

## Abstracts

### **Yujirou Uchino, Osamu Yoshikawa, Takashi Morimoto, and Senichi Tsubakizaki Study on the Practical Application of a Method for Corrosion Potential Measurement in a Water Quality Monitoring System Used During Combined Water Treatment**

Combined water treatment (CWT) was adopted at Matsuura Thermal Power Station, Unit 2 (1000 MW unit that entered service in July 1997, operated by Electric Power Development Co., Ltd.) in August 1997. High-temperature and high-pressure potential measurements was conducted when CWT operation was first started as a part of the testing process to ascertain optimal water quality conditions; the quality monitoring system was evaluated.

The results indicated that this system of corrosion potential monitoring could be successfully utilized for water quality control during CWT application. It was confirmed that CWT ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> oxide-stable domain) potential was maintained when oxygenized film formed on the surface of test specimen under CWT conditions, even with small amounts of dissolved oxygen less than 5  $\mu\text{g kg}^{-1}$  in a few days.

### **Mrinal R. Pai, Salil Varma, Arvind D. Belapurkar, and Narendra M. Gupta Development of Catalysts for the Mitigation of Hydrogen in Water Cooled Nuclear Power Reactors Part 2: Poisoning Characteristics**

In this paper we report on the influence of various contaminants on the catalytic behavior of platinum- and palladium-coated stainless steel gauze strips for the H<sub>2</sub> + O<sub>2</sub> reaction. While water or steam cause a temporary catalyst deactivation, gases such as carbon dioxide and methane have practically no effect. Carbon monoxide exposure and oil vapor deposition lead to considerable catalytic deactivation beyond a minimum tolerance limit. Carbon monoxide has more a pronounced effect on palladium-based catalysts, while oil vapor deposition effects platinum-supported catalysts more. In the cases of samples covered with carbon monoxide or with oil vapor, flushing in air regenerates the catalyst to its original activity.

**Ashok S. Kerkar, Mrinal R. Pai, Salil Varma, and Narendra M. Gupta**  
**Development of Catalysts for the Mitigation of Hydrogen in Water Cooled Nuclear Power Reactors**

**Part 3: A Prototype Recombiner Device**

A prototype device intended for the mitigation of hydrogen in the containment of a nuclear power reactor during severe accident conditions is described in this paper. The device is an assembly of a number of catalyst bearing metal panels, each packed with modules of palladium/platinum-coated corrosion resistant stainless steel wire gauze strips and stacked in a metal box under inert atmosphere. The panels are flexibly connected to one another with metal strings and can be suspended downwards with the help of pneumatic or electronic controls. The catalyst bearing panels then offer fresh catalyst surfaces, covering the entire surrounding area for instantaneous reaction of hydrogen and oxygen present in the containment. The system has many advantages such as simplicity, self-activation, high efficiency, resistance to moisture, rapid response, and the possibility of its being operated from a distance away from the accident site.

**François de Dardel and Brian J. Hoffman**  
**New Ion Exchange Resins for Condensate Polishing**

Resins used for condensate polishing, particularly those operating in mixed bed units at high pH values, must have a high cation exchange capacity and very good physical stability. This paper describes two new monodisperse resins, a highly cross-linked gel-type cation exchanger and a macroporous anion exchanger. The properties and performance of the resins are illustrated. Particular emphasis is put on the ability of the resins to withstand a moderate oxidative attack, which could result in sulfonated TOC leachables from the cation resin and kinetic impairment of the anion resin.

**Philip Fatula, Stefan Hilger, Fred Muir, Paul Gross, and Darin Cunningham**  
**The Cost of Producing Demineralized Water in the Gulf Coast with Upflow "Packed Beds"**

A number of upflow "packed bed" demineralization systems have been operating continuously in the Gulf Coast Region for the past 4 years. This paper compiles the actual operating costs of three specific installations, discusses the components associated with these costs, and compares them to operating costs calculated for membrane-based systems capable of producing the same demineralized water quality.

**Frances M. Cutler**

**Maintaining Healthy Resin – Appropriate Resin Specifications, Testing, Treatment, and Storage**

The appropriate time to be concerned about resin performance is before the resin is purchased and installed in a system. Maintaining healthy resin requires starting out with the right resin. Once a new demineralizer system is in service, meaningful resin testing should be made a routine part of the demineralizer quality control (QC) program. When properly designed, a good QC program is inexpensive, simple, and not time consuming.

The major topics covered are: demineralizer design and operating demands, factors affecting resin life and performance (temperature, osmotic shock, mechanical attrition, oxidative attack, resin size - single beds, resin size - mixed beds, flow rate, resin clumping, and crosslinkage), resin specifications, testing, storage, and reuse.

PowerPlant Chemistry GmbH:

Please send me copies of the following articles published in your September journal issue (US\$10 per copy, minimum order US\$15) as PDF files by E-mail (E-mail address required):

- |  |                          |
|--|--------------------------|
| Yujirou Uchino, Osamu Yoshikawa, Takashi Morimoto, and Senichi Tsubakizaki: Study on the Practical Application of a Method for Corrosion Potential Measurement in a Water Quality Monitoring System Used During Combined Water Treatment | <input type="checkbox"/> |
| Mrinal R. Pai, Salil Varma, Arvind D. Belapurkar, and Narendra M. Gupta: Development of Catalysts for the Mitigation of Hydrogen in Water Cooled Nuclear Power Reactors, Part 2: Poisoning Characteristics                               | <input type="checkbox"/> |
| Ashok S. Kerkar, Mrinal R. Pai, Salil Varma, and Narendra M. Gupta: Development of Catalysts for the Mitigation of Hydrogen in Water Cooled Nuclear Power Reactors, Part 3: A Prototype Recombiner Device                                | <input type="checkbox"/> |
| François de Dardel and Brian J. Hoffman :New Ion Exchange Resins for Condensate Polishing  | <input type="checkbox"/> |
| Philip Fatula, Stefan Hilger, Fred Muir, Paul Gross, and Darin Cunningham : The Cost of Producing Demineralized Water in the Gulf Coast with Upflow "Packed Beds"  | <input type="checkbox"/> |
| Frances M. Cutler : Maintaining Healthy Resin – Appropriate Resin Specifications, Testing, Treatment, and Storage  | <input type="checkbox"/> |
| Please send me the September journal issue of your journal (US\$15 per copy) by surface mail   | <input type="checkbox"/> |
| Please send me the September journal issue of your journal (US\$20 per copy) by air mail   | <input type="checkbox"/> |

Total: US\$.....

Name: .....  
Company: .....  
Company address: .....  
City: .....  
Postal/ZIP code: .....  
Country: .....  
VAT Id. No. (EC countries only):   
Fax number\*: .....  
E-mail address: .....

\* This information is voluntary and is requested to make any possibly required contact easier.

Charge my credit card:

- Master/Eurocard   
VISA   
Amex

Card Holder's Address (City) .....

Credit Card Number: ..... Expiration Date (MM/YY): .....  
Card Holder (Name): ..... Date: .....  
Signature: .....

Mail this form to: PowerPlant Chemistry GmbH  
P.O. Box 1269  
68806 Neulussheim  
Germany

Fax this form to: +49-6205-37883