

Abstracts**Flow Restrictions in Water-Cooled Generator Stator Coils – Prevention, Diagnosis and Removal****Robert Svoboda and Hans-Günter Seipp****Part 1: Behaviour of Copper in Water-Cooled Generator Coils**

Flow restrictions in the stator bar cooling channels are commonly caused by copper oxide deposits. The paper discusses the mechanisms of such flow restrictions: formation, release, migration and transport of copper oxides. These parameters can be controlled by water chemistry. Of the 1,600 water-cooled stators world-wide (excluding Russia, China and Japan), about half operate under high-oxygen chemistry, the other half under low-oxygen conditions. Alkaline treatment and "cationic purification" are promising options.

Hariharan Subramanian, Madapuzi P. Srinivasan, Tulasi V. Krishna Mohan, Yadavalli V. Harinath, Valil S. Sathyaseelan, Sankaralingam Velmurugan, and Sevilmedu V. Narasimhan
On-Line Measurement of Chemistry Parameters in a Simulated Reactor Coolant System

Structural materials interact with coolant water at high temperatures even though alkaline chemistry is prevalent in reactor circuits. The properties of oxide films formed on construction materials change with the regime of water chemistry. Proper understanding of the effect of the ingress of impurities and consequent changes in water chemistry on the integrity of power plant heat transport system structural materials is essential. On-line water chemistry monitoring helps in achieving this goal in an effective and comprehensive manner. The primary side water chemistry in pressurized heavy water reactors was simulated in a high temperature high pressure loop. Various water chemistry parameters, such as high temperature pH, conductivity, redox and open circuit potential of various structural materials, were monitored under normal as well as off-normal operating conditions simulated in the recirculating loop. All the potential measurements were referenced against an external pressure balanced reference electrode with Ag/AgCl as the active element. The reliability and sensitivity of on-line measurements were investigated.

Anthony C. Bevilacqua, Eric Maughan, and Marc St. Germain**Is the Measurement of TOC in the Steam-Water Circuit of Power Plants Really Necessary?**

Total organic carbon (TOC) has evolved as an important measurement in power/steam generation over the past decade. Different measurement technologies are required as compared to the monitoring of TOC in wastewaters. The significance of TOC measurement in the pure water circuits such as found in power/steam generation is discussed. Different technologies are described which are available for the monitoring of TOC in pure water circuits. The advantages and shortcomings of each method are presented. An alternative technology to those currently in use is described.

Mechanical Carryover – A PowerPlant Chemistry® Survey

In cycles with drum boilers, contaminants may enter into and deteriorate the quality of the generated steam by three paths: mechanical carryover, chemical carryover, and attemperation.

The mechanical carryover is the focus of our survey, since it is the most decisive parameter influencing the quality of the generated steam. The chemical carryover significantly contributes to the transport of contaminants only at the highest drum pressures (about > 17 MPa or > 2 500 psia); the influence of attemperation can be neglected if its quality fulfils the commonly-known requirements on salt-free feedwater.

The PowerPlant Chemistry® journal would like to find out if the currently available data actually represent the situation in the field. For this reason, we ask our readers from utilities, industrial steam and power generating units, and boiler manufacturers to participate in a survey on mechanical carryover.

Albert Bursik

Power Plant Chemistry Practice – Cation Conductivity

In 1999 and 2000, some useful diagrams appeared in the PowerPlant Chemistry® journal. They shared the caption *Power Plant Chemistry Practice*.

Over the last few months, the PowerPlant Chemistry® editorial office has received many requests asking us to publish data useful in everyday power plant chemistry practice, e.g., basic diagrams which help in the interpretation of on-line analysis results and in controlling the most important cycle chemistry parameters.

For this reason, we are presenting a new series of diagrams starting in this issue. This month's topic is cation conductivity. Cation conductivity monitoring in a plant cycle is the basic surveillance tool for detecting the ingress of contaminants in the cycle. Unfortunately, the cation conductivity of a sample is a non-specific parameter. The kinds of substances contributing to or causing a cation conductivity increase are not known. For this reason, it is not easy or is sometimes hardly possible to evaluate the value measured]. The eight diagrams presented will help the user in evaluating the on-line monitoring results.

2003's Scientific and Technical Contributions: Papers in English

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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