



# World Hydrogen Congress

24 - 25 March 2020  
Le Méridien Etoile  
Paris



2 DAYS



60+ THOUGHT LEADERS



400+ SENIOR DECISION MAKERS

## WORKING TOWARDS A ZERO EMISSION WORLD

Innovative and emerging strategies for the growth and sustainability of the hydrogen industry

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# WELCOME TO THE WORLD HYDROGEN CONGRESS

The World Hydrogen Congress is the leading annual meeting place for senior executives working in the field of hydrogen production, transportation, distribution, storage, policy and end use applications.

The global energy markets are in transition led by the technological disruption of renewable energy power, digital technologies and the need to decarbonize the power generation, mobility and heat energy markets in the face of the rapidly evolving climate reality. Hydrogen is a rapidly growing solution to decarbonizing power generation, energy storage, cost efficient drivetrains and industrial heat markets.

The World Hydrogen Congress invites you to be part of an innovative platform of thought leaders, exchanges and debates between key hydrogen stakeholders, technology & science providers and world leading industry views in just 2 intense, information rich days.



“Green Power Global organized a great event with knowledgeable speakers and frequent networking opportunities”

Mattan Shrager, Ecoplexus

## WHAT IS THE WORLD HYDROGEN CONGRESS?

**A 2 day, in-depth, intense, unique meeting** of the world's leading commercial hydrogen minds

**Laser focused on increasing hydrogen production**, reducing costs across the whole value chain & scaling up the whole hydrogen market

**The whole value chain** from policy & regulation, production, transportation & distribution and end users

**Exposure to all market segments**  
Energy, mobility and industry

**Innovative technology and solutions** to meet the needs of the rapidly growing hydrogen market

**Global case studies** where you can meet the key stakeholders & learn best practice from early adopters

# MEET THE WORLD HYDROGEN CONGRESS SPEAKERS



**JORGO CHATZIMARKAKIS**  
*Secretary General*  
Hydrogen Europe



**STEPHAN HERBST**  
*Technical General Manager*  
Toyota Motor Europe



**ADAMO SCRENCI**  
*Head of Global Business*  
Development Green Chemicals  
Thyssenkrupp



**CAROLINE HILLEGEER**  
*EVP, Hydrogen Business Unit,*  
Chief Commercial Officer  
Engie



**KONSTANTIN ROMANOV**  
*Head of Division & Executive*  
Secretary, Coordinating committee  
on environmental protection and  
energy efficiency, Gazprom



**ULF ERIKSEN**  
*Vice President of*  
Hydrogen  
Statkraft



**ALICE VIEILLEFOSSE**  
*Director of cabinet of the general*  
directorate of energy and climate  
Ministry for the Ecological  
and Inclusive Transition - France



**TIMM KEHLER**  
*Chairman*  
Zukunft Erdgas



**HANS COENEN**  
*Vice-president Corporate Strategy*  
& Business Development  
Gasunie



**EVA HENNIG**  
*Head of Department*  
Policy Issues  
Thüga



**TIMUR GUEL**  
*Head of Energy*  
Technology Perspectives  
IEA



**NOE VAN HULST**  
*Hydrogen Envoy*  
Ministry of Economic  
Affairs and Climate Policy,  
The Netherlands



**SOONIL JEON**  
*Head Fuel Cell Engineering*  
Design Group  
Hyundai Motor Group



**MICHAEL LOSCH**  
*Director General*  
Austrian Federal Ministry  
for Sustainability



**ANN-ELISABETH SERCK-HANSSEN**  
*Senior Vice President, Asset*  
Management  
EQUINOR



**RUDOLF ZAUNER**  
*Head of Hydrogen*  
Verbund



**OLIVIER MENUET**  
*Senior Vice*  
President Energy  
SNCF Group



**JAMES WATSON**  
*Secretary General*  
Eurogas



**ROBERT MISSEN**  
*Head of the Innovation & Research Unit*  
Eu Commission Directorate  
General for Mobility and  
Transport



**PATRICE DOMENGE**  
*Director of Engineering*  
and R&D  
Swiss Mobility



**GILES DICKSON**  
*Chief Executive*  
Officer  
Wind Europe



**AXEL WIETFELD**  
*Managing Director*  
Uniper Energy  
Storage



**GERT VAN HECKE**  
*Head of sales*  
Van Hool



**BENEDIKT UNGER**  
*Decarbonisation Expert*  
Pöyry



**JESSE SCHNEIDER**  
*Executive Vice President,*  
Technology, Hydrogen & Fuel  
Cells  
Nikola Motor



**ULRIK STRIDBAEK**  
*Vice President, Head*  
of Regulatory Affairs  
Ørsted



**STELLA MATTHEWS**  
*H21 Officer*  
Northern Gas  
Networks



**WALBURGA HEMETSBERGER**  
*Chief Executive Officer*  
Solar Power Europe

# MEET THE WORLD HYDROGEN CONGRESS SPEAKERS



**AOIFE O'LEARY**  
Director, International Climate  
European  
Defense Fund



**BERT VAN DER TOORN**  
Global Lead Mid / Downstream  
Oil & Gas. Biofuels & Hydrogen  
ING Bank



**THIERRY TROUVÉ**  
Chief Executive  
Officer  
GRTgaz



**STÅLE AAKENES**  
Chief Economist  
Gassnova



**ERIC SEBELLIN**  
Marketing and Strategy  
Director, Hydrogen Energy  
Air Liquide



**RENE SCHUTTE**  
Program Manager  
Hydrogen  
Gasunie



**BART BIEBUYCK**  
Executive Director  
FCH Europe



**JAN KLAWITTER**  
Head of International  
relations and policy  
AngloAmerican



**ANDREW WIN**  
Programmes and  
Projects Manager  
Aberdeen City Council



**JACOB DIJKSTRA**  
Project engineer,  
sustainable energy  
Ameland



**JENIFER BAXTER**  
Head of Engineering  
Institution of Mechanical  
Engineers



**TOM CUNNINGTON**  
Head of Business  
Development  
Transport for London



**EVE TAMME**  
Senior Advisor  
Global CCS  
institute



**JEAN-MARC LEROY**  
Senior Vice President,  
Infrastructure  
Engie



**CHRISTIAN ESSERS**  
Director, Global Energy  
Procurement  
Wacker Chemie



**FERNANDO DE SISTERNES**  
Energy Specialist & lead on the  
Energy Storage Partnership  
Program  
The World Bank



**HANS-JOACHIM POLK**  
Member of the  
Executive Board  
VNG



**STEFAN REICHELSTEIN**  
Director  
Mannheim Institute for  
Sustainable Energy Studies



**DRIES ACKE**  
Director, Energy Systems  
Programme  
European Climate  
Foundation



**ROB STEVENS**  
VP Technology  
scouting  
Yara



**MARIE GODARD PITHON**  
Deputy Director, Hydrogen  
Vicat



**TORBEN BRABO**  
Chief Executive  
Officer  
Energinet



**MARC OLIVER BETTZÜGE**  
Head of the Chair of Energy  
Economics - Department of  
Economics  
University of Cologne



**YVES VERCAMMEN**  
Director Transformation  
Projects,  
Fluxys



**CHRISTA SYS**  
BNP Paribas Fortis Chair on  
Transport, Logistics and Ports  
University of Antwerp



**KEITH WHIRISKEY**  
Deputy Director  
Bellona

INTERESTED IN SPEAKING?

PLEASE  
CONTACT



**NADIM CHAUDHRY**

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# THE KEY CHALLENGES IN THE MARKET



## Regulatory developments & standards

Some regulations currently limit the development of a clean hydrogen industry so the event will tackle what it will take to achieve the 2050 long term climate change strategy with hydrogen, which barriers to hydrogen deployment need to be removed and which incentives need to be put in place.



## Hydrogen demand & global economics

Whilst hydrogen supply is often discussed, demand is less so. We will be analysing how big the hydrogen market really can be and what will drive world demand growth and how it might be priced. Understanding the global hydrogen economics is key are well in terms of where the tipping point is for investment flows into different regions.



## Production

Producing hydrogen from low-carbon energy is currently quite costly. We will be discussing what it will take for the declining of costs of renewables and the scaling up of hydrogen production. Also how refuelling equipment and electrolyzers could all benefit from mass manufacturing to bring costs down.



## Hydrogen in the gas grid

Decarbonising the gas grid and maritime transportation are the next frontiers of energy transition. Whilst there are many projects around the world (some of which we will be showcasing) that are examining the possibility of using existing natural gas infrastructure to deliver hydrogen to end users, to what extent are existing pipes suitable for hydrogen? What regulatory & technical hurdles need to be overcome?



## Maritime transportation

With roughly of the world's goods transported by sea there are steps for developing hydrogen-powered fuel cells for ship propulsion in order to reduce air pollutants and noise emissions. In the shipping industry diesel engines are used almost exclusively today and as in aviation, fuel cells are currently being tested as energy providers for the on-board power supply. However the use of hydrogen-powered fuel cells for ship propulsion is still at an early design or trial phase.



## Blue hydrogen & CCUS

There has been a growing recognition of the importance of CCUS technologies in contributing towards energy and climate goals. However investment has fallen behind that of many other clean energy solutions. Policy support is critical for securing investing in CCUS. We will discuss the commercial viability of blue hydrogen and innovative technology alongside the range of policy options available.



## Refuelling infrastructure

The development of hydrogen infrastructure is relatively slow and therefore holding back widespread adoption. Hydrogen prices for consumers depend on the number of refuelling stations and how often they are used. WHC discusses the need for investment, planning and coordination between industry stakeholders, debating the obstacles that need to be overcome.



## Encouraging investment in the hydrogen economy

If the industry can scale up hydrogen in a co-ordinated way then this will encourage further investment in the hydrogen market. Business models are changing to enable a long term focus on energy transition but what will it take to lock in investors? The industry needs a better understanding of the political & insurance risk that impacts finance decisions alongside putting a project together.



## Mobility

Making hydrogen fuelled transport a global reality has a huge amount of momentum at the moment, with steps in place to expand hydrogen in transport through fleets & freight. However the need to confirm the technical and commercial readiness of vehicles, fuelling stations and hydrogen production techniques is still paramount. We will address this and other issues alongside interviews with leading OEMs. Planes, trains, buses, trucks, cars & ports are all on the table!



## Industry

Nearly 70 million tonnes of hydrogen is used today, notably in oil refining and chemical production. This hydrogen is currently produced from fossil fuels, with significant associated CO2 emissions. Hydrogen is also used in several industrial processes. However hydrogen use in refineries has increased in recent years for several different reasons from the strict regulations that require low sulphur in diesel to the increased consumption of low quality 'heavy' crude oil.

# SPONSORSHIP OPPORTUNITIES

## THE WORLD HYDROGEN CONGRESS OFFERS TAILORED OPPORTUNITIES TO FIT YOUR BUSINESS

You will meet the entire clean energy ecosystem, including developers, offtakers, EPC contractors, consultants, government stakeholders, installers and integrators. The event is highly attended by international delegates from across the globe. Take advantage of the opportunity to meet all of your customers in one place at the same time!

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TO DISCUSS A BESPOKE SPONSORSHIP PACKAGE, PLEASE CONTACT:

**OLIVER SAWYER**

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## HYDROGEN 101 - Fundamentals of the Hydrogen Economy

An invaluable '101' for those either new to hydrogen or wanting to understand how their specific role fits within the wide-ranging value chain and competitive picture. This afternoon's session provides an excellent introduction to key hydrogen terminology along with an independent perspective on common and often-contentious industry discussions.

Ideal for those of a non-technical background, seeking to better understand both new business opportunities and risks, the session aims to be low on powerpoint and maximise the time for Q&A.

### 14.00 - Hydrogen applications and 'the hydrogen economy'

- Hydrogen today
- Energy decarbonisation pathways & proposed roles for hydrogen
- The competitive environment: recognising and evaluating alternatives to hydrogen
- The value chain, including drivers for its key players

#### Using hydrogen

- Reviewing the options: fuel cells, combustion, chemical and other conversions
- Hydrogen as long-term energy storage
- Cross-sector deployment strategies and examples of implementations
- Behavioural change and paths of least resistance: their importance for hydrogen growth

### 15.50 - Producing hydrogen:

- Which 'colour': brown, blue or green?
- Technology review: electrolysis, reforming and other/emerging solutions
- Feedstocks and their availability (including risks around some common assumptions)
- Linking hydrogen with carbon capture (CCS / CCUS)
- Key issues around energy efficiency, location, scale and cost

#### Distributing and transporting hydrogen

- Physical attributes and distribution challenges
- Infrastructure for transport refuelling
- Hydrogen and the natural gas grid
- Ammonia as a hydrogen carrier (and others)

### 15.30 - Refreshments

### 17.30 - Close



#### Presented by DR JOHN MASSEY

Dr John Massey is an independent clean energy market analyst and educator and the founder and Managing Director of Grey Cells Energy Ltd. He provides small-group training and one-to-one coaching to senior business people from companies of all shapes and sizes worldwide, along with business strategy 'micro-consulting' for clean energy start-ups and SMEs.

He tracks technology, market disruption and value-chain competition within the highly-interdependent sectors of renewable power generation, low-carbon power systems, energy storage, hydrogen and electric mobility.

He has a first-class honours degree in Natural Sciences from the University of Cambridge, a PhD in Earth Sciences and a Diploma in Innovation, Economics & Sustainability. Prior to becoming independent fifteen years ago, he was Research Director at Informa plc (a £9bn, FTSE-100 business intelligence provider), where he worked for over ten years.

## Hydrogen New Business Models, Regulation and Infrastructure

An essential introduction into how hydrogen can be introduced into the current energy system, looking specifically at the substitution of natural gas. What are the emerging business models shaping the hydrogen economy, the role that regulation plays in this development and the changes needed, as well as the role that existing natural gas infrastructure can play in this new economy.

This is a deep dive into those wishing to understand how hydrogen could fit into the future energy system and within the business model of their companies. Ideal for those of a non-technical background, seeking to better understand both new business opportunities and risks. Interaction with the speaker and discussion of real-life cases brought by the participants will be a key element of the workshop.

### 14.00 - H2 business models

- H2 production
  - Green, blue and grey hydrogen – focus from renewables to hydrogen
  - Key players in H2 production across sectors and partnerships – how companies are placing themselves to win in the new hydrogen economy
- H2 as a fuel
  - Air, land and maritime transportation sectors new business models
  - Comparative analysis with alternative fuels
  - Demand outlook

### 15.30 - Refreshments

### 15.30 - H2 regulation and infrastructure

- Current regulatory framework for H2 (focus on Europe)
- H2 and natural gas – new business models for natural gas infrastructure and the emergence of new value chain
- Regulatory and policy initiatives to foster H2 use across the new value chain

### 17.30 - Close



### Presented by CRISTIANO FRANCESE

Cristiano Francese has 10+ years of work experience in the energy business. Throughout his career, he worked across regulatory and policy development, as well as commercial and business development activities. He worked closely with governments and energy regulatory agencies and supported their capacity development, analysis and policy development. His key areas of expertise include energy regulation and policy development, as well as structuring of commercial agreements for large energy infrastructure projects, business development and strategy activities.

Mr. Francese contributed to the success of multiple organizations spanning from government and international institutions to major energy companies. He advised governments and international institutions on how to reform energy regulation in multiple countries in order to develop a fully functioning and competitive energy market. He contributed to the definition and negotiation of major commercial contracts in natural gas transportation, notably the Trans Adriatic Pipeline project, by providing risk analyses and by defining options for the structuring of commercial contracts. He has also advised European energy regulators on the measures needed to support the development of renewable gasses such as hydrogen and biogas.

08.00 - Coffee and registration

09.00 - Chair's welcome address

## 09.05 - Post Davos update on regional hydrogen roadmaps: Is developing a sustainable European hydrogen market really achievable? How does this compare to the global picture?

- Enabling hydrogen to be a systemic solution to achieving a renewable world for energy (power & heat), mobility & industry
- Opportunities and challenges facing ultra-low carbon (green/blue) hydrogen to replacing grey hydrogen across the value chain
- What regulatory, financial and market developments need to happen for cost to come down and the infrastructure required for bulk production to scale up?

**JORGO CHATZIMARKAKIS**, Secretary General, **Hydrogen Europe**

## 09.20 - Beyond the hype: future hydrogen supply/demand scenarios

- How big can the hydrogen market really be?
- What will drive world demand growth of hydrogen and how will it be priced?
- An update on the short term global supply dynamics
- What are the medium term trends that are shaping the market?



## 09.35 - From today to net zero carbon point: understanding the next steps towards achieving the European Commission's 2050 long term climate change strategy with hydrogen

- How much will this cost & where will investment come from?
- What policy & public perception barriers need to be overcome?
- Sector coupling and creating a united energy framework for electricity and gas

**NOE VAN HULST**, Hydrogen Envoy, **Ministry of Economic Affairs and Climate Policy, The Netherlands**  
**KLAUS-DIETER BOCHARDT**, Deputy Director-General, Energy Policy, **Directorate-General for Energy**  
**MICHAEL LOSCH**, Director General, Energy and Mining, **Austrian Federal Ministry for Sustainability and Tourism**  
**ALICE VIEILLEFOSSE**, Director of cabinet of the general directorate of energy and climate, **Ministry for the Ecological and Inclusive Transition**

## 10.05 - Driving the global hydrogen economy & scaling up: creating infrastructure, policy framework, affordable technologies and investment

- What will it take to encourage and grow demand for green/blue hydrogen?
- Business models – how to invest in future infrastructure for energy, mobility and industry
- With hydrogen technologies reaching maturity how does the industry move from R&D to market activation?
- What is the cost base and when will it break even?

Moderator : **JAMES WATSON**, Secretary General, **Eurogas**

**EVA HENNIG**, Head of Department Policy Issues, **Thüga**

**SOONIL JEON**, Head of Fuel Cell Engineering Design Group, **Hyundai Motor Group**

**ADAMO SCRENCI**, Head of Global Business Development Green Chemicals, **Thyssenkrupp**

## 10.40 - Fireside chat: Financing Panel - Encouraging investment in the hydrogen economy: what business models will enable a long term focus on energy transition? Locking in investors

- What are the opportunities and constraints for the value chain and policy markers?
- What political & insurance risk impacts finance decisions?
- How do we step up to truly large scale projects commensurate with climate change targets quickly?
- Shifting from short term to long term investment models

Moderator : **BART BIEBUYCK**, Executive Director, **FCH Europe**

**DRIES ACKE**, Director, Energy Systems Programme,

**European Climate Foundation**

**BERT VAN DER TOORN**, Global Lead Mid /

Downstream Oil & Gas, Biofuels & Hydrogen, **ING Bank**

**FERNANDO DE SISTERNES**, Energy Specialist & lead on the Energy Storage Partnership Program, **The World Bank**

## 11.00 - Morning coffee & networking

## 11.30 - Exploring the role of hydrogen as a link between the power, industry and mobility sectors

- What incentives are required to delivery hydrogen at scale to end users – how do we develop business models
- Where are the opportunities in energy flexibility, availability, security?
- What obstacles stand in the way of improved efficiency and cost-effectiveness in the energy transition?
- Why are hydrogen powered electric vehicles part of the future?

**CAROLINE HILLEGEER**, EVP, Hydrogen Business Unit, Chief Commercial Officer, **Engie**

## 11.50 - Achieving low cost hydrogen production & conversion: what needs to happen to outperform fossil fuels?

- Given grid constraints means a lot of renewable capacity won't find a place on the grid, how can hydrogen opportunities support renewable deployment?
- Can renewables produce enough green hydrogen to meet our needs in the short term, and might hydrogen boost commitment to renewables? What about the rate of deployment?
- Flexible energy working alongside intermittent energy - Hydrogen power plants working alongside renewable deployment?
- Overcoming infrastructure constraints for true scale (1000s TWh?)
- Scaling the global supply chain for electrolysis – making green hydrogen economically viable
- Traceability: guarantees of origin – where are we?

Moderator : **GILES DICKSON**, Chief Executive Officer, **Wind Europe**

**ULF ERIKSEN**, Vice President, Hydrogen, **Statkraft**

**WALBURGA HEMETSBERGER**, Chief Executive Officer, **SolarPowerEurope**

**HANS-JOACHIM POLK**, Member of the Executive Board, **VNG**

**STEFAN REICHELSTEIN**, Director, **Mannheim Institute for Sustainable Energy Studies**

**ULRIK STRIDBAEK**, Vice President, Head of Regulatory Affairs, **Ørsted**

## 12.20 - From isolated grey hydrogen to bulk available blue and green: decarbonising global gas markets: How can gas markets meet the demand in a low carbon economy?

- Working together to create an 'at scale' hydrogen market for the short medium and long term
- Developing and/or converting your assets for hydrogen use
- End User technology readiness levels - available vs affordable technologies

Moderator : **MARC OLIVER BETTZÜGE**, Head of the Chair of Energy Economics, Department of Economics, **University of Cologne**

**HANS COENEN**, Vice-president Corporate Strategy & Business Development, **Gasunie**

**JEAN-MARC LEROY**, Senior Vice President, Infrastructure, **Engie**

**AXEL WIETFELD**, Managing Director, **Uniper Energy Storage**

## 12.50 - Scaling up & timescale! The right technology, at the right time at the right scale: the grey to blue & green to green transition

- The international Trading of renewables option – what are the timescales for at scale green hydrogen
- What technologies are in the market / on the horizon to allow green hydrogen to organically develop alongside blue?
- Challenges to developing the supply chain – the importance of mega scale, large and small projects
- Regulation & encouraging investment.
- Storage - how to articulate the differences between gas storage and battery market to policy makers
- Economies of scale – Bringing down the cost of components



## 13.10 - Networking lunch

## 14.10 - Complementarity or head to head? A rainbow of hydrogen – looking at the benefits, obstacles and costs

- **Green:** Global trading, removing constraints, timescales for renewable availability, timescale for scalability end to end?
- **Blue:** Enabling scale and infrastructure - benefits of SMR and methane pyrolysis

**Moderator :** TIMM KEHLER, Chairman, **Zukunft Erdgas**  
**KONSTANTIN ROMANOV**, Head of Division & Executive Secretary, Coordinating committee on environmental protection and energy efficiency, **Gazprom**  
**ERIC SEBELLIN**, Marketing and Strategy Director, Hydrogen Energy, **Air Liquide**

## 14.40 - Decarbonisation of the gas grid – the next frontier of energy transition

- What are the opportunities & constraints to converting to 100% ultra-low hydrogen in Europe's gas grids?
- What regulatory & technical hurdles need to be overcome?
- To what extent are existing pipes suitable for hydrogen? The gas quality debate
- Making the right decisions to encourage investments

**Moderator :** TORBEN BRABO, Chief Executive Officer, **Energinet**  
**DANIEL MUTHMANN**, Head of Corporate Development, Politics & Communications, **Open Grid Europe**  
**THIERRY TROUVE**, Chief Executive Officer, **GRTgaz**  
**KEITH WHIRISKEY**, Deputy Director, **Bellona**  
**YVES VERCAMMEN**, Director Transformation Projects, **Fluxys**

## 15.15 - Maritime transportation: What is the future for hydrogen-powered ship/vessel propulsion?

- Could fuel cells really become a main form of power?
- What infrastructure & safety development needs to happen to support widespread use?
- What technologies are out there to reduce Co2 and who pays for it?
- Ammonia – can this become the fuel of choice for maritime?

**Moderator :** PATRICE DOMENGE, Director of Engineering and R&D, **Alca-Torda Application**  
**JENIFER BAXTER**, Head of Engineering, **Institution of Mechanical Engineers**  
**ROBERT MISSEN**, Head of the Innovation & Research Unit, **European Commission Directorate General for Mobility and Transport**  
**AOIFE O'LEARY**, Director, International Climate, **European Defense Fund**  
**CHRISTA SYS** BNP Paribas Fortis Chair on Transport, Logistics and Ports **University of Antwerp**

## 15.45 - Let's talk scale - blue hydrogen & CCS

- Innovative technology to capture CO<sub>2</sub>: the costs behind blue hydrogen and strategies for reducing energy consumption
- Ensuring the commercial viability of blue hydrogen – who will invest?
- What are the opportunities and limitations of hydrogen storage? Salt caverns & depleted gas fields
- CCUS and hydrogen technology developed in regional industrial clusters

**Moderator : MARC OLIVER BETTZÜGE**, Head of the Chair of Energy Economics, Department of Economics, **University of Cologne**

**STÅLE AAKENES**, Chief Economist, **Gassnova**

**TIMM KEHLER**, Chairman, **Zukunft Erdgas**

**EVE TAMME**, Senior Advisor, **Global CCS institute**  
Senior representative, **Equinor**

## 16.15 - Afternoon Coffee & networking

### INTRODUCTION OF PECHAKUCHA BY THE CHAIR!

PechaKucha is a presentation style in which 20 slides are shown for 20 seconds each (6 minutes and 40 seconds in total).  
Speakers must be concise and fast-paced! Q&A will follow for the remaining time

### COUNTRY PROJECT UPDATES

## 16.45 - California: achieving 100% green electricity on the network by 2045

- Policies, incentives and regulatory environment
- Building new production & distribution facilities for mobility markets
- Hydrogen fuel cells & port equipment opportunities
- Partnerships & creative financing schemes

## 17.05 - Case study: the hydrogen revolution in The Netherlands

- Lessons learned from Project HyStock & the Island of Ameland
- Challenges behind scaling up gas to power technology
- Encouraging system integration

**JACOB DIJKSTRA**, Project engineer, sustainable energy, **Ameland**

**RENE SCHUTTE**, Program Manager Hydrogen, **Gasunie**

### TECHNICAL SHOWCASES

## 16.45 - Sizing of the market for electrolyzers: How big can the market grow?

- Demand growth projections by region
- Analysing the different technologies: Alkaline water, PEM, SOE
- What are the emerging themes and challenges in the value chain?

## 17.05 - Leading the field for alkaline water electrolysis

- What are the challenges and opportunities for low temperature water electrolysis
- New demand: what will drive up demand?
- New markets: sector or geography?
- The importance of partnerships in industry

## COUNTRY PROJECT UPDATES

## TECHNICAL SHOWCASES

### 17.25 - The H21 project: large scale conversion of the gas network to hydrogen

- Project update: applying large-scale hydrogen solutions for clean flexible power production
- Starting local, growing national?
- Safety concerns, challenges for customer acceptance & the cost of appliances

STELLA MATTHEWS, H21 Officer, [Northern Gas Networks](#)

### 17.25 - Next generation PEM electrolyser stacks: the advantages and disadvantages of PEM technology

- Dealing with spikes in supply from renewable energies
- The development of cost effective electrocatalysts for PEM water electrolysis
- Reducing production cost and maintaining high efficiency
- Optimising operational efficiency

### 17.45 - Australia: exploring the potential for an economically-sustainable hydrogen industry

- Blue and green Oz – Carbon net and HypSA
- Update on current hydrogen projects: what are the hurdles to putting together a commercially viable project?
- Attracting commercial investors & making transactions bankable
- De-risking the project: legal, safety and environmental risks

### 17.45 - Storage: Innovative technology to capture co2

- What technology is out there?
- The costs behind blue hydrogen
- Strategies for reducing energy consumption and making blue hydrogen more economical
- Regulatory and political challenges

18.05 - Chair's round up of the day

18.10 - End of World Hydrogen Congress Day 1

18.10 – 20.00

NETWORKING DRINKS



07.45 - World Hydrogen Congress breakfast

08.15 - Morning coffee & networking

09.00 - Chair's welcome address

**09.05 - IEA world hydrogen update: given the decarbonisation of energy what are the challenges and solutions for the growth of the hydrogen economy?**

- What will it take to have enough renewable power/energy at source?
- Can hydrogen and fuel cell technologies really support climate change and energy security goals?
- Accelerating the development and deployment of hydrogen and fuel cell technologies
- Overcoming risks related to investment in infrastructure

**TIMUR GUEL**, Head of Energy Technology Perspectives, **IEA**

**09.35 - Global hydrogen economics: where is the tipping point for investment flows into different regions?**

- Where is the highest value add?
- Which countries and energies will become swing producers and what challenges do they face?
- Segmentation, size, market share & leading players
- Timescales for real ramp up of global trading for hydrogen

**BENEDIKT UNGER**, Decarbonisation Expert, **Pöyry**

**09.50 - Equinor: Innovative strategies for offering markets a carbon neutral pathway using natural gas**

- Blue hydrogen – the essential transition to a true hydrogen economy – unlocking green hydrogen as a link between power, industry and mobility
- Opportunities & barriers for converting natural gas into hydrogen
- What technologies are the most cost efficient?
- Applying large scale hydrogen solutions to clean flexible power production, industry and heat

**ANN-ELISABETH SERCK-HANSEN**, Senior Vice President, Asset Management, **Equinor**



## 10.15 - Case studies for sectorial integration with green hydrogen in Austria: From ideas to early business cases

- Technical & commercial opportunities for sectorial integration
- What makes sense – and what does not?
- Developing additional revenue streams both up and downstream
- Challenges behind bringing down the cost of producing green hydrogen

**RUDOLF ZAUNER**, Head of Hydrogen, **Verbund**

## 10.35 - Hyundai: Spearheading global hydrogen mobility

- Strategies for putting the vision of strengthening your business operations across the hydrogen ecosystems into reality
- Developing a global mobility infrastructure network
- Aligning regulation
- Mobility technology – Hyundai's vision

**SOONIL JEON**, Head of Fuel Cell Engineering Design Group, **Hyundai Motor Group**

## 11.00 - Morning coffee & networking

## 11.00 - An interview with Toyota Motor Europe: Making hydrogen part of our fuel solution of the future

- What needs to happen for hydrogen fuel cell vehicles to become cheaper than gasoline-powered cars?
- Hurdles to getting the whole value chain & stakeholders to work together
- where can further cost reductions be taken?
- Exploring additional revenue streams

**STEPHAN HERBST**, Technical General Manager, **Toyota Motor Europe**

## 11.20 - Spotlight on: cars, trucks, buses, planes & trains: exploring technology, high costs, a lack of infrastructure and the complexity of storing hydrogen

- Action plan for achieving energy and CO2 objectives
- Strategies for increasing deployment: volumes and cost
- What needs to happen for costs to be competitive with battery & gasoline cars?
- How can production scale up if infrastructure isn't in place?
- Which hydrogen/low carbon technologies are on the radar?
- Capex, partnerships and business models

**TOM CUNNINGTON**, Head of Bus Business Development, **Transport for London**  
**OLIVIER MENUET**, Senior Vice President Energy, **SNCF Group**  
**JESSE SCHNEIDER**, Executive Vice President, Technology, Hydrogen & Fuel Cells, **Nikola Motor**  
**GERT VAN HECKE**, Head of Sales, **Van Hool**

## 12.00 - Nikola Motor: Vertical Integration: Parallel Development of both the 40T Fuel Cell Trucks and HD Hydrogen Infrastructure

- What barriers must be overcome for a coast to coast hydrogen fueling network to be a reality?
- Are renewable sources reliable enough?
- Can innovative technologies from other industries be shared?

**JESSE SCHNEIDER**, Executive Vice President, Technology, Hydrogen & Fuel Cells, [Nikola Motor](#)

## 12.20 - Panel: Creating global networks of hydrogen fuelling stations

- The numbers to date
- Obstacles to appropriate build-up of the refuelling infrastructure
- Political support, market framework and investment
- Developing supply chain & services support

## 13.00 - Lunch & networking

## 14.00 - Next generation technologies and solutions for mobility infrastructure

- Innovative technologies working towards a zero emissions world
- Can there be a cross over into other mobility sectors?
- Decreasing costs for every component for better efficiency – is this realistic?
- Encouraging a competitive price for hydrogen

## 14.20 - Drax Case study: developing the world's first carbon neutral industry

- Challenges behind producing hydrogen at scale: exploring future low carbon generation methods
- Diversifying your business' income and revenue stream
- What future legislative processes are needed for the introduction of robust, sustainability criteria?

## 14.40 - Yara: Innovative pathways in decarbonising industry and ammonia production

- Where are the challenges in transitioning to green hydrogen for industry?
- Hydrogen sources, logistics and industrial scale challenges
- Ammonia production and use

**ROB STEVENS**, VP Technology scouting, [Yara International](#)

“ Hydrogen is a huge market already, worth around \$100 billion, and it will be worth \$2.5 trillion by 2050.”

**Marco Alvera**,  
Chief Executive Officer, [SNAM](#)

## 15.00 - AngloAmerican: how the world's largest diversified mining company is driving the hydrogen revolution

- Strategies for making commitments to reducing co2 footprints
- Developments in hydrogen from a market & operational view point
- Growth in technologies in fuel cells & electrolosis
- Investing in the whole supply chain

**JAN KLAWITTER**, Head of International relations and policy, [AngloAmerican](#)

## 15.20 - Industry & refineries: switching from grey to blue/green hydrogen – exploring CO2 reduction, fuel switching and costs

- Given the huge growing demand for hydrogen in industry and feedstock, what regulatory and market incentives are needed to lower costs and get to scale quicker?
- Hydrogen initiatives across the sector: substitution of fossil fuels
- Cost curves for reducing costs whilst raising production
- Technologies, capex & opex challenges
- Increasing process efficiency and continuous technical improvement

**CHRISTIAN ESSERS**, Director, Global Energy Procurement, [Wacker Chemie](#)  
**JAN KLAWITTER**, Head of International relations and policy, [Anglo American](#)  
**MARIE GODARD PITHON**, Deputy Director, Hydrogen, [Vicat](#)

## 16.00 - H2 Aberdeen: strategies for bringing about a hydrogen economy in the Aberdeen City Region

- Challenges to commercialising infrastructure
- Capitalising on oil & gas expertise and technology
- Opportunities for transport, residential and heating

**ANDREW WIN**, Programmes and Projects Manager, [Aberdeen City Council](#)

## 16.20 - Chairman's closing remarks

## 16.30 - Afternoon Coffee & networking

## 17.00 - End of World Hydrogen Congress 2020

INTERESTED IN SPEAKING?

PLEASE  
CONTACT

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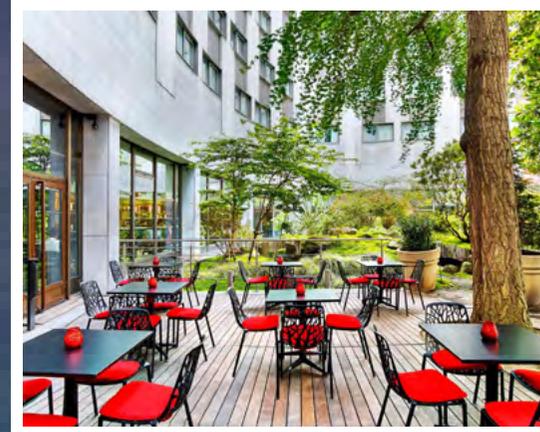


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