# Integration of Hydrogen Technologies into Regional Energy Systems

## Workshop

13:00, 6th May 2025 –
13:30, 8th May 2025

University of Bayreuth,
TAO building

ZET Zentrum für Energietechnik

UNIVERSITÄT BAYREUTH

## About this Workshop

Hydrogen has emerged as a key focus area in the pursuit of sustainable energy. As the global transition accelerates, integrating hydrogen into transportation, chemical processing, and the energy sector has become more crucial than ever. At the University of Bayreuth, hydrogen research bridges science and industry, making significant contributions to the market ramp-up of hydrogen. In this spirit, we are pleased to host a workshop on Integration of Hydrogen Technologies into Regional Energy Systems at the University of Bayreuth in the framework of our project HyBaCoM – Design and Optimization of Hybrid Hydrogen Battery Energy Systems for Community Microgrids. This event will bring together a diverse group of industry experts, researchers, and partners from Germany and Australia to exchange insights on the latest advancements in hydrogen research and technology. As part of the workshop, a site tour to the Wunsiedel Energy Park will take place. This is one of the largest operational electrolysis plants in Germany integrated into a coupled energy system, providing a unique opportunity to explore large-scale applications of hydrogen technology. We look forward to welcoming you to this workshop at one of Germany's most beautiful campus universities in Bayreuth.

## Details of the Event

- **Date:** 6th – 8th May 2025
- **Target Audience:** Experts and interested public from industry, science and politics
- **Venue:** University of Bayreuth, TAO building, Prof.-Rüdiger-Bormann-Str. 1, 95447 Bayreuth
- **Event language:** English
- **Participation fee:** None
- **Registration:** Please register here

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# Workshop

# "Integration of Hydrogen Technologies into Regional Energy Systems"

**Date**: 6th – 8th May 2025

**Venue:** University of Bayreuth, TAO Building, Prof.-Rüdiger-Bormann-Str. 1, 95447 Bayreuth

**Program:**

**Tuesday, May 6th, 2025**

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| 13:00 | Registration & Welcome | |
| | | *Prof. Dr.-Ing. Dieter Brüggemann, Director of the Center of Energy Technology (ZET) at the University of Bayreuth* |
| 13:30 | Hydrogen Technologies – Research, Development and Testing at the Center of Energy Technology | |
| | | *Dr.-Ing. Matthias Welzl, Coordinator Hydrogen Research and Technologies, University of Bayreuth* |
| 14:00 | Digital Twins and Optimization of Electrolysis Plants | |
| | | *Dr. Steven Percy, Senior Research Fellow, Victorian Hydrogen Hub (VH2), Swinburne University of Technology, Australia* |
| 14:30 | Modeling and Simulation of Power-to-Gas Plants | |
| | | *Tim Herrmannsdörfer, M.Sc., Research Associate, University of Bayreuth* |
| 15:00 | Coffee Break | |
| | | *(break 45 min)* |
| 15:45 | The Hydrogen Performance Suite | |
| | | *Timothy Costello, Siemens AG* |
| 16:15–16:45 | Power Intermittency in PEM Electrolyzers Directly Coupled with Renewable Energy Sources | |
| | | *Petros Polykarpoulos, M.Sc., Research Associate, University of Bayreuth* |
| 18:30 | Networking Dinner in Bayreuth | |
| | | *Engin's Ponte, Opernstr. 24-26, 95444 Bayreuth* |

## Wednesday, May 7th 2025

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| 9:00 | Keynote: Driving the Energy Transition – How Hydrogen Complements EV and Renewable Integration<br>*Prof. Dr. Mehdi Seyedmahmoudian, Director of Siemens Swinburne Energy Transition Hub, Swinburne University of Technology, Australia* |
| 9:30 | Hydrogen-Battery Hybrid Energy Storage Systems<br>*Manashaa Madhavan, PhD candidate, Swinburne University of Technology, Australia* |
| 10:00 | Unlocking Hydrogen as a Community Asset Enabling Smart Community Microgrids for a Net-Zero Future<br>Dr. *Gokul Sidarth Thirunavukkarasu, Swinburne University of Technology, Australia* |
| 10:30 | Coffee break |
| 11:00 | Discussion |
| 12:00 | Lunch at Mensa |
| 13:30 | Travel to Wunsiedel Energy Park<br>*Bus transfer (travel time approx. 1 hr ) will be organised by University of Bayreuth* |
| 14:30 | Visit of UBT Future Energy Lab Wunsiedel GmbH |
| 15:30 | Site tour: PEM Electrolysis Plant |
| 17:00 | Transfer to Bayreuth for Dinner |
| 18:30 | Networking Dinner in Bayreuth<br>*Manns Bräu, Friedrichstr. 23, 95444 Bayreuth* |

## Thursday, May 8th 2025

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| 9:00 | PEMFC Modeling, Temperature Control & Waste Heat Recovery<br>*Mohammed Irfan S R, M.Sc., Research Associate, University of Bayreuth* |
| 9:30 | Performance Study of Various Fuel Cells on a System Testbench<br>*Maximilian Kleber M.Sc., Research Associate, Hochschule RheinMain* |
| *10:00* | Coffee break |
| 10:15 | TBD<br>*GridData (TBC)* |
| 10:45 | TBD<br>*Technologiezentrum Energie (TBC)* |
| 11:15 | Summary and Conclusion<br>*Dr.-Ing Matthias Welzl, Coordinator Hydrogen Research and Technologies, University of Bayreuth* |
| 11:30 | Lunch at Mensa |
| 12:30–13:30 | Lab tour (optional) |