

Report on the Power Cycle Instrumentation Seminar (PCIS) Germany 2024 in Goslar, Germany

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ABSTRACT

For the first time in the history of these events, the Power Cycle Instrumentation Seminar (PCIS) series stopped over in Germany. The PCIS Germany 2024 in Goslar was held under the patronage of PPCHEM AG, with financial sponsorship from SWAN Analytical Instruments and REICON Wärmetechnik und Wasserchemie Leipzig GmbH.

The PCIS series provides a well-proven mixture of theoretical background information on cycle chemistry, sampling, and monitoring as well as a deeper look into analytical methods and critical issues for each parameter, concerning operation, verification, and calibration.

This report summarizes the two days of the PCIS Germany 2024.

INTRODUCTION

Due to a lack of travel budgets, station chemists, designers, and operators from Southeast Asia, South America, and southern Africa are not frequently seen at international conferences in the USA and Europe. For this reason, Waesseri GmbH, former publisher of the PowerPlant Chemistry® journal, started to organize the Power Cycle Instrumentation Seminars (PCIS) in order to connect experts from Europe and the USA with these regions of the world. The first PCIS took place on March 27–28, 2012, in Bangkok, Thailand. The detailed proceedings of this event were summarized and published in this journal [1].

Since then, the PCIS series has taken place at 16 different locations in Asia, the Americas, and Africa [2]. An overview of all the events organized in the past is given in Figure 1. The main concept of the PCIS has remained the same over the past years – a well-proven mixture of theoretical background information on cycle chemistry, sampling, and monitoring as well as a deeper look into analytical methods and critical issues for each parameter, concerning operation, verification, and calibration.

While in 2020 there was no PCIS due to the pandemic, PPCHEM held its first virtual PCIS in 2021, and in 2022, PPCHEM decided to bring

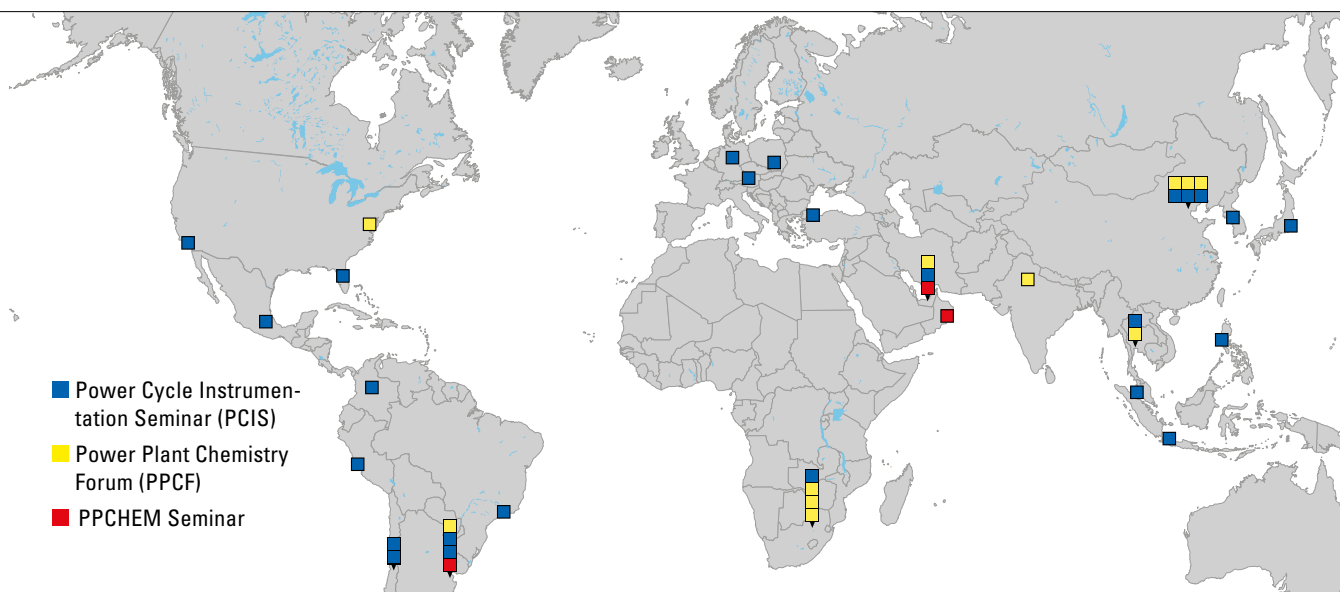


Figure 1: World map with all the locations where PPCHEM AG has organized events between 2012 and 2024.

this event closer to home, its offices in Switzerland. The first PCIS in the German-speaking neighborhood was the PCIS Austria 2022, which took place on March 27–28, in Linz, Austria. The detailed proceedings of this event were summarized and published in this journal [3].

The second German-speaking PCIS was held on March 12 and 13, 2024, in Goslar, Germany. The main questions to be answered during the two-day seminar were the following:

- How important is the chemistry in the water/steam cycle of every power plant?
- Which parameters should one measure and where and how and why?
- What can happen if the chemical parameters get out of hand, and what is the best way to react?
- What damage can be prevented with good instrumentation?

This report presents the two days of the PCIS Germany 2024, briefly summarizing each presentation and highlighting key findings.

AGENDA

Day 1

The seminar was started off by Michael Rziha, PPCHEM AG, Switzerland, who provided the audience with an initial introduction to the subject matter (Figure 2). In his presentation, he discussed various instances of damage and impairments stemming from faulty or inadequate chemistry, highlighting their associated economic impacts. Following a brief intermission, Michael delved into the different chemical regimes, their respective monitoring requirements, and the various guidelines for monitoring parameters and critical values. Information about the different guidelines may be found at reference [4].

At the morning session's conclusion, participants and speakers engaged in a panel discussion. This panel discussion recurred after each session over the two-day event. Insightful discussions were also held during the lunch and coffee breaks. During each break, the two sponsors were also able to present their latest products at their booths and answer further questions from the participants.

At the beginning of the afternoon session, Lars Dittmar, Swan Analytische Instrumente GmbH, Germany (Figure 3), spotlighted the vgbe standard S-006 [5], which encompasses crucial aspects of the sampling and monitor-



Figure 2:
Michael Rziha, PPCHEM AG, Switzerland.



Figure 3:
Lars Dittmar, Swan Analytische Instrumente GmbH, Germany.



Figure 4:
Karla Georgi-Kruggel, Lausitz Energie Kraftwerke AG, Germany.

ing of water/steam cycles. This vgbe standard, in conjunction with the vgbe standard S-010 [6] and other relevant norms and standards, provides the foundation for acquiring reliable, accurate, and precise measured values.

Karla Georgi-Kruggel, Lausitz Energie Kraftwerke AG, Germany (Figure 4), continued with a case study about online total organic carbon (TOC) monitoring in water treatment. This case study clearly showed the importance of the online monitoring of TOC in all process stages of the water treatment plant for a proper process evaluation.



Figure 5:
Ronny Wagner, REICON Wärmetechnik und Wasserchemie Leipzig GmbH, Germany.

After another coffee break, Lars Dittmar revisited the topic of sampling systems and sample preparation. Emphasizing the importance of proper sampling point design and maintaining consistent sample pressure, temperature, and flow, he stressed the need for state-of-the-art sampling systems which also integrate recent technical advancements to ensure representative samples and facilitate easy maintenance and service.

Concluding the day's proceedings, Michael Rziha discussed proper data management. "How to use the chemical data to operate a system safely and economically" and "how to react when chemical parameters get out of hand" were the two main questions addressed. Stressing the correlation between chemical trends, process data, and plant status, he highlighted the necessity of a plant-specific "chemical emergency plan" that determines responsibilities and actions in the event of an alarm, and emphasized the need for periodic revisions.

Day 2

Ronny Wagner, REICON Wärmetechnik und Wasserchemie Leipzig GmbH, Germany (Figure 5), started the second day off with a presentation on the detection of film-forming amines. After a brief introduction to the topic and a summary of the latest international developments in the field (e.g., international guidelines on film-forming amines [7,8]), the individual measurement methods were presented. The advantages and disadvantages of laboratory methods, manual measurements, and a specific online analyzer were presented in depth.

The following presentations in this morning session were dedicated to online instrumentation. Parameters discussed were the pH measurement, direct, acid, and degassed conductivity, sodium, dissolved oxygen, silica, and

phosphate measurement. Lars Dittmar gave an introduction to the analytical methods and the critical issues for each parameter concerning operation, verification, and calibration. The focus was on comprehending the fundamental principles, typical sampling points, and guidelines, rather than specific brands.

Michael Rziha closed the morning session with a presentation on dissolved hydrogen and its use as a diagnostic parameter for the assessment of the general formation of protective layers.

After lunch, Lars Dittmar showed how iron monitoring in the water/steam cycle can be done with non-contact nephelometry. Iron monitoring is a very useful parameter to ascertain the effectiveness of chemical conditioning, optimize chemical operation, prevent damage, and last but not least increase plant availability.

The final two presentations of the day were held by Michael Rziha. First, he discussed quality assurance for online water/steam analyzers. In his second presentation about the requirements for cooling water monitoring, he showed that chemistry and monitoring of the cooling water are just as important as in the water/steam cycle.

CONCLUSION

As with every seminar in this format, the PCIS Germany centered on analytical methods, sampling points, and critical issues for each parameter. It offered a blend of theoretical background information on cycle chemistry, sampling, and monitoring, as well as analytical methods and instruments.

The seminar in Germany drew over 50 attendees, including station chemists, instrument technicians, designers, and C&I-engineers. Linked to participation was a free e-paper subscription to the PPCHEM journal for the following year. The feedback from the audience was very positive, fueling motivation for new events. Further seminar dates and details will be announced in this journal once finalized.

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THE AUTHOR

Tapio Werder is the current editor in chief of the PPCHEM® journal.

He started his work for the journal in 2014 as an editorial assistant, and in 2015 the responsibility for finding appropriate submissions and for the production of the journal as the editor in chief was handed over to him completely.

As a member of the management at PPCHEM AG he is responsible for all administrative tasks and the organization of the international conferences and seminars.

From 2015 to 2022 he was the secretary of the Swiss Committee for the Properties of Water and Steam (SCPWS) – the Swiss national committee of IAPWS. In 2022, SCPWS merged with the German national committee of IAPWS to form the German-Swiss Association for the Properties of Water and Steam – GSAPWS, where Tapio Werder acts as the 2nd deputy on the board of the association.

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