

INFRASTRUCTURE MONITORING FROM TRAINS

Institution of
**MECHANICAL
ENGINEERS**

KEY SPEAKERS INCLUDE:

Steve Quinby
Head of Data Collection
Network Rail

Stephen Barber
Head of Track Engineering
London Underground

David Buckley
Project Manager Strategic Development
and Gauging Services Manager
Balfour Beatty

Clive Roberts
Director of the Birmingham Centre for
Railway Research and Education
University of Birmingham

29 November 2016
Birmingham

Railway Division
Seminar



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WHY ATTEND INFRASTRUCTURE MONITORING FROM TRAINS?

29 November 2016
Birmingham

INFRASTRUCTURE MONITORING FROM TRAINS WILL DISCUSS HOW BEST RAILWAY INFRASTRUCTURE CAN BE MONITORED FROM TRAINS AVOIDING MANUAL INSPECTION.

Manual inspection of the permanent way – by trackwalking and using human eyeballs - has been necessary since rail transport was invented. Ever since then alternatives have been sought to this labour-intensive, hazardous, and often flawed process. The Hatfield disaster in 2000 provided further impetus, as did technological advances in imaging, data storage and handling, and miniaturisation.

Higher speeds and traffic intensities, endless cost pressures and ever greater safety rigour mean that manual inspection is, over time, becoming rarer: today both London Underground and Network Rail have comprehensive infrastructure monitoring programmes from both bespoke and service trains. The technology and its application remain extremely difficult, however, and progress has been much harder than often predicted: there remain considerable obstacles to overcome before human inspection becomes a thing of the past.

There are three key challenges: collecting the data in the first place; analysing huge volumes – many terabytes per run - of it; and then doing something useful with the outputs. False positives are a maintenance pain; false negatives unacceptable. Hear from specialists NR, LU, suppliers, academics and others on the history, best current practice, and future of this fascinating branch of railway engineering.

PROGRAMME HIGHLIGHTS:

- Replacing Manual inspection: Collecting Track Data
- Dealing with Terabytes: Analysing Track Data
- A brief look at Electrification - OHLE
- What Now?: Implications for Maintenance
- The Future of Infrastructure Monitoring

KEY BENEFITS INCLUDE:

- Understand exactly how infrastructure operators are monitoring track and OHLE from trains
- Appreciate why infrastructure monitoring from trains is not yet a complete panacea
- Recognise problems that need to be addressed to use the technology successfully
- Identify likely future developments in the field
- Meet key practitioners in the field
- Develop your understanding of the technology and underlying railway engineering principles

2016 Advisory Board:

Iain Flynn
Head of Network Operations Business Planning
Network Rail

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Programme Manager, Research, Development and Technology, Safety, Technical and Engineering
Network Rail

Graham Neil
Head of Rolling Stock
London Underground

Edward Stewart Lecturer
University of Birmingham

Stuart Hillmansen
Senior Lecturer in Electrical Energy Systems
University of Birmingham

Brian Whitney
Principal Engineer
Network Rail

PROGRAMME

29 NOVEMBER 2016	
08:30	REGISTRATION AND REFRESHMENTS
09:00	CHAIRMAN'S OPENING REMARKS
	REPLACING MANUAL INSPECTION: COLLECTING TRACK DATA
09:10	COLLECTING TRACK DATA Steve Quinby, Head of Data Collection, Network Rail
09:40	REPLACING MANUAL INSPECTION: COLLECTING TRACK Paul Vincent, Principal Remote Track Monitoring Engineer, London Underground and Alan Wilson, Senior Project Manager - Rolling Stock Renewals, London Underground
10:05	INTRODUCTION OF PLPR SOME OF THE CHALLENGES, SUCCESSES AND LESSONS LEARNT Stephen Tait, Engineering Manager, Omnicom Engineering Ltd
10:30	QUESTION AND ANSWER SESSION
10:45	REFRESHMENT BREAK
	DEALING WITH TERABYTES: ANALYSING TRACK DATA
11:15	NETWORK RAIL'S DERBY EXPERIENCE Speaker to be announced
11:40	DEALING WITH TERABYTES: ANALYSING TRACK DATA Paul Vincent, Principal Remote Track Monitoring Engineer, London Underground
12:05	BIG DATA SUPPLY SIDE: ARTIFICIAL INTELLIGENCE IN PROCESSING GAUGING DATA David Buckley, Project Manager Strategic Development and Gauging Services Manager, Balfour Beatty
12:30	QUESTION AND ANSWER SESSION
12:45	NETWORKING LUNCH
	ELECTRIFICATION
13:45	COLLECTION OF OVERHEAD LINE DATA – WHY, WHAT AND HOW? Kevin Hope, Principle Engineer, Network Rail
	WHAT HOW? IMPLICATIONS FOR MAINTENANCE
14:10	WHAT NOW?: IMPLICATIONS FOR MAINTENANCE Stephen Barber, Head of Track Engineering, London Underground
14:35	WHAT MAINTAINERS ACTUALLY WANT Speaker to be announced
15:00	ADVANCES IN CONDITION MONITORING: BIG DATA AND THE DIGITAL RAILWAY Clive Roberts, Director of the Birmingham Centre for Railway Research and Education, University of Birmingham
15:25	QUESTIONS AND ANSWER SESSION
15:40	REFRESHMENT BREAK
	THE FUTURE OF INFRASTRUCTURE MONITORING
16:10	CONCLUDING PANEL DISCUSSION
16:45	CHAIRMAN'S CLOSING REMARKS
17:00	END OF SEMINAR

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

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

HOW TO BOOK YOUR PLACE

FEES AND CHARGES

Registration fees include entry to the sessions, refreshments and a copy of the conference proceedings.

Delegate Type	Standard Rate
Member, Institution of Mechanical Engineers	£249 + VAT
Member, Supporting Organisation	£249 + VAT
Non-Member	£299 + VAT
Student/Retired	£199 + VAT

Group booking discounts are available. Contact us for more information.

THREE WAYS TO BOOK

- 1 Online:
www.imeche.org/infrastructuremonitoring
- 2 Email:
eventenquiries@imeche.org
- 3 Phone:
+44 (0)20 7973 1251

Please read the information listed below as each booking is subject to the Institution's standard terms and conditions.

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Completed application forms should be returned to the address above, along with the correct payment. Attendance at the event will be confirmed on receipt of the full balance. All participants are advised to bring a copy of their confirmation with them on the day, to ensure the fastest possible entry.

SPECIAL REQUIREMENTS

Please inform us of any special requirements, ie dietary or access, on the relevant section of this form.

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For a refund (minus £25+VAT admin charge), cancellations must be received at least 30 days prior to the event. Replacement delegates are welcome at any time. The Institution reserves the right to cancel any event. In this case, the full fee will be refunded unless a mutually convenient transfer can be arranged. In the event that the

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CONFERENCE VENUE

Birmingham

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OTHER EVENTS TO LOOK FOR



17 NOVEMBER 2016 THE DORCHESTER, LONDON

The Institution of Mechanical Engineers' Annual Dinner

The Institution's Annual Dinner will be returning to London's Dorchester hotel Thursday 17 November 2016, to celebrate the engineering profession with keynote address from The Rt Hon Patrick McLoughlin.

www.imeche.org/annualdinner2016



3 MARCH 2017, GROSVENOR HOUSE, LONDON

Rail Division Annual Luncheon 2017

The IMechE Railway Division Annual Luncheon is the pivotal networking event for the rail industry, attracting over 1,100 professionals for an afternoon of celebration.

www.imeche.org/railuncheon2017

The Institution of Mechanical Engineers organise over 120 events a year, including free-to-attend lectures as well as conferences, seminars, annual luncheons and dinners. Please visit www.imeche.org/events for the complete list of events.

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