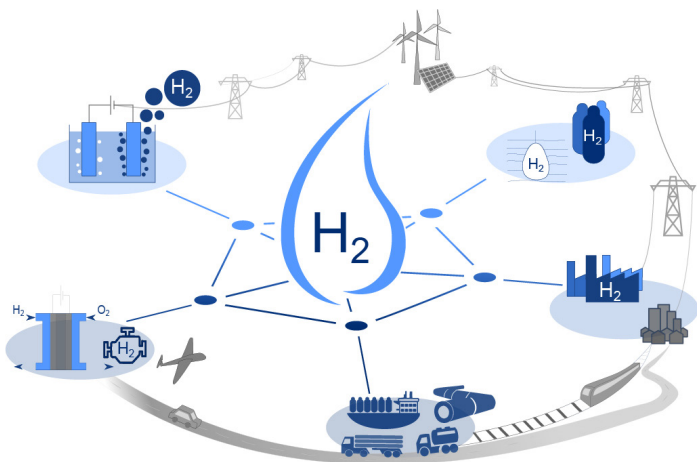


# Program

## Aachen Hydrogen Colloquium

Novotel | Peterstraße 66 | 52062 Aachen  
May 14 - 15, 2024



# TUESDAY, MAY 14, 2024

## Main Hall Plenary Session

- 08:30 Welcome Prof. Dr. Matthias Wessling | Vice-Rector | RWTH Aachen University
- 08:40 Introduction Prof. Dr.-Ing. Stefan Pischinger | Head of Institute | TME, RWTH Aachen University
- 09:00 Keynote Tanja Neuland | Hydrogen Techno IPT Leader | Airbus Operations GmbH
- 09:20 Keynote Dr. Christiane Kerber | Vice President Static Equipment | Linde GmbH
- 09:40 Keynote Dr. Stefan Kaufmann | Independent Consultant and Member of the German Bundestag
- 10:00 Panel Discussion
- 10:30 BREAK
- 11:00 Poster Pitch Session
- 12:00 LUNCH BREAK
- 13:00

## Main Hall Session: PEM Electrolysis I - System and Controls

- Digital twin concepts for H<sub>2</sub> production plants  
Nicolai Szeliga | Siemens AG
- Simulation-based design of operating strategies for dynamic hydrogen production based on renewable energy systems  
Peter Braun | Neuman & Esser
- Performance impact of inductive loops at low frequencies in PEM water electrolysis  
Debora Brinker | KIT, IAM-ET

14:30 BREAK

## 15:00 Session: PEM Fuel Cells I

- Ageing of fuel cell systems under heavy-duty and bus applications  
Florian Henkel | Cellcentric
- Model-predictive energy management for optimizing the system efficiency of a fuel cell truck considering fuel cell degradation  
Vivek Srivastava | FEV Europe GmbH
- PEM FCEV cold start control strategy investigation of digital twin based on multi-physics system simulation  
Christian Altenhofen | Gamma Technologies GmbH

16:30 BREAK

## 17:00 Session: The Global Hydrogen Transition

- Demand vs. supply of hydrogen and impact on market prices  
Daniel Neumann | FEV Consulting
- Electrolyzer production ramp-up and its real-life challenges  
Christian Sacchet | P3 energy solution GmbH
- Geospatial strategies for coordinated electrification and green hydrogen production in West Africa  
Richa Adhikari | Controlling, RWTH Aachen

18:30 BREAK + WALK

19:00 DINNER FIREPLACE | THEATERSTR. 17 | 52062 AACHEN

## Second Hall Session: Hydrogen Burner

- Investigating the potential of hydrogen for decarbonization of aluminum production  
Galyna Lapyeva | Speira GmbH, R&D
- Challenges in use of hydrogen technologies in industrial thermo-processes  
Christian Wuppermann | IOB, RWTH Aachen
- Impact analysis of H<sub>2</sub>-admixture on the flame behaviour of an additively manufactured oxy-fuel gas burner  
Christian Goßrau | IKDG, RWTH Aachen

## Session: Regulation Framework and Pilot Projects

- TotalEnergies' activities in low-carbon hydrogen  
David Aymé-Perrot | TotalEnergies SE
- Hydrogen powertrains for heavy duty trucks – Potentials and advantages  
Stefan Buhl | MAN Truck & Bus SE
- National alliance for hydrogen safety  
Kai Holtappels | Bundesanstalt für Materialforschung und -prüfung

## Session: High-Pressure Storage

- Towpreg process window for hydrogen tanks  
Viktor Reimer | Advanced Composite Technology Center (ACTC)
- Improved prediction of vessel failure using μChain®  
Nils Meyer | mefex GmbH
- Intelligent tanks for hydrogen vehicles – Structural monitoring of hydrogen pressure vessels made of fiber-plastic composite  
Manuel Mathes | Fraunhofer LBF

## Main Hall

### Session: PEM Fuel Cells II

Sustainable powered yachts- SuPY

Evren Firat | Weichai Power Hydraulic Powertrain Innovation Center

Cloud-based digital twin of fuel cell electric vehicles

Simon Mertes | TME, RWTH Aachen

An economic and environmental analysis of retrofitted fuel cell electric heavy-duty vehicles

Tim Kemperdick, Julius Hausmann | Controlling, PEM, RWTH Aachen

BREAK

### Session: Hydrogen-carriers and Transport

Global trade in hydrogen - how can this be implemented technically?

Dennis Krieg | Uniper Hydrogen GmbH

Evaluation of different hydrogen carriers for intercontinental H<sub>2</sub> transport

Andreas Peschel | INW, Forschungszentrum Jülich

Methanol, as a hydrogen carrier, generation from CO<sub>2</sub> hydrogenation by membrane reactors

Colin Scholes | The University of Melbourne

LUNCH BREAK

### Session: Life Cycle Assessment

An environmental assessment of electrochemical hydrogen peroxide synthesis for enhanced sustainability in propylene oxide production

Oskar Vögler | Carbon Minds GmbH

Guidelines for life cycle sustainability assessment of fuel cell and hydrogen technologies – An international approach

Petra Zapp | Forschungszentrum Jülich

Comparative life cycle assessment of renewable hydrogen transport in natural gas pipelines with subsequent hydrogen separation

Karan Anand | LTT, RWTH Aachen

BREAK

## Main Hall

### Plenary Session

Keynote **Carola Ruse | Project Vice President PEM Electrolyzer | Robert Bosch GmbH**

Keynote **Markus Schwaderlapp | Senior Vice President Entwicklung | DEUTZ AG**

Panel Discussion

Closing Address incl. Awards

## Second Hall

### Session: Research on Alkaline Electrolysis

Ultra-low loading transition metal alloy's impact on the alkaline OER performance of N-doped, hydrothermal carbon

Sebastian Tigges | MPI for Chemical Energy Conversion

Prometh<sub>2</sub>eus – Technically relevant electrode development for the oxygen evolution in alkaline water electrolysis

Vera Seidl | AVT.ERT, RWTH Aachen

Hydrogen generation through alkaline water electrolysis: Investigating long-term operation characteristics

Sharon-V. Pape | IEK-14, Forschungszentrum Jülich

### Session: PEM Electrolysis II - Materials

Novel Ru-based catalyst – Overcoming the iridium bottleneck in PEM electrolysis

Matej Bulic | Heraeus Precious Metals GmbH & Co. KG

Locally-resolved investigations in an industrial-scaled along the channel PEM electrolysis test cell

Niklas Hensle | Fraunhofer ISE

Visualizing electrochemical processes at nanoscale using in-situ and cryo electron microscopy

Shibabrata Basak | IEK-9, Forschungszentrum Jülich

### Session: Hydrogen-resistant Materials

Material compatibilities throughout the H<sub>2</sub> value chain

Tina Andrá | Freudenberg Technology Innovation SE & Co. KG

Laser-cladded metallic coatings as a permeation barrier and protection for pressure storage devices

Stephan Koß | DAP, RWTH Aachen

Polymer coatings to reduce hydrogen embrittlement

Sandra Kentish | The University of Melbourne

08:30



10:00



10:30

12:00



13:00

14:30



15:00

15:20

15:40

16:10

## Hydrogen Generation

Performance and characterization of stainless steel based porous transport layers for polymer electrolyte water electrolysis  
Sarah Zerresen | IEK-14, Forschungszentrum Jülich

Conductivity and gas crossover in PEM electrolyzer: The role of MEA conditioning  
Leander Treutlein | IEK-9, Forschungszentrum Jülich

Development of protective coatings for stainless steel porous transport layers in PEM electrolyzers via cold gas spraying  
Tim Sievert | IEK-1, Forschungszentrum Jülich

Optimization of the decal transfer process of Pt/C-layers supported onto PTFE and Kapton foils, prepared with different techniques  
Francesco Bartoli, Andrei Salavei | IEK-9, Forschungszentrum Jülich

Understanding hydrogen gas crossover in anion-exchange membrane water electrolysis: Hysteresis analysis  
Alexander Kohushölder | IMTEK, The University of Freiburg

Understanding the influences on bubble formation and flow during the oxygen evolution reaction of alkaline water electrolysis  
Jonathan Franz | RSM, TU Darmstadt

Defect engineering of electrocatalyst for efficient hydrogen production via water splitting  
Helena Wang | The University of Melbourne

Prediction of perovskite electrocatalysts for operation at different temperatures  
Mengran (Aaron) Li | The University of Melbourne

Watersplitting for hydrogen production by nano scale electrospun hematite fiber based photoelectrode  
Şükrü KAYA | Metallurgical Engineering, Marmara University

Techno-economic analysis of the integration of the PTC system with SOEC for green hydrogen production  
Ahmet Lokurlu | Soliterm Group GmbH

Electrolysis calculation webtool for green hydrogen production from renewables  
Marvin Brands | TH Köln

Techno-economic analysis and optimal sizing of hybrid PV-wind systems for hydrogen production by PEM electrolysis in California and Northern Germany  
Paul Fabianek | E.ON Energy Research Center, RWTH Aachen

Techno-economic assessment of green hydrogen production using direct air capture in arid regions  
Sohna Huja Jeng | RWTH Controlling, RWTH Aachen

## Transport & Conversion

Optimizing hydrogen value chains: From transport to industrial usage  
Kai Leonhard | LTT, RWTH Aachen

Hydrogen oxidation for gas separation and compression from the natural gas grid  
Piyush Kumar | AVT.ERT, RWTH Aachen

Investigation of the stability of HOR catalysts for electrochemical hydrogen pumps towards impurities in the natural gas grid  
Ina Kohlhaas | ITMC, RWTH Aachen

Development of a compact measuring system for real time measurement of ortho-para ratio in multiphase hydrogen  
Max Hannot | ZEA-1, Forschungszentrum Jülich

Side product formation during hydrogen storage using the liquid organic hydrogen carrier (LOHC) system benzyltoluene/ perhydro-benzyltoluene  
Julian Henseler | IEK-11, Forschungszentrum Jülich

Robust instrumentation and hydraulic testing of type IV composite pressure vessels for distributed fiber optic sensing  
Oscar Bareiro | ITA, RWTH Aachen

## Hydrogen Applications

Strategies to achieve the carbon dioxide emissions set for the heavy duty vehicle sector in Germany  
Achim Kampker | PEM, RWTH Aachen

Energy management for hybrid fuel cell propulsion systems in heavy-duty applications  
Verena Neisen | IRT, RWTH Aachen

Process chain interdependency in the production of bipolar plates for an aviation fuel cell  
Max Meerkamp | MTI, RWTH Aachen

Recovery procedures for proton exchange membrane fuel cells used in automotive applications  
Yue Yang | TME, RWTH Aachen

Developing proton-conducting ion liquids for intermediate-temperature polymer electrolyte membrane fuel cell  
Tommaso Bertolin, Yang Tang | IEK-14, Forschungszentrum Jülich

Social life cycle assessment of fuel cell electric vehicles  
Sally Springer | IEK-STE, Forschungszentrum Jülich

Operation strategy for hythane fueled SOFC systems  
Robert Styn | IEK-14, Forschungszentrum Jülich

Optimal control of highly transient hydrogen combustion engine operation  
Kevin Kluge | IRT, RWTH Aachen

Techno-economic-environmental analysis of H<sub>2</sub>-fired gas turbines in future operating scenarios  
Laurenz May | IKDG, RWTH Aachen

Design and optimization of fuel-flexible burner systems through joint numerical and experimental analyses  
Florence Cameron | ITV, RWTH Aachen

Hydrogen niche emergence in steel and chemical industries: Analysis of policies and techno-economic barriers in Germany and France  
Hrishikesh Chinchkar | TH Köln

Kickstart into hydrogen transformation – relevant factors for economically viable H<sub>2</sub> projects from planning to execution  
Marcus Rübsam | CibusCell Technology GmbH



## PARTICIPANTS

**FULL PARTICIPATION** 380,- €  
 Online Participation 129,- €

**MEMBERS**

**FULL PARTICIPATION** 266,- €  
 Online Participation 90,- €



**UNIVERSITY/RESEARCH**

**FULL PARTICIPATION** 190,- €  
 Online Participation 64,- €

## CONFERENCE APP

- » Agenda and program overview
- » Livestream for both rooms
- » Rating of presentations and posters
- » Exchange with other participants



## ABOUT US

Hydrogen as an energy carrier offers the possibility of establishing a global and local CO<sub>2</sub>-neutral energy economy. The **Hydrogen Clusters4Future** bundle already existing expertise in the field of hydrogen technologies in and around Aachen with actors from Industry, Science and Society. All while considering the entire hydrogen life cycle – from production to storage and distribution to use.

### CONTACT



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Speaker of the Hydrogen Clusters4Future

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