



## **ABHUG 2019 Highlights and Press Release**

The first annual meeting of ABHUG held on the 30th October to 1st November 2019 in Brisbane, Australia was chaired by Barry Dooley of Structural Integrity Associates. This first ABHUG conference followed 11 annual meetings of AHUG (Australasian HRSG Users Group) and included conventional fossil plant technology and issues closely related to those in HRSGs. ABHUG 2019 attracted 75 participants from Australia, Japan, New Zealand, Thailand, UK, and USA. About 50% of the participants were Users, which is the highest of the other HRSG forums worldwide.

ABHUG is supported by the International Association for the Properties of Water and Steam (IAPWS) together with the local National Committees of IAPWS in Australia (AUSAPWS) and New Zealand (NZAPWS). It is held in association with the European HRSG Forum (EHF) and the US HRSG Forum (HF). PowerPlant Chemistry provides publishing opportunities for the presentations. For the 2019 meeting there were seven exhibitors: ALS, Duff and Macintosh, Sentry, Flotech, Optimum Control, Quest Integrity and Swan. The Gold Sponsors for this conference were Bang & Clean and HRL Technology Group.

The meeting provided a highly interactive forum for the presentation of new information and technology related to HRSGs and boilers, case studies of plant issues and solutions, and for open discussion among plant users, equipment suppliers, and industry consultants. ABHUG provided a unique opportunity for plant users to discuss questions relating to all aspects of HRSGs and boiler operation with the industry's international experts.



## KEY HIGHLIGHTS

### FROM ABHUG 2019 INCLUDED:

- There were 21 presentations and an ABHUG Workshop on Welding for Fossil and HRSG plants which included another 6 detailed presentations. ABHUG 2019 provided the ability to share experiences and issues across conventional fossil plants and combined cycle plants.
- International updates were provided on HRSG and fossil plant cycle chemistry, instrumentation and FAC as well as on the recent IAPWS Technical Guidance Documents in these areas including the application of Film Forming Substances (FFS), Air In-leakage and Generator water chemistry.
- International updates on HRSG thermal transient aspects associated with attemperators, condensate return and superheater/reheater drain management and by-pass operation.
- The very informative workshop/presentation on welding was well organized and chaired by Russell Coade of HRL, and brought together multiple professionals and companies. Presentations included the latest content of the National Standard AS/NZS 3992 and welding of service exposed materials. Case studies on ligament cracking in superheater headers, cold repair of Grade 91 material and modification of HRSG ducting. Weld Australia provided information on the Welding Skills data base.
- Two fossil plant presentations on pitting were very useful for the operators of HRSGs. This mechanism is unique to reheaters and discussion focused on how it is initiated during inadequate layup of plant. This risk has been discussed at previous AHUG meetings, but these presentations illustrated how severe the damage can be. Both presentations were followed with discussions on the use of dehumidified air (DHA) for reheaters and steam turbines. Unfortunately, the application of DHA is usually added after the damage has occurred instead of proactively beforehand.
- A very practical presentation on Hexavalent Chromium contamination of high chromium material post combustion gas turbine and fireside surfaces in HRSGs and other hot, oxygen rich containing environments (including steam turbine external bolts and steam lines). This provided information on how and where it forms, the health risks it poses, and how to avoid the health effects. This led to a number of attendees purchasing chromate check swabs and modifying their work procedures and PPE requirements during the conference.
- A new inspection tool on developing a digital twin of pressure vessels and other plant components uses the application of state of the art imaging and image capture technology. A particularly interesting application is planned for the upper ducts of an air-cooled condenser to view, without entry into the upper ducts (streets), the tube entries and any associated FAC.
- The users were very appreciative of the plant updates. Operators from four HRSG plants provided their experience in the form of “a year in the life” of their plant. One HRSG plant had conducted an inspection in the ‘stack dead space’ under the floor which another plant will add to the scope for their next shutdown. The specific fossil reheater pitting gave insight into what good layup practices should involve.
- The question/answer periods included impromptu discussions of the oxidation limits for steels used in the superheater/reheater of fossil and HRSG plants. A new index on Oxide Growth and Exfoliation (OGE) will be published soon to include the formation of steam side oxide, how the characteristics of oxide exfoliation varies from one material to another, and the various types of damage that the different exfoliated oxides causes.
- For the first time Pressure Wave cleaning of fireside/gas side surfaces was discussed for both fossil and HRSGs respectively.
- The next meeting of ABHUG will be in Brisbane at the Convention Centre in early December 2020.
- Please contact Barry Dooley ([bdooley@structint.com](mailto:bdooley@structint.com)) or ([bdooley@IAPWS.org](mailto:bdooley@IAPWS.org)) for further information and with suggestions for ABHUG 2020.