSG/35 (capacity 40)	
Session 5d: Diagnostic Management – part 5	Session 5e: Miscellaneous		Session 5
Chair: Diego Galar	Chair: Joan Lu		
A Real-time Monitoring System for the Pipeline Network of Coalmine	Structural Integrity Monitoring During Hydrotesting of Pressure Vessels with Notches using Acoustic emission & infrared Thermography Techniques		14.40
H L Zhao, J K Wang and X Jiang	T Jayakumar, C K Mukhopadhyay, N Kulasegaran, T K Haneef, S Bagavathiappan, B P C Rao, J Philip		
The Measurement of Maintenance Function Efficiency Through Financial KPIs	Diagnostic Approach for an Automated Filling Machine: Setup and Preliminary Results		15.00
D Galar, A Parida, U Kumar, D Baglee, A Morant	M Cotogno, G Prata, M Cocconcelli, C Fantuzzi, R Rubini		

Refreshments

15.20

Session 6d: Miscellaneous	Session 6e: Turbomachinery – part 4	Session 6f: Gear Box Diagnostics – part 2	Session 6
Chair: Rakesh Mishra	Chair: Xiandong Ma	Chair: Yimin Shao	
The New School-Based Learning to Work-Based Learning Transition Module: A Practical Implementation in the Technical & Vocational Education System in Bahrain	Risk Assessment of Failure Modes of Gas Diffuser Liner of V94.2 Siemens Gas Turbine by FMEA Method	A Hybrid Prognostic Model for Multistep Ahead Prediction of Machine Condition	15.50
M Alseddiqi, R Mishra, C Pislaru	H M Rafsanjani, A Nasab	D Roulias, T H Loutas, V Kostopoulos	
Comparison of Flow Characteristics at Rectangular & Trapezoidal Channel Junctions	Computational Fluid Dynamics based Fault Simulations of a Vertical Axis Wind Turbines	Gearbox Bearing Fault Simulation using a Finite Element Model Reduction Technique	16.10
A K Pandey, R Mishra	K Park, T Asim, R Mishra	L Deshpande, N Sawalhi, R B Randall	
Identification of Critical Speeds of Rotating Machines Using On-Shaft Wireless Vibration Measurement	Diagnosis of Centrifugal Pump Faults Using Vibration Methods	Two Stage Helical Gearbox Fault Detection and Diagnosis based on Continuous Wavelet Transformation of Time Synchronous Averaged Vibration Signals	16.30
M E Elnady , J K Sinha, S O Oyadiji	A Albraik, F Althobiani, F Gu, A Ball	F Elbarghathi, T Wang, D Zhen, F Gu, A Ball	

Parallel sessions – Wednesday 20 June

09.00 Keynote speeches 7 & 8 (Business School Lecture Theatre)
 10.00 Refreshments

	BSG/19 (capacity 60)	BSG/20 (capacity 60)	BSG/21 (capacity 60)
Session 7	Session 7a: Electronic Applications – part 7	Session 7b: Structural Health Monitoring	Session 7c: Miscellaneous
	Chair: Fengshou Gu	Chair: Crinela Pislaru	Chair: Joan Lu
10.30	A New Method to Detect and Correct the Critical Errors and Determine the Software-Reliability in Critical Software-System	Dynamic Modelling and Experimental Study of Cantilever Beam with Clearance	BREEAM Excellent: Business Value Vs Employee Morale
	O Krini, J Börcsök	B Li, W Jin, L Han, Z He	N Turner, M Arif
10.50	Data Transmission via Erasure Type Channels Protected by Linear Codes	Response of Shrink Fitted Assemblies to the Dynamic Torsion	Bearing Fault Detection in Induction Motor-Gearbox Drivetrain
	H D Wacker, P Pendli, J Börcsök	D R Rajakumar	J Cibulka, M K Ebbesen, K G Robbersmyr
11.10	Sophisticated Calculation of the 1oo4-architecture for Safety Related Systems Conforming to IEC61508	Risk Based Inspection Methodology and Software Applied to Atmospheric Storage Tanks	Applying an Innovative Educational Program for the Education of Today's Engineers
	A Hayek, M Al Bokhaiti, M H Schwarz, J Boercsoek	P Topalis, G Korneliussen, J Hermanrud, Y S Teo	M Kans
11.30		Prediction of Presence and Severity of Damages using Experimental Mode Shape	An Evaluation Quality Framework for Analysing School-Based Learning (SBL) to Work-Based Learning (WBL) Transition Module
		R Shanker, S Bhalla, A Gupta	M Alseddiqi, R Mishra, C Pislaru
11.50		Fatigue Life Assessment of Structures Using Electro-Mechanical Impedance Technique	
		S Bhalla	

12.20 Formal close (Diamond Jubilee Lecture Theatre, Business School)

Parallel sessions – Wednesday 20 June

Keynote speeches 7 & 8 (Diamond Jubilee Lecture Theatre, Business School)
Refreshments

09.00
10.00

BSG/22 (capacity 60)	BSG/23 (capacity 80)	BSG/35 (capacity 40)	
Session 7d: Diagnostic Management – part 5	Session 7e: Manufacturing Systems Diagnostics – part 2	Session 7f: Flow Diagnostics	Session 7
Chair: Aditya Parida	Chair: Karsten Schmidt	Chair: Nig-De Jin	
Developing a “Research Test Bed” to introduce innovative Emission Testing Technology to improve New Zealand’s Vehicle Emission Standards	Between “Ferrogram” and “Filtergram” Makers is the Multiple Centrifiltergram Maker: A New Technique for Solid Debris Separation	A Study on Optimal Sizing of Pipeline Transporting Equi-sized Particulate Solid- Liquid Mixture	10.30
S J Cox	S Raadnui	T Asim, R Mishra, S Pradhan, K Ubbi	
Development and Displacement in India: Reforming the Economy towards Sustainability	Five-Axis Machine Tool Condition Monitoring Using dSPACE Real-Time System	Experimental Verification of the Four-Sensor Probe Model for Flow Diagnosis in Air Water Flow in Vertical Pipe	10.50
K Siddiqui	S Sztendel, C Pislaru, AP Longstaff, S Fletcher, A Myers	S Pradhan, R Mishra	
E-Learning and Context Aware e-Support Software for Maintenance	Auto-positioning Mount System for Stereoscopic Imaging on Variable Distances	Validation of CFD Predictions using Process Data obtained from Flow through an Industrial Control Valve	11.10
N Papathanasiou, C Emmanouilidis, P Pistofidis, D Karampatzakis	Zh Yordanov , E Fuchs, S Löser, J Börcsök	J Green, R Mishra, M Charlton, R Owen	
O&M Efficiency Model: A Dependability Approach	Vibration Characteristics Analysis of a 20-high Sendzimir Mill with Localized Defect on the Working Roller	Local Analysis of Flow Conditions within a Geometrically Complex Control Valve Trim using CFD	11.30
D Galar, U Kumar, P Sandborn, A Morant	R Y He, J Liu , Y L Yuan, Y M Shao, H F Xiao	J. Green, R Mishra, M Charlton, R Owen	
State of Offsite Construction in India - Drivers and Barriers			11.50
M Arif, D Bendi, A Sawhney, K C Iyer			

Formal close (Diamond Jubilee Lecture Theatre, Business School)

12.20

Optional Tours, Workshop and Lecture

Meeting the Needs of Energy Efficient Low Cost Housing: Bringing Multi-Disciplinary Technologies Together **Tuesday 19 June 10.30 – 12.30, Room BSG/34**

This workshop will focus on highlighting the issues surrounding the delivery of low cost housing on a mass scale around the world. It will discuss issues dealing with process, systems and technologies and bringing everything together. This workshop is jointly funded by UK India Education and Research Initiative and Higher Education Academy.

3M Buckley Innovation Centre Tour **Tuesday 19 June at 12.40 and 13.10 (maximum of 20 people per tour)** **Please book your place at the reception desk**

The 3M Buckley Innovation Centre is a £12 million flagship project and will be a landmark innovation project for the University, signalling a new approach to university-business engagement.

The facility, which is funded through the European Regional Development Fund, aims to establish a unique environment to support spin-in and spin-out companies linked to the University to foster growth and economic regeneration within Huddersfield and the region.

Centre of Diagnostic Engineering Tour **Tuesday 19 June at 12.40 and 13.10 (maximum of 30 people per tour)** **Please book your place at the reception desk**

Headed by Prof Andrew Ball, the Centre for Diagnostic Engineering at the University of Huddersfield is the largest independent group of its type in the world. Its mission is to tackle real-world problems using the most practical and accessible means possible.

The Centre specialises in vibro-acoustics, vibro-impacts, instantaneous angular speed and instantaneous electric current analysis, diagnostic model development, signal processing, feature extraction, pattern recognition, sensor development, non-intrusive parameter estimation and model based fault diagnosis.

Professor Rakesh Mishra: “Destined to Flow” Professorial Lecture **Wednesday 20 June 14.30** **Diamond Jubilee Lecture Theatre, Business School**

Professor Rakesh Mishra will deliver his professorial lecture on various facets of fluid flows encountered in practice and will discuss the many experimental, analytical and computational tools used to understand and analyse difficult flows for better design of fluid handling systems.

Keynote Speakers' Profiles

Graham Michael Penning OBE Hon DSc
Group Technology Director
David Brown Gear Systems, Huddersfield

Currently Group Technology Director of David Brown Gear Systems, Graham Penning has been a director and general manager of the David Brown Group of companies for the last 20 years. He was appointed to his current position in 2009 when he established the David Brown Gear Academy to retain and develop the core skills of the business. This innovative institution has now enrolled over 800 students on to its courses and in conjunction with the University of Huddersfield has launched a unique MSc in Gear Technology.

Always taking an active interest in the greater engineering and academic community, Graham's achievements were recognised at the highest national level in 2005 when he was awarded the position of Officer of the Order of the British Empire by HM Queen Elizabeth II for services to the UK Defence Industry. In 2006 he accepted the honorary award of Doctor of Science from the Senate and Council of the University of Huddersfield. He is Chairman of the British Gear Association, a fellow of the RSA, and in December 2011 was appointed Visiting Professor of Practice at Newcastle University.

Professor Andrew Ball
Pro-Vice-Chancellor for Research and Enterprise
University of Huddersfield, UK

Andrew graduated from the University of Leeds with a first class honours degree in Mechanical Engineering, having been sponsored by BICC Fibre Optic Cables. He worked for Ruston Gas Turbines and the Ministry of Defence and was sponsored by WM Engineering and the Royal Navy on the Total Technology Scheme at the University of Manchester, where he gained a PhD in Machinery Condition Monitoring.

Andrew took the Shell Lectureship in Maintenance Engineering at the University of Manchester in 1991, and was promoted to Professor of Maintenance Engineering in 1999. He was Chair of the Research Committee at the Manchester School of Engineering from 1999 to 2003 and thereafter was Head of School from 2003 to 2004. In 2005 he became Dean of Graduate Education and in late 2007 moved to the University of Huddersfield as Professor of Diagnostic Engineering and Pro-Vice-Chancellor for Research and Enterprise.

In addition to his Pro Vice-Chancellor role, Andrew is the Director of the Centre for Efficiency and Performance Engineering – the largest independent engineering diagnostics R&D activity in the world. The Centre specialises in machinery condition and performance monitoring, data analysis, signal processing and sensor systems design and development.

Andrew is the author of well over 200 technical and professional publications, and he has spent a large amount of time lecturing and consulting to industry in all parts of the world. He has to date graduated more than 40 research degrees, has acted as external examiner at over 20 universities, and has held honorary positions at three overseas institutions. He is also a Registered Expert Witness in three countries.

Professor Jürgen Krahl

Vice President of Coburg University of Applied Sciences and Arts, Germany

Professor Jürgen Krahl studied Chemistry at the Technical University (TU) Braunschweig, Germany. In 1993 he gained his PhD entitled “Measurement of biodiesel exhaust gas emission from agricultural tractors in comparison with fossil diesel fuel” and in 2001 he was awarded ‘Venia Legendi’ for Ecological Chemistry.

In 1997 Professor Krahl became Professor of Chemistry at Coburg University of Applied Sciences and Arts and that same year was appointed Head of the Steinbeis Technology Transfer Centre for Biofuels and Environmental Measurement Techniques, Coburg and Research Leader for Biofuels at the German Federal Agricultural Research Centre, Braunschweig.

Professor Krahl became the Vice President of Coburg University of Applied Sciences and Arts in 2009 and in addition to this role he is also Head of Technology Transfer Center Automotive at the University and German Vice-Team leader at the International Energy Agency Bioenergy, Task 39.

Professor Krahl is the author of nearly 300 publications and has won many awards including Excellence Oral Presentation Award from the Society of Automotive Engineers (SAE) and the SAE-Lloyd L Withrow Distinguished Speaker Award.

Professor Rajkumar Roy

Cranfield University, UK

Professor Rajkumar Roy is leading the Manufacturing and Materials Department and Director of the EPSRC Centre for Innovative Manufacturing in Through-life Engineering Services. The EPSRC Centre will provide world-class capability in the UK to enable industry to deliver high value products with outstanding availability, predictability and reliability with the lowest life cycle cost.

Prior to this, he founded and led the Decision Engineering Centre for over 10 years. Professor Roy has published 58 journal papers and over 120 conference papers. He has successfully supervised 19 PhD thesis and is currently supervising a further nine PhD researchers jointly with other colleagues. He is the Principal Investigator of four Product-Service System (PSS) and cost engineering (IMRC, EPSRC, Industry and MoD funded) in the areas of concept design, whole life cost modelling, design for service and obsolescence management.

Professor Roy is the Editor in Chief of the Applied Soft Computing Journal (real life application of fuzzy logic, neural networks and genetic algorithms) from Elsevier. He is one of the Editors of the Journal of Engineering Design from Taylor Francis and Concurrent Engineering Research and Applications (CERA) from Sage Publishers. He is a Chartered Engineer and a Fellow of the International Academy for Production Engineers (CIRP), IED, Association of Cost Engineers (ACostE) and is a member of IEEE and Institution of Engineers (India). He is also invited to be a Fellow of the Royal Society of Arts for his contribution to design. He was a co-organiser of an IPS2 Spring School at Bochum (Germany) in February 2008. Professor Roy has organised CIRP Design and IPS2 Conferences at Cranfield University in 2009. Professor Roy is also on the steering committee of the Cranfield IMRC and is contributing to the direction and management of the Centre.

Currently Professor Roy is serving on the IET Manufacturing Policy Panel and the National Technical Committee on Advanced Design and Manufacturing. He has also started an annual National Manufacturing Debate at Cranfield and was a judge for the European Strategic Manufacturing Award for 2010.

Professor Gui Yun Tian
Newcastle University, UK

Professor Gui Yun Tian obtained his BSc in Metrology and Instrumentation and Masters in Precision Engineering at the University of Sichuan (Chengdu, PR China) in 1985 and 1988, respectively. Currently, he is Chair Professor in Sensor Technologies in the School of Electrical and Electronic Engineering, Newcastle University. He has a joint background in engineering and computer science with research interests broadly in the areas of sensor and instrumentation, signal processing, electromagnetic non-destructive evaluation and structural health monitoring and has published over 160 papers and book chapters in English and Chinese in these areas. He is a regular reviewer for international journals and conferences. He coordinates several national and international research programs funded by the EPSRC, Royal Society, Royal Academy of Engineering and FP7. He is also on several international advisory boards for international conferences and international steering committees including Chinese Society for NDT.

John Amoore MIMechE CEng BEng
Senior Research Specialist
Network Rail

After an early career in research and product development in the automotive components industry, John moved to the rail sector in 1986 as operations director for a company involved in the design, manufacture and operations of rail vehicles.

Following a period of consultancy with national and international railway undertakings, including two years with the Swedish national train operating company SJ, John joined Network Rail in 2003 as Senior Research Specialist. His activities have focussed on building collaboration with the European railway research community and increasing the engagement of UK universities in UK and European railway research.

John is a member of the European Technology Platform for Rail, the European Rail Research Advisory Council (ERRAC) and Work Package leader in the FP7 project ERRAC ROADMAP that has the task of defining the strategic research required to deliver the 2050 railway, and annually submits proposals for FP7 topics to the European Commission. Proposals that have succeeded in gaining EU funding under the FP7 arrangements include Automain that will develop the first steps in automating the track inspection and maintenance processes and Sustrail that investigates how freight trains and track may be improved to move towards non damaging interaction.

Professor Diego Galar
Luleå University of Technology, Sweden

Professor Diego Galar has a Masters in Telecommunications and a PhD degree in Manufacturing from the University of Saragossa. He has been appointed Professor at several universities, including the University of Saragossa and the European University of Madrid, a researcher in the department of Design and Manufacturing Engineering from the University of Saragossa, a researcher in I3A, Institute for Engineering Research in Aragon, Director of Academic Innovation and subsequently Pro-Vice Chancellor. He has also been visiting Professor at the University of Valencia, Polytechnic of Braganza (Portugal), Valley University (Mexico) and NIU (USA).

In industry, he has been a technological director and CBM manager. He is author of more than hundred journal and conference papers, books and technical reports in the field of maintenance.

Currently, he is working in the Division of Operation and Maintenance at LTU, Luleå University of Technology, where he is coordinating several EU-FP7 projects related to different maintenance aspects and is also involved in the SKF UTC centre located in Luleå focused on SMART bearings.

Sponsors

DNV Software

DNV Software is a leading provider of software for managing risk in the energy, process and maritime industries, and is a part of the independent foundation DNV. Their purpose is to safeguard life, property and the environment, offering solutions for design, engineering, strength assessment, risk and reliability, QHSE and asset integrity management.

DNV has worked internationally since 1867. Their global presence enables them to be close to their customers and share best practice and quality standards, thereby working toward our vision of a global impact for a safe and sustainable future. As a knowledge-based company, their prime assets are the expertise and creativity of 9,000 employees from more than 85 different countries.

University of Huddersfield, School of Computing and Engineering

The School of Computing and Engineering has a vibrant and rapidly growing research community with expertise in such diverse areas as precision engineering, intelligent interfaces, systems engineering, and diagnostics. In the government's most recent Research Assessment Exercise, 30% of its research activities were recognised as 'World Leading' or 'Internationally Excellent'. The Centre for Precision Technologies, widely regarded as the best research facility of its type in the UK, has recently received funding to establish an Engineering and Physical Sciences Research Council (EPSRC) Centre for Innovative Manufacturing in Advanced Metrology.



Exhibitors

We have a number of companies exhibiting at COMADEM2012 along with the sponsors, DNV Software and The University of Huddersfield:

Global Sensor Technology

Global Sensor Technology (GST) is a specialist supplier of high quality transducers, signal conditioners, amplifiers, data acquisition systems and analytical software, all at highly competitive prices. GST also specialises in tailor-made sensors and measurement systems, designed and developed in conjunction with customers to meet their precise needs. With customers all over the world, we have an unrivalled reputation for the quality and value for money of our products and for the emphasis that we place upon providing the very best technical advice and after sales support.

Fachhochschule Frankfurt am Main – University of Applied Sciences

The University was founded in 1971 and has 246 professors, 500 part time lecturers (from industry, public sector and associations) and 487 administrative staff. It has 10.500 students and offers 50 degree programmes.

Key facts:

- International diversity on campus: about 30% international students from 100 countries
- Practice-oriented and academic education, based on international academic standards
- Emphasis on interdisciplinary teaching and research and professional knowledge
- Comprehensive support services for all students
- Large choice of English taught courses and programmes
- Wide range of learning language opportunities
- Worldwide exchange network offering a variety of study abroad opportunities
- Modern IT facilities and IT support system

Weir Valves & Controls, UK

Weir Valves & Controls UK (WVC UK Ltd) are part of the Weir Group plc, a well-established global engineering group, which focuses on delivering exceptionally performing products and services to meet the demands of three high-growth industry sectors around the world: Minerals, Oil & Gas and Power & Industrial. Founded in 1871 Weir now have a global presence in over 70 countries on five continents, employing more than 11,000 people worldwide and is one of the fastest-growing engineering companies in the FTSE 100.

Cybula

Cybula, a research intensive SME based in York, England, focuses on the development of novel pattern recognition which can be applied to large, 'noisy' data sets. The company has expertise in data analysis, pattern recognition, processing methods and application software development in addition to associated hardware development (embedded pattern recognition on fpga boards and small scale, low power data collection devices).

Cybula uses this expertise to provide systems to monitor complex engineering assets using feature/event signatures in multi-parametric time-series signal data. The company works with engineers in the transportation industries (aerospace, rail, automobile) and power generation (nuclear, fossil fuel and wind turbine) sector providing its software platform, Signal Data Explorer (www.signaldataexplorer.com) to allow specialist engineers to create, test and run abnormality models and event signatures to monitor assets. Cybula's clients are particularly enthusiastic about the flexibility and adaptability of this type of modelling on 'real world' data and the ability to detect small but potentially important changes to asset performance giving the opportunity for much earlier detection of failure modes.

Cybula has an active development pipeline achieved by re-investment of revenues in its own R&D and by working closely with the Advanced Computer Architectures Group (ACAG) in Computer Science at the University of York. In 2011, ACAG received the prestigious 'Times Higher Education' Outstanding Engineering Team of the Year award. Cybula's development priority focuses on the application of a cloud compute platform for capturing data streamed from multiple assets and applying customised event detection algorithms together with visualisation methods to allow remote users to review the condition of the asset on mobile devices.

Social programme

Sunday 17 June

17.30 – 19.00

Drinks reception

Business School, University of Huddersfield

We hope that you are able to attend our informal drinks reception on the Sunday evening which will take place in the Business School at the University. It will be an ideal opportunity to start networking with the other delegates and to meet your COMADEM 2012 hosts. Transport to the venue will be provided from the Cedar Court Hotel at 17.00.

Monday 18 June

19.00 – 22.30

Visit to the National Coal Mining Museum and Dinner

The National Coal Mining Museum for England provides a unique opportunity to travel 140 metres underground down one of Britain's oldest working mines. Situated in a rural setting, it offers an unusual combination of exciting experiences, whilst providing a genuine insight into the hard-working lives of miners through the ages.

There are two tours available: underground or overground. The tours will give you the opportunity to explore one of Britain's oldest working mines and your guide, a former-miner, will share his mining experiences with you.

As this is a real coal mine, warm clothes and sensible, flat shoes are recommended. Contraband items, including cigarettes, lighters and battery or electronically operated equipment, must be left with an attendant in the lamp room during the underground tour. Please note that the battery pack required on the underground tour weighs 2kg and must be worn by all participants.

Tuesday 19 June

19.15 – 23.00

Conference Dinner, Cedar Court Hotel

The conference dinner will take place in the President Suite at the Cedar Court Hotel, Ainley Top, Huddersfield, situated 3 miles from the University. Coaches will be provided from the University at 19.00 and will return at 23.00.

There will be entertainment on arrival from the Holme Valley Singers. Based in Holmfirth (6 miles from Huddersfield), they have been singing together for pleasure since 1975. They are held in high esteem in music circles in the area and are a respected participant in competitions.



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