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## Abstracts

### Cation Conductivity Monitoring during Startup

Michael Rziha and Peter Wuhrmann

In recent years, the requirements on startup time durations of combined cycle units with heat recovery steam generators have become extreme. In this context, measures in the area of monitoring the key cycle chemistry parameters resulting in reduction in the time necessary to obtain correct and representative analysis values are very important. This paper describes the recent development in this field and clearly demonstrates that the response time of the instrumentation may be reduced by more than half. In this way, the bypass operation time may be markedly reduced what yields significant benefits.

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### Fast Sampling under Process Conditions and after New Start-up in the Steam-Water Cycle of Power Plant

Eric V. Maughan, Alexander Hörig, Karl-Heinz Leleux, and Wolfgang Leye

Acid ("cation") conductivity is used throughout the power industry by manufacturers of steam-driven plants, utility operators and supporting organisations (e.g. the VGB) in specifications, guidelines and standards to quantify steam quality. Although this measured quantity is non-specific and cannot identify any single contaminant, it remains nevertheless a good indication of the steam quality being fed to the turbine. Since the acid conductivity is measured after a strong cation resin exchanger, any changes in flow can upset the measured result, even if flow is discontinued for a short period of time. In addition the presence of dissolved carbon dioxide, found mainly under start-up conditions, will strongly influence the measurement and mask the presence of more harmful ionic contaminants, which have been implicated in the corrosion of materials of construction in the plant cycle. This presentation describes a method to maintain the integrity of the cation exchanger resin even under upset flow conditions and a device for the rapid removal of dissolved carbon dioxide (degassed acid conductivity) to eliminate this nuisance contaminant, which would otherwise unnecessarily delay the return of the steam turbine to service, owing to elevated acid conductivity values. In addition a device to remove transported corrosion products (particularly present during start-up conditions), thus preventing "blinding" of on-line sensors and contamination of the analysers, is also presented.

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## Essentials of the Revised Guideline "Water Conditioning for Boiler Feedwater and Boiler Water" in Japan (JIS B 8223:2006)

Hiroshi Takaku

This paper summarizes the revised parts of the Japanese Industrial Standards for "Water Conditioning for Boiler Feedwater and Boiler Water" (JIS B 8223:2006). The major changes regard the following subjects: the quality of the boiler feedwater and boiler water for heat recovery steam generators (HRSGs) in combined cycle power plants, and the boiler feedwater quality at plant start-up for oxygenated water treatment (OT) of once-through boilers (new additions to JIS B 8223). In particular, the latter focuses on the water quality at plant start-up and on short-term plant outage/lay-up under OT conditions. The main topics to be reviewed and discussed during the next revision of this guideline will be hydrazine for oxygen removal, steam quality, and sodium hydroxide treatment for drum-type boilers.

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## Discussion

In the October 2007 issue of our journal, the paper *Is Cation Conductivity Monitoring Relevant For Today's Combined Cycle Power Plant? – Yet Another Case Study Says It Is Not*, authored by Luis Carvalho, Thomas James, and William E. Hunter, appeared (PowerPlant Chemistry 2007, 9(10), 608–612). This was expected to will provoke some interesting discussion. This appraisal has proven correct: the PowerPlant Chemistry editor has already received the first letter with comments on this article. This letter is published without any changes. After consulting with the corresponding author of this paper, it was agreed that a response to this and any other comments which may be received will appear in the December issue of this journal.

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## Degassed Cation Conductivity – The Manufacturers Report

PowerPlant Chemistry has received many e-mails in which our readers request that we publish information about degassed cation conductivity monitors available on the market. All the mails are of the same tenor: publish short descriptions of the available systems with some application examples. In this paper, the first two manufacturers and their customers present contributions that represent the view of the particular manufacturer or its customer. For understandable reasons PowerPlant Chemistry does not take any responsibility for the content of these reports.

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## To Shut Down, or Not to Shut Down, That Is the Question

Albert Bursik

Faced with the data from their monitoring instruments, personnel at a power plant may be required to make a quick decision – to shut down or not to shut down a drum boiler. The major cycle guidelines give lower limits of 8.0 or 8.5 for the boiler water pH. However, calculations reported on in this paper indicate that these limits are not sufficient to ensure alkaline conditions in the entire temperature range in which drum-type boilers are operated. It is concluded that the boiler water shutdown limits in the guidelines should be re-evaluated, a pressure-dependent shutdown pH limit may be safer and more economical, and a pressure-dependent minimum sodium level for ensuring alkaline conditions at temperature may be advisable.

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