

WHEELSETS: LESS COST, LESS RISK – THE CHALLENGE

Organised by

Institution of
**MECHANICAL
ENGINEERS**

15 March 2016

One Birdcage Walk,
Institution of Mechanical Engineers,
London

More details available at
www.imeche.org/wheelsets

KEY SPEAKERS INCLUDE:

Andy Course (MBE)
Chief Operating Officer, Eversholt Rail

Neil Drury
**Lead Engineer, Business Development, FirstGroup,
Chair, Wheelset Management Group,**

Bridget Eickhoff
Professional Head of Infrastructure, RSSB

Clive Cashin,
**Principal Rolling Stock Engineer (Maintenance),
London Underground Ltd**

Railway Division
Seminar

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WHEELSETS: LESS COST, LESS RISK – THE CHALLENGE

15 March 2016,
London



THE RAILWAY INDUSTRY UNDENIABLY PLAYS A VITAL PART IN THE DEVELOPMENT OF CURRENT AND FUTURE INFRASTRUCTURE ACROSS THE WORLD. MAINTAINING ESSENTIAL COMPONENTS SUCH AS AXLES, BEARINGS AND WHEELSETS IS SOMETHING RAILWAY PROFESSIONALS MUST FOCUS ON TO ENSURE MAXIMUM PERFORMANCE AT A SAFE LEVEL.

Axles, bearings and wheelsets are some of the most expensive 'consumables' on a vehicle: they make up a significant element of the maintenance budget and are key components in causing damage and cost to infrastructure. These components are also vitally important drivers for vehicle availability and customer service.

This must-attend seminar returns following a successful 2014 edition and will explore the relationship between safety, performance and cost, focusing on new and emerging research and how the industry will benefit. With an international and cross-industry speaker line-up, attendees will discover how these theories can be put into practice within their organisations.

Attendees will also be able to ask questions and voice opinions in a number of panel sessions, providing an opportunity to share cross-learning and stimulate thought-provoking debate.

ORGANISING COMMITTEE

Ian Papworth
**Independent Consultant,
Organising Committee Chair**

John Reddyhoff,
Consultant Engineer, Eversholt Rail

Neil Drury,
Chair, Wheelset Management Group (WMG)

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⊕ BENEFITS OF ATTENDANCE:

- Learn from **companies, maintainers and TOCs** who already excel in balancing performance, safety and cost
- Develop an **understanding of research outputs**
- Discover **how these emerging technologies may be applied**
- Identify **more efficient and effective methods** of approaching axle, bearing and wheelset maintenance
- Understand **practical applications**, i.e. theory into practice
- Network with **industry experts**

Key topics include:

- Insight into industry-driven standards and the work of **CEN TC 256 Railway Application**
- Addressing and managing **successful risk**
- Developing **best practice and learning** from other railways
- Inspecting the depth of wheel tread surface damage using **magnetic flux leakage**
- A quick method for determining **equivalent conicity** of wheels and rails

PROGRAMME

15 MARCH 2016



08:30

REGISTRATION AND REFRESHMENTS

08:55

CHAIR'S OPENING REMARKS

Ian Papworth, Independent Consultant, Chair, IMechE Organising Committee

09:00

LESS COST, LESS RISK – THE CHALLENGE

Andy Course, Chief Operating Officer, Eversholt Rail

- Who carries the cost?
- Who carries the risk?
- How do we get the best solution for the industry?

SESSION 1: WHERE ARE WE NOW?

09:25

INDUSTRY DRIVEN STANDARDS – THE WORK OF CEN TC 256 RAILWAY APPLICATION

Geoff Mather BSc (Eng), FIMechE, CEng, Independent Engineer

- An overview of the stakeholders
- Information on Geoff's scope of work in this field
- Background and development of European standards (Euronorms – ENs) for the rail industry
- How the requirements were and still are being identified

09:50

CAN WE REMOVE IN-SERVICE AXLE TESTING?

Neil Drury, Lead Engineer, Business Development, FirstGroup and Chair, Wheelset Management Group (WMG)

- T774: research investigating the value, reliability and effectiveness of axle inspection techniques, considering the issues:
- Why did it come about?
- What's changed?
- Where is industry going?
- What is available to help?

10:15

THE ROLE OF STANDARDS IN DEVELOPING BEST PRACTICE FOR WHEEL-RAIL MANAGEMENT

Bridget Eickhoff, Professional Head Of Infrastructure, RSSB

- Developing best practice
- Learning from other railways
- New developments

10:40

PANEL SESSION



10:50

NETWORKING REFRESHMENT BREAK

SESSION 2: TECHNICAL CONSIDERATIONS

11:25

FROM FURNACE TO FLEET

Speaker to be announced, Lucchini Unipart Rail Limited

- View from a vertically integrated supply chain
- A wheelset manufacturer's view of maintenance
- Applying manufacturer's knowledge to reducing whole life costs

11:50

REFURBISHMENT OF LOCOMOTION AXLES THROUGH LASER APPLIED SURFACE ENGINEERING (RELASE): A COLLABORATIVE APPROACH TWI, LASE LTD, TATA STEEL AND WALL COLMONOY

Stavros Avramidis, Senior Project Leader NDT

- Background and benefits of laser cladding
- Results from laser cladding of railway axles and other applications
- Results from fatigue and hardness testing using representative clad coupons
- Background and results from automated high frequency ultrasonic testing of cladding layer on axles
- Future development activities

12:15

MANAGING RISK: RISAS AND THE FUTURE

Stuart Draper, Engineering Director, Northern Rail


- RISAS: what is it?
- What is it doing now?
- What can it do for you?
- Why are companies avoiding it?

12:40

PANEL SESSION



PROGRAMME

	12:45	NETWORKING LUNCH
		SESSION 3: PRACTICAL CONSIDERATIONS
	13:40	INSPECTING THE DEPTH OF WHEEL TREAD SURFACE DAMAGE USING MAGNETIC FLUX LEAKAGE Stephanie Klecha, UK Engineering Manager, MRX UK and Dr Adam Bevan, The Institute of Railway Research, University of Huddersfield <ul style="list-style-type: none">• Overview: Surface Crack Measurement (SCM) technology• Introduction to handheld unit data collection, including lathe validations trials (with RSSB and Bombardier Transportation)• Case study describing typical use and benefits
	14:05	THE IMPACT OF CONDITION MONITORING AND INNOVATION ON LSER'S C375/376 BOGIE OVERHAUL PROGRAMME LSER Mark Johnson, Engineering Director, SouthEastern <ul style="list-style-type: none">• Field experience of adapting traditional maintenance practices in the depot to a condition-based approach• How innovation can be embraced and supported through its introduction into service• Getting a condition-based maintenance plan safety case signed off
Joint Presentation		WHY WHEELSET RCM IS POTENTIALLY THE MOST STRATEGIC DECISION FOR THIS DECADE Justin Southcombe, Commercial Director, Perpetuum <ul style="list-style-type: none">• Addressing the macro issues facing all depots over the next 10-20 years• Understanding the unique advantages of wheelset/bogie components for RCM
	14:30	A QUICK METHOD FOR DETERMINING EQUIVALENT CONICITY OF WHEELS AND RAILS Mark Burstow, Principal Vehicle Track Dynamics Engineer, Network Rail <ul style="list-style-type: none">• Equivalent conicity is an important geometric parameter controlling the interaction of wheels and rails• If unmanaged it can lead to poor vehicle ride, damage to infrastructure and vehicles, and increased risk of derailment• Current methods for determining equivalent conicity require complex calculations and detailed, accurate measurements of wheel profiles• How to use the 'quick conicity' method which has been developed and is based on a simple measurement from the wheel profile
	14:55	NETWORKING REFRESHMENT BREAK
		SESSION 4: PRACTICAL CONSIDERATIONS
		CHAIR: John Reddyhoff, Consultant Engineer, Eversholt Rail
	15:20	EVOLVING WORKSHOP KNOWLEDGE REQUIREMENTS Julian Betts, Senior Team Leader, Govia Thameslink Railway <ul style="list-style-type: none">• Changes in wheel defects from the old to the new rolling stock• Why and where to find evidence• Do you know what condition your wheels are in when in service, not just as new?
	15:45	WHEEL PROFILE MANAGEMENT: A PRACTICAL PERSPECTIVE Clive Cashin, Principal Rolling Stock Engineer (Maintenance), London Underground Ltd <ul style="list-style-type: none">• What is it and what are the benefits?• Translating academic requirements into practical steps for the maintainer• The London Underground experience
	16:10	WHEELSETS OF THE FUTURE: A PRACTICAL CONSIDERATION Roger Deuce, Senior Product Engineer, Europe Bogies, Bombardier Transportation <ul style="list-style-type: none">• Wheelset developments outside of the UK• What can we learn?• What can we apply?
	16:35	PANEL SESSION
	16:50	CHAIR'S CLOSING REMARKS John Reddyhoff, Consultant Engineer, Eversholt Rail
	16:55	END OF SEMINAR

For the most up-to-date and detailed programme for the event, please visit www.imeche.org/wheelsets

- This programme is subject to change.
- The Institution is not responsible for the views or opinions expressed by individual speakers.

SPEAKERS AND CONTRIBUTORS

KEYNOTE SPEAKER

ANDY COURSE (MBE)
CHIEF OPERATING OFFICER, EVERSOLT RAIL

Andy Course joined Eversholt Rail in June 2013 and is new to the railway industry. After joining the Royal Navy as an engineering apprentice in the early 1980s, he served for over 20 years as an Engineering Officer, responsible for the development, procurement, upgrade, maintenance and operation of warships and their systems, and a further six years advising private and public sector clients as a strategy consultant and Director at PwC. Andy is a Chartered Engineer with a Master's degree in Systems Engineering and a second Master's degree in Strategic Studies.

SEMINAR CHAIRS SPEAKERS

IAN PAPWORTH
INDEPENDENT CONSULTANT, ORGANISING COMMITTEE CHAIR

JOHN REDDYHOFF
CONSULTANT ENGINEER, EVERSOLT RAIL

GEOFF MATHER
INDEPENDENT ENGINEER

Geoff Mather has worked for 41 years in the rail industry. He started at the BR Research Department in the field of Track & Structure before moving onto the Department of Mechanical and Electrical Engineering (DM&EE) in the testing section. There he rose to the position of Head of Development Testing before being recruited by British Rail Engineering Limited (BREL) to set up a testing organisation of their own.

Following a year working in France on the Eurostar tender team, Geoff was appointed to the role of Chief Engineer Bogies, back at BREL. Through the many company name changes Geoff rose to the position of Engineering Director before retiring from Bombardier in 2008. Geoff still works part time, primarily in standards where he holds the positions of Chairman of CEN TC 256 Sub Committee 2 (Rolling Stock products) and its UK BSI shadow committee RAE/3.

NEIL DRURY
**LEAD ENGINEER, BUSINESS DEVELOPMENT, FIRSTGROUP, CHAIR,
WHEELSET MANAGEMENT GROUP**

Neil Drury started his railway career as an engineering graduate on the ATOC scheme in 2004. He moved through various depot management roles in three depots covering all aspects of depot workings and also has looked after the HST, locos, LHCS and C180 units at FGW as Fleet Engineer. Neil has headed up the fleet technical, performance and support functions at FCC as Head of Engineering Asset Management and is now the lead on engineering input for business development activities within FirstGroup.

BRIDGET EICKHOFF
PROFESSIONAL HEAD OF INFRASTRUCTURE, RSSB

Bridget Eickhoff currently works as Professional Head for Infrastructure for RSSB, with responsibility for leading the work on GB railway group standards related to the interfaces between infrastructure (track, bridges, tunnels and stations) and trains. This also involves providing input into a range of European Standards and committees and support to research projects in related areas. Previously Bridget worked in Vehicle Track Interaction for BR Research and successor organisations prior to joining RSSB in 2008. Bridget has also worked on ride and passenger comfort, derailment risk and investigation, track forces and track deterioration, track geometry, vehicle testing and the details of the wheel-rail interface.

STAVROS AVRAMIDIS
SENIOR PROJECT LEADER NDT, TWI TECHNOLOGY CENTRE, WALES

Stavros Avramidis has worked in non-destructive testing for over four years. He has developed inspection techniques for railway axles, railway lines and other critical components of the rail industry for the projects: AxleInspect, RailSaft and ReLASE. His main expertise is in conventional and advanced ultrasound (Level 2 inspector,) ultrasonic simulations and acoustic emission. He has presented numerous papers in conferences in which he was either the main author or co-author.

SAM LESTER
TECHNICAL DIRECTOR, LASE LTD

Sam Lester is a materials engineer with six years of experience working with high power industrial lasers. During this time Sam's main role has been the development of the laser cladding process for repair and coating of critical components. He is the Technical Director of LASE Ltd, who are a laser cladding subcontractor in Neath, South Wales.

SPEAKERS AND CONTRIBUTORS

SPEAKERS

STUART DRAPER **ENGINEERING DIRECTOR, NORTHERN RAIL**

Stuart Draper is a seasoned railway professional, having started work with British Rail at the Derby Carriage and Wagon works on Litchurch Lane as a technician trainee, then transferred to the Derby Technical Centre to become a Technician and then a manager in the Suburban Maintenance Section. Since 1987 he has worked at Neville Hill depot holding a number of posts including shift manager and depot manager, before moving to York to be the engineering change manager, involved in culture change, use of lean processes, head of the quality system and project manager of unit cascades. He is currently Engineering Director for Northern and more recently from 2015, is looking after the control and performance teams as well as engineering.

STEPHANIE KLECHA **UK ENGINEERING MANAGER, MRX UK**

Stephanie Klecha is responsible for engineering personnel and activities at MRX UK, covering MRX's range of rail and vehicle inspection technologies and products. Stephanie has had an extensive career within MRX, both in Europe and Australia, joining in 2008. Prior to MRX she was on Rolls-Royce's Engineering Leadership Scheme and performed three leadership roles in the UK and Canada spanning design, repair and testing.

ADAM BEVAN **HEAD OF ENTERPRISE, THE INSTITUTE OF RAILWAY RESEARCH, UNIVERSITY OF HUDDERSFIELD**

Adam Bevan is Head of Enterprise at the Institute of Railway Research (IRR) at the University of Huddersfield. Following the completion of his PhD in 2004, Adam joined the Rail Technology Unit at Manchester Metropolitan University. During his time at the Rail Technology Unit, Adam built a wide range of expertise and knowledge in the field of wheel-rail interface engineering, vehicle dynamics simulation and vehicle-track interaction. In his current role Adam has led a number of industry-sponsored research and enterprise projects for various clients, such as the Rail Safety and Standards Board (RSSB,) UKTram and Network Rail.

JUSTIN SOUTHCOMBE **COMMERCIAL DIRECTOR, PERPETUUM**

Justin Southcombe joined Perpetuum in March 2014 after 18 years with Alstom. After launching the TrainTracer remote condition monitoring service at Alstom he then moved to the systems division, developing infrastructure maintenance business in the Middle East, France and the UK. Since joining Perpetuum, projects have been launched in Australia, the continent and in the UK, including new services such as on-board track monitoring and motor monitoring. Justin holds a BEng (Hons) in Mechanical Engineering from the University of Surrey, an MBA from INSEAD and is a Chartered Engineer with the Institution of Mechanical Engineers.

MARK JOHNSON **ENGINEERING DIRECTOR, SOUTHEASTERN**

Mark Johnson first joined the railway industry in 1994 as a dual trained apprentice for Network Southeast. During his career Mark has held both technical and operational positions across the industry, managing existing fleets and supporting the introduction of new fleets onto the network. In 2014 Mark was appointed as Engineering Director for Southeastern and is responsible for leading and directing the undertakings on the Southeastern fleet, consisting of 360 trains running metro, mainline and high-speed services; a direct workforce of 528 people across three directly controlled maintenance depots and one outsourced maintenance facility operated by Hitachi Rail.

MARK BURSTOW **PRINCIPAL VEHICLE TRACK DYNAMICS ENGINEER, NETWORK RAIL**

Mark Burstow is currently Principal Vehicle Track Dynamics Engineer with Network Rail. He is responsible for a team of technical specialists supporting the work of the Vehicle/Track Systems Interface Committee (V/T SIC) and leading research and investigations into wheel/rail interface issues. He joined Network Rail in 2006 from AEA Technology Rail where he had been principally involved in research into rolling contact fatigue (RCF). Since then he has been involved in many projects on both sides of the wheel/rail interface, to improve the performance of the vehicle/track interface, including the introduction of hydrodynamic radial arm bushes to reduce RCF and the use of P12 wheel profiles to reduce wheelset 'hunting' and extend wheelset life.

JULIAN BETTS **SENIOR TEAM LEADER, GOVIA THAMESLINK RAILWAY (GTR)**

Julian Betts gained an engineering craft apprenticeship with the Ministry of Defence at the RSAF specialising in tool room and CNC programming. He then went into the railway industry as lathe operator preferring a heavier engineering environment, followed very quickly with promotion to a Team Leader within the wheel lathe. Following several restructures and promotions he is now a Senior Team Leader, with one of his departments being all wheel lathe operations, including planning, records and control.

BOOKING FORM

EVENT CODE: S6338

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15 JANUARY 2016**

WHEELSETS: LESS COST, LESS RISK - THE CHALLENGE

15 March 2016, Institution of
Mechanical Engineers, London

www.imeche.org/wheelsets

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