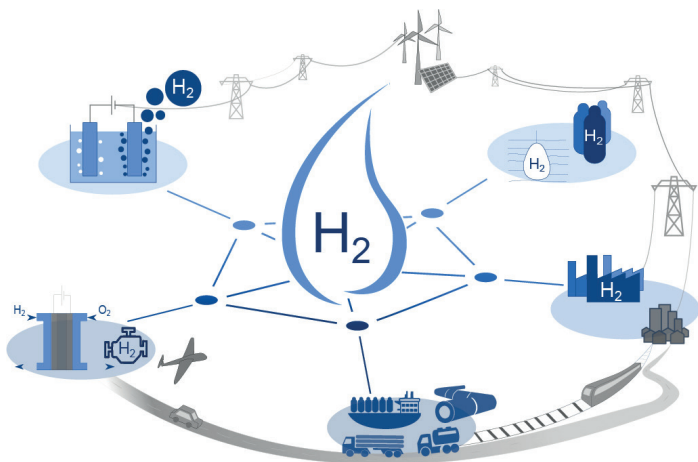


# Program

## Aachen Hydrogen Colloquium

Novotel | Peterstraße 66 | 52062 Aachen  
April 18 - 19, 2023



# TUESDAY, APRIL 18, 2023

## Main Hall Plenary Session

- 08:30 Introduction Prof. Dr.-Ing. Stefan Pischinger | Head of Institute | TME, RWTH Aachen University
- 08:50 Keynote Dr. Thomas Wintrich | Senior Vice President Fuel Cell Mobility Solutions | Robert Bosch GmbH
- 09:10 Keynote Dr. Goetz Baumgarten | Vice President Membranes | Evonik Operations GmbH
- 09:30 Keynote Ann-Kathrin Lipponer | Associate Programme Officer | IRENA
- 09:50 Panel Discussion
- 10:20 Welcome Prof. Dr. rer. nat Dr. h. c. mult. Ulrich Rüdiger | Rector | RWTH Aachen University



10:30 BREAK



11:00 Poster Pitch Session

12:00 LUNCH BREAK

## Main Hall Session: PEM Electrolysis I

PEM Water Electrolyzers: Key enabler of the energy transition?  
Marcelo Carmo | NEL

Sizing of integrated GreenH2 projects  
Lukas Duwe | ITM Linde

Time dependence of the contact pressure in PEM electrolysis stacks  
Sebastian Holtwerth | H-Tec



14:30 BREAK

## Session: AEM & Electrochemical Compression

Mechanical and physio-chemical properties of Anion Exchange Membranes and their Implications on Industrial Scale Water Electrolysis  
Andre Klinger | Siemens Energy

Development of high differential pressure AEM electrolyzer  
Anirudh Venugopal | HyET

Production of novel tubular electrochemical hydrogen compressors  
Wibke Zängler | AVT.CVT, RWTH Aachen



16:30 BREAK

## 17:00 Session: Building a Hydrogen Society

Will it prevail or will it niche - the future of hydrogen as technology field in 2035. Applying the Delphi method on technology field foresight in the sustainability transition  
Leo Leyboldt | TIME, RWTH Aachen

Advanced technologies for the H2 value chain  
Tina Andrä | Freudenberg

Potential conditions for green hydrogen acceptance: how social acceptance literature can help  
Mariana Galvão Lyra | LUT University



18:30 BREAK + WALK



19:00 DINNER RATSCELLER | MARKT 40 | 52062 AACHEN

## Second Hall Session: High-Temperature Industry

How to realise the potential of hydrogen in the aluminium cast house?  
Galyna Laptyeva | Speira

Numerical and physical simulation of a jet-type burner used for NG-hydrogen mixtures  
Andreas Kemminger | SMS group

Influence of hydrogen burners in the electric arc furnace  
Lily Schüttensack | IOB, RWTH Aachen

## Session: Sealing Hydrogen

Numerical Simulation of Hydrogen Spread in an Industrial Building Using containmentFoam  
Khaled Yassin | IEK-14, Forschungszentrum Jülich

Development of mechanical seals optimized for hydrogen applications  
Felix Meier | Eagle Burgmann

Development of a multiscale approach for hydrogen induced cracking  
Berk Tekkaya | IEHK, RWTH Aachen

## Session: Mobile High-Pressure Storage and Refilling

Fueling and Transportation Concepts in Heavy Duty Applications  
An Insight in Technical Challenges  
Filipp Kratschun | NPROXX

H2 refueling technology for Off-highway machines - Challenges and Solutions  
Bart Rosendaal | Wystrach

A Techno-economic Investigation of Relevant Hydrogen Refuelling Concepts for Heavy-duty Vehicles  
Tobias Otto | IEK-3, Forschungszentrum Jülich

## Main Hall

### Session: Fuel Cells

Development of a prototype fuel cell powered Toyota Hilux  
Timothy D'Herde | Toyota

Model predictive thermal management of fuel cell systems  
Simon Mertes | TME, RWTH Aachen

Aircraft Propulsion Systems with PEM Fuel cells - Potential & Challenges  
Peter Jeschke | IST, RWTH Aachen

BREAK

### Session: Changing Perspectives

People, technology, and the environment: The role of green hydrogen in Senegal's sustainable development path  
Marcel Kottrup, Jakob Kulawik, Rega Sota | WASCAL, RWTH Aachen

Which way to choose? Technical, economic and environmental evaluation of different hydrogen production pathways  
Christina Kockel | EON.ERC, RWTH Aachen

Ultrapure water from seawater  
Raw material for green offshore hydrogen  
Hans-Ulrich Baldes | Sobek-Tec

LUNCH BREAK

### Session: PEM Electrolysis II

Dynamic Simulation of a PEM Electrolyzer with Modelica  
Max Ellerich | Neuman und Esser

Challenges of operation of a Hydrogen plant in MW scale  
Manuel Langemann | RWE Generation

Corrosion resistant coatings for PEM electrolysis  
Robert Vaßen | IEK-1, Forschungszentrum Jülich

BREAK

## Main Hall

### Plenary Session

Keynote | Dr. Wiebke Lüke | Founder and Managing Director | WEW GmbH

Keynote | Prof. Dr. Richard van de Sanden | Scientific Director | Eindhoven Institute for Renewable Energy Systems

Keynote | Dr. Jörg Walter | Head of Hydrogen Technical | RWE Generation

Panel Discussion

Closing Address incl. Awards

## Second Hall

### Session: H2 in Gas Grids

The construction of H2 transport networks  
Daniel Bick | Open Grid Europe

Perspectives in repurposing natural gas pipelines for the hydrogen economy  
Julius Langenberg | IWT Solutions

Turbomachinery Solutions for Zero Emissions  
Jan Philipp Schnitzler | MAN Energy Solutions

### Session: Electrochemical Materials

Electrocatalytic Performance Enhancement of Metal Oxides and their Mixtures towards Oxygen Evolution Reaction in Alkaline Electrolyte via Ball Milling  
Sabita Bhandari | AVT.ERT, RWTH Aachen

Lanthanum-Nickel-based Perovskite-coated Nickel Electrodes for the OER Electrocatalysis  
Nikolas Mao Kubo | ITMC, RWTH Aachen

Glycerol oxidation to improve electrochemical hydrogen production: Prospects with regard to thermodynamics and economics  
Katharina Ebeling | AVT.SVT, RWTH Aachen

### Session: H2 Internal Combustion Engines

Development of a Hydrogen Combustion Engine for Passenger Car Application  
Roman Pelzetter | Hyundai

Hydrogen Internal Combustion Engines for Light Duty Applications  
Gavin Dober | BorgWarner

H2 ICE, sustainable solution for on and off-road sector  
Lukas Virnich | FEV

08:30



10:00



10:30

12:00



13:00

14:30



15:00

15:20

15:40

16:00

16:30

## Hydrogen Generation

Production of PEM Electrolyzers – Impact of flow field design on manufacturing  
Martin Aretz | IPT, Fraunhofer

Inside of the MEA fabrication labyrinth – Which way to go? Stephan Zimmer,  
Niklas Vollmert, Cathleen Plath | AVT.CVT, RWTH Aachen

Production and processing of inks for corrosion-resistant coatings in electrolyzer  
PTLs by Aerosol Jet Printing  
Max Rommerskirchen | DAP, RWTH Aachen

V-Ni binary compounds in electrochemical water splitting Büşra Mete | Institut  
für Chemische Physik fester Stoffe, Max-Planck-Gesellschaft

Prometh2eus: Optimized material development for technical H<sub>2</sub> generation  
through improved oxygen electrodes  
Christian Marcks | AVT.ERT, RWTH Aachen

A model-based evaluation of overpotentials in alkaline water electrolysis  
J. Raphael Seidenberg | AVT.SVT, RWTH Aachen

Solar Heat Supported High Temperature Cell Electrolysis  
Timo Roeder | Future Fuels, DLR

Generation of Hydrogen from Steam using Oxygen Membrane Reactors  
Kai Bittner | ZEA-1, Forschungszentrum Jülich

Hydrogen engineering and consulting Elena Borgardt | iGas energy

Grüner Wasserstoff aus Klärschlamm und Kunststoffabfällen  
Nadia Romdhane | Green Hydrogen Technology

## Transport & Conversion

Integration of fiber optic sensors into type-IV pressure vessels  
Jannick Fuchs | IKV, RWTH Aachen

Chemical hydrogen storage by liquid organic hydrogen carriers (LOHC)  
– Catalytic loading and unloading of the LOHC benzyltoluene  
Barbara Bong | ITMC, RWTH Aachen

Shaped Inorganic-Organic Hybrid Catalyst Materials Based on Highly  
Crosslinked Porous Polymers for the Formic Acid Decomposition  
Sebastian Seidel | ITMC, RWTH Aachen

Thermodynamic Efficiency Limits for Ammonia Production  
Martin Florian Seidler | IEK-5 & IEK-14, Forschungszentrum Jülich

Beyond Ammonia – The Next Generation of Chemical Hydrogen Carriers  
Sebastian Thill | INW-I, Forschungszentrum Jülich

Influence of the Ni:Pt Ratio and Loading on the Catalytic Activity in the Synthesis  
of Carbon Neutral Isobutanol  
Johannes Häusler | IEK-14, Forschungszentrum Jülich

Comparative Well-to-Wheel LCA of green Methanol Fuels based on WLTP drive  
cycle simulations Fabio Voit | FIW, RWTH Aachen

Understanding the demand of hydrogen and resulting greenhouse gas emis-  
sions in the German chemical industry: a bottom-up modeling approach  
Oskar Vögler | Carbon Minds

Powering artificial enzymatic cascades with electrical energy via H<sub>2</sub> as a media-  
tor Lars Lauterbach | IAMB, RWTH Aachen

## Hydrogen Applications

Vehicle Packaging and Integration of Hydrogen Powertrains  
Tobias Vossball | FEV

Development of an Integration Concept for Extending the Range of Electric  
Buses Using Fuel Cell Technology Karem Hadla | AE Driven Solutions

Fuel Cell MEA Production Industrialization: From Prototyping to Process devel-  
opment Heiner H. Heimes | PEM, RWTH Aachen

Development of an ex-situ analysis methodology for PEM fuel cells  
Philipp von Tettau | TME, RWTH Aachen

Investigation of different simulation approaches of aero-specific Bipolar plate  
forming Jan Sommer | WZL, RWTH Aachen

Container Solution for Power to Power or Power to X using H<sub>2</sub>  
Chandra Kanth Kosuru | Tec4Fuels

Research and Development of an rSOC System  
Felix Kunz | IEK-9, Forschungszentrum Jülich

Modeling and Simulation of a Fuel-Flexible Solid Oxide Fuel Cell  
Sreejoe Kaniyampambal | TME, RWTH Aachen

Wasserstoffbetriebene KWK-Anlagen – Heute Erdgas morgen Wasserstoff  
Jörg Lösing | 2G Energietechnik

Ceramic Matrix Composites for the combustion of Hydrogen in modern Gas  
Turbine Plants Fabian Jung | ITA, RWTH Aachen

Hydrogen Technologies for high temperature heating systems - Activities at IOB  
Thomas Echterhof | IOB, RWTH Aachen

Effects of H<sub>2</sub> content on CH<sub>4</sub>-air flames and pollutant formation in a swirled,  
radially multi-staged, multi-injector industrial burner  
Salvatore Nardi | ITV, RWTH Aachen

Decarbonizing the glass melting process: Assessing the potential of energy  
efficiency measures and fuel switching to hydrogen  
Daniel Jost | LTT, RWTH Aachen

## Hydrogen Society

Techno-Economic Analysis of a Local Renewable Power-to-Hydrogen System in  
Germany Tobias Sieker | IKGD, RWTH Aachen

Investigation of a pure hydrogen pipeline for the Solent region  
Breanna Vekeria | Uni Southampton

A hydrogen-based microgrid to cover the entire hydrogen value chain  
Mirko Gronert, Stefan Stollenwerk | Westnetz

How to cover Hydrogen in your IT? Frank Sent | CGI



## PARTICIPANTS

**FULL PARTICIPATION** 330,- €  
 Online Participation 119,- €

**MEMBERS**

**FULL PARTICIPATION** 230,- €  
 Online Participation 83,- €



**UNIVERSITY/RESEARCH**

**FULL PARTICIPATION** 165,- €  
 Online Participation 59,- €

# 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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