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**100+ SPEAKERS**

**IN-PERSON**

**Technologies & solutions  
for a low-carbon  
hydrogen future**

Europe's dedicated exhibition and conference showcasing the latest hydrogen and fuel cell technologies, components, raw materials, test and evaluation tools, and engineering solutions.

# CONFERENCE PROGRAMME

## TRACK 01

Hydrogen  
Production, Storage,  
& Infrastructure  
Development



## TRACK 02

Fuel Cell Design,  
Development,  
& Manufacturing



## TRACK 03

Carbon Capture,  
Utilisation  
& Storage



**20-21 October 2021**



**Messe Bremen, Germany**



**[hydrogen-worldexpo.com](https://hydrogen-worldexpo.com)**

## TRACK 01

### Hydrogen Production, Storage, & Infrastructure Development

DAY 1: OCTOBER 20, 2021

9:00 am - 12:30 pm  
OPENING PLENARY &  
KEYNOTE SESSIONS:



9:00 am  
**WELCOME ADDRESS**

**Kristina Vogt**  
Minister of Economic Affairs,  
Labour and Europe, FREE  
HANSEATIC CITY OF BREMEN



Welcome and opening of the conference.



9:05 am  
**HYDROGEN - THE ENERGY  
CARRIER OF THE FUTURE?**

**Thorsten Herdan**  
Director General, FEDERAL  
MINISTRY FOR ECONOMIC  
AFFAIRS AND ENERGY, GERMANY



Germany's energy transition is not just about eliminating nuclear and coal-fired power plants, but a complete overhaul of the entire energy system. Germany's Climate Action Plan 2050 has declared greenhouse gas neutrality as the goal, so the country will construct a low-carbon society that relies mainly on sustainable energy sources including hydrogen technology.

## TRACK 02

### Fuel Cell Design, Development, & Manufacturing

DAY 1: OCTOBER 20, 2021

9:00 am - 12:00 pm  
OPENING PLENARY &  
KEYNOTE SESSIONS:



9:00 am  
**FUEL CELL PROJECTS IN THE  
FIELD OF MARKET ACTIVATION  
AND R&D WITHIN THE NATIONAL  
INNOVATION PROGRAMME  
HYDROGEN AND FUEL CELL  
TECHNOLOGY (NIP)**



**Elena Hof**

Programme and Team Leader, National  
Innovation Programme Hydrogen and Fuel Cell  
Technology (NIP), NOW GMBH

The presentation will provide updates on market  
trends and the latest news from a range of fuel cell  
projects across the EU observed by National Innovation  
Programme Hydrogen and Fuel Cell Technology (NIP).



Join network:  
**hydrogenexpo**  
Password:  
**hydrogen21**

## TRACK 03

### Carbon Capture, Utilisation & Storage

DAY 1: OCTOBER 20, 2021

9:00 am - 1:00 pm  
OPENING PLENARY &  
KEYNOTE SESSIONS:



9:00 am  
**CARBON CAPTURE AND  
UTILIZATION IN THE EUROPEAN  
CONTEXT**



**Secretary General**  
CCU Officer, CO2 VALUE EUROPE

Carbon capture and utilization (CCU) is gaining increasing attention as a solution to achieve the EU's ambitious climate goals for 2030 and 2050. Many pre-commercial projects are expected to come into operation in the next three to four years and many more are in the pipeline, supported by European and national schemes. Now is the time to invest in this scale-up to achieve net emissions reduction in various economic sectors, provide an alternative carbon feedstock for the production of everyday carbon-based products and increase circularity approaches within industrial processes. While support through schemes like the Innovation Fund, the IPCEIs, the CCUS SET-Plan and Horizon Europe is essential, equally important is the correct signal that policy should give to industrial actors who are ready and willing to upscale their processes. It is therefore essential that the complex climate policy framework is consistently supportive of the deployment of CCU technologies and the market uptake of CCU products.

## TRACK 01



9:20 am  
**HYDROGEN VISION FOR 2025**

**Dr. Urban Keussen**  
CTO, EWE AG

**EWE**

Hydrogen in combination with renewable energy production will be an important pillar in the global portfolio.

The focus is on the industry sector and heavy-duty applications in the mobility sector along with integration of large-scale storage facilities and pipeline transport as an important aspect of cost reduction of hydrogen supply.



9:45 am  
**DECARBONIZATION, FLEXIBILIZATION AND HYDROGENATION – HOW TO INCORPORATE ELECTROLYZERS INTO ENERGY SYSTEMS**

**SIEMENS**

**Jörn Ernst**  
Project Developer, SIEMENS

This presentation will provide solutions for how electrolyzer technology could fit together into an energy ecosystem that serves as a backbone to create new business models.



**Coffee  
breaks  
served in  
Hall 5**

## TRACK 02



9:25 am  
**HYZON MOTORS,  
“ACCELERATING THE ENERGY  
TRANSITION”**

**HYZON**

**Stefan van der Spek**  
Business Development Manager,  
HYZON MOTORS

This presentation will discuss the latest innovations around zero-emission, hydrogen fuel cell powered commercial vehicles, including heavy trucks, buses and coaches.



9:50 am  
**FUEL CELL - A CRUCIAL PILLAR  
IN FUTURE AUTOMOTIVE  
POWERTRAINS**

**BOSCH**

**Achim Moritz**  
Vice President Product  
Management Fuel Cell Mobility  
Solutions and Innovations,  
ROBERT BOSCH GMBH

Fuel cells can make an important contribution to reducing CO<sub>2</sub> in the transport sector, which accounts for an enormous share of global CO<sub>2</sub> emissions. By 2030, these emissions are set to be reduced by 30% in newly registered vehicles. Yet it is unlikely that these targets will be met by battery-electric drive systems alone. And that is where the strengths of the fuel cell come into play. The fuel cell can effect a lasting transformation in the transport sector and bring huge advantages to people and the environment. How do we bring the technology to scale?

## TRACK 03



9:20 am  
**THE ROLE OF EUROPEAN CO<sub>2</sub>  
INFRASTRUCTURE IN THE RACE  
TOWARD NET ZERO**

**CCSA**

**Per-Olof Granström**  
EU Director, CARBON CAPTURE  
AND STORAGE ASSOCIATION

The future of CCS technology depends largely on successful CO<sub>2</sub> transport and storage infrastructure. What is the latest in common access and tariff controls? Will they allow transport of CO<sub>2</sub> that links emitters across Europe to storage sites?



9:40 am  
**CARBON CAPTURE IN THE US &  
EUROPE: POLICY AND PROJECT  
TRENDS**

**CATF**

**Lee Beck**  
International Director, Carbon  
Capture, CLEAN AIR TASK FORCE

Project development in the US and Europe is shaping up at unprecedented speed, with more than 40 carbon capture projects under way on either side of the Atlantic. At the same time, policymakers are drawing up new policies and innovative ways of support. What has happened over the past three years, where are we headed, and how does it align with achieving net-zero emissions? This presentation will review the latest trends carbon capture trends in policy and projects and discuss the technologies' role in achieving net-zero emissions.



## TRACK 01



### 10:05 am THE IMPORTANCE OF COLLABORATIVE R&D IN THE HYDROGEN SECTOR

**Erik Busche**

Executive Committee representative for Germany, IEA HYDROGEN TCP



The Hydrogen TCP is an international collaborative R&D programme created under the auspices of the IEA in 1977. In this session, we will learn more about the current and planned activities of the Hydrogen TCP that will address challenges faced by hydrogen technologies in the different steps of the value chain. What are the main challenges and drawbacks that limit the massive scale-up and deployment of hydrogen technologies? How are they being addressed? What is needed?

10:30 am - 11:00 am  
**BREAK**



### 11:00 am GREEN HYDROGEN FOR ZERO-EMISSION AVIATION

**Guido Schwartz**

Strategy & Innovation Lead, AIRBUS



Airbus aims to lead the decarbonization of the aviation sector by building the world's first zero-emission airliner by 2035. Through the advancement of its new ZEROe aircraft concept designs, green hydrogen production will play a key role in the reduction of CO2 emissions.

## TRACK 02

10:15 am - 10:45 am  
**BREAK**



### 10:45 am FUEL CELLS FOR REAL WORLD APPLICATIONS: WHAT DOES IT TAKE?

**George Rubin**

CCO, LOOP ENERGY



Organizations that adopt hydrogen-electric solutions have two major benefits to gain: superior functionality and lower cost of ownership. Loop Energy has attracted customers and partners around the world to its hydrogen fuel cell products, and it has gained many market insights along the way. This presentation will outline critical factors that one must consider when designing a hydrogen fuel cell vehicle for mass market adoption.



### 11:10 am THE ROADMAP TO SUSTAINABLE HEAVY DUTY MOBILITY

**Dr Florian Henkel**

Stack Development & Integration, CELLCENTRIC



The presentation will outline a roadmap toward series production of fuel cell systems and fuel cell trucks. This will include hydrogen fuel cell systems that can be used as a clean powertrain in trucks and other commercial vehicles, making long-range possible or as an emergency power supply for critical facilities in data centers.

## TRACK 03



### 10:00 am INSIGHTS FROM SHELL PERNIS'S DECARBONISATION ROADMAP AND THE ROLE OF CCUS

**Nick Flinn**

VP Decarbonisation Technologies, Shell Catalysts & Technologies,



SHELL

In 2021, Shell set out its Powering Progress strategy, which is designed to accelerate the transition of its business to net-zero emissions. This includes targets to reduce the carbon intensity of the energy products it sells: by 6–8% by 2023, 20% by 2030, 45% by 2035 and 100% by 2050. This presentation will highlight some of the actions that the organization is taking to achieve these targets, both around the world and with a particular focus on its Pernis refinery in Rotterdam, the Netherlands, and how CCUS plays a major role in meeting these decarbonization objectives at Pernis. Shell's net-zero targets include emissions from its operations and the life-cycle emissions, including from the end uses, from all the energy products it sells. So, Shell intends to work through the three classic Decarbonisation pathways. It will reduce emissions from its own operations by increasing energy efficiency and capturing (or offsetting) any remaining emissions. And, as more than 90% of its emissions come from the use of the fuels and other energy products it sells, Shell will also work with its customers to reduce their emissions when that energy is used. That means offering them the low-carbon products and services they need, such as renewable electricity, biofuels, hydrogen, carbon capture and storage, and nature-based offsets.



## TRACK 01



11:25 am  
**QUO VADIS HYDROGEN?**

**Dr. Peter Hoffmann**

Associate Director Energy System Planning, TENNET



The presentation will first analyse the needs for Hydrogen and the renewable potential in Germany available for Hydrogen production. It will further work out, where the electrolyzers should be placed and how they need to be operated, to have maximum benefits for the society.



Join network:  
**hydrogenexpo**

Password:  
**hydrogen21**

## TRACK 02



11:30 am  
**PANEL DISCUSSION: ARE FUEL CELLS NOW A VIABLE CHALLENGER?**

**Dr. David Hart**

Director, E4TECH



**Achim Moritz**

Vice President Product Management Fuel Cell Mobility Solutions and Innovations, ROBERT BOSCH GMBH



**George Rubin**

CCO, LOOP ENERGY



**Fabio Oldenburg**

Consultant, APRICUM



Fuel cell technologies have experienced cycles of high expectations followed by periods of disillusionment. Recent evidence however suggests that these technologies form an attractive option for the decarbonisation of the global energy mix, and that recent improvements in their cost and performance point towards economic viability as well. Are we now at a time where we can see fuel cells competing against both fossil fuels and batteries?



12:00 pm - 1:30 pm  
**LUNCH**

## TRACK 03



10:25 am  
**CCS+ INITIATIVE: UNLOCKING CARBON CREDIT POTENTIAL FOR EMISSION REDUCTIONS AND REMOVALS**

**Matthias Krey**

Managing Director, PERSPECTIVES CLIMATE GROUP



Introduction of the recently launched CCS+ Initiative, its objectives to scale up CCS+ activities through the carbon market and workplan for developing methodologies for carbon credit generation and associated compliance tools

10:50 am - 11:20 am  
**BREAK**



11:20 am  
**DECARBONISING GAS TURBINES WITH CARBON CAPTURE WHILE PRESERVING THEIR VALUE TO THE ELECTRIC GRID**

**Martin O'Neill**

Vice President of Product Management, GE GAS POWER



In all scenarios envisioning the power grid in 2050, today's gas turbine fleet will still function to provide reliable, dispatchable, load-flexible power to a renewable grid. Few studies have approached decarbonizing gas turbines with the express goal of preserving the attributes of a natural gas combined-cycle plant, which are critical to enable a renewable energy-based future. GE has the expertise in NGCC design and operability to achieve this flexibility when integrated with post-combustion carbon capture without compromising the value GT's provide to the grid.

## TRACK 01



11:50 am  
**PANEL DISCUSSION: WHAT'S HOLDING HYDROGEN BACK? INVESTMENT OR TECHNOLOGY?**

**Dr Carola Kantz**

Deputy Managing Director, VDMA



**Tore Sylvester Jeppesen**

Senior Vice President, HALDOR TOPSOE



**Victoria Judd**

Counsel, PILLSBURY WINTHROP SHAW PITTMAN LLP



**Salah Mahdy**

Global Director for the Hydrogen Market, HOWDEN



**Magnolia Tovar**

Zero-Carbon Fuels Policy Director, Europe, CLEAN AIR TASK FORCE



Hydrogen can play a massive role in fighting both the climate crisis and decarbonising a variety of different sectors yet it still remains some way from realising its potential. Is this down to a lack of serious investment and infrastructure or is the technology and innovation standard still not up to speed?



12:30 pm - 2:00 pm  
**LUNCH**

## TRACK 02

1:30 pm - 5:30 pm  
**DESIGN:**



1:30 pm  
**UP AND AWAY: FUEL CELL POWERTRAIN DESIGN FOR AVIATION**

**Sergey Kiselev**

Head of Europe, ZEROAVIA



The presentation will discuss a zero-emission powertrain that has 75% lower fuel and maintenance costs, resulting in up to 50% total trip cost reduction. It delivers 300-500 mile zero-emission missions in a 10-20-seat fixed-wing aircraft to utilize existing infrastructure and simplify regulatory issues.



1:55 pm  
**SCALING PRODUCTION TECHNOLOGIES FOR METALLIC BIPOLAR PLATES**

**Fabian Kapp**

Managing Director, GRAEBENER BIPOLAR PLATE TECHNOLOGIES



The presentation will discuss specialized manufacturing technology for the production of metallic bipolar plates for fuel cells.

## TRACK 03



11:45 am  
**EFUELS – CONVERTING CARBON EMISSIONS INTO LIQUID, CARBON NEUTRAL FUEL**

**Asam Rafi**

VP of Sales, vCARBON CLEAN



**Claes Fredriksson**

CEO & Founder, LIQUID WIND



The world needs large volumes of clean fuel, to reduce carbon emissions fast. Together Liquid Wind and Carbon Clean will efficiently capture biogenic CO2 and convert this into commercially-viable carbon neutral fuel. Join to find out how

Carbon Clean's innovative CCU technology combined with Liquid Wind's ambitious plans will reduce emissions by 1 billion tonnes by 2050.



12:10 pm  
**DIRECT AIR CAPTURE: A TECHNOLOGY SOLUTION TO GET TO NET-ZERO**

**Birk Teuchert**

Head of Business Development, CLIMEWORKS



To get to net zero, significant carbon dioxide removal (CDR) capacities are required. Direct Air Capture (DAC) offers high potential in terms of scalability and permanence of the removals. Climeworks has set out to deploy DAC facilities in order to realize cost improvements as well as to get removal capacities to a climate-relevant scale in the near future.

## TRACK 01

### 2:00 pm - 6:00 pm LOW-CARBON HYDROGEN PRODUCTION:



2:00 pm  
**PRESENTATION TITLE TO BE  
ANNOUNCED**

**Pavan Chilukuri**

Director – Decarbonization  
Technologies (Hydrogen/CCUS/  
BioFuels), SHELL



2:25 pm  
**LARGE COMPOSITE TANKS FOR  
LIQUID HYDROGEN: CROSS-  
INDUSTRY POTENTIAL FOR  
LIGHTWEIGHT TANK PRODUCTION**



**Dr Tobias Reincke**

Project Leader, CTC GMBH



**Tim Frerich**

Project Leader, CTC GMBH



Production of composite tanks for liquid  
hydrogen can be more lightweight and  
cost-effective than metallic tanks, which  
offers potential for many industries, among  
others the aircraft, space, logistics and truck  
industry. Beside the potential, this presentation

will discuss the significant challenges associated with cryogenic  
composite tanks and give an overview of promising production  
technologies to overcome these challenges.

## TRACK 02



2:20 pm  
**FUEL CELL STACKS AND SYSTEMS  
FOR STATIONARY AND MOBILE  
APPLICATIONS**



**Andreas Bodén**

Director Sales, POWERCELL  
SWEDEN AB

Latest updates across a range of international projects  
and collaborations on fuel cell stacks and systems for  
stationary and mobile applications.

2:45 pm - 3:15 pm  
**BREAK**



3:15 pm  
**INNOVATIONS IN FUEL CELL  
STACK DESIGN**



**Hauke Soetje**

Business Unit Leader Advanced  
Technologies, SEGULA  
TECHNOLOGIES

The presentation will introduce a uniquely redesigned  
fuel cell stack at the microstructure level, making it  
more compact, lightweight and efficient. FC technology  
operates with a simplified system architecture, leading to  
fewer parasitic loads, lower costs and higher efficiency.  
High micro precision eliminates conventional stack  
assembly methods, which drives down production costs  
significantly.

## TRACK 03



12:35 pm  
**WORLD-LEADING EXPERTISE IN  
CARBON CAPTURE**



**Arne Thorsen Kalle**

Commercial Manager,  
TECHNOLOGY CENTRE  
MONGSTAD

Technology Centre Mongstad (TCM) offer world-class test  
facilities and competence to highly esteemed Technology  
Vendors in their pursuit of excellence. They provide  
Advisory Services – risk intelligence – to Project Owners  
through all project phases to mitigate technical, HSE  
and financial risk. Wide experience from proprietary and  
non-proprietary scientific campaigns, which has given  
valuable practical experience in emission measurements,  
operations and maintenance.

1:00 pm - 2:30 pm  
**LUNCH**





## TRACK 01



### 2:50 pm ADVANCED ANION EXCHANGE MEMBRANE TECHNOLOGY FOR COST-COMPETITIVE GREEN HYDROGEN PRODUCTION



**Dr Anna Pougin**  
Project Manager, EVONIK

Sustainable hydrogen is regarded as a key-component to a climate neutral society and industry. For sustainable hydrogen to make a difference and pose as an attractive alternative energy carrier or reactant it needs to be produced at costs competitive to conventional grey hydrogen. Today, the costs for hydrogen produced by water electrolysis with sustainable energy exceeds the costs of grey hydrogen by far. In order to reduce the costs of green hydrogen from electrolysis the investment costs into the electrolyzer have to be reduced, while operating at high energy efficiencies to keep operational costs at a minimum. Evonik's Alkaline Exchange Membrane (AEM) is the key component in alkaline membrane water electrolysis. It requires Evonik's competence in high-performance polymer design and electrolysis expertise, because it combines superior durability both mechanical and in alkaline medium while allowing for outstanding ion exchange rates. In this presentation we want to introduce you to our vision of how AEM can lower the costs of green hydrogen and why and how can become part of that vision.

3:15 pm - 3:45 pm  
**BREAK**

## TRACK 02



### 3:40 pm BIPOLAR PLATES FOR HT-/ LT-PEM FUEL CELLS AND ELECTROLYZERS



**Thorsten Hickmann**  
CEO, EISENHUTH GMBH & CO. KG

The latest developments with porous and non porous composite bipolar plates for HT-/ LT-PEM fuel cells and electrolyzers.



### 4:05 pm ENERGY-EFFICIENT INTO THE FUTURE – THE STATIONARY FUEL CELL SYSTEM BY BOSCH



**Marcus Spickermann**  
Senior Vice President - Head of  
the stationary Solid Oxide Fuel  
Cell (SOFC) program, ROBERT  
BOSCH GMBH

The latest developments with porous and non porous composite bipolar plates for HT-/ LT-PEM fuel cells and electrolyzers.



### 4:30 pm COST EFFICIENT FUEL CELLS FOR MOBILE GENERATORS



**Simon Pauli**  
Vice President, ASPENS

Generators using fossil fuel are state of the art for generating energy. What are the challenges for Fuel Cell Systems to become more competitive in the future? What is the impact of initial and operating cost on Fuel Cell System distribution?

## TRACK 03

### 2:30 pm - 6:00 pm CARBON CAPTURE & STORAGE:



### 2:30 pm DECARBONISATION AND IMPLEMENTATION ROADMAP OF HEIDELBERGCEMENT



**Jan Theulen**  
Director Alternative Resources,  
HEIDELBERGCEMENT

The presentation will discuss the 2030 and 2050 decarbonization targets for HeidelbergCement. This will include remaining competitive while complying with carbon pricing and climate change regulations; which technologies we are considering; our future fuel, energy and infrastructure requirements; support mechanisms needed to decarbonize the business; progress made toward our decarbonization targets.



### 2:55 pm METAL-ORGANIC FRAMEWORKS – ENABLING DEEPER DECARBONIZATION



**Conor Hamill**  
COO, MOF TECHNOLOGIES

Metal-organic frameworks are a new class of advanced materials that are creating new possibilities for carbon capture. Their unique physicochemical properties and their engineerable structure offer opportunities for unmatched capacity and selectivity for CO<sub>2</sub> removal.



## TRACK 01



3:45 pm  
**ACHIEVING THE END GOAL OF GREEN HYDROGEN: WHAT TECHNOLOGY DEVELOPMENTS ARE REQUIRED**



**Eugene McKenna**

Managing Director Green Hydrogen, JOHNSON MATTHEY

There is an urgent need to limit the rise in global temperatures to avoid severe environmental and societal impact. This can be expressed as a target to achieve net zero carbon emissions by 2050. The provision of decarbonised hydrogen at scale is an essential step in helping to achieve net zero. Johnson Matthey's Low Carbon Hydrogen (LCH) technology permits the needs of scale and urgency to be met. Scale up of green hydrogen production will increase the role of electricity in hard to decarbonise areas, including transport, heating, and chemical industries, where it plays a small role today.



4:10 pm  
**RENEWABLE HYDROGEN ON THE WAY TO FOSSIL PARITY**



**Thorsten Herbert**

Director for Market Development and Public Affairs, NEL ASA

Hydrogen produced from renewables, such as wind and solar, is a key enabler for the energy transition. With the current cost trend of renewables, green hydrogen is on a trajectory to start outcompeting fossil solutions by the middle of this decade.

## TRACK 02



4:55 pm  
**PANEL DISCUSSION: EXPLORING RECENT BREAKTHROUGHS IN FUEL CELL DESIGN**



**Andreas Bodén**

Director Sales, POWERCELL SWEDEN AB



**Thorsten Hickmann**  
CEO, EISENHUTH GMBH & CO. KG



**Hauke Soetje**

Business Unit Leader Advanced Technologies, SEGULA TECHNOLOGIES



**Marcus Spickermann**

Senior Vice President - Head of the stationary Solid Oxide Fuel Cell (SOFC) program, ROBERT BOSCH GMBH



The global market for fuel cells is projected to reach almost US\$15 billion by 2027, driven by the technology's crucial role in building a clean and sustainable planet for future generations. Despite the research and improvements in fuel cell design and components made over the past several years, many issues still have to be addressed before they can finally become competitive enough. What are the latest developments in the market and what



does the future of design look like for fuel cells across multiple industries?

**END OF DAY 1**

## TRACK 03



3:20 pm  
**QUANTUM ALGORITHMS AND QUANTUM COMPUTING SOLUTIONS FOR ADVANCED CARBON CAPTURE, UTILIZATION AND STORAGE (CCUS) TECHNOLOGIES**



**Dr Simon McAdams**

Project Lead, CAMBRIDGE QUANTUM COMPUTING

A collaboration with Total Energies will use CQC's expertise in quantum computing and quantum chemistry, including the utilization of CQC's industry-leading quantum chemistry platform EUMEN, to support and help develop Total Energies' CCUS R&D efforts.

3:45 pm - 4:15 pm  
**BREAK**



4:15 pm  
**THE APPLICATION OF CRYOGENIC CARBON CAPTURE TO HYDROGEN PRODUCTION**



**Dr. Larry Baxter**

Technical Director, SUSTAINABLE ENERGY SOLUTIONS

Cryogenic Carbon Capture (CCC) is a post-combustion technology that has the potential to reduce carbon emissions from fossil-fueled power plants by 95–99%, at half the cost and energy of current state-of-the-art carbon capture processes. In addition, CCC removes other pollutants, such as SOX, NOX and mercury.

## TRACK 01



### 4:35 pm H2FUTURE – A EUROPEAN FLAGSHIP PROJECT FOR THE GENERATION AND USE OF GREEN HYDROGEN

**Verbund**

**Robert Paulnsteiner**  
Hydrogen Technologist, VERBUND

H2FUTURE is a European flagship project for the generation of green hydrogen from electricity from renewable energy sources. Coordinated by the utility VERBUND, the steel manufacturer Voestalpine and Siemens, a proton exchange membrane (PEM) electrolyzer manufacturer, a large-scale 6MW PEM electrolysis system will be installed and operated at the Voestalpine Linz steel plant in Austria. The Austrian transmission system operator (TSO) Austrian Power Grid (APG) will support the prequalification of the electrolyzer system for the provision of ancillary services. The Netherlands' research center TNO and K1-MET (Austria) will study the replicability of the experimental results on larger scales in EU28 for the steel industry.



### 5:00 pm SCALING EFUELS – PUSHING BEYOND GREEN HYDROGEN

**Claes Fredriksson**  
CEO & Founder, LIQUID WIND



**Engelbert Schrapp**  
Principle Corporate Account  
Manager, SIEMENS ENERGY



The world needs large volumes of clean fuel, to reduce carbon emissions fast. Together Liquid Wind and Siemens Energy will utilise leading green hydrogen technology and digital expertise to produce commercially-viable carbon neutral fuel at scale. Join to find out how together they will establish 500 eFuel facilities and reduce carbon emissions by 1 billion tonnes by 2050.



## TRACK 03



### 4:40 pm ENABLING CCUS WITH A BROAD AND DIVERSIFIED TECHNOLOGY PORTFOLIO



**Gianluca Di Federico**  
Energy Transition and Carbon  
Capture Strategist, BAKER  
HUGHES

Deployment of CCUS at scale is essential to meet the growing demand for energy while also addressing climate change. Baker Hughes offers a full range of products and services to support the entire CCUS project value chain. For carbon capture in particular, Baker Hughes is focused on making sure the process itself is sustainable. It is using CAP (Chilled Ammonia Process) to remove carbon dioxide from the flue gas. CAP's solvent is stable, not susceptible to contaminants, widely available, easily procured and safe. Baker Hughes continues to innovate with technologies such as Compact Carbon Capture, a pioneering industrial scale solution, as well as to invest in bio-methanation technology company Electrochaea that provides a solution to recycle CO2 into grid-quality synthetic natural gas.



### 5:05 pm SAFE AND COST-EFFICIENT CO2 STORAGE: EMERGING MONITORING TECHNOLOGIES



**Cathrine Ringstad**  
Senior Adviser, SINTEF

A reliable monitoring system is essential for safe and cost-efficient CO2 storage. This presentation will look at emerging technologies for the acquisition and interpretation of geophysical data for efficient and accurate CO2 monitoring. It will include topics such as fiber-optic sensing, noise-based monitoring, integration of complementary data types and the use of machine learning.



## TRACK 01



5:25 pm  
**PANEL DISCUSSION: CAN HYDROGEN MEET ENERGY DEMANDS? CLEAN HYDROGEN FOR A GREEN RECOVERY**



**Dr Carola Kantz**  
Deputy Managing Director, VDMA



**Jens Bischoff**  
Business Development, ENAPTER



**Jörg Balster**  
Business Manager, EVONIK



**Bart de Vries**  
Business Development & Sales Manager, VONK



**Jean Louis Kindler**  
Co-Founder, and CEO, WAYS2H



Clean hydrogen is a major piece of the climate puzzle and a prominent feature of the European Green Deal, a strategy the EU has adopted to reduce the dependence on dirty, imported fossil fuels. In recent years green hydrogen has been hailed as the magic bullet but is it the answer and can it meet increasing energy demands as we get back to a new normal post-pandemic?



**END OF DAY 1**



## TRACK 03



5:30 pm  
**PANEL DISCUSSION: ENABLING LARGE-SCALE CCS: KEY ACTIONS AND INVESTMENT OPPORTUNITIES**



**Olivia Azadegan**  
Commercialization and Policy Manager, CLEAN AIR TASK FORCE



**Birk Teuchert**  
Head of Business Development, CLIMEWORKS



**Massimo Pardocchi**  
Global Development Director Projects & Key Account Management, BILFINGER



**Cathrine Ringstad**  
Senior Adviser, SINTEF



Carbon capture and storage technology is vital for the decarbonisation of energy-intensive industries, which are responsible for about a fifth of all greenhouse gas emissions in the EU. At the same time, carbon capture technologies have only been tested on a smaller scale and are still not yet available for multiple energy-intensive industries that need them. What steps should be taken to address economic and political barriers and what support is needed to develop key infrastructure and technology?



**END OF DAY 1**

## TRACK 01

DAY 2: OCTOBER 21, 2021

### 9:00 am - 12:30 pm INFRASTRUCTURE AND TRANSPORTATION NETWORK:



9:00 am  
**THE ROLE OF SUPPLY CHAIN  
DEVELOPMENTS IN HYDROGEN  
INFRASTRUCTURE**



**Dr. David Hart**  
Director, E4TECH

For low-carbon fuel such as hydrogen to work, improvements and changes to infrastructure and the transportation network are necessary. How will a fledgling supply chain encourage more widespread adoption of hydrogen?



9:25 am  
**EXPANDING THE NORTHERN  
NETHERLANDS HYDROGEN VALLEY**



**Nienke Homan**  
Regional Minister, PROVINCIE  
GRONINGEN

Over the past several years, the Northern Netherlands has accelerated its hydrogen project pipeline together with its ambitions of becoming the leading European hydrogen ecosystem. By 2040 it aims to connect all of western Europe through its unique hydrogen valley.

## TRACK 02

DAY 2: OCTOBER 21, 2021

### 9:00 am - 12:00 pm DEVELOPMENT, TESTING & SAFETY:



9:00 am  
**PRESENTATION TITLE TO BE  
ANNOUNCED**



**Andrew Emil**  
Global Sales Director Hydrogen  
Technologies, CUMMINS INC



9:25 am  
**MODEL BASED DEFINITION OF  
REQUIREMENTS FOR FUEL CELLS**



**Ralf Wascheck**  
Head of Fuel Cell & Hydrogen  
Mobility, IAW

Fuel cells are used for a variety of different applications in the mobility sector, which will increase in the near future. To reduce the costs of fuel cell systems and powertrains by exploiting scale of economy effects one strategy is to use the same components, stacks and systems for various applications. But this is not feasible for all use cases and also depends on the powertrain layout and hybrid control calibration. In addition the right V&V program is needed for each specific component, component group and (sub) system. So Tier2s, Tier1s and OEMs have to use an effective requirements engineering process to address the different parameters previously mentioned and fulfill the market requests. This speech shows a holistic model based approach applying state of the art systems engineering methods for such a process.

## TRACK 03

DAY 2: OCTOBER 21, 2021

### 9:00 am - 1:00 pm CCUS:



9:00 am  
**CAPTURING CARBON. CREATING  
VALUE**



**Babette Pettersen**  
VP of Europe, LANZATECH

LanzaTech recycles carbon from industrial off-gases and syngas generated from solid waste streams, turning the global carbon crisis into a feedstock opportunity with the potential to displace 30% of crude oil use today and reduce global CO2 emissions by 10%. The LanzaTech process converts carbon-rich gas streams to valuable products via gas fermentation, to reduce emissions and make new products for a circular carbon economy.



9:25 am  
**BUILDINGS AS CARBON SINKS**



**Petri Laakso**  
CEO, SOLETAIR POWER

Petri Laakso will introduce and explain Soletair Power products and how they can make buildings as carbon sinks. CO2 capturing in building ventilation will make people perform better and be more wellbeing. Captured CO2 can be turned into different valuable products and it also makes negative emissions to reduce buildings emissions.



## TRACK 01



### 9:50 am THE KEY ROLE OF COMPOSITE STORAGE SYSTEMS IN HYDROGEN DISTRIBUTION



**Hartmut Fehrenbach**

Vice President Hydrogen Distribution,  
HEXAGON PURUS

The latest updates on high-pressure full composite cylinders and systems for compressed gases and their impact on the hydrogen economy.

10:15 am - 10:45 am  
**BREAK**



### 10:45 am INTEGRATED HUB FOR THE OPTIMIZATION OF RENEWABLE HYDROGEN COSTS IN INDUSTRIAL AND MOBILITY APPLICATIONS



**Christoph Erdmann**

Vice President On-site, MESSER GROUP

The presentation will introduce an integrated hub concept for the optimization of renewable hydrogen costs in industrial and mobility applications, drawing on practical examples from European countries.

## TRACK 02



### 9:50 am PROCESSES OF MECHANICAL PEM MEMBRANE DEGRADATION AND ITS IMPACT ON PROGNOSTIC HEALTH MANAGEMENT



**Marius Zübel**

Technical Specialist Fuel Cell, FEV

Understanding the underlying physical processes of degradation and its impact on prognostic health management.

10:15 am - 10:45 am  
**BREAK**



### 10:45 am HYDROGEN FUEL CELL SOLUTIONS FOR POWER AT BERTH (COLD IRONING)



**Renaud Cornu**

Senior Sales Passenger Vessels, GE  
ENERGY CONNECTIONS



### Roel van de Pas CCO, NEDSTACK



The use of a fuel cell to produce electrical power required on a ship while in port represents a potentially viable alternative to cold ironing.

## TRACK 03



### 9:50 am FULL-SCALE CCS ON WASTE-TO- ENERGY – NEGATIVE EMISSIONS FROM SUSTAINABLE TREATMENT OF RESIDUAL WASTE



**Markus Sebastian Hole**

Public Affairs Manager, FORTUM  
OSLO VARME

The presentation will outline Oslo's plans for a full-scale CCS plant on WtE. From landfills to BECCS and CDR, contributing to Europe's net-zero goal – a blueprint for cities to produce negative emissions while dealing with non-recyclable waste.



### 10:15 am INFRASTRUCTURE DEVELOPMENT FOR CCUS VALUE CHAINS



**Leila Faramarzi**

CCUS Director, VALLOUREC



### Pieter Verberne CTO, CARBONORO



The presentation will take a look at the supply chain and capabilities enabling deployment to be ramped up.

## TRACK 01



11:05 am  
**WASTE-TO-HYDROGEN: USING BIOMETHANE TO PRODUCE RENEWABLE HYDROGEN FOR HEAVY-DUTY TRANSPORT**



**Steve Jones**  
VP Europe, BAYOTECH

Exploring the use of renewable biomethane as a pathway to low-cost, low/no-carbon hydrogen to fuel captured fleet buses and trucks.



11:25 am  
**ACCELERATING HYDROGEN DEPLOYMENT TO REACH NET ZERO**



**Corin Taylor**  
Principal Consultant, DNV GL

The presentation will offer DNV's energy transition view of how energy demand and supply will change over the coming years, and how more will be needed to get to net zero, including work DNV has done for Eurogas on hydrogen deployment.



11:45 am  
**H2 HIGH PRESSURE PROCESS BALL VALVES**



**Eduard Ametller**  
Managing Director, Europe, HABONIM

Storage, transportation and fuelling of hydrogen is pushing process valves to new limits in terms of pressure, fugitive emissions control, highest cyclability, weight optimisation and certification. Get an overview of cost-effective solutions for high pressure compressed and liquified H2. Presentation will cover the offering and the technology of Habonim's high pressure H2 process valves.

## TRACK 02



11:10 am  
**RAPID PEM FUEL CELL PRODUCT DEVELOPMENT FOR COMMERCIAL VEHICLES**



**Amy Nelson**  
Manager, Stack Architect, AVL FUEL CELL CANADA INC

This talk will highlight gaps and opportunities for achieving emerging technical and commercial targets. The focus is on rapid product development with emphasis on systems engineering processes, integration of expert capabilities from subscale material evaluation up to powertrain engineering, smart controls and operating strategies, accelerated test methodology and validation strategy.



11:30 am  
**PANEL DISCUSSION: UP TO THE TEST? DEVELOPING AND TESTING FUEL CELLS**



**Ralf Wascheck**  
Head of Fuel Cell & Hydrogen Mobility, IAV



**Marius Zubel**  
Technical Specialist Fuel Cell, FEV



**Amy Nelson**  
Manager, Stack Architect, AVL FUEL CELL CANADA INC



An enhanced focus on the rapid development of standards and regulations is required in order to ensure wherever possible that fuel cell development is not further held up and that standards across different sectors do not conflict. Testing and evaluation equipment is essential to the continued successful development of the supply chain, to validate and improve components and systems, and also to certify them. Europe is currently reasonably well placed, but how does it capitalise on this position of strength?

## TRACK 03



10:40 am  
**CARBON2CHEM**



**Dr. Markus Oles**  
Head of Carbon2Chem Sustainable Production, THYSSENKRUPP

To reduce the CO2 emissions generated in steel production, ThyssenKrupp is working alongside partners from the worlds of science and industry in the Carbon2Chem research project to recover materials from steel-mill gases. As a raw material for the chemical industry, the process gases from blast furnaces can be used to produce fuels, plastics and fertilizers.

11:00 am - 11:30 am  
**BREAK**



11:30 am  
**MEETING TIGHTER EMISSIONS GOALS WITH LOW COST CO2 CAPTURE USING HONEYWELL H2 SOLUTIONS TECHNOLOGIES**



**William J. Blasko**  
Senior Offering Manager, Hydrogen, HONEYWELL UOP

Demand for hydrogen is expected to increase up to ten-fold by 2050, with industry reports predicting 8% to 24% of the world's final energy demand will be supplied by hydrogen. Hydrogen has a unique ability to address 'hard-to-decarbonize' sectors, including refining, chemicals, steel, heating, long-haul transport, and long-term power storage – all of which currently produce significant CO2 emissions. For hydrogen to enable decarbonization of these sectors, it must be produced with significantly lower carbon intensity than is practiced today. Further, each of these sectors will require the supplied hydrogen to meet purity and pressure specifications tailored to the end use. To meet the demand of all these burgeoning markets, both hydrogen production from hydrocarbons with

## TRACK 01



12:00 pm  
**PANEL DISCUSSION: FUELLING  
AND SUPPLYING HEAVY-DUTY  
TRANSPORT**



**Dr. David Hart**  
Director, E4TECH



**Bill Ireland**  
CEO, LOGAN ENERGY



**Thorsten Harder**  
Product Manager, BURCKHARDT  
COMPRESSION



**Richard Kennett**  
Managing Director, PDC  
MACHINES

Hydrogen fuel may still only be making minor waves in the automotive sector, but in the future of the wider heavy-duty transport industry, it is touted as the fuel of the future. According to the Energy Transition Outlook Report it is anticipated that up to 13% of heavy good vehicles will be powered by hydrogen by 2050. What infrastructure and bespoke technology and equipment is required to meet these targets and how do we ensure that supply is kept with demand?



## TRACK 02

12:00 pm - 1:30 pm  
**LUNCH**

**1:30 pm - 5:00 pm  
MANUFACTURING, DIGITISATION  
AND AUTOMATION:**



1:30 pm  
**ACCELERATING FUEL CELL  
TECHNOLOGY ADOPTION FOR  
HEAVY-DUTY MOBILITY**



**Mark Kammerer**  
Sales and Business Development  
Director, BALLARD POWER SYSTEMS

The presentation will outline the latest technology innovations, cost-reduction efforts and system integration partnerships to reduce technology adoption friction points and increase the deployment of fuel cell buses, trucks, trains and marine vessels.



1:55 pm  
**H2 STARVATION EVENTS IN  
PEM FUEL CELLS – MATERIAL  
MITIGATION STRATEGIES**



**Robert Marić**  
Project Manager Catalyst  
Application & Testing, HERAEUS  
DEUTSCHLAND GMBH & CO. KG

The presentation will focus on fuel cell anode catalyst materials and the latest developments in manufacturing.

## TRACK 03

carbon capture, utilization and storage and production from renewable energy via electrolysis will be required. Today, customized and integrated carbon capture and hydrogen purification technology deliver the most cost-effective and proven routes to low carbon intensity hydrogen. This presentation will share the latest examples of hydrogen production and CO2 capture systems optimized to serve various end-use applications for hydrogen and CO2, including both existing and new assets.



11:55 am  
**CAPTURE COALITION: AN  
ANCIENT MICROORGANISM HELPS  
TO UTILIZE CAPTURED CO2 TO  
PRODUCE RENEWABLE METHANE**



**Doris Hafenbradl**  
CTO/Managing Director,  
ELECTROCHAEA

The conversion of carbon dioxide to valuable chemicals such as methane has drawn great attention for use in supporting carbon capture and utilization, especially as methane can be used not only as fuel but also as a hydrogen carrier, transporting town gas to existing infrastructure.



## TRACK 01

12:30 pm - 2:00 pm  
**LUNCH**

### 2:00 pm - 5:00 pm **STORAGE SOLUTIONS:**



2:00 pm  
**THE ROLE OF HYDROGEN  
REFUELING STATIONS IN  
REALIZING THE HYDROGEN  
ECONOMY**



**Hendrik Sijtsma**  
Area Sales Manager Hydrogen,  
RESATO INTERNATIONAL BV

The construction of public and private hydrogen fueling stations is rapidly advancing across Europe and beyond. How do we ensure that the complex supply chain for the components and the amount of testing that is required to ensure their safe operation remains in line with demand?



2:25 pm  
**THE LONG FUTURE OF STEEL  
CYLINDERS FOR HYDROGEN  
STORAGE**



**Frank Ashton**  
Head of Strategy and Commercial  
Development, PRESSURE  
TECHNOLOGIES

This presentation will discuss a steel-based route to the lowest capex cost per kilo of hydrogen stored. Steel as a material offers long cylinder life and good asset utilisation. It is greener, and lowest total cost of ownership business models.

## TRACK 02



2:20 pm  
**FUEL CELL SYSTEMS AND THEIR  
ROLE IN THE STATIONARY AND  
AUTOMOTIVE SECTOR**



**Matteo Schmid**  
Sales Manager Commercial  
Vehicles, PROTON MOTOR FUEL  
CELL

The presentation will discuss the integration of fuel cell systems in commercial vehicles, the challenges of system engineering, current Proton Motor projects (stationary and automotive) and a market forecast with the status of the industry for future development of different segments.

2:45 pm - 3:15 pm  
**BREAK**



3:15 pm  
**INVESTMENT IN GIGAFACTORY  
MANUFACTURING PLANT FOR  
FUTURE FC PRODUCT GROWTH  
REQUIREMENTS**



**Dennis Hayter**  
Head, External Affairs,  
INTELLIGENT ENERGY

This presentation will look at the latest developments reflecting Intelligent Energy's plans to increase manufacturing capability with a new state-of-the-art gigafactory facility in the East Midlands, positioning the region as a centre of hydrogen fuel cell manufacturing in the UK.

## TRACK 03



12:20 pm  
**PANEL DISCUSSION: THE  
NORTHERN LIGHTS PROJECT AND  
ITS ROLE IN THE CCS VALUE CHAIN**



**Kim Bye Bruun**  
Communications & Government  
Relations Director, NORTHERN  
LIGHTS



**Nick Flinn**  
VP Decarbonisation Technologies,  
Shell Catalysts & Technologies,  
SHELL



**Jorunn Brigtsen**  
CCUS Development Manager,  
TOTALENERGIES



**Nina Scholz**  
Country Manager Germany, EQUINOR



The Northern Lights project will be the first cross-border, open-source CO2 transport and storage infrastructure network and offers European industrial emitters the opportunity to store their CO2 safely and permanently underground. Phase one of the project will be completed in 2024 with a capacity of up to 1.5 million tonnes of CO2 per year.



1:00 pm - 2:30 pm  
**LUNCH**



## TRACK 01



2:50 pm  
**LARGE-SCALE ELECTROLYSIS:  
INCORPORATING CLEAN  
HYDROGEN INTO THE  
RENEWABLE ENERGY MIX**



**Andrew Emil**  
Global Sales Director Hydrogen  
Technologies, CUMMINS INC

The presentation will cover the basics of electrolysis; incorporating clean hydrogen into the renewable energy mix; hydrogen storage – liquefaction, compression, material-based, hydride storage, sorbents; driving down the cost of hydrogen; regulation and investment requirements to enable rapid scale-up and adoption.

3:15 pm - 3:45 pm  
**BREAK**



3:45 pm  
**BREMERHAVEN PORT AS A  
MARITIME TEST FIELD FOR  
HYDROGEN TECHNOLOGIES**



**Uwe von Barga**  
Director Environment &  
Sustainability  
BREMERHAFEN PORTS GMBH & CO. KG

The presentation will show that the Bremen ports are prepared for hydrogen-innovation and hydrogen transport chains.

## TRACK 02



3:40 pm  
**FUEL CELLS & ELECTROLYZERS  
ASSEMBLY & TEST: WHERE DO  
WE STAND?**



**Thomas Kuschel**  
Head of Sales Fuel Cell Assembly &  
Testing, THYSSENKRUPP

- Presentation of general groups of market players: OEM (automotive), Tier 1 (automotive), new players (any other supplier of PEM FC + electrolyzers), new players (SOFC, EOFC) • Capabilities of groups to step into serial production • Requirements of groups for assistant • Barriers to step into market (maturity of the product, missing sponsors, missing hydrogen infrastructure, ... ) • Requirements of market • General information about technology available for serial production • Let's go for it



4:05 pm  
**FUEL CELL PROTOTYPE  
DIGITISATION: FROM  
COMPONENT DESIGN TO  
SYSTEM ANALYSIS**



**Christian Altenhofen**  
European Application Lead for Fuel Cell  
Applications, GAMMA TECHNOLOGIES



**Akrem Mouffouk**  
Scandinavia Regional Manager, GAMMA  
TECHNOLOGIES



The presentation will describe how virtual development and state-of-the-art simulation methods support the development of fuel cells, from initial component design to system controls development. A focus will be put on the efficiency gains from virtual product development with respect to time and cost. Different stages of the development process and their specific requirements will be discussed. Real world use cases will be presented along the way.

## TRACK 03

2:30 pm - 5:00 pm  
**CCU & SUSTAINABILITY:**



2:30 pm  
**CCU AS A STEP TOWARDS A  
CIRCULAR ECONOMY**



**Dr Gorge Deerberg**  
Deputy Director, Division Director  
Processes, FRAUNHOFER  
UMSICHT

Carbon is a central building block for the manufacture of chemical products and is currently provided predominantly from fossil raw materials. A circular economy is therefore needed that enables production to be defossilized. CCU solutions are an essential part of the solution. The example of the Carbon2Chem® project can be used to show how implementation can take place and what challenges still need to be solved.



2:50 pm  
**MORE THAN OFFSETTING -  
ACTIVELY REDUCE EMISSIONS BY  
CARBONIZATION**



**Marcel Rensmann**  
Head of Sales, PYREG



**Caspar Ziegner**  
CEO, CARBOCONTROL



As a plant manufacturer and CCS solution provider, Pyreg and CarboControl enable industries to convert biogenic residues into the valuable, carbon negative resource - biochar. The technical expertise, as well as advanced consulting and operation management services help businesses adapt to a new low carbon future. Quick transition positions them for success, as the markets and conditions are rapidly changing. During the pyrolysis process, most

## TRACK 01



### 4:10 pm HYDROGEN STORAGE AND DISTRIBUTION VIA LIQUID ORGANIC CARRIERS

**Stefan Reif**

Business Development,  
HYDROGENIOUS LOHC  
TECHNOLOGIES



The presentation will discuss patented technology enabling safe and efficient storage of hydrogen in an easily transportable oil, thus eliminating the need for pressurized hydrogen tanks.



Join network:  
**hydrogenexpo**

Password:  
**hydrogen21**

## TRACK 02



### 4:30 pm PANEL DISCUSSION: UNLOCKING THE POTENTIAL FOR FUEL CELL DIGITISATION AUTOMATION

**Akrem Mouffouk**

Scandinavia Regional Manager,  
GAMMA TECHNOLOGIES



**Dennis Hayter**

Head, External Affairs,  
INTELLIGENT ENERGY



**Matteo Schmid**

Sales Manager Commercial  
Vehicles, PROTON MOTOR FUEL  
CELL



The fuel cell stack and its components are being manufactured using mostly laboratory fabrication methods that have been scaled up in size, but do not tend to incorporate high-volume manufacturing methods. More manufacturing research is needed to prepare advanced manufacturing and assembly technologies that are necessary for low-cost, high volume fuel cell powerplant production. There have been recent successful demonstrations of automated lines but what is required to then bring automation to scale?



**END OF CONFERENCE**

## TRACK 03

of the carbon in the resulting biochar is sequestered, preventing the release of CO<sub>2</sub> into the atmosphere, for centuries. Biochar production is a negative emission technology (NET) with a wide range of durable applications that create a carbon sink. This not only unlocks new opportunities, but it will allow companies to seamlessly transition to circular business models. The sequestered CO<sub>2</sub> can be certified and used either to meet own sustainable corporate goals or to trade them as certificates on the open market. With over 35 systems in operation, they represent one of the first commercialized CCS solution available on the European market. The sister companies, are the market leaders and specialists in this field, helping customers worldwide to close the loop while improving their carbon footprint and using the renewable energy generated.



### 3:10 pm CHEMICAL LOOPING FOR STEAM, HYDROGEN OR SYNGAS PRODUCTION WITH CO<sub>2</sub> CAPTURE FOR CARBON FOOTPRINT REDUCTION



**Brian Higgins**

Director of Advanced Technologies,  
BABCOCK & WILCOX

BrightLoop is the next generation of chemical looping. Babcock & Wilcox has partnered with some of the brightest minds in academia to demonstrate that Chemical Looping is ready for commercial scale-up. Their collaboration has shown that Chemical Looping can effectively separate CO<sub>2</sub> while producing hydrogen, steam and/or syngas. Our Chemical Looping system is a game-changing evolution capable of ushering in a new era of decarbonization.

3:30 pm - 4:00 pm  
**BREAK**

## TRACK 01



4:30 pm  
**PANEL DISCUSSION: CLEAN HYDROGEN COASTLINE**

**Dr Geert Tjarks**  
Stakeholder Management, EWE AG

**EWE**



**Matilda Heidorn**  
Project Manager Hydrogen & Infrastructure, FAUN UMWELTECHNIK

**FAUN**  
KIRCHHOFF GROUP



**Bert Kiewiet**  
Manager Hydrogen Germany, GASUNIE

**gasunie**  
diverging partners in energy



**Matthias Wantia**  
Senior Advisor Public Affairs, TENNET TSO  
With the Clean Hydrogen Coastline project, partners intend to integrate up to 400 megawatts of electrolysis capacity with corresponding storage of hydrogen into the energy system by 2026 with a corresponding funding framework. The hydrogen generated by offshore electricity will be used, among other things, for climate-neutral steel production. In addition, the Clean Hydrogen Coastline can create the basis for bringing up to 12,000 hydrogen-powered commercial vehicles into operation by 2026.

**Tennet**

**END OF CONFERENCE**



## TRACK 03



4:00 pm  
**PROCESS SIMPLIFICATION WITH PHASE-CHANGE CO2-REMOVAL**

**Werner Friedl**  
Project Manager Desublimators, KELVION



Capturing CO2 in processes followed by storage or reuse in other applications is one of the greatest challenges when moving towards a carbon neutral future. Conventional approaches like amine systems are widely used yet connected to cost intensive post processing including compression, drying and cooling. Kelvion follows another path. With almost 70 years of experience in desublimation technology, Kelvion is able to offer an energy efficient capturing method, that results in a liquid, medium pressure stream of very pure CO2. Follow our presentation to learn about this game-changing approach for applications in Blue Hydrogen and LNG.



4:20 pm  
**INDUSTRIAL CARBON FLOWS – STATUS, OUTLOOK AND THE ROLE OF CCU**

**Michael Carus**  
Managing Director, NOVA-INSTITUTE



This presentation will look at the latest research around carbon flows for chemicals and derived materials with regards carbon management and utilisation.





## TRACK 03



4:25 pm  
**PANEL DISCUSSION:  
CO<sub>2</sub> UTILISATION AND  
SUSTAINABILITY**



**Michael Carus**  
Managing Director, NOVA-  
INSTITUTE



**Jarno Dakhhorst**  
Consultant, NEN



**Dr Francisco Vidal Vázquez**  
Project Manager, KIT –  
KARLSRUHE INSTITUTE OF  
TECHNOLOGY



**Dave Walker**  
Head of Process Engineering and  
Scale-up, ECONIC



Following on from Michael's  
presentation, panellists will take a deep  
dive into the role of CCU in supplying  
the Chemical Industry with carbon.



**END OF CONFERENCE**



For further information and general enquiries  
please contact us via email or phone:



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20-21 October 2021



Messe Bremen, Germany