

**Abstracts****Feedwater Redox Stress Management: A Detailed @T ORP™ Study at a Coal-Fired Electric Utility**

Peter D. Hicks, David A. Grattan, Phil M. White, and Kurt M. Bayburt

Arizona Electric Power Cooperative Inc. (AEPCO), located in Cochise, Arizona, has several coal-fired electric power boilers. The boiler systems have copper-based feedwater heaters. The plant feeds carbonylhydrazide (ELIMIN-OX®) as its oxygen scavenger and metal passivator.

AEPCO is constantly looking for ways to improve their boiler operation and protect their capital investment. In 2006, AEPCO began an evaluation of Nalco Company's new, innovative @T ORP™ sensor technology. This technology has the ability to measure the oxidation-reduction potential of feedwater at system operating temperatures and pressures.

Monitoring and controlling the feedwater oxidation-reduction potential at system temperature and pressure was successfully demonstrated at AEPCO. A quantum improvement (paradigm shift) in redox (reduction/oxidation) stress management was achieved after the plant switched to controlled feed of carbonylhydrazide based on the at-temperature (@T) ORP signal. The sensitivity, responsiveness and reliability of this technology were shown during the yearlong evaluation. At-temperature ORP (ORP(T)) showed excellent sensitivity in picking up even small changes in redox stress, providing early detection of a corrosive situation and a means of correcting it. Room temperature (RT) ORP probes were found to be relatively ineffective in picking up these feedwater (FW) redox excursions as compared to ORP(T) probes.

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**Around the *Legionella* World in 20 Minutes**

Matthew R. Freije

This paper provides a brief update on *Legionella* guidelines, risk reduction strategies, legal issues, and domestic water disinfection, with recommendations for facility operators and water treatment specialists.

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**Recent Status of *Legionella* Issues in Japan**

Akira Morita, Takaya Hisamatsu, and Takahiko Uchida

The "Japanese Guideline for the Prevention of Legionellosis" is introduced and the status of *Legionella* inhibition in cooling water systems in Japan is reviewed. About 9,000 sampling data on *Legionella* in cooling water systems are discussed. A seasonal trend has been observed based on cooling water sample numbers and positive *Legionella* findings. Moreover, the percentage of positive findings with a registered chemical treatment program at the Japanese Association of Air Conditioning Water Treatment Chemicals for *Legionella* is about half that without chemical treatment. It is concluded that the registered chemical treatment program is successful in Japan.

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**Corrosion of Service Water Piping in Nuclear Systems**

George Licina

Service water systems are a critical part of the infrastructure of nuclear plants. Corrosion has been shown to be the predominant degradation mechanism for service water piping. Because of the diversity of water sources (seawater, brackish water, and various fresh waters), piping materials (bare carbon steel, coated or lined carbon steel, stainless steels, and non-ferrous metals), and service water system designs, a guideline for service water piping requires a set of concise rules, rather than a prescriptive chemical "recipe," for the system to achieve its design life.

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**Organic Plant Cycle Treatment Is Becoming More Attractive**

Albert Bursik

On May 22–23, 2007 the PowerPlant Chemistry Seminar "Organic Cycle Treatment Chemicals" was held in Heidelberg, Germany. This paper gives a short review of the seminar with brief summaries of the individual seminar contributions.

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**Diagnostic Methods for Operating Surveillance of Large Fluidized Bed Boilers**

Zdeněk Kadlec, Bohumir Čech, Václav Roubíček, and Pavel Kolat

The articles gives a summary of the measurement units that are used for diagnostic measurements in fluidized bed boilers. During the verification process, the Technical University of Ostrava designed and tested various types of probes for temperature and velocity measurements, and for sampling both flue gases and solid particles. The results give more detailed information about the behaviour of the fluidized layer in various fluidized bed boilers. Moreover they can be of use in case of boiler modifications or boiler operation improvements.

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