

ABSTRACTS

Selecting a Water Treatment Program – A Holistic Approach

Jasbir S. Gill

Water treatment for any system should not be viewed simply as the addition of scale and corrosion inhibitors, dispersants, or biocides. It requires a thorough knowledge of many simultaneous processes responsible for scale corrosion and biofouling. These processes depend to a great extent on each other. The use of impaired waters is increasing due to the shortage of good quality water and for such systems the best solution may require a combination of chemical and non-chemical approaches. The paper discusses a systematic approach to developing a water treatment program by evaluating mechanical, operational, and chemical parameters and their impact on each other.

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Cycle Chemistry Development at Kogan Creek

Ian Richardson

Kogan Creek Power Station was built with the intention of running with oxygenated treatment (OT) feedwater chemistry in accordance with EPRI Guidelines (pH 8.0–8.5, dissolved oxygen about 100 µg/kg). The use of an air-cooled condenser (ACC) to dramatically reduce site cooling water consumption has resulted in conventional OT being unsuitable for this 750 MW, all-ferrous once-through unit, due to significant flow-accelerated corrosion (FAC) issues in the condensate system. While the incidence of FAC within the condensate system is a result of several factors, changes in condensate pH are the only feasible short to medium term variable available to address this issue. The high levels of corrosion in the condensate have also presented challenges for boiler integrity as a result of the iron deposits likely to be forming within the boiler. Kogan Creek is attempting to address these issues by bringing together several different cycle chemistry techniques.

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Looking for Condenser Air Ingress – A Summary of Detection Methods and the Use of Carbon Dioxide as a Tracer Gas

Colin Gwynne

The operation of steam turbine condensers at vacuum conditions creates the risk of air ingress into the water/steam cycle. This can lead to poor condenser backpressure and turbine efficiency issues, or increases in condensate dissolved oxygen and cation conductivity – which are all undesirable. This paper briefly reviews the impact of air ingress and some of the traditional methods used to identify sources of ingress. It then introduces a methodology developed at Eraring Power Station which utilises some of the unique features of that site's 660 MW plant, plus it includes the use of carbon dioxide as an alternate tracer gas, which has proved effective at locating sources of air ingress including a large, but not so obvious leak.

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High Temperature Boiler Cleaning with EDTA

Klaus Kuhnke and Ladislav Bursik

A novel EDTA/NH₃/N₂H₄ process has been developed for the chemical cleaning of steam generators and has been successfully applied for preoperational and operational cleaning of fossil-fired steam generators and for the cleaning of the secondary side of steam generators in pressurized water reactors. This publication focuses on the application of this cleaning process in combined cycle units with heat recovery steam generators. The solvent characteristics and the application procedure are discussed. Among other advantages, the process is fast, has relatively low heat and water requirements, and produces a relatively low volume of wastewater.

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Bottom Ash Treatment Program Saves Midwest Coal Burning Utility More than US\$50,000 Annually

Robert Muehlenkamp and Robert J. Derus

The plant bottom ash spray headers were tested during each outage and most were found to be completely plugged with a white deposit. To repair the spray headers, most were replaced along with the damaged refractory and supply piping. GE Water and Process Technologies conducted preliminary testing on the deposit and found that it was predominately calcium sulfate. Water samples were collected to determine baseline system chemistry and to help define the treatment program. Based on these results, GE Water and Process Technologies's ScaleTrol PDC9326, was recommended for prevention of calcium sulfate scale formation.

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PPChem 101 – Fossil Cycle Chemistry**Lesson 6:****Oxygenated Treatment**

In the February 2008 issue, we introduced our project PPChem 101 "Fossil Cycle Chemistry" with the first lesson (*What Is Plant Cycle Chemistry and Why Is It Important for Steam and Power Generating Plants?*). In March, the second lesson (*Makeup Water Treatment*), in April the third lesson (*Cycle and Component Design, Materials, Operating Mode, and Plant Cycle Chemistry*), in May the fourth lesson (*Feedwater Treatment*) followed, and in June the fifth lesson (*All-volatile Treatment*). The focus of this lesson is on the oxygenated treatment, the treatment for all-ferrous cycles with excellent condensate and feedwater quality.

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