

# SITE TESTING: SYSTEM PERFORMANCE OPTIMISATION.

Institution of  
**MECHANICAL  
ENGINEERS**

Fluid Machinery Group  
**Seminar**

12 June 2013  
London  
[www.imeche.org/events/S1764](http://www.imeche.org/events/S1764)



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UNTIL 17/5**

## WHY YOU SHOULD BE THERE

### **In the search for reduced operating costs, the overall efficiency of fluid handling systems becomes ever more important for many industries.**

Studies have shown that 20% of all energy consumption is absorbed by fluid machinery, and that the equipment is often incorrectly matched to the demands of the systems in which it is installed. There is wide scope to improve the overall efficiency of fluid handling systems, but first we must be able to measure and assess the machine's performance in the field accurately.

Site performance testing offers many challenges: scale, equipment availability in live systems,

measurement accuracy and, importantly, installation effects.

Exploring some of the modern techniques for assessing machine and system performance, this is your chance to learn about the latest developments in testing and monitoring. Ensure your understanding of relevant standards and the type of instrumentation necessary for performance monitoring is up-to-date and share your experiences.

## TOPICS COVERED:

- Site power measurement
- Advanced thermodynamic performance measurement techniques
- Equipment and system performance evaluation
- Pump/system optimisation
- Control system testing
- Monitoring overall system efficiencies
- Differences between factory and site test measurements
- Limitations of field data acquisition

<b>WHEN</b>	12 June 2013
<b>WHERE</b>	One Birdcage Walk, Westminster, London, SW1H 9JJ
<b>BOOK ONLINE</b>	<a href="http://www.imeche.org/events/S1764">www.imeche.org/events/S1764</a>

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## SPEAKERS AND CONTRIBUTORS



### FRANK GRIFFITH

CONSULTANT ENGINEER, ABB, UK  
Frank has been with ABB for 23 years, mainly dealing with application questions on the use of variable speed drives (VSDs). He now specialises in drive applications but also has experience of VSD system design.

### MALCOLM ROBERTSON

MANAGING DIRECTOR, ROBERTSON TECHNOLOGY, AUSTRALIA  
Malcolm has a background in temperature measurement, analogue electronics, and mechanical design which has now been applied to the thermodynamic method for energy efficiency and flow rate measurements. He relocated to Western Australia in 1990 and has been supplying instrumentation and test services internationally for pump, blower and turbine performance measurements since 2002.

### GAVIN WESTWORTH

ENERGY MANAGER, XYLEM WATER SOLUTIONS, UK  
Gavin has been in the pump industry for more than 40 years holding senior technical and sales positions with 5 prominent companies. His wide experience of pump design and pump/system interactions has helped customers get the performance they require. In his current role with Xylem he examines site test data and identifies cost-effective ways to improve their efficiency.

## PROGRAMME

<b>WELCOME TUESDAY 12/06</b>	<b>09:45</b>	<b>REGISTRATION</b>
	<b>10:15</b>	<b>CHAIRMAN'S WELCOME AND INTRODUCTION</b>
<b>SESSION 1</b>	<b>10:25</b>	<b>SITE POWER MEASUREMENTS DO'S AND DON'TS: A DEFINITIVE GUIDE?</b> Frank Griffith, Consultant Engineer, ABB <ul style="list-style-type: none"> <li>• On-site power measurements entail completely different conditions to those experienced in a test bay/house</li> <li>• Operational restraints can colour the results obtained and conclusions</li> <li>• Key issues: instrument and transducer types and accuracies, cumulative errors, the relatively small impact of VSD losses</li> </ul>
	<b>10:45</b>	<b>PUMP AND SYSTEM OPTIMISATION</b> Brian Conway, Boulting Group Details will be updated on the website
	<b>11:05</b>	<b>DISCUSSION SESSION</b>
	<b>11:15</b>	<b>REFRESHMENTS</b>

<b>SESSION 2</b>	<b>11:45</b>	<b>ADVANCED THERMODYNAMIC PERFORMANCE MEASUREMENTS FOR PUMPS AND PUMP SYSTEMS</b> Malcolm Robertson, Managing Director, Robertson Technology <ul style="list-style-type: none"> <li>• Temperature measurement methods</li> <li>• Avoiding probe vibration</li> <li>• Detection of cavitation</li> <li>• Variations in suction temperature</li> <li>• Continuous monitoring</li> </ul>
	<b>12:05</b>	<b>PUMPING SYSTEM EFFICIENCY INDEX</b> Gavin Westworth, Energy Manager, Xylem Water Solutions <ul style="list-style-type: none"> <li>• How to find out how much energy is well-used or wasted</li> <li>• A 'first-pass' assessment to find systems that need attention</li> <li>• Identification of stations that are working well and those in need of further investigation</li> <li>• Comparing what the end-user gets from the system with the energy supplied</li> </ul>
	<b>12:25</b>	<b>TESTING THROUGH UTILITIES AND POWER</b> Geoff Walker, Field Engineering Manager, Sulzer UK Pumps <ul style="list-style-type: none"> <li>• Overview of testing capability</li> <li>• Yorkshire Water main grid pumping analysis</li> <li>• Castle Peak Hong Kong pump efficiency programme</li> </ul>
	<b>12:45</b>	<b>DISCUSSION SESSION</b>

## SPEAKERS AND CONTRIBUTORS



### DJORDJE RADULJ

MANAGING DIRECTOR, HYDRATEK,  
CANADA

Djordje's expertise lies in hydraulic analysis and investigations, both through the use of numerical models and field risk assessments. He has previous experience of working with several public and private sector organisations in the municipal infrastructure fields.



### ARNO GERLING

HEAD OF THERMODYNAMICS  
AND PROCESS ENGINEERING,  
MAN DIESEL AND TURBO SE, GERMANY

Arno is responsible for assessing service machines in new operating conditions, including the evaluation of site data measured by field instrumentation to assess running machines.

## PROGRAMME (CONTINUED)

	<b>13:00</b>	<b>LUNCH BREAK</b>
<b>SESSION 3</b>	<b>14:00</b>	<b>THE PURPOSE AND BENEFITS OF PUMP SITE TESTING</b> Stuart Morrison, ClydeUnion Pumps Details will be updated on the website
	<b>14:20</b>	<b>PUMP ENERGY EFFICIENCY FIELD TESTING AND BENCHMARKING IN CANADA</b> Djordje Radulj, Managing Director, HydraTek <ul style="list-style-type: none"> <li>• Pump and energy related trends and obstacles in Canada</li> <li>• Summary results of pump efficiency and energy assessments of more than 150 water pumps</li> <li>• Pump performance and efficiency benchmarking and metrics</li> </ul>
	<b>14:40</b>	<b>DISCUSSION SESSION</b>
	<b>14:50</b>	<b>REFRESHMENTS</b>
<b>SESSION 4</b>	<b>15:20</b>	<b>CONTROL SYSTEM TESTING OF SCREW COMPRESSOR PACKAGES IN OIL AND GAS APPLICATIONS</b> Billy Milligan, Lead Electrical and Control Engineer, Howden Process Compressors <ul style="list-style-type: none"> <li>• Screw compressor packages used in the oil and gas industry</li> <li>• Control system design and package factory testing</li> <li>• Site testing of the package control system</li> <li>• Comparison of the differences between the factory testing and the site testing with conclusions</li> </ul>
	<b>15:40</b>	<b>PERFORMANCE EVALUATION BASED ON FIELD INSTRUMENTATION DATA</b> Arno Gerling, Head of Thermodynamics and Process Engineering, MAN Diesel and Turbo SE <ul style="list-style-type: none"> <li>• Necessary performance figures</li> <li>• Influencing variables on the evaluation</li> <li>• Limits of assessments based on field data</li> <li>• Example of compressor and steam turbine evaluation</li> </ul>
	<b>16:00</b>	<b>DISCUSSION AND CLOSING COMMENTS</b>
	<b>16:30</b>	<b>CLOSE OF SEMINAR</b>

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

### Fluid Machinery Group

#### Organising committee:

Robert Brown, Sulzer Pumps  
Harald Carrick, Carrick Consultants  
Ivor Rhodes, ACE Cranfield  
Simon Whatley, Thames Water Utilities

#### The committee would like to thank the following supporters:

Power Industries Division and Process Industries Division

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8 May 2013, London

#### **FLUID MACHINERY: COMBATING INCREASED FLOODING RISKS.**

A free evening lecture open to members and non-members of the Institution. Learn about several projects the Environment Agency has underway to help combat the increasing risks of flooding within the UK.

[www.imeche.org/events/L304](http://www.imeche.org/events/L304)

16 May 2013, London

#### **COMPRESSORS AND FANS WORKSHOP.**

Enabling anyone with a general engineering or commercial background to gain an understanding of the principles associated with gas compressors and fans.

[www.imeche.org/events/W1680](http://www.imeche.org/events/W1680)

9-10 September, London

#### **COMPRESSORS AND THEIR SYSTEMS.**

The international conference on compressors and their systems is run by City University London in conjunction with the Institution of Mechanical Engineers.

[www.city.ac.uk/compressorsconference](http://www.city.ac.uk/compressorsconference)

If you are interested in any of these events, please contact **Amelia Brunt** on +44 (0)20 7973 1294 or [a\\_brunt@imeche.org](mailto:a_brunt@imeche.org)

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You may be interested in:

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(Proceedings of the Institution of Mechanical Engineers, Part O).

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### GET INVOLVED

Whether you're new to the profession or well established, volunteering is a great way to gain new skills, knowledge and experience.

As an Ambassador you have the chance to represent your profession and give something back to the engineering community as well as inspiring the next generation.

See [www.imeche.org/volunteering](http://www.imeche.org/volunteering) for more information or go to [nearyou.imeche.org](http://nearyou.imeche.org) to find engineering events hosted by volunteers in your area.

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# BOOKING FORM

FLUID MACHINERY GROUP

## SITE TESTING: SYSTEM PERFORMANCE OPTIMISATION

12 JUNE 2013

S1764

### REGISTRATION Please complete in capitals.

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Membership No	Institution
Name of Organisation (for name badge)	
Address for correspondence	
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Do you have any special requirements?	

How did you hear about this event?  Direct mail  Website  Colleague  Other

**The Institution organises a wide programme of events each year. If you would like to receive information about our events, please tick this box**

### FEES AND CHARGES Please complete the appropriate box.

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

#### DELEGATE FEES

	Fee	VAT	Total	£
Member, Institution of Mechanical Engineers – early booking	£230.00	£46.00	£276.00	_____
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Invoice Charging (if applicable)	£10.00	£2.00	£12.00	_____
			<b>Total</b>	_____

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Payment must accompany this registration form. Registration will be confirmed only on receipt of full payment.

Please indicate method of payment:  Cheque  Credit Card  BACS  Invoice (see below)

Cheques should be made payable to IMechE and crossed. Please note international delegates may pay only by credit card, BACS or banker's draft. A copy of the draft must accompany this form. It is the delegate's responsibility to pay any bank charges.

**Credit Card:**  Visa  MasterCard (please note we cannot accept American Express, Diners Club or Maestro)

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#### EVENT REGISTRATIONS

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For registration enquiries call

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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.

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Members of supporting organisations can register at members' rates. See page 2.

#### VENUE

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#### ENQUIRIES

For event enquiries, please contact

**Amelia Brunt**

on +44 (0)20 7973 1294

or email [a\\_brunt@imeche.org](mailto:a_brunt@imeche.org)

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