

Report on the Power Cycle Instrumentation Seminar (PCIS) Germany 2025

Tapio Werder

ABSTRACT

For the second time, the Power Cycle Instrumentation Seminar (PCIS) series made a stop in Germany. The PCIS Germany 2025 in Aachen 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 focuses on the analytical methods, the sampling points, and the critical issues for each parameter. The emphasis lies on spreading knowledge of cycle chemistry and an understanding of analytical instruments. The seminar 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 2025.

INTRODUCTION

The inaugural Power Cycle Instrumentation Seminar (PCIS) was held on March 27–28, 2012, in Bangkok, Thailand, with the goal of enhancing knowledge of cycle chemistry and deepening the understanding of analytical instrumentation. Since then, the PCIS series has been hosted at 25 locations across Asia, the Americas, Europe, and Africa [1]. [Figure 1](#) provides an overview of all events held to date.

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.

The first PCIS in the German-speaking neighborhood of PPCHEM's offices was the PCIS

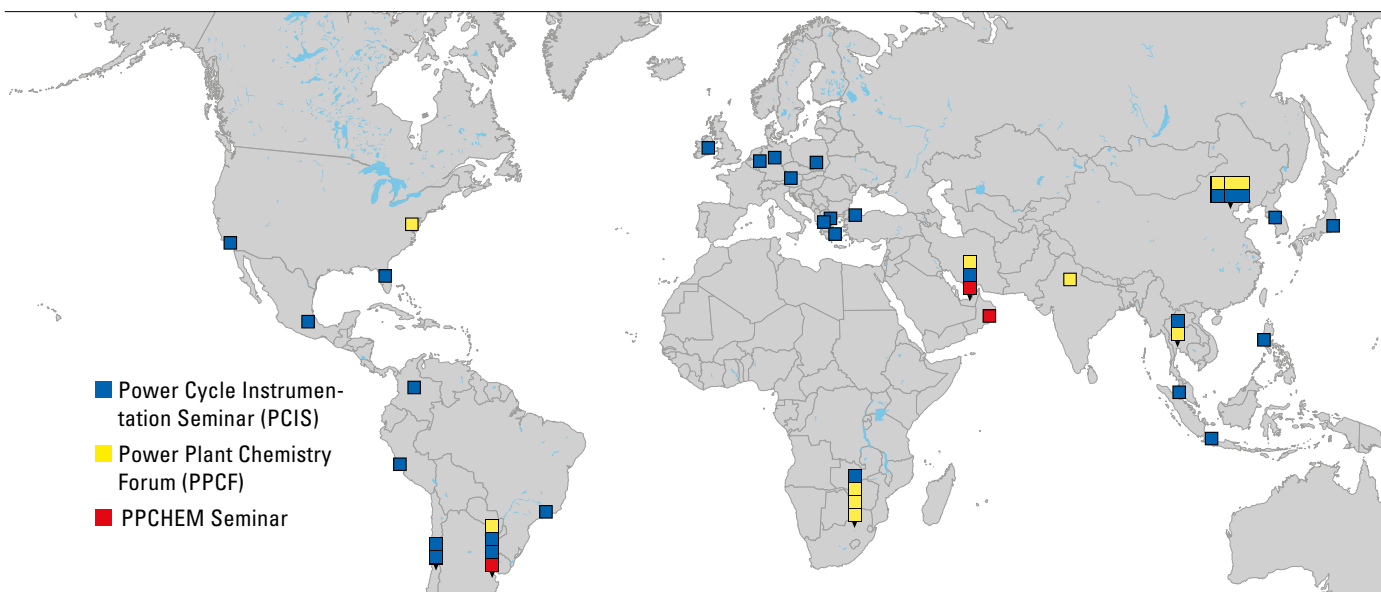


Figure 1: World map with all the locations where PPCHEM AG has organized events between 2012 and 2025.

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 [2]. The second German-speaking PCIS was held on March 12 and 13, 2024, in Goslar, Germany. The detailed proceedings of this event were summarized and published in this journal as well [3].

Encouraged by the positive feedback from the event in Goslar, the decision was made to hold a follow-up seminar this year in Aachen, 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 2025, briefly summarizing each presentation and highlighting key findings.

AGENDA

Day 1

The seminar began with an opening presentation by Michael Rziha from PPCHEM AG, Switzerland, who provided an introductory overview of the topic (Figure 2). He explored several cases of damage and performance issues caused by improper or insufficient chemistry, emphasizing the resulting economic consequences. After a short break, Michael continued by examining various chemical regimes, their specific monitoring needs, and the relevant 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 question and answer session. This question and answer round 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), focused on the vgbe



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.

standard S-006 [5], which addresses key elements of the sampling and monitoring in water/steam cycles. This vgbe standard, together 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



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

online monitoring of TOC in all process stages of the water treatment plant for a proper process evaluation.

After another coffee break, Lars Dittmar returned to the topic of sampling systems and sample preparation. He underscored the importance of proper sampling point design and the importance of maintaining consistent sample pressure, temperature, and flow. Highlighting the value of modern sampling systems, he emphasized the integration of recent technological advancements to ensure representative sampling and to support ease of maintenance and servicing.

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 developments in the field, 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 article on which this presentation was based was published earlier this year in this journal [7].

The subsequent presentations in this morning session focused on online instrumentation. Parameters discussed were 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 emphasis was placed on understanding the fundamental principles, typical sampling locations, and relevant guidelines, rather than on specific manufacturers or products.

After lunch, Michael Rziha continued with a presentation on dissolved hydrogen and its use as a diagnostic parameter for the assessment of the general formation of protective layers.

Lars Dittmar then 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 presentation of the day was held by Michael Rziha about the requirements for cooling water monitoring, where 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 2025 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 almost 30 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 coming year. The feedback from the audience was very positive, fueling motivation for new events. Further seminar dates and details are announced in this journal and on the webpage www.ppchem.com.



REFERENCES

- [1] Werder, T., Rziha, M., "Conferences and Seminars Organized by PPCHEM AG – An Overview", *PPCHEM* 2021, 23(4), 180.
- [2] Werder, T., "Report on the Power Cycle Instrumentation Seminar (PCIS) Austria 2022 in Linz, Austria", *PPCHEM* 2022, 24(5,6), 238.
- [3] Werder, T., "Report on the Power Cycle Instrumentation Seminar (PCIS) Germany 2024 in Goslar, Germany", *PPCHEM* 2024, 26(2), 82.
- [4] EPRI: <https://www.epri.com/>;
IAPWS: <http://www.iapws.org/>;
vgbe: <https://www.vgbe.energy/>.
- [5] *VGB Standard: Sampling and Physico-Chemical Monitoring of Water and Steam Cycles*, 2012. vgbe energy e.V. & vgbe energy service GmbH, Essen, Germany, VGB-S-006-00-2012-09-EN.
- [6] *vgbe-Standard: Feed Water, Boiler Water and Steam Quality for Power Plants/Industrial Plants*, 2023. vgbe energy e.V. & vgbe energy service GmbH, Essen, Germany, VGBE-S-010-00-2023-08-EN.
- [7] Wagner, R., "How to Analyze Film-Forming Amines – Analytical Methods and Best Practices", *PPCHEM* 2025, 27(1), 38.

THE AUTHOR

Tapio Werder is the 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.

CONTACT

Tapio Werder
PPCHEM AG
P.O. Box 433
8340 Hinwil
Switzerland

E-mail: tapio.werder@ppchem.com