

# BOILERS & PUMPS CONFERENCE

## Featured Speakers:

### RAY BEEBE

Managing Director - MCM Consultants Pty Ltd; Predictive Maintenance & Condition Monitoring Expert; Sessional Lecturer - Federation University Australia



### SELWYN BRAVER

Technical Director - Martec Asset Solutions; Condition Monitoring and Diagnostics Specialist



### DOUG WALLIS

Technical Director - All Areas Inspections; Senior Examiner of Boiler Inspectors; NATA Technical Assessor & Standards Australia Committee Member



**24th & 25th  
November 2015**

**Rydges Hotel - North Sydney  
SYDNEY, AUSTRALIA**

## WHAT YOU WILL GAIN FROM THIS EVENT:

- Learn about new boiler and pump management approaches
- Understand how to apply IEC61508 and IEC61511 to your plant or project
- Gain practical solutions to common pump and compressor challenges
- Identify opportunities for energy and cost savings
- Learn how to increase reliability and overall safety of your boilers and pumps
- Simulate typical boiler control systems and uncover potential problems in design
- Receive expert advice on pump and compressor selection, correct speed calculation, alignment and mitigating inconsistent flow and blockages
- Understand how to apply AS3814 standard to your burner management system
- Learn techniques to maximise the value of your pumps and compressor systems
- Hear case studies and critical discussion from the local industry
- Network with specialists in the field and your peers
- No sales pitches – Non-commercial presentations

## WHO SHOULD ATTEND:

- Chemical and process engineers/ technicians
- Mechanical engineers and technicians
- Designers and engineers involved in instrumentation and control of process plants
- Project engineers
- Structural designers and engineers
- Boiler plant operators, installers and construction managers
- Process, control and automation engineers
- Operation, maintenance and inspection managers
- Reliability engineers
- Plant maintenance managers, engineers and technicians
- Plant engineers, supervisors and managers
- Consulting engineers
- Pump service contractors
- Electrical & equipment designers and engineers
- Training managers

**DISCOUNTS  
EARLY BIRD OFFER!  
10% OFF**  
*Book on or before  
27th October 2015*  
**AND/OR  
3 FOR 2 OFFER!  
SAVE UP TO \$1795.00**  
*See back page for details*

## FOR MORE INFORMATION

**Phone: 1300 138 522**

**idc@idc-online.com or**

**www.idc-online.com**

*Presented by:*



*Technology Training that Works*

AUSTRALIA • CANADA • INDIA • IRELAND • MALAYSIA  
NEW ZEALAND • POLAND • SINGAPORE • SOUTH AFRICA  
UNITED KINGDOM • UNITED STATES • VIETNAM

Proudly Sponsored by:



# INTRODUCTION TO THE BOILERS & PUMPS CONFERENCE

This conference will be highly practical and offer delegates the opportunity to gain access to the most up-to-date information on the design, installation, commissioning, operation, maintenance, troubleshooting and management of two key interconnected and often challenging components – boilers and pumps. The conference is intended for engineers, technicians and consultants from a wide range of abilities and backgrounds.

The conference will cover a selection of case studies and examples of real world working systems, and problem solving scenarios. When delegates leave this conference they will have an increased ability to work with and solve their boiler and pumps problems simply, easily and with confidence.

All conference papers are reviewed and selected for their high quality and technical value by our panel of specialists experienced in the theory and practice of boilers and pumps.

## CONFERENCE DAY ONE – 24<sup>th</sup> November 2015

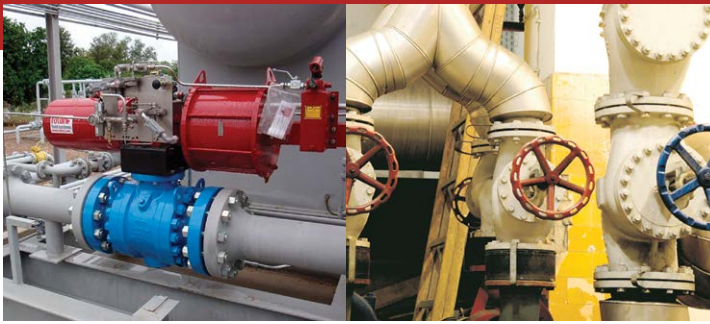
8.00am	<b>Registration</b>		
8.15am	<b>Opening Address</b>		
8.30am Session 1	<b>Condition Monitoring of Boilers and Heat Exchangers</b> <b>Ray Beebe</b> – Engineer, Speaker, Trainer, Author, Adviser in Predictive Maintenance/Machine Condition Monitoring, MCM Consultants Pty Ltd 	<b>KEY NOTE</b>	
	Condition monitoring is often seen as applicable only to rotating plants. Stationary plants gets less attention, yet the application of condition monitoring is a vital part of managing these assets. Solid-fuelled fossil-fired boilers incur deposits on furnace walls and on tubes in the convection passes and eventually this fouling can lead to boiler/unit output being reduced.  This paper describes the use of performance monitoring to detect and monitor boiler fouling. Techniques applicable to boilers such as visual inspection, non-destructive testing, acoustic leak detection, measurement of dimensions and air in-leakage tests will be outlined. Also covered will be shell-and-tube heat exchangers and some of the service problems that can be detected and monitored by performance analysis. Simple expedient methods can often suffice and will be explained.		
9.30am Session 2	<b>Operating Multiples Pumps or Boilers in Tandem</b> <b>Graham Jefferson</b> – Director & Principal Consultant, Scope Process Controls When considering the design, purchase, installation and associated running costs of large capital assets such as fans, compressors, pumps or boilers the focus tends to be on them operating in isolation or in “Island Mode”. The reality is that many times a complete system contains multiple machines which are highly coupled through the process by headers, pipes, ducts etc. This paper will explore the opportunities and problems associated with operating multiple assets that are linked together in some form.		
	<b>Morning Tea – 10.15am</b>		
10.45am Session 3	<b>Emission Levels of a Multifuel-Fired CFB Boiler in Australia</b> <b>Ian Pennington</b> – Senior Process Engineer, RCR Energy Pty Ltd This paper explores the environmental control systems applied on multifuel-fired circulating fluidised bed (CFB) boilers recently commissioned in Australia; the emission levels achieved and operating experience gained will be presented. The influence of limestone quality, size grading, injection location and bed temperatures on sulphur emission levels will be explored; as well as the method used to control the sulphur emission level by regulating the limestone feed rate. The NO <sub>x</sub> , SO <sub>x</sub> , CO and particulate emission levels achieved with coal fired CFB boilers will be compared to that of more conventional pulverised coal fired boilers. The tests conducted to determine the coal release temperature in order to satisfy the application of IEC 61511 functional safety will be presented.		
11.30am Session 4	<b>Cracking in Water Tube Boilers</b> <b>Doug Wallis</b> – Technical Director, All Areas Inspections This syndrome affects a large number of package water tube boilers. Some cracking has escaped detection until it has progressed to half of the plate thickness. Here the latest recommendations will be given with regard to inspection and testing. Action is recommended to protect capital assets & facilitate work place health and safety.		
	<b>Lunch – 12.15pm</b>		
1.15pm Session 5	<b>Sealless Pumps – Advantages on High Temperature Fluids</b> <b>Matthew Thompson</b> – Technical Engineering Manager, Renroc Group Sealless pumps have been in operation since the 1950's, providing leak free reliable operation on many services. These units have proven performance on high temperatures where traditional mechanical seals struggle from their inherent design limitations. This paper will aim to discuss the operating principal of sealless pumps including on higher temperature fluids and how these are handled. It will also show how pumps are able to handle other conditions such as elevated suction pressures on hot water. The paper will show how sealless pumps can provide increased reliability on high temperature services such as boiler feed, waste heat recovery and recirculation pumps.		
2.00pm Session 6	<b>Boiler Water Treatment – Options, Selection and Monitoring Tools</b> <b>Peter Pachacz</b> – Technical Director, Hydro Flow Water treatment requirements for boilers can vary depending on the degree of complexity of the boiler operation, in addition to the steam and condensate system configuration and operating dynamics. This presentation deals with the pre-treatment of water prior to it being used as make-up for the boiler system, as well as the on-going treatment of the boiler water, steam and condensate fluids. Critical to managing water treatment is the monitoring of the water treatment program effectiveness. Here the delegates will learn of the different options available, the selection criteria for each, and the monitoring tools available to assess the performance of the water treatment programs.		
	<b>Afternoon Tea – 2.45pm</b>		
3.15pm Session 7	<b>Online Acoustic Monitoring of Power Boilers</b> <b>Selwyn Braver</b> – Technical Director, Martec Asset Solutions Acoustic monitoring is an increasingly popular tool to indicate the presence (and has been proven to be the earliest indicator) of a tube leak or other operating anomaly within a power boiler. Early detection of a tube leak, along with the knowledge of its location within the boiler, can help a plant manage risk, determine the best course of action for the unit and schedule the unit out of service at the most opportune time. This translates into shortened outage duration and a savings of related outage costs. An acoustic monitoring system can also detect stuck sootblowers, pluggage, external leaks and other items that may affect optimal operation. This presentation will cover case histories from several different events and describe the ways a plant can benefit from a comprehensive acoustic monitoring program.		
4.00pm Session 8	<b>Boiler Operation for Heat Recovery</b> <b>Dr. Alan L Harvey</b> – Process Engineer, Covey Consulting and Lecturer, RMIT University Aged boiler equipment without heat recovery sections can lose up to 30% of generated heat in stack gases. Luckily, this combustion heat load can be recovered, improving heat recovery from 70% to 95% for some fired equipment by adding heat recovery sections. This paper will cover boiler operation, the benefits of adding a convection section plus air preheating and excess air reduction for improved combustion controls using in situ CO and H <sub>2</sub> analysers for combustion air control. Alan will also show how an equipment audit can reveal if fired equipment losses are excessive.		
	<b>Closing – 4.45pm</b>		
	<b>Networking Session – 4.45pm to 6.00pm</b> An hour dedicated for all attendees to meet and socialise with experts and industry peers at the Boilers and Pumps Conference Cocktail Hour. 		

**REGISTER NOW:**


**Phone:**  
1300 138 522

**Email:**  
idc@idc-online.com

**Online:**  
www.idc-online.com



## CONFERENCE DAY TWO – 25<sup>th</sup> November 2015

8.30am Session 9	<p><b>Recent Developments in Pulse Reflectometry for Tube Inspection</b></p> <p><b>Selwyn Braver</b> – Technical Director, Martec Asset Solutions</p> <p>Pulse Reflectometry is a non-invasive technique for probing the properties of cavities and materials. In recent years the acoustic version of pulse reflectometry has been applied successfully to inspection of condensers, boilers, preheaters and other heat exchangers, by sending acoustic pulses into the air enclosed within the tubes and analysing the reflections created by defects on the internal diameter (ID). This method enables detection of defects such as blockages, holes and ID wall loss. Recent developments extending this technique further enable detection of a wider range of defect with higher accuracy. These developments will be presented here, along with tests demonstrating the performance of this technique.</p>	
9.30pm Session 10	<p><b>Using Intelligent Technology to Drive Boiler Efficiency Gains</b></p> <p><b>Peter Pape'</b> – Fireye - Regional Sales Manager (Africa, Oceania)</p> <p>The demand for boiler efficiency savings is relentless as all industries strive to stay competitive. Suppliers and manufacturers explore opportunities to go beyond basic functionality by expanding product capability without increasing cost. This short seminar will examine two industrial application case studies where examples of boiler control, safety instrumented and management systems have offered user benefits.</p>	
<b>Morning Tea – 10.15am</b>		
10.45am Session 11	<p><b>New Innovations in Burner Ignition – Plasma</b></p> <p><b>Dr Kevin Bate</b> – Manager – Sales &amp; Operations, DURAG UK GmbH</p> <p>This presentation will explore, firstly, the more traditional methods of burner ignition where gas fired pilots and High-Energy-Spark-Ignition (HESI) have been used as part of an ignition system for coal fired burners. Secondly, the latest innovation using plasma, replacing gas, HESI and oil to directly ignite coal and biomass, will be presented. At its heart is a microwave-source fuelled only by compressed air. Designed to fit into standard burners, the resulting plasma lance gives a “flame” temperature of 3,500oC allowing the direct ignition of large scale coal and biomass burners. No gas or oil; only electricity and air.</p>	
11.30am Session 12	<p><b>Practical Steam Accumulator Installations</b></p> <p><b>Ross Patterson</b> – Director and Mechanical Design Engineer, Covey Consulting</p> <p>Steam storage devices are unusual, but can be very useful in improving plant efficiency, or even its operability. This paper discusses several recent installations. These have all been of the “Ruth Accumulator” or variable pressure type, which are typically installed to protect the steam generation plant from rapid load swings. The applications discussed involved major load swings generated by batch pulp digesters. The paper describes the mechanical design features adopted as well as the control methodology. Control response curves are presented.</p>	
<b>Lunch – 12.15pm</b>		

1.15pm Session 13	<p><b>Reduce Energy used by your Pumps</b></p> <p><b>Ray Beebe</b> – Engineer, Speaker, Trainer, Author, Adviser in Predictive Maintenance/Machine Condition Monitoring, MCM Consultants Pty Ltd</p> <p>If a pump requires throttling to meet the required duty, its impeller/s may be too large. The paper will show by case studies how to estimate the energy saved by modifying impellers. As pumps wear, internal recirculation increases, wasting energy. Condition monitoring can be used to find the optimum time for overhaul based on energy saving. The method developed by Ray has been presented around the world and led to his award-winning book. A spreadsheet application will be available to delegates.</p>	<p><b>CASE STUDY</b></p>
2.00pm Session 14	<p><b>Harmonised Plant Regulations in the Australian States – Latest Developments</b></p> <p><b>Doug Wallis</b> – Technical Director, All Areas Inspections</p> <p>In the late stages of the Gillard government, a deal was struck to harmonise WHS Regulations. These were legislated by most of the jurisdictions, with two exceptions. Amendments to the legislation have appeared in the last few months. Recent developments from Victoria and the Council of Australian Governments will be discussed. The possible implications of these will affect all plant owners, especially those about to procure equipment from overseas.</p>	
<b>Afternoon Tea – 2.45pm</b>		
3.15pm Session 15	<p><b>Energy from Low Calorific Fuels</b></p> <p><b>John Jardine</b> – Managing Director, SAACKE Australia</p> <p>The development in the field of combustion technology now makes it possible to achieve stable combustion with waste fuels having extremely low and fluctuating heating values. The technology can be applied to various fuels like bio-gas, hydrogen, coal seam methane, blast furnace gas and other lean gases formed as by-products. This technology is for firing plants for industrial use and can be used for firing gases with heating values as low as 2.5 MJ/Nm<sup>3</sup> without the need of auxiliary fuels. This presentation will cover the basic principle of the burner design and function, the theoretical principles and two examples of applications where the technology has been applied successfully.</p>	
4.00pm Session 16	<p><b>Discussion Panel</b></p> <p>This session will provide delegates with the opportunity to ask our speakers questions and discuss boilers and pumps related issues in their workplace, covering typical problems and possible solutions.</p>	
<b>Closing – 4.45pm</b>		

## Sponsorship Opportunities

Representing your business at the Boilers and Pumps Conference in 2015 will provide you the opportunity to reach key decision makers from a multitude of industries. For more information on sponsorship and exhibition opportunities please contact Sarah Montgomery via email [conferences@idc-online.com](mailto:conferences@idc-online.com)



## KEYNOTE SPEAKERS

**RAY BEEBE** Managing Director  
– MCM Consultants Pty Ltd

Ray developed condition monitoring alongside 28 years of engineering and middle management in power generation. Many initiatives in people development and training led him to write his first book, *Machine Condition Monitoring* and later to join Monash University (now Federation University). Ray led the postgraduate programs in maintenance and reliability engineering from 1996-2010. Ray has presented at many conferences and led workshops worldwide, with many papers also appearing in technical magazines. His book, *Predictive Maintenance of Pumps using Condition Monitoring*, gained Engineers Australia's George Julius Medal for 2004.



## SELWYN BRAVER

Technical Director – Martec Asset Solutions

Selwyn is a specialist in the areas of condition assessment, condition monitoring and diagnostics for predictive maintenance for generation, transmission and distribution assets. Prior to establishing Martec, Selwyn was General Manager of Dynamic Ratings Pty Ltd (a subsidiary of Wilson Transformers). Selwyn was the Divisional Marketing Manager with Alstom T&D and prior to this the Director and General Manager of Alstom Measurements for 15 years. Selwyn has a B.Sc. (Elec. Eng.), an M.B.A. and has over thirty years experience in this industry.



## DOUG WALLIS

Technical Director - All Areas Inspections

Doug is a Bachelor of Engineering (Mechanical) and a Fellow of the Institution of Engineers, Australia. His background experience is in project management, bulk materials handling, building materials manufacture (Japan & Germany) and design/manufacture of pressure equipment. He is the Technical Director of AAI – All Areas Inspections and holds a number of pro bono positions including: Senior Examiner of Boiler Inspectors, NATA Technical Assessor & Standards Australia Committee member. He is the author of several parts of an international inspection standard.



### REGISTRATION FORM:

## BOILERS & PUMPS CONFERENCE

Tuesday 24th to Wednesday 25th November 2015  
Rydges Hotel, North Sydney

Simply complete this form online or return by email to [idc@idc-online.com](mailto:idc@idc-online.com).

### 1. DELEGATE DETAILS

Contact: \_\_\_\_\_ Company Name: \_\_\_\_\_

Company Address: \_\_\_\_\_

Suburb: \_\_\_\_\_ State: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Phone: \_\_\_\_\_ Email: \_\_\_\_\_

ATTENDEES:	Mr/Ms:	Job Title:
1	_____	_____
	Email: _____	
2	_____	_____
	Email: _____	
3	_____	_____
	Email: _____	

### 2. HOW DID YOU HEAR ABOUT THIS EVENT?

- Received an email from IDC       Received a brochure in the mail       Searched online (Google, Yahoo etc)  
 Recommended by a friend/colleague       Magazine advertisement/insert (please specify which magazine below)  
 Other (please specify) \_\_\_\_\_

### 3. REGISTRATION & PAYMENT DETAILS

Prices shown are inclusive of GST

**PLEASE NOTE: Full payment is required prior to the commencement of the conference.**

#### BOILERS & PUMPS CONFERENCE - 24<sup>TH</sup> & 25<sup>TH</sup> NOVEMBER 2015

- OPTION 1: Early Bird Discount**  
- Book on or before 27th October (**SAVE \$179.50**)      \$1615.50 x \_\_\_\_\_ delegates = \$ \_\_\_\_\_
- OPTION 2: Standard Rate (NO Early Bird Discount)**  
- Book after 27th October      \$1795.00 x \_\_\_\_\_ delegates = \$ \_\_\_\_\_
- OPTION 3: 3 for 2 Offer AND Early Bird Discount**  
- Book on or before 27th October (**SAVE \$2154.00**)      3 delegates: 2 x \$1615.50 = \$3231.00 = \$ \_\_\_\_\_
- OPTION 4: 3 for 2 Offer Standard Rate (NO Early Bird)**  
- Book after 27th October (**SAVE \$1795.00**)      3 delegates: 2 x \$1795.00 = \$3590.00 = \$ \_\_\_\_\_

**TOTAL DUE = \$ \_\_\_\_\_**

Corporate packages available upon request

I wish to pay by:  Direct Deposit       Company Purchase Order Number: \_\_\_\_\_  
 Cheque (made payable to IDC Technologies)

Please charge my:  Mastercard       VISA      \_\_\_\_\_

CARDHOLDER'S NAME: \_\_\_\_\_      CARDHOLDER'S SIGNATURE: \_\_\_\_\_      EXPIRY DATE: \_\_\_\_\_ / \_\_\_\_\_

On the reverse of your card, above the signature, is a security number. In order to authorise your card transaction, we require the last 3 digits: \_\_\_\_\_

If the Cardholder's address is not the same as shown above please tick this box:

BOOKING CODE: **Y**

### EARLY BIRD OFFER:

10% off the conference fee  
for registrations received  
on or before 27th October 2015  
- **SAVE \$179.50**

**AND  
/OR**

### 3 FOR 2 OFFER:

Register 3 delegates  
and only pay for 2  
- **SAVE UP TO \$1795.00**

## GENERAL INFORMATION

### Confirmation Details

A confirmation email and invoice will be sent to delegates within 3 days of receiving the registration.

### Cancellation Policy

A fee of 20% cancellation will apply for cancellations received 7 – 14 days prior to the start date of the conference. Cancellations received less than 7 days prior to the start date of the conference are not refundable, however substitutes are welcome.

### Venue

Rydges North Sydney  
54 McLaren Street, North Sydney NSW 2060  
SYDNEY, AUSTRALIA  
Phone: (02) 9922 1311

### Accommodation

The conference venue has accommodation available. Contact directly on (02) 9922 1311 and mention the conference when booking and receive the best room rate available.

### Food and Beverages

All lunches, morning and afternoon refreshments are included in the registration fee.

### Unable to Attend

If you are unable to attend the full conference program, contact us for details to attend individual sessions, or to purchase the Conference Resource Kit.

### Enquiries

Phone 1300 138 522 or  
email [idc@idc-online.com](mailto:idc@idc-online.com).

## REGISTRATIONS

**By Email:**  
[idc@idc-online.com](mailto:idc@idc-online.com)

**Online:**  
[www.idc-online.com](http://www.idc-online.com)

**By Phone:**  
1300 138 522

**By Mail:**  
IDC Technologies  
PO Box 1093, West Perth WA 6872

ABN 78 003 263 189