



Workshop

Thermal Management in the Hydrogen Supply Chain – Applications and Measurement Techniques

event
on Thursday, March 14th 2024

at Center for Applied Energy Research
in Würzburg (Germany)

The objective of the workshop is to contribute to the improvement of the Thermal Management in the Hydrogen Supply Chain by better connecting the relevant actors.

Hence, the workshop is primarily aimed at industrial companies that are involved in hydrogen technology, whether producing, transporting, storing or using it.

Registration fee: 100.- Euro
CAE-member discount: 20%

To register for the workshop
Please use the QR-code to send
an e-mail to

met4h2@cae-zeroarbon.de

You will get a confirmation
together with more information
about the venue.



Schedule of the workshop: Forenoon on March 14th 2024

Time	Title	Speaker
09 ⁰⁰	Start of the workshop	
Section 1: Status and results of MET4H2: Metrology in the hydrogen supply chain		
09 ⁰⁰ till 09 ¹⁰ (10 min)	Welcome and introduction	Hans-Peter Ebert CAE
09 ¹⁰ till 09 ⁴⁵ (35 min)	Safety aspects of hydrogen supply lines	Adriaan van der Veen VSL
09 ⁴⁵ till 10 ⁰⁵ (20 min)	Gas permeation measurements of polymer materials in hydrogen applications	Frank Lotter CAE
10 ⁰⁵ till 10 ²⁵ (20 min)	Discussion	all
10 ²⁵ till 10 ⁴⁵ (20 min)	Coffee break	
Section 2: Thermal management in the hydrogen supply chain – measurement techniques		
10 ⁴⁵ till 11 ²⁰ (35 min)	Characterization of materials under hydrogen with thermo-analytical methods	Jürgen Blumm NETZSCH-Gerätebau GmbH
11 ²⁰ till 11 ⁴⁵ (25 min)	Thermophysical properties of materials in a wide range of temperatures and pressures	Jochen Manara CAE
11 ⁴⁵ till 12 ³⁰ (45 min)	Laboratory tour	all
12 ³⁰ till 13 ³⁰ (60 min)	Lunch break	

Schedule of the workshop: Afternoon on March 14th 2024

Time	Title	Speaker
Section 3: Thermal management in the hydrogen supply chain – applications		
13 ³⁰ till 14 ⁰⁵ (35 min)	Hydrogen and fuel cells in the aviation sector	Gerrit Rexhausen Lufthansa Technik AG
14 ⁰⁵ till 14 ³⁰ (25 min)	Hydrogen in the energy sector	Fabian Scheller CAE
14 ³⁰ till 14 ⁵⁰ (20 min)	Discussion	all
14 ⁵⁰ till 15 ⁰⁰ (10 min)	Summary and farewell	Jochen Manara CAE
15 ⁰⁰	Close of the workshop	

The project 21GRD05 MET4H2 receives funding from the European Partnership on Metrology, cofinanced by the European Union's Horizon Europe Research and Innovation Programme and from the Participating States.

The Met4H2 project involves 27 partners from all over Europe. More information can be found on the project website:

<https://met4h2.eu>



Co-funded by the
European Union

METROLOGY
PARTNERSHIP





Workshop

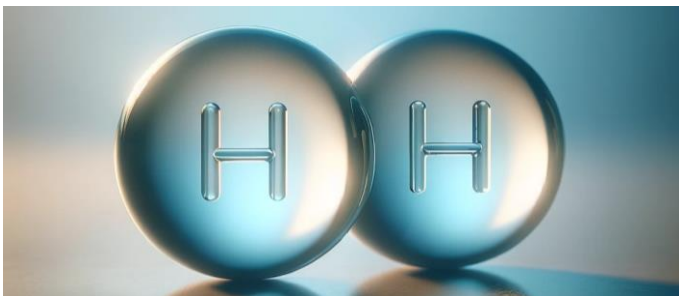
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As the world moves towards sustainable energy solutions, the role of hydrogen in the energy supply chain becomes increasingly important.

The workshop focusses on the thermal management in the hydrogen supply chain and the determination of thermophysical properties under hydrogen atmosphere and application conditions (such as low or high temperature, high pressure etc.) using appropriate measurement techniques.



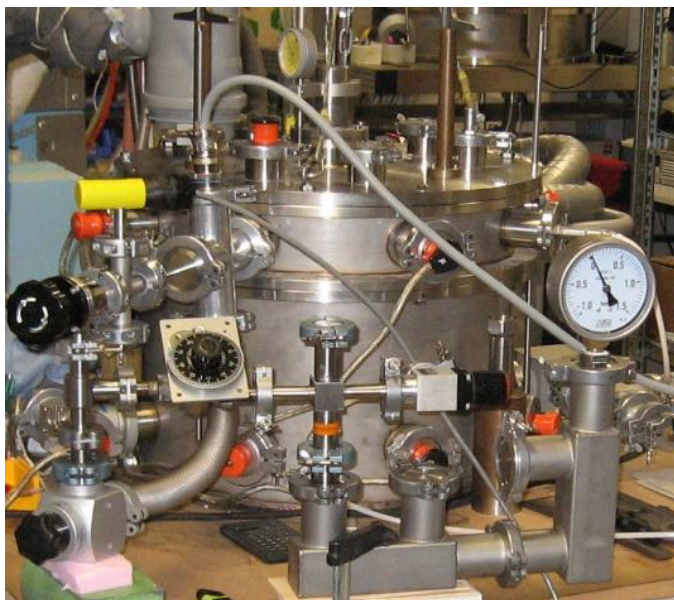
Contact and venue

E-Mail: met4h2@cae-zeroarbon.de

Center for Applied Energy Research (CAE)
Magdalene-Schoch-Str. 3, 97074 Würzburg, Germany

Scope of the workshop

The workshop brings together industry experts and researchers as well as policy makers and regulatory bodies to explore the latest advancements and challenges in thermal management in the hydrogen supply chain including applications and measurement techniques for quantifying the thermophysical characteristics as key figures for improving performance and efficiency of technologies for the generation, transport, storage and conversation of hydrogen.



The latest developments in measuring and optimizing thermal properties in hydrogen systems will be presented and discussed. Additionally networking opportunities will be provided enabling participants to exchange ideas and develop new approaches.

In the workshop, different fields of application will be presented. The usage of hydrogen in the different sectors will be introduced and emerging issues will be discussed. This includes thermal management and thermophysical properties as well as sensors technology and material embrittlement in hydrogen atmosphere.

Furthermore generation, transport, storage and usage of hydrogen will be part of the workshop.

Scope of the project Met4H2

The project aims to establish standards for hydrogen flow measurement, quality assessment, and custody transfer to ensure safe application and regulatory compliance. Specific goals include developing reliable measurement methods for hydrogen production and use, improving standards for flow metering and gas quality assessment, and developing novel methods for evaluating measurement uncertainty. The project's outcomes are expected to support the industry, metrology, and scientific communities, contributing significantly to the safe application of hydrogen in energy systems.

Besides thermal management as a comprehensive framework, the project addresses the following key issues:

- health, safety and environment,
- flow measurement,
- hydrogen quality,
- measurement uncertainties for fiscal metering.

