

Abstracts**Summary of the Eskom International Chemistry Conference "Power Plant Chemistry and Process Water Treatment" (Mabalingwe, South Africa, November 9–11, 2005)**

Eric Maughan

This paper is a very brief summary of the recent traditional and as always very successful Eskom International Chemistry Conference, which took place in Mabalingwe, South Africa, on November 9–11, 2005.

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Events Calendar

PowerPlant Chemistry wants to inform you of all power plant chemistry-related conferences and other events taking place worldwide. Please help us to make our Events Calendar more complete. Send us information on planned events by e-mail to editor@ppchem.net. We will include it in the next version of our EVENTS CALENDAR. Your cooperation is much appreciated.

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Decomposition of Chlorinated Hydrocarbons in the Water/Steam Cycle of a Power Plant

Karol Daucik

By mistake, a small amount of trichlorethane was injected into the condensate of a power plant unit with a once-through boiler. The gradual decomposition of the contaminant could be observed by measuring acid conductivity at different places along the feedwater and steam path. The ion chromatographic analysis showed that the increase in acid conductivity was attributable to chloride. The observations give a basis for simplified evaluation of the kinetics of thermal decomposition of trichlorethane in water.

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The Potential Use of Amines in High Temperature Once-Through Nuclear Power Plant Boilers

Andy Rudge, Gary Cook, and Ian Woolsey

A project to implement amine dosing to the steam-water circuit in two of British Energy's nuclear power plants is underway, which, it is hoped, will arrest increases in boiler pressure drop. This paper summarises the reasoning behind the decision to go forward with amine dosing, the amine selection process, and progress to-date with the implementation project. Evidence from boiler rig testing is presented, which shows that amine dosing should be effective at arresting increases in boiler pressure loss. Results from a short plant trial with dimethylamine dosing are also presented, which show that amine decomposition under plant operating conditions is low.

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Formation of Polyamine Films on Iron Surfaces under Power Plant Conditions – Laboratory Investigations

Dietrich Frahne and Thomas Blum

Polyamines have been used for more than two decades and are currently being applied to an increasing extent for successful conditioning of low, medium and high pressure boiler and steam/water cycles, this despite the fact that amines in general are comparatively reactive and in some cases less thermally stable. In some high temperature applications, polyamines and amines are repeatedly alleged in the literature to degrade into volatile organic acids, especially to form the very stable and corrosive acetic acid, in addition to dreaded sticky degradation products on metal surfaces.

In order to find a suitable response to these risky and long debated topics and to provide laboratory evidence to support the numerous practical successes and performance achievements obtained over more than 20 years, we have performed some laboratory experiments that address the origin of volatile acids, the question of stability of decomposition products and the film forming features of polyamines and their protection of metal surfaces. The estimation of low or residual concentrations of polyamines as typically encountered in practice is also discussed. These experiments were partly performed in open vessels at atmospheric pressure. Experiments involving polyamine stabilities were conducted in an autoclave at 175 °C and 400 up to 520 °C. Although laboratory experiments under such simple conditions are not always comparable to practical conditions, the results obtained still offer acceptable confirmation of the many positive practical observations and applications of polyamines in industry.

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Chemical Cleaning of Fossil Steam Generators with Organic Solvents: North American Experience

Kevin J. Shields, Dennis A. Frey, Robert D. Bartholomew, and Gary H. Roberts

Use of organic-based solvents as an alternative to inorganic solvents has been practiced in North America since the 1960s. Solvents in use include hydroxyacetic-formic acid, citric acid, and ethylenediaminetetraacetic acid. Initial applications were in the cleaning of waterwalls of conventional fossil fueled boilers, including drum-type boilers and once-through subcritical and supercritical steam generators, and subsequently in the cleaning of superheaters and reheaters. Most recently, organic solvents have been used in the preoperational cleaning of heat recovery steam generators of combined cycle units.

The organic solvents offer certain advantages as well as some limitations and these aspects must be considered during the selection process. Various characteristics and features of these organic solvents are considered and comparisons to commonly used inorganic solvents are made. Case studies based on field application of the organic solvents for specific purposes are presented to demonstrate the possible uses of these solvents and the required process conditions.

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2005's Scientific and Technical Contributions

As every year, the January issue closes with abstracts of all the articles published in this journal in the last year. Back issues of our journal are – with few exceptions – still available; interested parties can receive PDF files of all articles by e-mail. The order forms may be downloaded from our homepage.

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