Report on the Power Cycle Instrumentation Seminar (PCIS) Austria 2022 in Linz, Austria

Tapio Werder

ABSTRACT

For the first time in the history of these events, the Power Cycle Instrumentation Seminar (PCIS) series stopped over in a German-speaking country. The PCIS Austria 2022 in Linz was held under the patronage of PPCHEM AG, and SWAN Analytical Instruments provided financial support.

Since 2012, PPCHEM AG and its precursor organization, Waesseri GmbH, have organized more than 30 conferences and seminars around the world with the mission of expanding the knowledge of cycle chemistry and the understanding of analytical instruments. Over the past 10 years, different formats of events have been developed to fit the different needs and interests within the power plant chemistry community.

This report summarizes the two days of the PCIS Austria 2022

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 international experts with the above-mentioned 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].

Shortly after the event in Bangkok, the decision was made to organize a second event. While the first seminar concentrated on the fast-growing region of Southeast Asia, the world region chosen this time was southern Africa. Since then, the PCIS series has taken place at 16 different locations in Asia, the Americas, and Africa. 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 analytical methods and instruments, with a practical hands-on session with instruments.

While in 2020 there was no PCIS due to the pandemic, in 2021 PPCHEM held the first virtual PCIS – even though there was no possibility to offer a hands-on session, the feedback from the participants was very positive. When it was clear that – at least in Europe – travelling could become possible again in 2022, PPCHEM AG decided to plan an event in the close neighborhood of its offices in Switzerland. For several reasons, it soon became clear that we would like to hold the PCIS in a German-speaking country.

The PCIS Austria 2022 (September 26 and 27) at the Courtyard by Marriott Hotel in Linz, Austria, was held under the patronage of PPCHEM AG, and Swan Analytical Instruments provided financial support.

AGENDA

Day 1

The session was opened by Michael Rziha, PPCHEM AG, Switzerland, by providing the audience with a first introduction to the subject. In his first presentation, he discussed several examples of damage and impairments caused by the chemistry and the associated economic impact. After a short coffee break, Michael introduced the different chemical regimes and their respective monitoring requirements as well as the different guidelines for monitoring parameters and critical values. Information about the different guidelines may be downloaded at [2].

At the end of the session, questions from the participants were discussed in a panel discussion with all speakers and Prof. Dr. Herwig Maier (former head of chemistry at EnBW, Germany, and longtime Chairman of the VGB Technical Committee Chemistry). This panel discussion was repeated after each session during the two days.

After lunch, Lars Dittmar, Swan Analytische Instrumente GmbH, Germany, focused on the vgbe standard S-006 [2], which covers the most important aspects of the sampling and monitoring of water/steam cycles. This vgbe standard, together with the vgbe standard S-010 [3], as well as other applicable norms and standards, provides the basis for obtaining reliable and, above all, correct and precise measured values.

Christian Hinterstoisser, Linz Strom GmbH, Austria, continued with a case study about damage caused by an ingress of caustic soda at a combined cycle power plant. This case study showed very well the importance of the monitoring system for a proper root cause analysis in case of damage.

After another coffee break, Robert Steiner, Swan Analytische Instrumente GmbH, Austria, returned to the topic of sampling systems and sample preparation. The correct design of the sampling point is just as important as maintaining constant sample pressure, temperature, and flow in order to achieve precise and reproducible measurement results. A state-of-the-art sampling system not only ensures representative samples but also incorporates recent technical developments to allow easy maintenance and service.

Michael Rziha concluded the day by discussing 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 adressed. Chemical trends must always be correlated with the plant status and relevant process data; this is the only way to make reliable and correct diagnoses. A plant-specific "chemical emergency plan" defines who must do what, when, and how in the event of an alarm, and this plan needs to be revised from time to time.

Day 2

The morning session of the second day was opened by Lars Dittmar speaking about the importance and interpretation of chemical (online) parameters in power plant operation. The presentation was originally prepared by Karla Georgi-Kruggel, LEAG, Germany, who unfortunately couldn't attend the seminar. The presentation summarized the content of the first day and highlighted again some important prerequisites for evaluating measured values.

The following session was dedicated to online instrumentation, beginning with presentations on pH measurement, direct, acid and degassed conductivity, sodium, dissolved oxygen, silica, and phosphate measurement. Lars Dittmar and Robert Steiner gave an introduction to the analytical methods and the critical issues for each parameter with respect to operation, verification, and calibration. The emphasis was on understanding the basic principles, typical sampling points, and guidelines, instead of focusing on 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, and afterwards, Robert Steiner discussed quality assurance for online water/steam analyzers.

The final presentation of the day was held by Michael Rziha. In his presentation about the requirements for the cooling water monitoring he showed that chemistry and monitoring of the cooling water is just as important as in the water/steam cycle.

CONCLUSION

The seminar in Austria attracted over 40 station chemists, instrument technicians, designers, and C&I-engineers. Linked to participation was a free e-paper subscription to the PPCHEM journal for the next year.

The feedback from the audience was very positive. New events are already being planned. Seminar dates and other details will be published in this journal as soon as they are available.

REFERENCES

[1] Germann, R., "Report on the SWAN/Power-Plant Chemistry Power Cycle Instrumentation Seminar in Bangkok, Thailand", *Power-Plant Chemistry* **2012**, 14(4), 244.

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[3] *VGB Standard: Sampling and Physico-Chemical Monitoring of Water and Steam Cycles*, **2012**. vgbe energy service GmbH, Essen, Germany, VGB-S-006-00-2012-09-EN.

[4] *VGB Standard: Feed Water, Boiler Water and Steam Quality for Power Plants / Industrial Plants*, **2011**. vgbe energy service GmbH, Essen, Germany, VGB-S-010-T-00;2011-12. EN.

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 in the board of the association.

CONTACT

Tapio Werder
PPCHEM AG
P.O. Box 433
8340 Hinwil
Switzerland
E-mail: tapio.werder@ppchem.com

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