

# AHUG 2012

## Australasian HRSG Users Group Conference and Workshops

4 - 6 December 2012, Brisbane

Brisbane Convention & Exhibition Centre



[www.ahug.co.nz](http://www.ahug.co.nz)

The Australasian HRSG Users Group (AHUG) will conduct its third annual meeting in Australia on 4-6 December.

AHUG 2012 will consist of a number of focused presentations, lots of interactive discussions and two half-day workshops on topics of primary interest to HRSG operators and advances in Next Generation HRSGs. All attendees will be requested to raise specific technical problems with their HRSGs, and then participate while other attendees join in to share their experiences and debate solutions.

There will also be a number of exhibits associated with all aspects of HRSGs.



**Who should attend?**  
*Anyone involved in the design,  
construction, operation,  
cycle chemistry, or maintenance  
of an HRSG.*



Conference Organiser



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*Photo courtesy of Teluserra Pty*



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### Summary Agenda

#### AHUG Conference

Venue: Brisbane Convention & Exhibition Centre  
Corner Glenelg & Merival Streets, South Bank, Brisbane  
Meeting Rooms M1 & M2

#### Day 1: Tuesday, 4 December

7:15	Registration
8:00 to 17:00	Conference Session
17:30 to 19:30	Networking Drinks

#### Day 2: Wednesday, 5 December

8:00 to 17:00	Conference Session
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#### Workshops: Thursday, 6 December

7:15	Registration
8:00 to 12:00	Workshop - <b>Technical and Management Aspects of Optimizing the Cycle Chemistry for Combined Cycle/HRSG Plants</b>
13:00 to 17:00	Workshop - <b>Next Generation HRSG Design</b>

Important Note: Due to limited workshop seating capacity early registration is recommended.

#### Workshop - Technical and Management Aspects of Optimizing the Cycle Chemistry for Combined Cycle/HRSG Plants

The cycle chemistry of combined cycle/HRSG plants is one of the most important aspects which controls over 70% of the damage that occurs in these plants worldwide. All the technical and management aspects of operating with a world class program will be covered and include guideline development (using IAPWS guidance) for operation and shutdown, avoidance of damage mechanisms, instrumentation, and management processes.

### Workshop - Next Generation HRSG Design

Review of the advanced performance anticipated from the next generation of HRSGs; summary of features required to achieve faster startup, higher efficiency and adequate component life while two-shifting.

### Call for AHUG Conference Papers

There are still a few open spots on the agenda for the presentation of short brief case studies (5-10 minutes) presented by Owners/Operators describing actual plant issues. If you have experienced a significant plant issue or interesting feature that you think others would benefit from knowing about, please send a suggestion.

Submissions for these short presentations should be sent to [bdooley@structint.com](mailto:bdooley@structint.com)

### Conference Committee

AHUG 2012 is chaired by Barry Dooley, Structural Integrity Associates with the assistance of a Steering Committee consisting of:

- » Bob Anderson, Competitive Power Resources
- » John Blake, Stanwell Corporation
- » Mark Utley, Contact Energy
- » Lester Stanley, HRST
- » David Addison, Thermal Chemistry
- » Des McInnes, Stanwell Corporation



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## Conference Agenda: Tuesday 4th & Wednesday 5th December Mezzanine Level, Rooms M1 & M2

### Tuesday: Conference

7:15	Registration - Arrival Tea & Coffee
8:00	Opening comments
8:15	Open floor discussion
9:30	<b>Morning tea</b>
10:00	<b>Case Study : Creep fatigue life assessment of repaired main steam stop valve.</b> <i>Charles Thomas, Quest Integrity Group and John Broad, Genesis Energy</i>
10:30	<b>Updates by attendees</b> <b>Presentation A: Improving sampling techniques to optimise HRSG FAC Management</b> <i>John Blake and Scott Drysdale, Stanwell Corporation</i> <b>Presentation B: Chemistry at Darling Downs Power Station - After commissioning</b> <i>Aletta Botha, Origin Energy</i>
11:15	<b>Project Specification/EPC Contract considerations</b> <i>Ashley Grohn, Aurecon</i>
11.45	Open floor discussion
12:00	<b>Working Lunch within Exhibition</b>
1:00	<b>Optimising HRSG shutdown and startup</b> <i>Bob Anderson, Competitive Power Resources</i>
1.30	<b>Establishment HRSG component lifetime and ramp rates</b> <i>Ian Perrin, Structural Integrity Associates</i>
2.00	<b>Discussion on HRSG startup, shutdown and life assessment</b>
2.30	<b>Updates by attendees</b> <b>Presentation C: Superheater Thermocouple Installation and Results at Swanbank</b> <i>John Blake, Stanwell Corporation</i>
3:00	<b>Afternoon tea</b>
3:30	<b>How to make timely, well-informed decisions in outages based on inspection findings</b> <i>Anita Zunker, Pressure Equipment Integrity Ltd.</i>
4:00	<b>Updates by attendees</b> <b>Presentation D: P91 main steam elbow replacement at Swanbank</b> <i>John Blake, Stanwell Corporation</i> <b>Presentation E: Wet Layups at Contact Energy's Otahuhu Plant</b> <i>Morris Young, Contact Energy</i>
4.30	Open floor discussion
5:00	Day one concludes

5:00 - 7:00

Networking drinks within Exhibits- pre-function area

### Wednesday: Conference

7:30	Registration - Arrival Tea & Coffee
8:00	Open floor discussion
9:30	<b>Morning tea</b>
10:00	<b>HRSG steam drums - Important functions and reliability aspects</b> <i>Lester Stanley, HRST Incorporated</i>
10:30	<b>Drum level instrumentation and the latest ASME code requirements</b> <i>Jim Kolbus, Clark-Reliance Corporation</i>
11:00	<b>Updates by attendees</b> <b>Presentation F: What do power plants look like</b> <i>John Roberts, Sinclair Knight Merz</i> <b>Presentation G: Currently open</b>
11.30	Open floor discussion
12:00	<b>Working Lunch within Exhibition</b>
1:00	<b>Advanced pipe/tube materials and the ASME Code</b> <i>Jeff Henry, Structural Integrity Associates</i>
1:45	<b>Updates by attendees</b> <b>Presentation H: Optimal and effective sampling and analysis methods for Iron</b> <i>David Addison, Thermal Chemistry Limited</i> <b>Presentation I: HRSG cost effective performance assessment</b> <i>Lester Stanley, HRST Incorporated</i>
2.30	Open floor discussion
3:00	<b>Afternoon tea</b>
3:30	<b>Innovation solutions to design issue over the last 25 years</b> <i>John Roberts, Sinclair Knight Merz</i>
4:00	<b>Updates by attendees</b> <b>Update on Contact Energy's Te Rapa Plant</b> <i>Morris Young, Contact Energy</i> <b>The latest on steam side oxides on T23 Alloys</b> <i>Barry Dooley, Structural Integrity</i>
5:00	Day 2 concludes



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## Workshop Agenda: Thursday 6th December Mezzanine Level, Rooms M1 & M2

### Thursday: Workshops

7:15 am Registration and Arrival tea & coffee

#### Workshop

#### Technical and Management Aspects of Optimising the Cycle Chemistry for Combined Cycle/HRSG Plants

*The cycle chemistry of combined cycle/HRSG plants is one of the most important aspects which controls over 70% of the damage that occurs in these plants worldwide. All the technical and management aspects of operating with a world class program will be covered and include guideline development (using IAPWS guidance) for operation and shutdown, avoidance of damage mechanisms, instrumentation, and management processes.*

*To be conducted by: Barry Dooley, Gary Joy, Dave Swainsbury, Des McInnes and David Addison*

8:00 am	<p><b>Introduction: Barry Dooley and Dave Swainsbury</b></p> <ul style="list-style-type: none"> <li>» Cycle chemistry control depends on a management approach which involves total integration of all plant staff (operations, maintenance, technical and chemists) and the identification of repeat situations to control future damage and failure.</li> </ul>
8:10 am	<p><b>Chemically influenced combined cycle/HRSG damage leads to optimum treatment</b></p> <ul style="list-style-type: none"> <li>» Identification of the most common damage mechanisms worldwide provide the direction of the plant staff and chemists. Comprehensive cycle chemistry programs need to address the key features of FAC, Deposits, UDC, Pitting and PTZ problems. Each will be briefly discussed and provide the bases of why the topics in the other workshop sections are needed and why plants can't afford to allow repeat situations to continue. <b>Barry Dooley</b></li> </ul>
9:15 am	<p><b>Road map application of IAPWS technical guidance documents</b></p> <ul style="list-style-type: none"> <li>» The IAPWS technical guidance documents have been designed to address these key HRSG problems. Each TGD contains a road map approach of how the base conditions should be customised to a particular combined cycle plant. <b>Gary Joy</b></li> </ul>
9:45 am	<p><b>Morning Tea</b></p>
10:15 am	<p><b>Monitoring total iron in combined cycle plants</b></p> <ul style="list-style-type: none"> <li>» Measuring total iron is the key indicator of whether the damage mechanisms are likely to occur. But monitoring total iron properly is one of the major deficiencies in combined cycle/HRSG plants worldwide. The optimum processes and accuracies of each will be covered. To include good practices from fossil plants. <b>Des McInnes</b></li> </ul>
10:45 am	<p><b>Fundamental level of instrumentation. Philosophy and usage.</b></p> <ul style="list-style-type: none"> <li>» The second largest deficiency in combined cycle/HRSG plants is that the instrumentation doesn't match the IAPWS International Standard. The key control parameters will be discussed and the appropriate management approach highlighted. <b>Dave Swainsbury</b></li> </ul>
11:15 am	<p><b>Shutdown and layup protection for flexible return to service</b></p> <ul style="list-style-type: none"> <li>» Combined cycle plants most often shutdown without optimum protection. The market today demands flexibility on the return to service capability. The key aspects will be discussed and include the attributes of wet and dry shutdown, short and long term, and the dependence on the return to service. <b>David Addison</b></li> </ul>
11:45 am	<p><b>Management aspects of cycle chemistry control. Repeat situations.</b></p> <ul style="list-style-type: none"> <li>» It is most clear from plant assessments worldwide that allowing more than 3 repeat situations to exist will ultimately lead to failure/damage. The latest data from over 50 plant assessment will be presented to paint a consistent picture. A couple of examples will be provided. <b>Barry Dooley and Dave Swainsbury</b></li> </ul>
12:00	<p><b>Working lunch in Exhibition</b></p>



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## Workshop Agenda: Thursday 6th December Mezzanine Level, Rooms M1 & M2

### Workshop: Next Generation HRSG Design

*Review of the advanced performance anticipated from the next generation of HRSGs; summary of features required to achieve faster startup, higher efficiency and adequate component life while two-shifting.*

*To be conducted by:  
HRSG manufacturers including Alstom, NEM and Nooter-Eriksen.*

1:00 pm	<p><b>Introduction (Ian Perrin, Structural Integrity Associates, Inc.)</b></p> <ul style="list-style-type: none"> <li>» Overview of the challenges of next generation combined cycle plant and overall impacts on HRSG design.</li> </ul>
1:15 pm	<p><b>Next generation gas turbines and their influence on HRSG design (Glenn Selby, Alstom Power Inc.)</b></p> <ul style="list-style-type: none"> <li>» An overview of the features of next generation gas turbines and overall combined cycle plants, with specific discussion of trade-off between drum and once-through designs, designing in operational flexibility and the scalability of the single-row harp concepts for HRSG construction.</li> </ul>
2:00 pm	<p><b>Next generation HRSGs (Raymond Gunnewijk, NEM)</b></p> <ul style="list-style-type: none"> <li>» The implications associated with HRSG design due to larger gas turbines will be discussed. The effect of higher gas turbine exhaust temperatures will be addressed to explain the need for stainless steel tubing and associated challenges. The need for configurable design will be discussed to explain how the HRSG can be adapted for different steam conditions, supplementary firing and even integration with hybrid solar systems.</li> </ul>
2:45 pm	<p><b>Afternoon Tea</b></p>
3:15 pm	<p><b>HRSGs - Today and tomorrow (Joe Schroeder, Nooter-Eriksen)</b></p> <ul style="list-style-type: none"> <li>» Some examples of large HRSGs will be presented to explain the evolution of HRSG design over the last few years. The trend to larger HRSGs, operating at higher temperatures, requires more careful design to address fast start, cycling and overall reliability. In addition, erectibility must be considered in modularisation of the design</li> </ul>
4:00 pm	<p><b>Panel Discussion/Q&amp;A</b></p> <ul style="list-style-type: none"> <li>» Common themes from the presentations will be reviewed and an interactive discussion will be held to allow workshop participants to question the presenters/panelists to cover topics in greater depth or seek answers on topics not specifically addressed.</li> </ul>
5:00 pm	<p><b>Day 3 concludes</b></p>

