

European Hydrogen Energy Conference 2022



AeH₂
ASOCIACIÓN ESPAÑOLA
DEL HIDRÓGENO

**PROGRAM
18-20 MAY**



European Hydrogen Energy Conference

Conference Program
18-20 MAY



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Welcome Letter

Mr Javier Brey
Spanish Hydrogen Association (AeH2)



Dear friends,

I am pleased to extend the warmest of welcomes to the European Hydrogen Energy Conference 2022. It is a pleasure to meet you all once again.

As an ongoing event since 2005, the EHEC has become a long-standing conference within the hydrogen and fuel cell sector, which seeks to develop a deeper understanding of the evolving global energy industry and the role of hydrogen therein. Over the years it has increasingly gained visibility and renown as the perfect place to share and showcase innovation, results, investigation, technological advances, and to establish and build relationships. It has even been recognised by the Spanish Government as an "invaluable opportunity for the development of hydrogen technologies in Spain" in the Spanish Hydrogen Roadmap (Measure 38).

This year, the EHEC outdoes itself with 4 thought-provoking sessions on hydrogen hot topics with high-level plenary speakers from around the world, 36 outstanding parallel sessions where 190+ international speakers will present leading research breakthroughs, and 70+ posters on cutting-edge research topics, hydrogen initiatives, and projects.

With a growing number of companies and institutions working on hydrogen, this year's Trade Fair will be divided over two areas (Nube and Sol), covering over a total of 1,800m², where 50+ exhibitors will share their projects, products, and services.

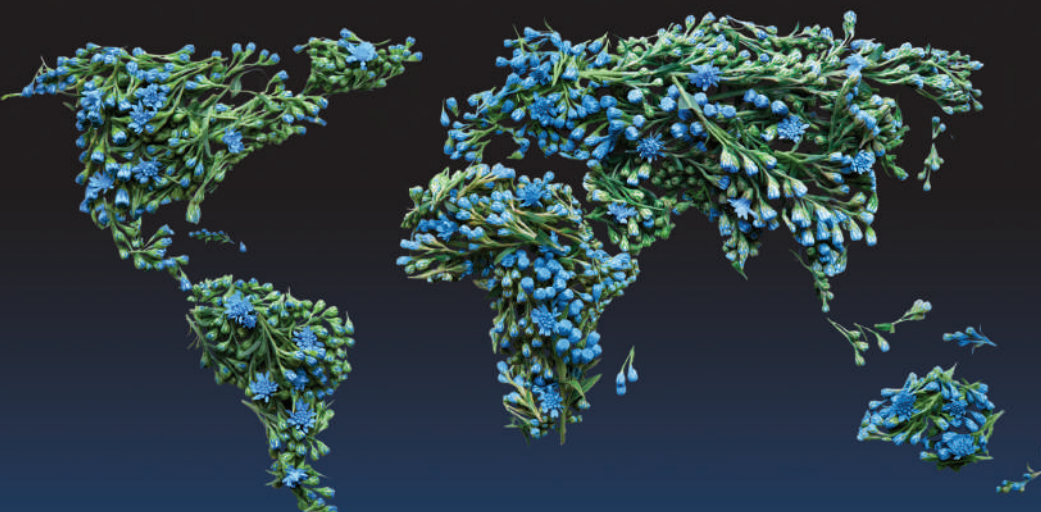
To ensure every detail is to your liking, the Spanish Hydrogen Association (AeH2) has worked tirelessly in the organisation. Our goal is to provide you with a superb conference, engaging presentations, and successful networking opportunities; and, of course, we hope you enjoy your visit to our beloved country.

This edition of the European Hydrogen Energy Conference takes place during a critical and exciting period for the hydrogen industry, at a time when a united common will to achieve carbon neutrality is expanding exponentially. We are experiencing an authentic transition through the decarbonisation of the seven energy and land-use systems that produce the world's emissions: power, industry, mobility, buildings, agriculture, forestry and other land use, and waste, and hydrogen holds the key to decarbonising at least five of these. This strategic three-day event offers the opportunity to learn all about our greatest challenges and meet potential partners and worldwide experts from along the hydrogen value chain to discuss the best course of action for hydrogen technologies to achieve their full potential.

To conclude this message, I would like to thank every member of the organisation for their dedication and hard work. This event would not have been possible without their efforts. And, of course, I thank all of you for attending. We hope to live up to your expectations. Once again, welcome to EHEC 2022.

The net-zero transition

What it would cost, what it could bring



Download the report: mck.co/NetZeroTransition



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Carlos Merino	Centro Nacional del Hidrógeno (CNH2)
Sagrari Miguel Montalvá	Asociación Española del Hidrógeno (AeH2)
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Emiliano García-Page	President of Castilla-La Mancha
Joan Groizard	General Manager. Institute for Energy Diversification and Saving (IDAE)
Rosa Ana Rodríguez	Regional Minister of Education, Culture and Sports. Government of Castilla-La Mancha
Eduardo Sicilia	Regional Minister of Science, Universities and Innovation. Community of Madrid



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POSITIVE MOTION

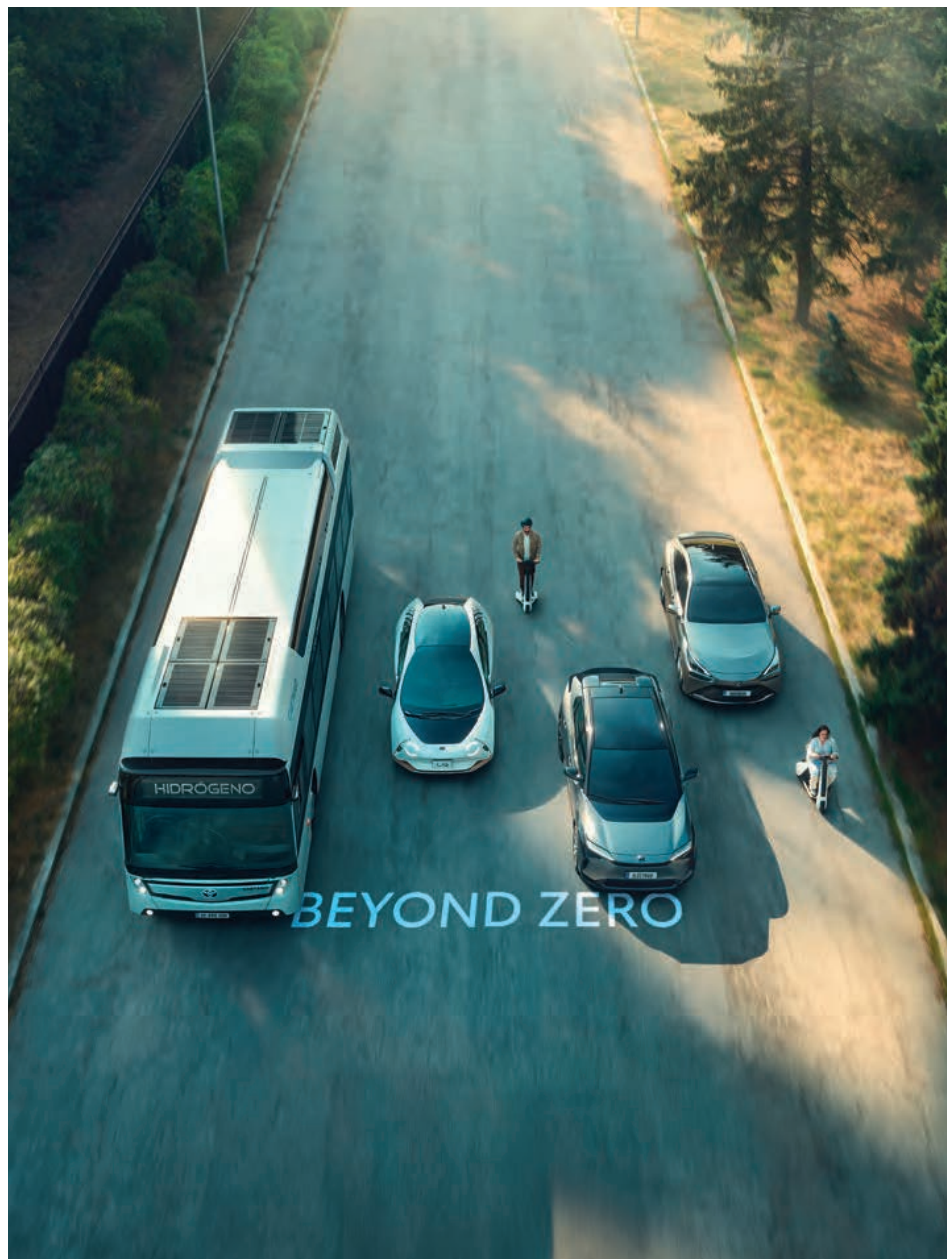
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Ekain Fernández	TECNALIA	Spain
Vanesa Gil	Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón	Spain
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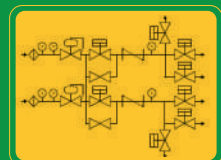
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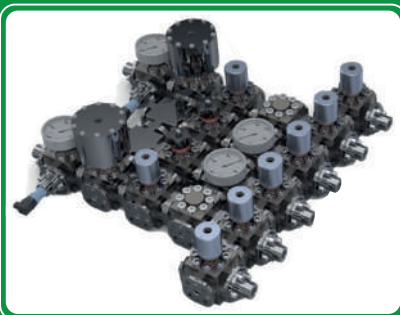


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Remi Costa	DLR-Institute of Solar Research	Germany
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Deborah Jones	University of Montpellier	France
Jennifer Kurtz	National Renewable Energy Laboratory	USA
María Jesús Lázaro	CSIC-ICQ	Spain
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Yong Dan Li	Aalto University	Finland
Chiuyue Lin	Feng Chia University	Taiwan
Justo Lobato	Universidad de Castilla-La Mancha	Spain

Name	Affiliation	Country
Carlos Merino	Centro Nacional del Hidrógeno	Spain
Jaroslav Milewski	Institute of Heat Engineering, Warsaw University of Technology	Poland
Vladimir Molkov	University of Ulster	UK
Nazim Z. Muradov	University of Central Florida	USA
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Nuria Rojas	NORDEX ENERGY SPAIN	Spain
Ewa Ronnebro	Pacific Northwest National Laboratory	USA
Fernando Rubiera	CSIC-INCAR	Spain
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Giuseppe Spazzafumo	University of Cassino and Southern Lazio	Italy
Robert Steinberger	University of Birmingham	UK
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Panagiotis Tsiakaras	University of Thessaly	Greece
Zhengkai Tu	Huazhong University of Science and Technology	China
Íñigo Ubierna	Centro Nacional del Hidrógeno	Spain
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Reinhold Wurster	Ludwig-Bölkow-Systemtechnik GmbH (LBST)	Germany

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The AeH2

In 2002, the Spanish Hydrogen Association (AeH2) was established to encourage, promote and foster the development of hydrogen technologies as an energy carrier and its use in industrial and commercial applications. In recognition of hydrogen's ability to reactivate, redefine, and transform the world economy. Today, it has naturally become the voice of the hydrogen industry in Spain, representing more than 300 partners from across the hydrogen value chain.

Members of AeH2 are the most active companies, public and private institutions, and researchers in hydrogen fields in Spain that jointly pursue a common goal: to promote hydrogen and fuel cells in the energy system in a socially and environmentally beneficial manner.

The AeH2 acknowledges the fundamental role that the Science - Business - Industry - Public Administration axis plays in the transition to a sustainable energy model, innovation, and employment generation. In this regard, AeH2 has actively collaborated with the Public Administrations (national, regional, and local), acting as a bridge between the public and private sectors, to ensure the inclusion of hydrogen in the different strategic plans, as well as the formation of a regulatory framework in Spain. Several documents of great national significance reflect this collaboration, such as the Draft Bill on Climate Change and Energy Transition, the National Integrated Energy

and Climate Plan 2021-2030 (PNIEC), and the Spanish Hydrogen Roadmap. The latter establishes the European Hydrogen Energy Conference as a strategic measure to position Spain as a global leader in this field.

A significant part of AeH2's efforts is devoted to establishing collaborative and cooperative relationships with international organizations, learning about the state of hydrogen technologies in different parts of the world, and developing opportunities for commercial cooperation in this sector with other countries. Currently, the Association has signed a total of 13 international bilateral agreements and is a member of Hydrogen Europe, the European Clean Hydrogen Alliance, and the CEOE.

The Association plays an important role in promoting hydrogen commercial and R&D cooperation through initiatives such as the Spanish Hydrogen and Fuel Cell Technology Platform, active since May 2005; the development of the Hydrogen Industry Sectoral Agenda, in collaboration with the Spanish Ministry of Industry, and the constitution of working groups involved in strategic, legislative, and regulatory tasks.

Find out more at www.aeh2.org

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Inauguration

Wednesday 18th

09:00 h. European Hydrogen Energy Conference 2022 Inauguration

- Opening video
- Welcome by Mr. Javier Brey,
Chairman of EHEC and AeH2.
- Intervention of Teresa Ribera,
Third Vice-president and Minister
for Ecological Transition and
Demographic Challenge.
- Intervention of Ursula Von der Leyen,
President of the European Commission (video)



09:40 h. End of the opening.



European Hydrogen Energy Conference

Conference Program
18-20 MAY



Timetable



Wednesday 18th

8:00 - 9:00	Registration
9:00 - 10:00	Opening
10:00 - 10:30	Coffee Break Poster Session
10:30 - 12:30	Plenary Session 1 Renewable energies and green hydrogen
12:30 - 13:00	Break
13:00 - 14:00	Parallel Session 1
14:00 - 15:30	Lunch Break
15:30 - 17:30	Parallel Session 2
17:30 - 18:00	Coffee Break Poster Session
18:00 - 20:00	Parallel Session 3

Thursday 19th

8:00 - 9:00	Registration
9:00 - 11:00	Plenary Session 2 Towards the Hydrogen economy. Where we are. What we need
11:00 - 11:30	Coffee Break Poster Session
11:30 - 13:30	Plenary Session 3 Hydrogen Mobility
13:30 - 15:00	Lunch Break
15:00 - 17:00	Parallel Session 4
17:00 - 17:30	Coffee Break Poster Session
17:30 - 19:30	Parallel Session 5
21:00	Gala Cocktail

Friday 20th

8:00 - 9:00	Registration
9:00 - 11:00	Plenary Session 4 Hydrogen strategies around the world
11:00 - 11:30	Coffee Break
11:30 - 13:30	Parallel Session 6
13:30 - 14:00	Closing Ceremony



Venue

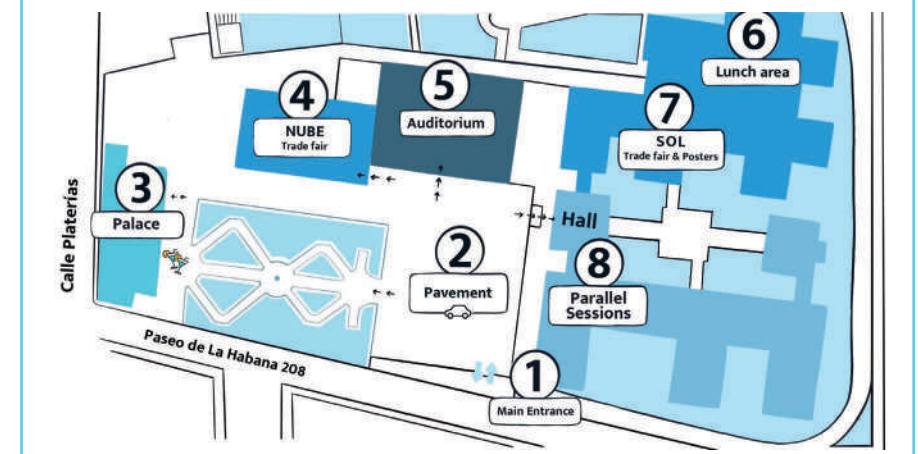
Complejo Duques de Pastrana

At Paseo de la Habana, in Madrid, lies the Duques de Pastrana Complex, a spectacular Macro-complex of spaces and gardens. This enclave's versatility and capacity make it an ideal location for the European Hydrogen Energy Conference 2022.

Multiple rooms, terraces, an auditorium with a seating capacity of 500, three adjoining rooms and a large stage, a

multipurpose pavilion (an open space of 1000 square meters), a dining room, classrooms, and exposition halls comprise the complex.

Among the complex's highlights are an 1860 palace, which was declared a cultural monument in 1949 and is known for its elegant and distinguished facade with balconies, stunning columns, and beautiful gardens.



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Conference Information



Registration

Registration will be held in the Hall of the Complex (see map) from 7:45 to 9:00 am on Wednesday 18, Thursday 19, and Friday 20.

Each type of ticket will have its queue. Please, identify yours (FR, TF, INV, Plenary Speaker) and line up in the correct one.

The Registration & Information Desk and Speakers' Room will remain open throughout the three-day Congress.

EHEC 2022 enjoyable features and activities

- Conference Plenary & Parallel Sessions
- Trade Fair: Nube & Sol
- Test & Drive
- Gala Dinner
- Delegate bag: Program & Proceedings Book



Test & Drive

You can register for Test & Drive on the pavement (2) near the main entrance (1).



Name badge

Your name badge serves as your ticket to all sessions, the exhibition, catering, and the Gala Dinner. Please, wear it at all times.



Coffees and drinks

Coffee & Drinks corners will be at the Trade Fair and Posters areas (Nube & Sol).



Lunch

Lunch will take place in the hall annexed to the Sol pavilion (6).



Wireless internet

Available on-site at no charge. Please note that the connection speed could vary due to the number of attendees connected.

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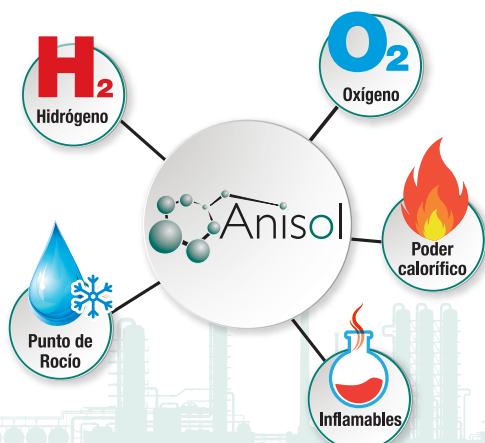
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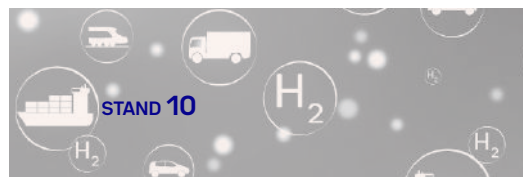
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Speakers & Chairpersons Info

Information for Speakers

Preparation

- Store all your files in a unique folder, especially videos (make sure videos play automatically when the slide is displayed). 16/9 slides format is recommended.
- Mac users: please don't forget to bring your adaptor.
- Bring your file (ppt and pdf format) in a USB to the Speakers' Room located on the 1st Floor of the Building where Parallel Sessions (8) will be held. For the exact location, please see map on page 47.

Speakers' Room

- Please, bring your presentation the day before or at least 2 hours before your lecture.
- Our technicians will transfer your presentation to a server. We encourage you to confirm on the technician's computer that the ppt is correctly displayed.

Lecture Room

- Your presentation will be transferred and available on your lecture room, on a presentation computer operated by a technician. There will be no possibility to connect your laptop.
- It won't be possible to make any changes in the presentation once you are in the Lecture's room.
- Oral presentations will last 15 minutes. There will be an additional 5 minutes for discussion and Q&A. It is important to adjust to the time limits.

Information for Chairpersons

- Please stick to the time scheduled to allow people to follow the program and move between sessions.
- Let the speaker know when there are left 5 and 1 minute of their time.
- Facilitate and encourage the discussion after the speaker's presentation.



Members of the organization and local staff will be always present at the venue. If you need any help, please contact them



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Gala Dinner

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Join us on Thursday 19th, May at 9:00 pm for an exciting cocktail at the Palacio Duques de Pastrana (1). The event, sponsored by Repsol, offers all attendees an exquisite soiree at the most special place of the Complex, the Palace's gardens.

A unique occasion to meet and establish meaningful relationships and toast to upcoming opportunities.



Madrid, at a glance



Madrid, capital of the State since 1561, also known as La Villa y Corte, is the most populous city of Spain, accounting for 3.2 million inhabitants in the city and 6.5 million in the metropolitan area. Madrid holds the seat of government, the residence of the Spanish monarch, and it is the political, economic, and cultural center of the country.

The origins of the city foundation are underpinned by Arab roots, Visigothic basilicas, and remainings of the Jewish quarter which can be found within the historic district.

Madrid is a cosmopolitan city, with the third-largest GDP in the EU, faithful to its customs, culture, and art, while, at the same time, it is a modern place, which hosts cultural, economic, and political centers. Due to its economic output, high standard of living, and market size, Madrid is considered the major financial center and the leading economic hub of the Iberian Peninsula and Southern Europe. It is an open and joyful city for those willing to discover it, where culture, gastronomic, business, leisure, and entertainment activities are blended, being one of the strongest and diverse tourist attractions in Europe.

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DH2 energy

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Also, we are pleased to announce that UNESCO has added Madrid's Paseo del Prado and Retiro Park to the World Heritage list. UNESCO described the locations as a landscape of arts and sciences; indeed, the Paseo featured several prominent structures including squares with historic marble sculptures and fountains such as the Plaza de Cibeles, which is described as "an iconic symbol of the city".

With this new designation, Madrid has become the first urban historic landscape to be declared in Europe, the second worldwide, after Rio de Janeiro, and thus, Spain becomes the third country with the most properties declared World Heritage. Keep reading to discover the numerous opportunities to live close to the center, as everything is very well connected by subway and commuter trains.



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Engineering and
Project Development

Refuelling
Stations

Grid
Injection

Supply for
fuel cells

Not to miss...

Puerta del sol

This bustling square located bang in the centre of Madrid is one of the city's most famous sites. With its semi-circular shape, it is a junction for many of the city's historical and busiest streets such as Mayor, Arenal, Alcalá and Preciados, as well as the starting point for all major radial roads in Spain.

Originally the site of one of the city's gates, Puerta del Sol should be at the top of your list of places to visit. Sitting atop the Casa de Correos building, the current headquarters of the Madrid regional government, you'll find the famous clock that all eyes turn to on the last day of the year.



Parque del Retiro

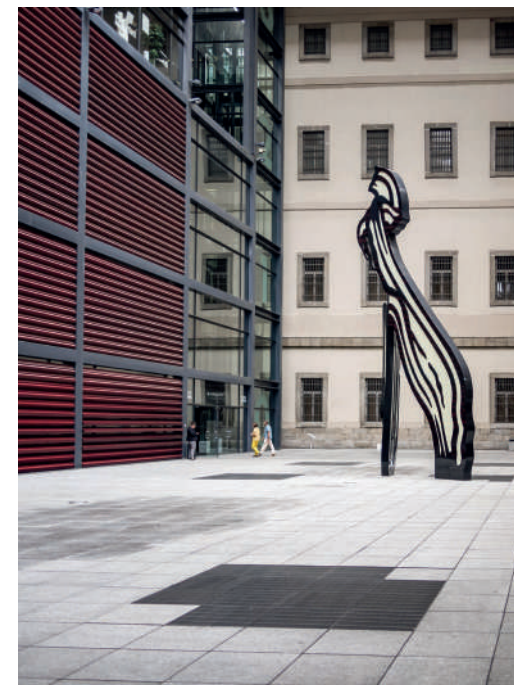
Covering over 125 hectares and comprising more than 15,000 trees, El Retiro Park is a green oasis in the heart of the city. In it, you'll find all kinds of interesting monuments and gardens, including the Jardín de Vivaces, the Jardines de Cecilio Rodríguez (Andalusian-inspired classicist gardens), the Jardines del Arquitecto Herrero Palacios, the Rosaleda rose garden, and the Parterre Francés, which holds a Mexican conifer that is nearly 400 years old and is believed to be Madrid's oldest tree.



Reina Sofia Museum

Located on the Art Walk, the Reina Sofia houses paintings by Salvador Dalí, Joan Miró, and Juan Gris as well as one of Spain's most famous artworks, Picasso's Guernica.

Opened in 1990, this is Madrid's Spanish contemporary art museum par excellence. Its collection, which comprises over 22,400 works, spans much of the 20th century and is divided into three sections titled The Irruption of the 20th Century. Utopia and Conflict (1900-1945), Is the War Over? Art in a Divided World (1945-1968), and From Revolt to Postmodernity (1962-1982). In Room 206 you'll find one of the museum's highlights: Picasso's masterpiece Guernica.



Casa de Campo

The Casa de Campo is an urban park but with a marked forested area. It has an interesting Botanical Path of 4 kilometres of flat land. In addition, the variety of ecosystems present in this area of the city allows for the presence of great biodiversity of birdlife in the area of the city.

Its 1535.52 hectares make this natural space the largest public park in Madrid. The history of the Casa de Campo began with Philip II's decision to move the Court to Madrid and reside there. The king created an estate that linked the Palace with the hunting grounds of El Pardo and around this nucleus, farms and fields bought from the surrounding areas were added.



Trade Fair

The perfect place for networking with companies and initiatives in the hydrogen sector"

NUBE PAVILION

Nube is the Spanish word for cloud, clouds are made from gaseous water and therefore 66% hydrogen!

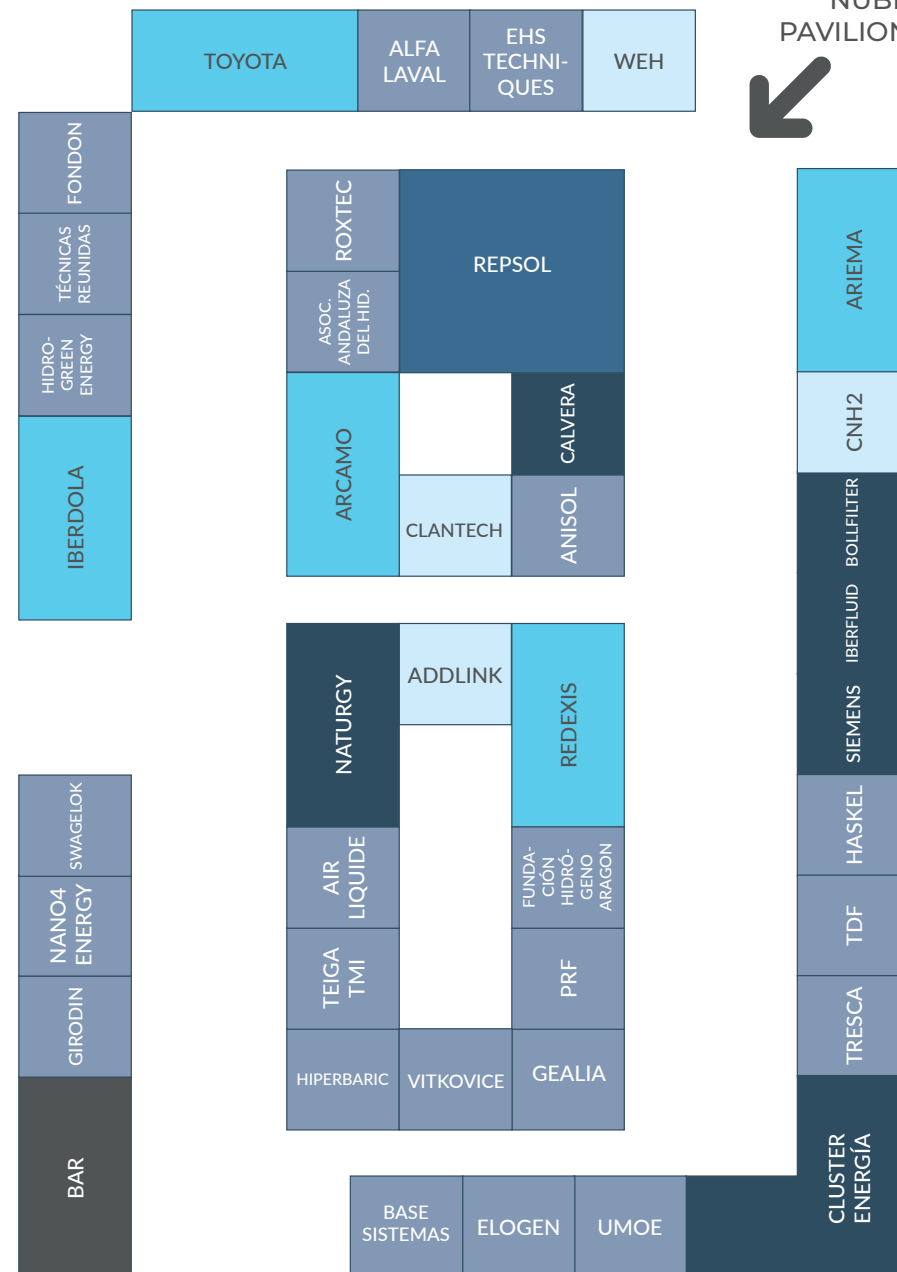


Sol is the Spanish word for sun, the great ball of gas that powers our lives made up of 75% hydrogen!

SOL PAVILION



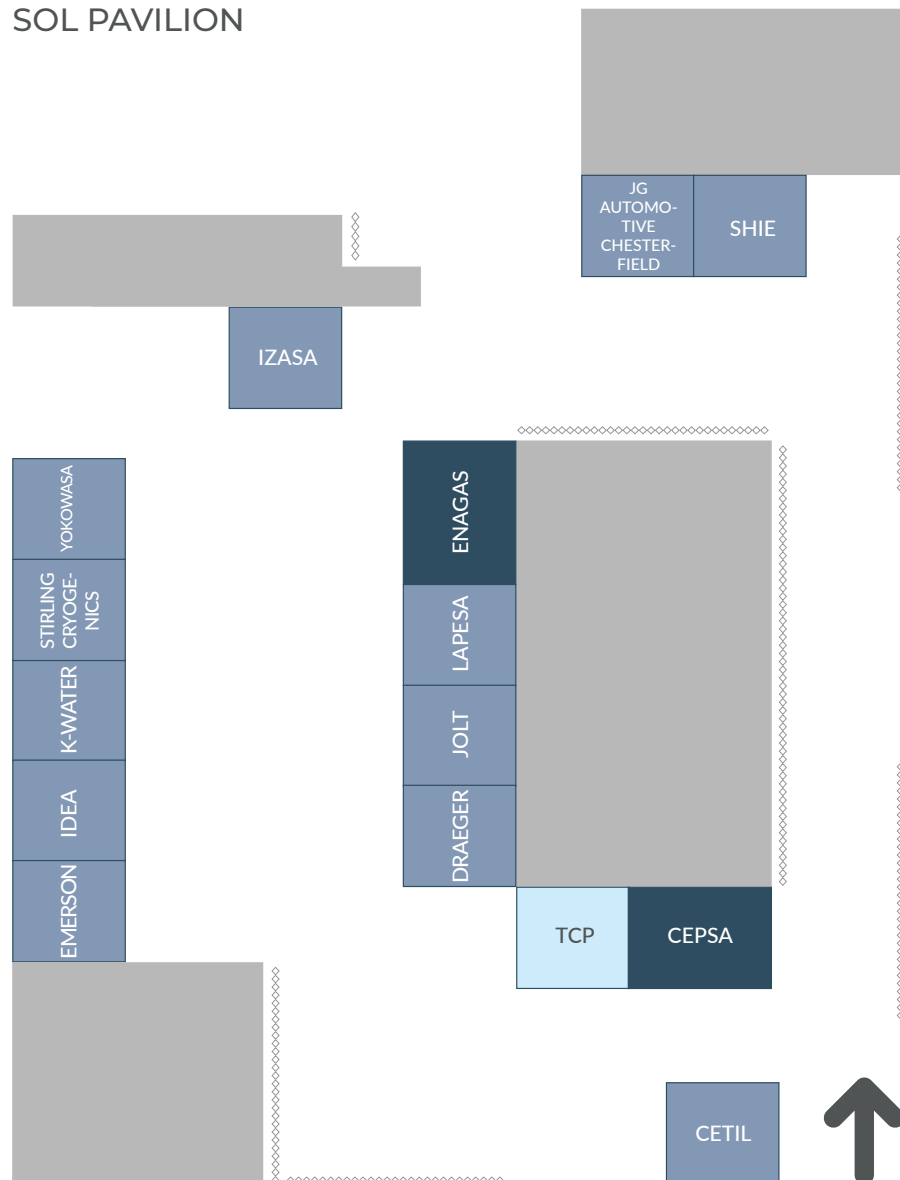
Trade Fair Map

NUBE
PAVILION



Trade Fair Map

SOL PAVILION



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“ACME envisions to become a leading green energy provider in the world by 2030 and produce 10 million tons/year of green ammonia. ACME has started working with various Governments, partners and stakeholders to develop projects in various geographies. We are committed to bring sustainability in some of the toughest sectors to decarbonize like food, agriculture, steel, shipping, cement, aluminum etc.

Mr. Manoj K Upadhyay
Founder & Chairman, ACME Group

THE OMAN PROJECT

- The state-of-the art facility is located in the Duqm Special Economic Zone of Oman
- The first phase of the Green Hydrogen & Ammonia project is expected to produce 100,000 tonnes of Green Ammonia annually
- It will be expanded to 1.2 million tonnes per annum with about 3.5 GW of electrolyser capacity, which will be powered by 5.5 GWp of the solar PV plant
- Potentially, the facility can be further expanded in later phases at the same location

• Future projects planned in Australia, India and Africa

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Hyundai NEXO: Emisiones CO₂ (gr/km): 0 durante el uso. Consumo mixto (kg/100km): 1,0. Autonomía: 666 Km*

(*Autonomía oficial conforme al Nuevo Ciclo de Conducción WLTP. La autonomía real estará condicionada por el estilo de conducción, las condiciones climáticas, el estado de la carretera y la utilización del aire acondicionado o calefacción). La garantía comercial de 5 años sin límite de kilometraje y la de 8 años o 200.000 km. (o que antes suceda) para la batería de alto voltaje, ofrecidas por Hyundai Motor España S.L.U. a sus clientes finales es sólo aplicable a los vehículos Hyundai vendidos originalmente por la red oficial de Hyundai, según los términos y condiciones del pasaporte de servicio. Consulta las condiciones de garantía en la red de concesionarios Hyundai o en www.hyundai.es.



Test & Drive

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Mobile dispenser:

A simple solution for hydrogen vehicle demonstrations.

- Our mobile dispenser allows flexible, emission-free refueling of vehicles with minimal installation.
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- This portable, low-cost technology can be easily installed and adapted to the needs of your location.
- Fully automatic refueling.
- Remote monitoring of the H₂ source so Carbueros Metálicos can offer you 24/7 assistance.
- H₂ capacity: Up to 600 kg for refueling.
- Pressure of the dispensers: Up to 350 bar.



There will be technicians explaining the dispenser on the following schedule:

Wednesday - 13:00-14:00
Thursday - 15:00-16:00
Friday - 11:30-12:30

SHIE Servicios de Hidrógeno Energético

SHiE - SERVICIOS DE HIDROGENO ENERGÉTICO S. L. is a company owned 50% by ARPA EQUIPOS MÓVILES DE CAMPAÑA S. A. and GRUPO ZOILORIOS S. A., whose main activity is the development of systems for the generation, compression, storage, transport and dispensing of green hydrogen.

Its hydrogen generators and dispensers are low consumption, modular and scalable, and work at 350 and 700 bar. They generate between 5 and 30 kg H₂ /day in a 20-foot container. They allow quick refueling with minimum maintenance of the installation.



Attendees will find the schedule of technical explanations at the information points of the Pavement (2) and SHiEs stand (Trade Fair Sol).



Test & Drive

HYUNDAI



New Hyundai NEXO, Hyundai's Utility Vehicle of the Future. With the Hyundai NEXO, Hyundai Motor once again takes the lead in fuel cell-powered electric vehicles with the first hydrogen-powered SUV. It combines the practicality of an SUV with advanced, clean fuel cell technology. This new generation of fuel cell vehicles offers the most advanced technology on the market, incorporating systems such as autonomous driving, intelligent driving assistance devices and the most powerful powertrain in its class.

The NEXO is the technological flagship of Hyundai's growing family of eco-vehicles and is developed and built on a completely new platform. At Hyundai Motor we call it the Future Utility Vehicle (FUV), as it combines the most cutting-edge electrified

technology on the market, together with comprehensive driving assistance and innovative design.

The new NEXO has one of the best ranges of both fuel cell vehicles and electric vehicles (EV), with 666 km of range according to the new WLTP standard and 756 km under NEDC homologation, in both cases measured after a single charge. This range is comparable to that of an internal combustion engine, enabling drivers to travel long distances.

Wednesday. Show case 12:30-13:30.
Test drive 14:30-15:30
Thursday 19. Show case 13:30-14:30.
Test drive 15:00-16:00
Friday. Show case de 11:00-12:00.
Test drive 13:00-14:00



Test & Drive

TOYOTA

During the European Hydrogen Energy Conference 2022, Toyota will have available for test drives the second-generation Toyota Mirai, Toyota's flagship hydrogen fuel cell electric vehicle whose only emissions are water vapor. Mirai is the proof that zero-emission future mobility is possible with a fuel cell electric vehicle that offers a range of 650 km, thanks to the three hydrogen tanks it is equipped with, with a refueling time of only 3 to 5 minutes to achieve a full charge.

Toyota will have the test drive starting area located in the outdoor area of the exhibition, along with the other two hydrogen vehicles that Toyota is exhibiting at the EHEC, a forklift truck, and a bus. People interested in testing the vehicle or learning more details about the vehicles may approach both the indoor and outdoor display that the company will have. They can register for the test drive, consult the vehicle catalog, or ask any questions they have to the expert driver conducting the test drive.



Timetable for the test drive is from 10 am to 2:30 pm, with a duration of 10 to 15 minutes per test drive depending on traffic and a predefined route through the streets of Madrid.

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Director Comercial:
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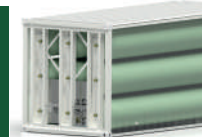
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Plenary Sessions

PLENARY SESSION 1: Renewable energies and green hydrogen

Wednesday 18th / 10.30 - 12.30

Sponsored by



High-level representatives from top green hydrogen production companies will present their unique solutions and latest projects, discussing the great potential of this energy vector. Both for the integration of intermittent sources of energy towards a 100% carbon-free energy system and to decarbonize current processes that consume non-renewable hydrogen. This plenary session is sponsored by Repsol Global S.A.



Mr. JUAN ABASCAL HEREDERO | Executive Director of Industrial Transformation and Circular Economy Repsol Global S.A

Repsol is a global multi-energy company that is leading the energy transition with its ambition of achieving net zero emissions by 2050. Present throughout the energy value chain, the company employs 24,000 people worldwide and distributes its products in nearly 100 countries to around 24 million customers.



JOAQUÍN RODRÍGUEZ JADRAQUE | Director Hydrogen & Clean Power at CEPSA Cepsa S.A.U

Cepsa is a leading international company committed to sustainable mobility and energy with strong technical expertise after more than 90 years of activity. The company presented in 2022 its new strategy for 2030, Positive Motion, projecting its ambition to be a leader in sustainable mobility, biofuels, and green hydrogen in Spain and Portugal and a key benchmark in the Energy Transition.



Dr. CHRISTOPH WOLFF | Director ACME Group

ACME Group is one of the leading global sustainable and renewable energy companies. Founded by Manoj K. Upadhyay in 2003, it is headquartered at Gurugram, India. Mr. Upadhyay is an innovator and entrepreneur who introduces disruptive technology solutions through intensive research and innovative approach. Initially, these solutions were utilized to optimize the energy usage for the telecom industry.



Plenary Sessions



Mr. ANTON MARTINEZ | Director of Renewable Gases and Services Enagás S.A

With 50 years' experience Enagás is an international energy infrastructures company that is boosting initiatives to promote the use of renewable gases, especially hydrogen. The company is working in more than 30 hydrogen projects with different partners in Spain and abroad. Enagás is also a European Transmission System Operator (TSO) and the Technical Manager of the Spanish Gas System. Among other recognitions, the company is the world leader in its sector in the Dow Jones Sustainability Index (DJSI). It is also included at the S&P Global Ratings in the field of ESG and it has obtained the highest rating in the CDP Climate Change ranking.



Mr. JAVIER GOÑIZ | CEO Fertiheria

Grupo Fertiheria is a European leader in the crop nutrition sector with over 1,600 employees and 13 industrial activity centers distributed across Iberia and France. The company develops, produces and markets agronomic solutions that boost the competitiveness of agriculture and help advance the ecological transition of this important sector of the European economy. It is also one of the world's leading companies in the ammonia market and produces environmental solutions, such as AdBlue, for the industry and other sectors. As part of Triton Partners, this Spanish company grows to become a leader in the future of fertilisation.



Mr. MILLÁN GARCÍA-TOLA | Global Director Green Hydrogen Iberdrola S.A

Iberdrola has more than 170 years of history and nowadays is a global energy leader, the number one producer of wind power and one of the world's biggest electric utilities in terms of market capitalization. Moreover, they are pioneers of bringing the energy transition to combat climate change and at the same time providing a clean, reliable, and smart business model.



Mr. JAVIER BREY | Chair Spanish Hydrogen Association (AeH2)

Since its foundation in 2002 the AeH2 works to encourage, promote, and foster the development of hydrogen technologies. Today, it has naturally become the voice of the hydrogen industry in Spain, representing more than 300 partners from across the hydrogen value chain.



Plenary Sessions

PLENARY SESSION 2: Towards the Hydrogen economy. Where we are. What we need

Thursday 19th / 09.00 - 11.00

A hydrogen ecosystem requires scientific excellence, industrial leadership, market development and territorial impact. The state of the art and next steps needed for hydrogen production, logistics, end-uses, and transversal activities will be analysed by distinguished international organizations and entities.



**Mrs. PETRA SCHWAGER | Chief, Energy Technologies and Industrial Applications (ETI) Division
UNIDO**

UNIDO is the specialized agency of the United Nations that promotes inclusive and sustainable industrial and economic development, in line with SDG 9. UNIDO, through the Global Programme on Green Hydrogen in Industry aims to stimulate the accelerated uptake and deployment of GH2 in industries of developing countries and transition economies. It aims to build partnerships for knowledge and technology transfer and cooperation. This includes building-up GH2 clusters and value chains and advancing sector coupling in industrial zones and parks.



**Mr. JOSÉ MIGUEL BERMÚDEZ | Energy analyst, Hydrogen and alternative Fuels
International Energy Agency (IEA)**

The IEA was created in 1974 to help co-ordinate a collective response to major disruptions in the supply of oil. While oil security this remains a key aspect of our work, the IEA has evolved and expanded significantly since its foundation. The IEA is at the heart of global dialogue on energy, providing authoritative analysis, data, policy recommendations, and real-world solutions to help countries provide secure and sustainable energy for all.



Dr. UTE COLLIER | Deputy Director – Knowledge, Policy and, Finance Centre.

International Renewable Energy Agency (IRENA)

IRENA is an intergovernmental organization that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a center of excellence, and a repository of policy, technology, resource, and financial knowledge on renewable energy. IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy.



Plenary Sessions



**Mr. NOÉ VAN HULST | Chair
International Partnership of Hydrogen & Fuel Cells in the Economy (IPHE)**

The IPHE, formed in 2003, is an international governmental partnership currently consisting of 21 member countries and the European Commission. Its mission is to facilitate and accelerate the transition to clean and efficient energy and mobility systems using hydrogen and fuel cell technologies across applications and sectors.



**Mr. DANIEL FRAILE | Chief Policy Officer
Hydrogen Europe**

Hydrogen Europe is the leading organization representing European based companies and stakeholders that are committed to moving towards a (circular) carbon neutral economy. With more than 350 companies, 20 EU regions and 30 national associations as members, HE encompasses the entire value chain of the European hydrogen and fuel cell ecosystem.



**Mr. BRUNO ESGALHADO | Partner
McKinsey & Company**

McKinsey is a global management consulting firm committed to helping organizations accelerate sustainable and inclusive growth. The Company works with clients across the private, public, and social sectors to solve complex problems, create positive change for all their stakeholders and help organizations innovate more sustainably, achieve lasting gains in performance and build workforces that will thrive for this generation and the next.



**Mr PAUL LUCCHESI | Chair
IEA Hydrogen TCP**

The Hydrogen Technology Collaboration Programme created under the auspices of the International Energy Agency in 1977 is the longest running international collaboration initiative on hydrogen, currently with 24 member countries, EC, UNIDO and 7 sponsor entities. A network of 250+ experts work together on collaborative R,D&D projects called Tasks addressing all stages of the hydrogen value chain.



Plenary Sessions

PLENARY SESSION 3: Hydrogen Mobility

Thursday 19th | 11.30 - 13.30

Sponsored by



Transport and mobility applications are crucial for large-scale hydrogen deployment. Cost-competitive infrastructure development for both heavy and light-duty transport in distribution and storage levels will be discussed. This session will count on the appreciated participation of leading mobility and infrastructure companies worldwide that will present their views and projects on hydrogen implementation towards transport decarbonization.



**Mr. MIGUEL MAYRATA | Manager of Business Diversification
REDEXIS**

Redexis is an integrated energy infrastructure company active in the development and operation of networks for the transmission and distribution of natural gas, the distribution and sale of LPG and the promotion of new gas-powered mobility infrastructure, renewable gas and hydrogen. With 761,607 connection points, they operate across 11 CCAA, providing Spanish homes, businesses, and industries with access to new, more sustainable, and efficient energy sources.



**Dr. STEPHAN HERBST | Technical Head Powertrain Hydrogen
and Fuel Cell Business Unit
TOYOTA**

With more than 19 million cars sold worldwide and 400,000 units sold in Spain since 1997, Toyota is a world-leading manufacturer of electrified vehicles – including hybrid, plug-in hybrid, battery-electric and fuel cell electric vehicles. Today, the company is putting its fuel cell technology at the forefront of its activities to meet environmental challenges and make hydrogen the primary energy source of tomorrow's society.



**Mr. JAIME BORREL | Director Business Development & Public
Affairs at Alstom Spain & Portugal
ALSTOM**

Leading societies to a low carbon future, Alstom develops and markets mobility solutions that provide the sustainable foundations for the future of transportation. World reference in hydrogen mobility, with fuel cell trains sold in Germany, Italy and France. Alstom built the first train ever to do commercial service with passengers using hydrogen traction since 2018, the Coradia iLint.



Plenary Sessions



**Mrs. SUSANA CARBALLO | Head of RFE (Rear, Fuselage, and
Empennage) Airframe Engineering
AIRBUS**

Airbus pioneers' sustainable aerospace for a safe and united world. The Company constantly innovates to provide efficient and technologically advanced solutions in aerospace, defence, and connected services. In commercial aircraft, Airbus offers modern and fuel-efficient airliners and associated services. Airbus is also a European leader in defence and security and one of the world's leading space businesses. In helicopters, Airbus provides the most efficient civil and military rotorcraft solutions and services worldwide.



**Mr DANIEL LORENZETTO | Onsite & Green H2 Business
Development Director
Carbueros Metálicos**

The company, which celebrates its 125th anniversary, is a leading company in the industrial and medical gas sector. It produces, distributes, and sells gas for multiple sectors. Carbueros Metálicos is part of the world's largest H2 producer: Air Products Group, which has participated in more than 250 hydrogen mobility projects since 1993. It also has the world's largest H2 channelled distribution network and a wide portfolio of patents related to refueling, so it is present throughout its value chain.



**Mr RONALD GRAMAN | VP Global Fuel Cooperation
HYUNDAI**

Hyundai has a clear sustainability roadmap with two key dates: 2035, when all vehicles sold in Europe will be zero emissions, and 2045 when the company will achieve carbon neutrality in all markets where it is present. This vision includes a commitment to have reduced its carbon emissions to 75% below 2019 figures by 2040.





Plenary Sessions

PLENARY SESSION 4: Hydrogen strategies around the world

Friday 20th / 09.00 - 11.00

Hydrogen strategies at national and regional levels are increasing at an exponential rate. Representatives from leading countries on hydrogen development will discuss their goals, ambitions, and approach, as well as their take on the rapidly evolving international hydrogen scene.



Mr. DIEGO MESA PUYO | Ministro de Minas y Energía Colombia

Colombia published its Hydrogen Strategy in late 2021. It is estimated that through hydrogen Colombia could develop new value chains that will boost the economy and create high-quality jobs, mobilizing an estimated US\$5.5 billion and creating close to 15,000 jobs during the decade between 2020 and 2030. Hydrogen constitutes a commercial opportunity for the country, in a market with expectations for the development of new technologies and accelerated growth.



Mrs. MARÍA PAZ DE LA CRUZ | CEO Association (H2 Chile)

Chile has been identified as a global power in terms of green hydrogen production, mainly due to the competitive advantage of low-cost renewable energy production. To achieve this, the Chilean government published in 2020 its Hydrogen Strategy with 3 main objectives: To produce the cheapest green hydrogen on the planet by 2030, to be among the top 3 exporters by 2040 and to have 5 GW of electrolysis capacity under development by 2025.



Mrs. ANA MARÍA RUZ | Green Hydrogen Specialist Chilean Economic Development Agency, CORFO

Chile has been identified as a global power in terms of green hydrogen production, mainly due to the competitive advantage of low-cost renewable energy production. To achieve this, the Chilean government published in 2020 its Hydrogen Strategy with 3 main objectives: To produce the cheapest green hydrogen on the planet by 2030, to be among the top 3 exporters by 2040 and to have 5 GW of electrolysis capacity under development by 2025.



Plenary Sessions



Mr. JIN YAMAGUCHI | Director Principal, Energy Efficiency and Renewable Energy Department

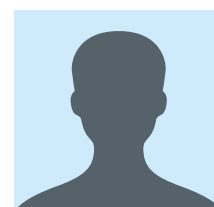
Agency for Natural Resources and Energy, METI, Japan

In 2017, Japan issued the Basic Hydrogen Strategy (reviewed in 2021), becoming the first country to adopt a national hydrogen framework. The development of hydrogen supply chains is a major agenda for the country. Besides, the Japanese government provides robust funding for R&D and cooperates with companies undertaking various projects, with the objective of expanding its hydrogen market from 2 million tons/year today to 3 million tons/year by 2030.



Dr. NAK-HYUN KWON | General Director Business Coordination Center, H2Korea, South Korea

South Korea seeks to become a global leader in the production and deployment of FCEVs and large-scale stationary fuel cells for power generation. In 2019, South Korea adopted the Hydrogen Economy Roadmap to help the country decarbonize and pursue a hydrogen economy for economic growth and industrial competitiveness. The country has robust targets for hydrogen usage that it seeks to achieve by 2040 regarding hydrogen consumption and transportation.



REPRESENTATIVE China Hydrogen Alliance

Home to the largest installed renewable power generation capacity in the world today, China plans to double its solar and wind generation capacity to 1,200 GW by 2030. While China has not yet announced a national hydrogen strategy, hydrogen demand outlook suggests strong growth. The China Hydrogen Alliance, a government-supported industry group launched in 2018, forecasts China's hydrogen demand to reach at least 5 percent of the Chinese energy supply.



Mrs. PAULA VIEIRA | Executive Director, Fuel Diversification Natural Resources Canada

In 2020 the Government of Canada released its Hydrogen Strategy for Canada. The strategy aims to position Canada as a world leader in clean, renewable fuels, as well as reach net-zero emissions by 2050. The Canada Strategy builds on existing policies, including Canada's recently announced Climate Plan, carbon pricing, the Clean Fuel Regulations, the \$1.5 Billion Low-carbon and Zero-Emission Fuels Fund, and the Incentives for Zero-Emission Vehicles program.

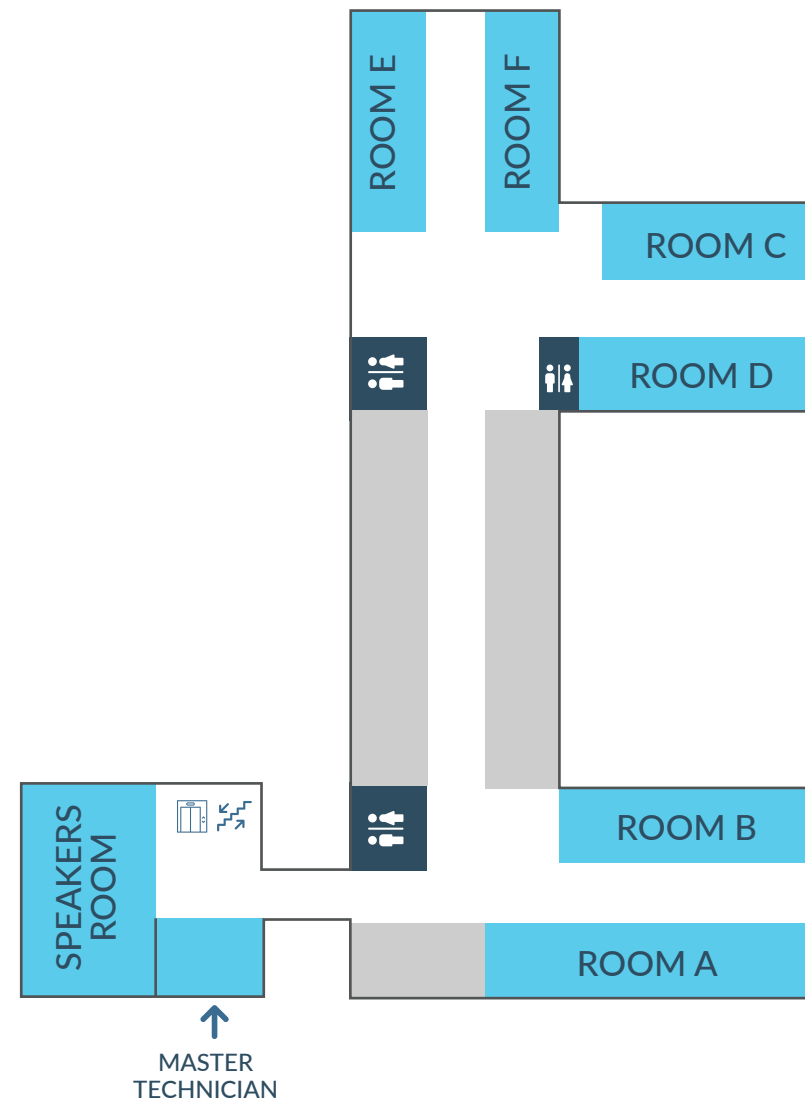


Parallel Sessions Schedule

	ROOM A	ROOM B	ROOM C	ROOM D	ROOM E	ROOM F
Parallel Session 1 Wed 18	13:00-14:00 Environmental Impact & Transportation Applications	Aerospace Applications	Other Hydrogen Applications	Fuel Cell Components & Modelling	Purification & Safety	Codes & Standards
Parallel Session 2 Wed 18	15:30-17:30 Hydrogen Production: Renewable	Electrocatalysts/ Electrodes	Safety	Fuel Cell Components	Transportation Applications	Pipelines and Hydrogen infrastructure
Parallel Session 3 Wed 18	18:00-20:00 Hydrogen Production: Renewable	Electrocatalysts/ Electrodes	Hydrogen Storage	Fuel Cell Components	Transportation Applications	Pipelines and Hydrogen infrastructure
Parallel Session 4 Thu 19	15:00-17:00 Hydrogen Production: Renewable	Hydrogen Production: Renewable/ Electrolysis	Hydrogen Storage	Fuel Cells & Hydrogen Systems Modelling	Stationary Applications	Hydrogen Production: Catalysts
Parallel Session 5 Thu 19	17:30-19:30 Hydrogen Production: Renewable	Hydrogen Production: Renewable/ Electrolysis	Hydrogen Storage	Fuel Cells & Hydrogen Systems Modelling	Stationary & Other Applications	Hydrogen Production: Catalysts
Parallel Session 6 Fri 20	15:30-17:30 Hydrogen Production: Renewable/ Electrolysis	Hydrogen Production: Bio Hydrogen / Bio Gasification	Hydrogen Storage	Fuel Cells & Hydrogen Systems Modelling	Commercialization Codes and Standards	Associations, Countries & Assessments



Parallel Sessions Map





Oral Presentations

Wednesday, 18th May. Parallel Session 1 (13:00-14:00)

Room A. Environmental Impact & Transportation Applications

- 13:00 **The role of circularity and criticality indicators in the eco-design of fuel cells and hydrogen technologies**

Eleonora Bargiacchi, Felipe Campos-Carriedo, Gonzalo Puig-Samper, Diego Iribarren, Laurent Rey, Emmanuelle Cor, Javier Dufour

IMDEA-Energy (Spain); Rey Juan Carlos University (Spain); SYMBIO (France); Université Grenoble Alpes, CEA (France)

- 13:20 **Life-Cycle Global Warming Impact of Hydrogen Production by Photovoltaic Powered Electrolysis Imported from Africa compared to Hydrogen Production in Germany**

Olga Kanz, Franka Brüggemann, Karsten Bittkau, Kaining Ding, Uwe Rau, Angèle Reinders

Forschungszentrum Jülich GmbH (Germany); Eindhoven University of Technology (The Netherlands); University of Twente (The Netherlands)

- 13:40 **Green hydrogen for emission reduction by vehicles for transport and civil works**

Daniël Bakker, Ron Bol, Walter Corsten

KWR Water Research Institute (The Netherlands); Hysolar (The Netherlands); Aannemingsbedrijf Jos Scholman (The Netherlands)

Room B. Aerospace Applications

- 13:00 **A review of fuel cell unmanned aerial vehicles and their fuel storage**

Gema Montaner Ríos

German Aerospace Center DLR (Germany)

- 13:20 **Hydrogen system for small and nano satellite propulsion**

Tamara Guerrero, J. Javier Brey

Universidad Loyola Andalucía (Spain)



Oral Presentations

Room B. Aerospace Applications

- 13:40 **Hybrid catalyst for the direct CO₂ and H₂ conversion into jet fuels**

Vanessa Gil, Javier Sánchez-Lainez, Kiyoharu Tadanaga, Harald Gröger, Stefan Wuttke, Jonas Gurauskis, Pedro Camargo, Reinaldo Giudici, Francesca Bonino, Joke Hadermann

Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón (Spain); ARAID Foundation (Spain); Hokkaido University (Japan); Bielefeld University (Germany); UPV/EHU Leioa (Spain); Ikerbasque (Spain); Institute of Nanoscience and Materials of Aragon (Spain); Helsinki University (Finland); University of São Paulo (Brazil); University of Turin (Italy); University of Antwerp (Belgium)

Room C. Other Hydrogen Applications

- 13:00 **Impact of hydrogen impurities measured on PEMFC stacks in conditions representative of the automotive application**

Sylvie Escribano, Laurent Jacqmin, Nicolas Mariage

Université Grenoble Alpes, CEA (France)

- 13:20 **Recent progresses in the design of a hydrogen PEMFC for portable applications**

M. Antonia Folgado, Luis Duque, Juan José Martínez Morales, José Miguel Barcala, Juan Carlos Oller, Antonio Molinero, Antonio Martínez Chaparro

CIEMAT (Spain)

- 13:40 **Potential uses of the heat released in hydrogen fuel cells: Overview and case-study analysis**

Antonio Atienza-Márquez, Joan Carles Bruno, Alberto Coronas

Universitat Rovira i Virgili (Spain)

Room D. Fuel Cells Components & Modelling

- 13:00 **eCoCell: An improved Gas Diffusion Layer for PEM fuel cells and electrolyzers**

Andrés Jerez Navarro, Modesto Aguirre Gómez, Javier López Cascales

Universidad Politécnica de Cartagena (Spain)



Oral Presentations

Wednesday, 18th May. Parallel Session 1 (13:00-14:00)

Room D. Fuel Cells Components & Modelling

- 13:20 **Synergetic effect of major landfill contaminants on a LSGM electrolyte-supported SOFC with Ni-Ce based anode fed by biogas**
María José Escudero Berzal, Esperanza Ruiz, Isabel Ortiz
 CIEMAT (Spain)
- 13:40 **Ammonia as fuel in a combined electricity and heat production system with PEMFC and SOFC as electric generators**
 Cristina Escriche, Jorge Martínez, Enrique Romero, Jaime Soler
 Aragon Institute of Engineering Research, University of Zaragoza (Spain)

Room E. Purification & Safety

- 13:00 **Metal-Organic Framework/Graphene Oxide Hybrid Adsorbents for Hydrogen Separation and Storage at Ambient Temperature**
Anish Mathai Varghese, K. Suresh Kumar Reddy, Georgios N. Karanikolos
 Khalifa University (UAE)
- 13:20 **Pure H₂ generation in water gas shift or low temperature steam reforming membrane reactors over Ce-Zr and Zr based catalysts**
 Francesco Basile, Salvatore Abate, E. Orfei, Andrea Fasolini, Gabriele Centi
 University of Bologna (Italy); University of Messina (Italy)
- 13:40 **Effect of fuel-air ratio on combustion of hydrogen released from a fuel cell moving vehicle in free air**
Farhad Farajimoghadam, Matteo Testi, Luigi Crema
 Full Fondazione Bruno Kessler (Italy)



Oral Presentations

Room F. Hydrogen Distribution, Codes & Standards

- 13:00 **How clean is your hydrogen? An overview of metrological developments underpinning hydrogen-fuel quality assurance**
 Sam Bartlett, Thomas Bacquart, A. Murugan, A. Morris, N. Moore, R. Wilmot, O. Omoniyi, Y. Hristova
 National Physical Laboratory (UK)
- 13:20 **Energetic Analysis and Optimization of Decentral Micro Hydrogen Refuelling Stations Using Electrochemical Compression**
Linda Schorer, Sven Schmitz, Thomas von Unwerth
 DHBW Mannheim (Germany); Technical University Chemnitz (Germany)
- 13:40 **Assessment of the Hydrogen Regulatory Framework for Hydrogen Underground Storage**
Sara Martínez Casasnovas, Jesús Simón Romeo, Arnaud Réveillère, Flore Ostapoff
 Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón (Spain); Geostock (France)

Wednesday, 18th May. Parallel Session 2 (15:30-17:30)

Room A. Hydrogen Production: Renewable

- 15:50 **Hex-generation system from seawater and air. Seed for decarbonization on the island of Gran Canaria**
Antonio Pulido Alonso, G. Winter Althaus, L. Trujillo Castellano, E. Rosales Asensio
 Las Palmas de Gran Canaria University (Spain)



Oral Presentations

Wednesday, 18th May. Parallel Session 2 (15:30-17:30)

Room A. Hydrogen Production: Renewable

- 16:10 **Green Hysland: Deployment of a hydrogen ecosystem on the Island of Mallorca**
María Jaén, B. Ángela Sánchez
 Enagás S.A. (Spain)
- 16:30 **HOASIS - Green Hydrogen and Circular Economy**
 Francisco Mario Gómez Rodríguez, Carolina Pérez Bermúdez
 TCI Gecomp S.L. (Spain)
- 16:50 **SoHyCal: Renewable hydrogen production for transportation in California**
J. Javier Brey, Delia Muñoz, Manuel Rodríguez, Africa Castro, Pablo Molina
 H2B2 Electrolysis Technologies (Spain)
- 17:10 **Macroeconomic analysis of power-to-hydrogen technology in Switzerland using Input-Output analysis**
Ruchi Gupta, Thomas MM Guibentif, Markus Friedl, Martin Kumar Patel, David Parra
 University of Geneva (Switzerland); Institut für Energietechnik (Switzerland)

Room B. Electrocatalysts / Electrodes

- 15:30 **Noble metal-free catalysts for reactions in fuel cells and electrolyzers**
 Sergio Díaz Coello, Stephanie José Martínez, José Luis Rodríguez; Gonzalo García, Elena María Pastor Tejera
 Universidad de La Laguna (Spain)
- 15:50 **Effect of transition metals on the electrocatalytic activity of N-doped carbon composites derived from polydopamine for oxygen evolution and oxygen reduction reactions**
Jesús Cebollada Borao, David Sebastián del Río, María Jesús Lázaro Elorri, María Victoria Martínez Huerta
 ICB-CSIC (Spain); ICP-CSIC (Spain)



Oral Presentations

Room B. Electrocatalysts / Electrodes

- 16:10 **Effect of nitrogen doping method on the activity of Fe-N-C catalysts based on carbon xerogels for fuel cells**
Laura Álvarez Manuel, Cinthia Alegre, Pedro Napal, David Sebastián, María Jesús Lázaro
 ICB-CSIC (Spain)
- 16:30 **Imine-Based Framework as Key Precursor for Highly Active Fe/N/C Catalysts for Oxygen Reduction Reaction**
Álvaro Tolosana-Moranchel, Álvaro García, Laura Pascual, Pilar Ferrer, María Retuerto, Sergio Rojas
 ICP-CSIC (Spain); Diamond Light Source (UK)
- 16:50 **In-situ Electrochemical Characterization of the Oxygen Reduction Reaction in Ionomer Tailored Catalyst Layers with a Gas Diffusion Electrode (GDE)**
Vicent Lloret, Paskal Kaiser, Marc Ayoub, Konrad Ehelebe, Simon Thiele, Karl Mayrhofer, Serhiy Cherevko
 Helmholtz Institute Erlangen-Nürnberg for Renewable Energy (Germany); Friedrich-Alexander University (Germany)
- 17:10 **Investigation of the Behaviour of Gold Mesh Electrodes in Electrically Controllable Membrane Electrode Assemblies**
Carsten Cosse, Marc Schumann, Daniel Becker, Detlef Schulz
 Helmut Schmidt University / University of the Bundeswehr Hamburg (Germany)

Room C. Safety

- 15:30 **The European Hydrogen Safety Panel: key role in the safe deployment of hydrogen technologies in Europe**
Iñaki Azkarate, Alberto Garcia-Hombrados, Thomas Jordan, Stuart Hawksworth, Jennifer Wen, Trygve Skjold; Marta Maroño
 European Hydrogen Safety Panel, Fuel Cells and Hydrogen Joint Undertaken EHSP (Spain)



Oral Presentations

Wednesday, 18th May. Parallel Session 2 (15:30-17:30)

Room C. Safety

- 15:50 **Updated HIAD 2.0 database and the harmonised analysis procedure**
Jennifer Wen, Marta Marono, Pietro Moretto, Ernst-Arndt Reinecke, Pratap Sathiah, Etienne Studer, Elena Vyazmina, Daniele Melideo, Iñaki Azkárte
University of Warwick (UK); CIEMAT (Spain); EC Joint Research Centre JRC (The Netherlands); Forschungszentrum Juelich GmbH (Germany); Shell India Markets Private Limited (India); Université Paris-Saclay (France); Air Liquide R&D (France); Università di Pisa (Italy); European Hydrogen Safety Panel, Fuel Cells and Hydrogen Joint Undertaken EHSP (Spain)
- 16:10 **Modular Power Distribution Unit for Fuel Cell Based Electrical Systems**
David Marroquí, Carlos Corts, Ausías Garrigós, José M. Blanes, Cristian Torres, Pablo Casado
Miguel Hernandez University of Elche (Spain)
- 16:30 **Formation of isolated flame cells propagating in ultra-lean hydrogen-air mixtures in narrow gaps**
Fernando Veiga, Daniel Martínez Ruiz, Mike Kuznetsov, Eduardo Fernández Tarrazo, Mario Sánchez Sanz
University Carlos III of Madrid (Spain); Polytechnic University of Madrid (Spain); Karlsruhe Institut für Technologie (Germany)
- 16:50 **Flash back predictions in flames in horizontal devices: the case of hydrogen flames**
Carmen Jiménez, Vadim Kurdyumov
CIEMAT (Spain)
- 17:10 **Numerical simulation of lean H₂-air premixed flames in narrow gaps**
Josué Melguizo-Gavilanes, Daniel Fernández-Galisteo, Anne Dejoan, Mario Sánchez-Sanz, Vadim N. Kurduymov
Institute Pprime, CNRS (France); CIEMAT (Spain); Universidad Carlos III de Madrid (Spain)



Oral Presentations

Room D. Fuel Cells Components

- 15:30 **Qualitative and quantitative determination of liquid water distribution in a PEM fuel cell**
Dajana Benkovic, Clemens Fink, Alfredo Iranzo
AVL-AST d.o.o. (Slovenia); AVL List GmbH (Germany); Universidad de Sevilla (Spain)
- 15:50 **Investigation of aging effects of gas diffusion layers for high temperature PEM fuel cell application**
Nadine Pilinski, Tanja Zierdt, Nina Bengen, Peter Wagner
German Aerospace Center DLR (Germany)
- 16:10 **Multi-stabilized hybrid membranes for fuel cell and electrolyzer**
Evelise Ferri, C. Tougne, M. Daoudi, F. Gouanvé, O. Gain, L. Gonon, V.H. Mareau, H. Mendil-Jakani, A. El Kaddouri, JC. Perrin, J. Dillet, O. Lottin, V. Dufaud, E. Espuche
Université de Lyon 1 (France); Université Grenoble Alpes, CEA (France); Université of Lorraine (France)
- 16:30 **Innovative and sustainable recycling of materials in polymer electrolyte membrane fuel cells and electrolysis cells**
Mikkel Juul Larsen
IRD Fuel Cells A/S (Denmark)
- 16:50 **Metal-Organic Frameworks as novel electrolytes for proton exchange membrane fuel cells**
Catalina Biglione, Pablo Salcedo-Abraira, Nieves Ureña, Fabrice Salles, Alejandro Várez, Patricia Horcajada
IMDEA-Energy (Spain); Universidad Carlos III de Madrid (Spain); University of Montpellier (France)
- 17:10 **Experimental investigation of a novel bioinspired PEM fuel cell**
Christian Suárez, Alfredo Iranzo, Baltasar Toharias, Francisco Javier Pino, Felipe Rosa
University of Seville (Spain); Andalusian Association for Research & Industrial Cooperation (Spain)



Oral Presentations

Wednesday, 18th May. Parallel Session 2 (15:30-17:30)

Room E. Transportation Applications

- 15:30 **Hydrogen Mobility - Key Enabler of a renewable Transport System**
Juergen Rechberger
 AVL List GmbH (Austria)
- 15:50 **The BMW iX5 Hydrogen – Fuel Cell Electric Driving Pleasure as a New Element of the BMW i Brand**
Klaas Kunze, Jürgen Guldner, Robert Halas
 BMW AG (Germany)
- 16:10 **Renewable hydrogen based solution for refueling the logistic sector**
África Castro, Delia Muñoz, Manuel Rodríguez, J. Javier Brey, Pablo Molina
 H2B2 Electrolysis Technologies (Spain)
- 16:30 **Hydrogen on-board storage options for rail vehicles**
Mathias Boehm
 German Aerospace Center DLR (Germany)
- 16:50 **Putting rail at the center of national infrastructure: a wholistic view on hydrogen trains**
Luke Johnson, Ian Spencer, Tim Burleigh, Mike Muldoon
 H2 Green (UK); Eversholt Rail (UK); Alstom (UK)
- 17:10 **Progress in the development of LNG and Diesel-fueled SOFC systems for maritime applications**
Jan Hollmann, Marco Fuchs, Elmar Pohl, Oliver Heymann, Carsten Spieker, Ulrich Gardemann, Michael Steffen
 Leibniz University Hannover (Germany); OWI Science for Fuels gGmbH (Germany); Zentrum für BrennstoffzellenTechnik (Germany)



Oral Presentations

Room F. Pipelines and Hydrogen Infrastructure

- 15:30 **Hybrid Energy Networks – a Concept for Large Renewables and Hydrogen Utilization**
Evgueniy Entchev, Li Bing Yang, Wahiba Yaici, Lia Kouchachvili
 CanmetENERGY Research Centre (Canada); University of Waterloo (Canada)
- 15:50 **Introduction to Hydrogen Energy: from applications to technical solutions**
Laurent Allidières
 Air Liquide S.A. (France)
- 16:10 **Enabling Hydrogen Refuelling Station Networks**
Bill Ireland
 Logan Energy Limited (UK)
- 16:30 **Hydrogen precooling in refueling stations**
Agustín Torralba
 Alfa Laval (Spain)
- 16:50 **Effect of hydrogen partial pressure and degraded environmental conditions on the service behavior of a X65 pipeline steel not designed for hydrogen transport**
Christophe Mendibide, Flavien Vucko, Jean Kittel, Mickael Martinez, Gaurav Joshi
 Institut de la Corrosion RISE (France); French Petroleum Institute Energies Nouvelles (France)
- 17:10 **Effect of high-pressure hydrogen environment on the physical and mechanical properties of elastomers**
Karabi Halder, Geraldine Theiler, Winoj Balasooriya
 Federal Institute for Materials Research and Testing (Germany); Polymer Competence Centre Leoben GmbH (Germany)



Oral Presentations

Wednesday, 18th May. Parallel Session 3 (18:00-20:00)

Room A. Hydrogen Production: Renewable

18:00 H₂ generation using CPV resources (CPV4H2 Project)

María Martínez, Daniel Sánchez, Oscar de la Rubia, Rafael Cervantes,
Goulven Quémeré, Ignacio Luque-Heredia, Delia Muñoz, Covadonga García

Institute of Concentration Photovoltaic Systems (Spain); BSQ Solar (Spain); H2B2 Electrolysis Technologies (Spain)

18:20 Solar hydrogen and fuels production with concentrated solar energy

Nathalie Monnerie, Andreas Rosenstiel, Martin Roeb, Christian Sattler

German Aerospace Center DLR (Germany)

18:40 The CSP Role in the Spanish Green Hydrogen and Ammonia Industry

Carlos Mata-Torres, Giorgio Ceresoli, Xavier Lara

Pacific Green Solar Technologies (Spain)

19:00 The commercial opportunity for hydrogen as a route to market for wind projects in Europe: Generating and transporting hydrogen at scale at an economic cost

Molly Liffé, Annette Nienhaus

ERM (UK); ERM (Germany)

19:20 LIFE CABEZO GREENH₂: MW-scale green hydrogen production plant to decarbonize the treatment of meat residuals

Mónica Sánchez, José Luis Casarrubios, José Luis Martínez Sande, Emilio Bayón

Enagás S.A. (Spain); Falck Renewables SpA (Italy)

19:40 Modular Automation Concepts for Clean Hydrogen and eFuel Production

Hubertus Böhm, Bernd Kalusche, Fernando Trucharte-Artigas

Siemens AG (Germany); Siemens S.A. (Spain)



Oral Presentations

Room B. Electrocatalysts / Electrodes

18:00 A tanks-in-series model for high-temperature PEM Fuel Cell

Valerii Danilov, Gunther Kolb, Cartsten Cremers

Fraunhofer Institute for Microengineering and Microsystems (Germany); Fraunhofer Institute for Chemical Technology (Germany)

18:20 Low Pt loading GDEs for PEMEC developed by magnetron sputtering technology

Villamayor, Eva Gutierrez Berasategui, L. Mendizabal, J. Barriga

Tekniker (Spain)

18:40 Pyrochlores with low content of Ru as efficient and stable electrocatalysts for oxygen evolution reaction in acid media

Dmitry Galyamin, I. Rodríguez, M. A. Salam, J. Torrero, L. Pascual, M. Mokhtar,
D. G. Sánchez, A. Gago, M.A. Peña, P. Ferrer, M. Retuerto, S. Rojas

ICP-SIC (Spain); King Abdulaziz University (Saudi Arabia); German Aerospace Center DLR (Germany); Diamond Light Source (UK)

19:00 OER Catalysts derived from Ir double perovskites for Proton Exchange Membrane Water Electrolyzer

María Retuerto, Laura Pascual, Jorge Torrero, M. A. Salam, M. Mokhtar, Daniel García
Sánchez, Aldo S. Gago, J.A. Alonso, K. A. Friedrich, P. Ferrer, M.A. Peña, S. Rojas

ICP-CSIC (Spain); German Aerospace Center DLR (Germany); King Abdulaziz University (Saudi Arabia); Diamond Light Source (UK)

19:20 A MEA based on Reinforced short-side-chain Aquivion® membrane for proton exchange membrane water electrolysis

Stefania Siracusano, S. Tonella, C. Oldani, Antonino S. Aricò

CNR-ITAE (Italy); Solvay Specialty Polymers (Italy)

19:40 Performance evaluation and modelling of electrocatalytic CO₂ reduction in a tubular protonic membrane reactor

Imanol Quina García, D. Catalán, S. Escolástico, L. Almar, A.M. Dayagui,
C. Vigen, José Manuel Serra Alfaro

Universitat Politècnica de València (Spain); Centre for Materials Science and Nanotechnology SMN (Norway); CoorsTek Membrane Sciences AS (Norway)



Oral Presentations

Wednesday, 18th May. Parallel Session 3 (18:00-20:00)

Room C. Hydrogen Storage

- 18:00 **Hydrogen - heat storage system based on metal hydride and phase change material**
Jussara Barale, Giovanni Capurso, Thorbjorn Stühff, Federico Nastro, Bettina Neumann, José Bellosta von Colbe, Paola Rizzi, C. Luetto, H. Stühff, M. Baricco
 University of Turin (Italy); Helmholtz-Zentrum Hereon (Germany); Stühff Maschinen- und Anlagenbau GmbH (Germany); Tecnodelta S.r.l (Italy); GKN Sinter Metals Engineering GmbH (Germany)
- 18:20 **Innovative study of the by-product of NaBH₄ hydrolysis**
Diogo Silva, Hélder Nunes, Cármen Rangel, Alexandra Pinto
 University of Porto (Portugal); National Laboratory of Energy and Geology (Portugal)
- 18:40 **Metal - decorated activated carbon - based adsorbents for hydrogen storage at ambient temperature: A comparative study using Pt, Pd, and Li**
Anish Mathai Varghese, K. Suresh Kumar Reddy, Georgios N. Karanikolos
 Khalifa University (UAE)
- 19:00 **Hydrogen storage in nanostructured graphene-based materials**
Gotthard Seifert
 TU Dresden (Germany)
- 19:20 **New metal-organic frameworks based on Co/Ni mixed-metals in URJC-materials to improve hydrogen storage**
Isabel Aguayo Whelan, Gisela Orcajo Rincón, Carmen Martos Sánchez, Guillermo Calleja Pardo
 Rey Juan Carlos University (Spain)
- 19:40 **Economic Analysis of LN₂/LNG Precoolings in Hydrogen Liquefaction Process**
 Sarng Woo Karng, Hyun Ji Kim, Seo Young Kim, Seong Hoon Kim, Choong-Hyun Choi, Sang Jun Park, Jun Hee Lee, Y. T. Yoon
 Korea Institute of Science and Technology (Republic of Korea); Seoul National University (Republic of Korea); Hylum Industries, Inc. (Republic of Korea); NxMD, Hanwhasolutions (Republic of Korea); Korea Gas Technology Corporation (Republic of Korea)



Oral Presentations

Room D. Fuel Cells Components

- 18:00 **Improved performance of cobalt-free, SrFeO_{3-δ}-based IT-SOFC cathode using highly scalable spray pyrolysis**
Víctor Zapata-Ramírez, Ulises Amador, Clemens Ritter, Glenn C. Mather, Domingo Pérez-Coll
 ICV-CSIC (Spain); Universidad San Pablo-CEU (Spain); Institut Laue-Langevin (France)
- 18:20 **Processing and characterisation of BaZr_{0.8}Y_{0.2}O_{3-δ} proton conductor densified at 1200°C**
Ángel Triviño Peláez, D. Pérez-Coll, M. Aparicio, D.P. Fagg, J. Mosa, G. C. Mather
 ICV-CSIC (Spain); University of Aveiro (Portugal)
- 18:40 **Advanced microtubular SOFC cells and their integration in a 5 cell-bundle for portable applications**
Miguel A. Laguna-Bercero, Antonio García-Girón, Alodia Orera, Angel Larrea, Jorge Silva, Francisco J. Ester
 Institute of Nanoscience and Materials of Aragon (Spain); BSH Electrodomésticos (Spain)
- 19:00 **Phyllosilicate minerals as sealants for Molten Carbonate Fuel Cell stacks**
Jaroslav Milewski, Arkadiusz Szczesniak, Aliaksandr Martynchik
 Warsaw University of Technology (Poland)
- 19:20 **Integration of an intermediate-temperature fuel cell based on a CsH₅(PO₄)₂-doped polybenzimidazole membrane with a CuZn-based methanol reformer**
 Konstantinos Kappis, Yifan Li, Haibin Li, George Avgouropoulos
 University of Patras (Greece); Shanghai Jiao Tong University (China)
- 19:40 **Development of exacerbated load cycles as AST for PEMFC stacks and validation by in-situ and ex-situ characterizations**
Sylvie Escribano, Fabrice Micoud, Laure Guetaz
 Université Grenoble Alpes, CEA (France)



Oral Presentations

Wednesday, 18th May. Parallel Session 3 (18:00-20:00)

Room E. Transportation Applications

- 18:00 **State Machine-Based Architecture to Control PEMFC System Processes in a Fuel Cell Electric Vehicle**
Ali Molavi, Attila Peter Husar, María Serra Prat, Hampus Hjortberg, Niclas Nilsson, Markus Kogler, Juan Sánchez Monreal, Yousif Eldigair
 IRI-CSIC-UPC (Spain); PowerCell (Sweden); China Euro Vehicle Technology AB (Sweden); AVL (Austria); German Aerospace Center DLR (Germany); Brose Fahrzeugteile (Germany)
- 18:20 **Using Absorption Refrigerator and Metal Hydrides in Hydrogen Fuel Cell Trains: Draft Design Process and Feasibility**
Markus Kordel, Kevin Knetsch, Florian Heckert, Lutz Boeck
 German Aerospace Center DLR (Germany); Faiveley Transport Leipzig GmbH (Germany)
- 18:40 **High-Power Ultra-Efficient Hybrid Cycle Composed of a Fuel Cell, an Internal Combustion Engine and Thermochemical Recuperation**
David Diskin, Leonid Tartakovsky
 Technion - Israel Institute of Technology (Israel)
- 19:00 **Online model adaption for energy management in Fuel Cell Electric Vehicles (FCEV)**
Ricardo Novella, Benjamín Pla, Pau Bares, Douglas Pinto
 Universitat Politècnica de València (Spain)
- 19:20 **Assessment of liner-based thermal management strategies in hydrogen tank fast-filling via Computational Fluid Dynamics**
Ricardo Blanco-Aguilera, Manex Martínez-Agirre, Joanes Berasategi, Markel Penalba, Mounir Bou-Ali, Valentina Shevtsova
 Mondragon Unibertsitatea (Spain); Ikerbaske (Spain)
- 19:40 **Use of H₂, CH₄, CO and their mixtures in a commercial automotive spark-ignition engine adapted to run on gaseous fuels**
Pedro M. Diéguez, José Carlos Urroz, Miguel Arana, Luis M. Gandía
 Universidad Pública de Navarra (Spain)



Oral Presentations

Room F. Pipelines and Hydrogen Infrastructure

- 18:00 **Enabling the injection of hydrogen in high-pressure gas grids: investigation of the impact on materials and equipment, legal, regulatory and technical aspects**
Javier Sánchez-Laínez, Vanesa Gil, Alberto Cerezo, Maria Dolores Storch de Gracia, Agustín Pascual, Michael Walter, Virginia Madina
 Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón (Spain); ARAID Foundation (Spain); Redexis S.A. (Spain); German Technical and Scientific Association for Gas and Water (Germany); Tecnalia (Spain)
- 18:20 **Quantifying the impact of hydrogen content on the thermodynamic properties for natural gas transportation by an accurate molecular model**
Ismail I. I. Alkhatib, Lourdes F. Vega
 Khalifa University (EAU). National Physical Laboratory (UK); Cadent Gas Ltd (UK)
- 18:40 **Distributing hydrogen to fuel cell vehicles using the gas grid: an assessment of contaminant levels**
Oluwafemi Omoniyi, Thomas Bacquart, Abigail Morris, Niamh Moore, Arul Murugan, David Jones
 National Physical Laboratory (UK); Cadent Gas Ltd (UK)
- 19:00 **Design of transport, systems ashore, storage in port and supply of hydrogen, in the framework of the OCEANH2 project**
Eduardo García-Rosales, Beatriz Nieto, M. Dolores Storch de Gracia, Roberto Morales Burgos, Enrique Saborit, Pablo Martínez Fondón, Alberto Abánades
 Redexis S.A. (Spain); National Hydrogen Center (Spain); Universidad Politécnica de Madrid (Spain)
- 19:20 **Practicalities of the use of hydrogen in sector shifting: experience from two islanded networks**
Bill Ireland
 Logan Energy Ltd. (UK)
- 19:40 **Review of Ammonia Technologies as a Green Hydrogen Storage Carrier**
Pablo Molina, J. Javier Brey, Carlota Ríos, Celia Martínez de León
 Universidad Loyola Andalucía (Spain)



Oral Presentations

Thursday, 19th May. Parallel Session 4 (15:00-17:00)

Room A. Hydrogen Production: Renewable

15:00 **Production of hydrogen by solar photocatalytic treatment of wastewaters**

Alberto Puga

Universitat Rovira i Virgili (Spain)

15:20 **Transforming the world's waste into renewable hydrogen for onsite power generation and vehicle fueling**

Jean-Louis Kindler, Angelica Gyllen

Ways2H (USA)

15:40 **Multi-Fuel Compact Renewable Hydrogen Generator for Mobility Applications**

Elisa Alcolea, Jorge Carrero, Juan Manuel Sánchez, Diego Ubeda, Carmen Jimenez-Borja, Ana Nieto, Ernesto Simón, G. Monjas, A. Escobar, J.L. Carreras, C. Fernández-Caballero, M.A Vega

Técnicas Reunidas, S.A. (Spain)

16:00 **MnFe₂O₄-Na₂CO₃ thermochemical cycle for H₂ production: investigating material modification strategies for performance improvement**

Francesco Torre, T. Aguilar, S. Doppiu, M. Oregui, J. Udaeta, N. Uranga, M. Hernaiz, P. Luis, E. Palomo

CIC energiGUNE (Spain); Euskal Herriko Unibertsitatea (Spain); Tekniker (Spain); Ikerbasque (Spain)

16:20 **Comparison of hydrogen production via microwave assisted water splitting in doped-ceria materials**

Aitor Domínguez Saldaña, Laura Navarrete Algaba, María Balaguer Ramírez, Joaquín Santos Blasco, Pedro José Plaza González, José Manuel Catalá Civera, José Manuel Serra Alfaro

ITQ-CSIC-UPV (Spain); Universitat Politècnica de València (Spain)



Oral Presentations

Room A. Hydrogen Production: Renewable

16:40 **Hydrogen production by thermochemical water splitting using La_{0.8}Ca_{0.2}BO_{3-δ} (B=Co, Ni, Cu and Fe) perovskites**

Alejandro Pérez Domínguez, María Orfila del Hoyo, María Linares Serrano, Raúl Sanz Martín, Javier Marugán Aguado, Raúl Molina Gil, Juan Ángel Botas Echevarría
Rey Juan Carlos University (Spain)

Room B. Hydrogen Production: Electrolysis

15:00 **Toward an overall optimization of the anion exchange membrane water electrolysis cell**

Ester López Fernández, Celia Gómez Sacedón, Jorge Gil-Rostra, Juan Pedro Espinós, Agustín R. González-Élpe, Francisco Yubero, Antonio de Lucas Consuegra
University of Castilla-La Mancha (Spain); ICMS-CSIC-Univ. Sevilla (Spain)

15:20 **Development of a new alkaline electrolyser associated to a renewable offshore plant**

Rodrigo Pérez, David Solera, Rafael Luque
ARIEMA Energía y Medioambiente S.L. (Spain)

15:40 **Alkaline electrolysis at sea: water purification strategies to reduce the levelized cost of hydrogen**

Rafael d'Amore-Domenech, Vladimir Luis Meca, Antonio Villalba-Herreros, Teresa J. Leo
Universidad Politécnica de Madrid (Spain)

16:00 **Modeling the effect of electrolyte recirculation rate in the liquid-gas separators of an AWE on the purity of the gas produced**

Héctor González, E. Amores, D. Abad, M. Sánchez
National Hydrogen Center (Spain)

16:20 **Green hydrogen production based on high efficiency and low degradation pulsed-current electrolysis**

Francisca Segura, José Manuel Andújar, Julio José Caparrós Mancera, Rocío García, Francisco José Vivas
University of Huelva (Spain)



Oral Presentations

Thursday, 19th May. Parallel Session 4 (15:00-17:00)

Room B. Hydrogen Production: Electrolysis

- 16:40 **Simultaneous surface structuring and alloying of titanium fiber material for porous transport layers in PEM-Electrolysis**

Dorian Hüne, B. Bensmann, L. Stein, R. Reineke-Koch, A. Ditttrich, W. Schade, T. Gimpel

Clausthal University of Technology (Germany); University Hannover (Germany); Institute for Solar Energy Research (Germany); Fraunhofer Heinrich Hertz Institute (Germany)

Room C. Hydrogen Storage

- 15:00 **Compressed hydrogen, the most efficient way to store energy. A comparison between compressed hydrogen and liquid hydrogen as energy storage system**

Daniel Ballorca Juez

Hiperbaric (Spain)

- 15:20 **Thermal management of Cryo-adsorbed hydrogen storage system**

Daniel Tsukerman, Nir Tzabar

Ariel University (Israel)

- 15:40 **TCD based real-time measurement of Ortho-Para hydrogen fraction**

Hyun Ji Kim, Yong Tae Yoon, Sarn Woo Karng

Korea Institute of Science and Technology (Republic of Korea); Seoul National University (Republic of Korea)

- 16:00 **Methanation of CO₂ on Cu in a tubular co-ionic SOEC**

Esperanza Ruiz Martínez, Juan Aldecoa, Ángel Morales, Meryem Farchado, José María Sánchez

CIEMAT (Spain); Sisener Ingenieros S.L. (Spain)



Oral Presentations

Room C. Hydrogen Storage

- 16:20 **CO₂ methanation over Ni catalysts supported on sol-gel prepared Pr-doped CeO₂**

Anastasios I. Tsiotsias, Nikolaos D. Charisiou, Christos Zotos, Victor Sebastián, Kyriaki Polychronopoulou, María A. Goula

University of Western Macedonia (Greece); Nanoscience Institute of Aragón and Materials Science Institute of Aragón, University of Zaragoza-CSIC (Spain); Khalifa University of Science and Technology (UAE)

- 16:40 **Advanced materials and Reactors for ENergy storage tHrough Ammonia (ARENHA)**

José Luis Viviente Viviente, F. Gallucci, R. Campana, X. Sun, S. Megel, W.I.F. David, G. van Zee, S. Pylypko, J.A. Medrano, C. Dumand, C. Rouselle, A. Ramirez-Santos

Tecnalia (Spain); Eindhoven University of Technology (The Netherlands); National Hydrogen Center (Spain); DTU (Denmark); Fraunhofer IKTS (Germany); Rutherford Appleton Laboratory (UK); Proton Ventures BV (The Netherlands); Elcogen AS (Estonia); Hydrogen Onsite, S.L. (Spain); Stellantis, Centre Technique Vélizy (France); University of Orléans (France); ENGIE Lab CRIGEN (France)

Room D. Fuel Cells & Hydrogen Systems Modelling

- 15:00 **Uncertainty quantification of production cost for a wind power-to-hydrogen system**

Sajjad Yousefian, Tubagus Aryandi Gunawan, Parisa Javadi, Rory F. D. Monaghan

National University of Ireland (Ireland); SFI Centre for Energy, Climate and Marine Research (Ireland); Princeton University (USA)

- 15:20 **Modeling and simulation of integrated hydrogen - solar PV systems**

Fernando Gutiérrez Martín, José A. Díaz López, Ángel Caravaca Huertas, Antonio J. Dos Santos García

Polytechnic University of Madrid (Spain)

- 15:40 **Optimisation of Green Hydrogen Production Facilities**

Andrew Campbell, Raúl Mateos

Advisian (Australia); Advisian (Spain)



Oral Presentations

Thursday, 19th May. Parallel Session 4 (15:00-17:00)

Room D. Fuel Cells & Hydrogen Systems Modelling

- 16:00 **The hydrogen storage challenge: How does storage size and cost affect the techno-economic performance of hydrogen production?**

Cian Moran, Rory F.D. Monaghan

National University of Ireland (Ireland); SFI Centre for Energy, Climate and Marine Research (Ireland)

- 16:20 **Data analysis and parametrization for modelling a regenerative hydrogen storage with application in a regional housing sector**

Steffen Schedler, Stefanie Meilinger, Tanja Clees

University of Applied Sciences Bonn-Rhein-Sieg (Germany)

- 16:40 **Digital Twin technologies to optimize the planification and exploitation of hybrid plants with Power-to-Hydrogen**

Jesús La Parra Albaladejo, Cristina Corrales Quirós

Tecnatom, S.A. (Spain)

Room E. Stationary Applications

- 15:00 **Implementation of renewable hydrogen-based systems for the decarbonization of the stationary sector**

Víctor Manuel Maestre Muñoz, Alfredo Ortiz Sainz de Aja, I. Ortiz

University of Cantabria (Spain)

- 15:20 **Integration of Combined Cooling, Heating and Power Microgrids in Zero Energy Public Buildings with High Power Quality and Continuity Requirements**

Javier Tobajas, Félix García, Jesús Martín, Íñigo Ubierna

National Hydrogen Center (Spain); University of Córdoba (Spain)

- 15:40 **Increasing Combined Cycle Gas Turbines Flexibility via Power to Gas to Power Systems**

José García, Linus Engstam, Rafael Guédez

Royal Institute of Technology, KTH (Sweden)



Oral Presentations

Room E. Stationary Applications

- 16:00 **Hydrogen a storage solution of renewable energy of habitable mobile modules. LIFE ZEROENERGYMOD Project**

Carlos Arié, Pedro Casero

Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón (Spain)

- 16:20 **Solenco Powerbox: sustainable world's electrification by the mass uptake of wind and solar PV**

Hugo Vandenberghe, Francisco López

Solenco Power (Belgium)

- 16:40 **Grasshopper: A Modular and Flexible Hydrogen PEM Power Plant for Grid Balancing Services**

María Tejada Valderrama, Germán Nieto Cantero, Belén Sarmiento Marrón

Abengoa Innovación (Spain). Solenco Power (Belgium)

Room F. Hydrogen Production: Catalysts

- 15:00 **Production of hydrogen by dry reforming of methane over Ni/Al₂O₃ catalysts derived from sub-stoichiometric NiAl₂O₄ spinels**

Andoni Choya, Beatriz de Rivas, José Ignacio Gutiérrez-Ortiz,

Rubén López-Fonseca

University of the Basque Country (Spain)

- 15:20 **CO₂-free hydrogen production by catalytic methane decomposition over rice husk-derived silica**

Gema Gómez-Pozuelo, Inés Moreno, Patricia Pizarro, Juan A. Botas,

David P. Serrano

Rey Juan Carlos University (Spain); IMDEA-Energy (Spain)

- 15:40 **Catalytic behavior of transition metal carbide of group 5 in the methanol steam reforming**

Arturo Pajares, Pilar Ramírez de la Piscina, Narcis Homs

University of Barcelona (Spain); Catalonia Institute for Energy Research (Spain)



Oral Presentations

Thursday, 19th May. Parallel Session 4 (15:00-17:00)

Room F. Hydrogen Production: Catalysts

- 16:00 **Ammonia cracking with Pd-based membrane technology**
Igor Egaña, José Antonio Medrano, Jon Melénez, Andrés Galnares
H2SITE (Spain)
- 16:20 **Titanium dioxide electrodes for water photo-electrolysis: modelling of photoelectrochemical processes**
Alejandro Ansón-Casaos, José Carlos Ciria, Carlos Martínez-Barón, Ana M. Benito, Wolfgang K. Maser
ICB-CSIC (Spain); Universidad de Zaragoza (Spain)
- 16:40 **LOHC dehydrogenation on bimetallic Pt-Ni and Pt-Co catalysts**
Kevin Alconada, Pedro Luis Arias, Victoria Laura Barrio
University of the Basque Country (Spain)

Thursday, 19th May. Parallel Session 5 (17:30-19:30)

Room A. Hydrogen Production: Renewable

- 17:30 **Solar photocatalytic H₂ production by highly efficient laser engineered Au/TiO₂ photocatalysts**
Roberto Fiorenza, Marcello Condorelli, Stefano Andrea Balsamo, Luisa D'Urso, Giuseppe Compagnini, Salvatore Scirè
University of Catania (Italy)
- 17:50 **Hydrogen production from photoreforming of biomass using conventional and unconventional photocatalysts**
Stefano Andrea Balsamo, Roberto Fiorenza, Marcello Condorelli, Salvatore Scirè
University of Catania (Italy)



Oral Presentations

Room A. Hydrogen Production: Renewable

- 18:10 **SUNRGYZE: Photoelectrochemical Production of hydrogen**
Luis Villalba Trol, Mónica Sánchez Delgado, Maria Dolores Hernández Alonso, Ana Martínez González
Sunrgyze (Spain); Enagás S.A. (Spain); Repsol (Spain)
- 18:30 **IMDEA-Energy Frameworks as promising next-generation materials for green hydrogen production**
Sergio Carrasco, Pablo Salcedo-Abraira, Eva Montero-Lanzuela, María Cabrero-Antonino, Sergio Navalón, Hermenegildo García, Patricia Horcajada
IMDEA-Energy (Spain); ITQ-CSIC-UPV (Spain); Polytechnic University of Valencia (Spain)
- 18:50 **Role of Zr Doping in Pt/TiO₂ Photocatalysts for Hydrogen Production**
Irene Barba-Nieto, Uriel Caudillo-Flores, María Natividad Gómez-Cerezo, Anna Kubacka, Marcos Fernández-García
ICP-CSIC (Spain)
- 19:10 **Innovation in green hydrogen production**
Ron Bol, S. Drissen, W. Corsten
Hysolar (The Netherlands); Aannemingsbedrijf Jos Scholman (The Netherlands)

Room B. Hydrogen Production: Electrolysis

- 17:30 **Novel Coatings and Resistance Measurement Methods for Bipolar Plates**
Sigrid Lædre, Corneliu M. Craciunescu, Thulile Khoza, Nicolae Vaszilcsin, Aurel Ercuta
Sintef Industry (Norway); Politehnica University of Timisoara (Romania)
- 17:50 **PGM-free sustainable coating alternatives for anodic bipolar plates and porous transport layers in polymer electrolyte membrane water electrolyzers**
Lucía Mendizabal, E. G-Berasategui, S. Laedre, N. Rojas
Tekniker (Spain); Sintef Industry (Norway); National Hydrogen Center (Spain)



Oral Presentations

Thursday, 19th May. Parallel Session 5 (17:30-19:30)

Room B. Hydrogen Production: Electrolysis

- 18:10 **The Challenges of Green Hydrogen from Renewable Energy Sources**
Albert Bos, R. van Dongen
XINTC Global (The Netherlands)
- 18:30 **Reducing costs by using technology ready safety solutions**
Fernando Sánchez, Ignacio Astigarraga
Roxtec S&P (Spain)
- 18:50 **Experimental strategies of operation and preventive maintenance in electrolyzers for efficient hydrogen production**
Julio José Caparrós Mancera, Francisca Segura, José Manuel Andujar, Eduardo López
Spanish National Institute of Aerospace Technology (Spain); University of Huelva (Spain)
- 19:10 **H2BASQUE – Technologies for boosting the Hydrogen economy in the Basque Country: Green hydrogen production**
Ekain Fernández, Beatriz Calleja, Francisco Alcaide, Stefania Doppiu, Mikel Oregui-Bengoechea, Eva G-Berasategui, Elías Unzueta, J. Irigoyen
TECNALIA (Spain); TUBACEX INNOVACION AIE (Spain); CIDETEX (Spain); CIC energiGUNE (Spain); UPV/EHU (Spain); TEKNIKER (Spain); PETRONOR INNOVACION (Spain); BASQUE ENERGY CLUSTER (Spain)

Room C. Hydrogen Storage

- 17:30 **Development of novel filler strategies and reinforced elastomeric grades to be used in high-pressure hydrogen gas conditions**
Clara Clute, Annika Lenger, Winoj Balasooriya, Andreas Hausberger, Geralt Pinter, Sandra Schlögl
Polymer Competence Center Leoben GmbH (Austria); Montanuniversität Leoben (Austria)



Oral Presentations

Room C. Hydrogen Storage

- 17:50 **New Fastcure 2 Towpreg for Hydrogen 70 MPa On-board type IV Composite Pressure Vessel Manufacturing**
Stéphane Villalonga, Christophe Magnier, Frédéric Démaret, Martin Jégou, Sébastien Livi, Jannick Duchet-Rumeau, Jean-François Gérard
Central Commission of Nuclear Energy CEA (France); VITECH COMPOSITES (France); National Institute of Applied Sciences of Lyon (France)
- 18:10 **Advanced Hydrogen Storage System for a High-Performance Fuel Cell Powertrain**
Klaas Kunze, Andreas Pelger, Thomas Gruber
BMW AG (Germany)
- 18:30 **Large-scale storage of green hydrogen in concrete Gravity Based Structures (GBS) associated to renewable offshore plants**
Irene Sevilla de la Llave, Natividad Sánchez López, José Manuel González Herrero, Manuel Biedma García
Acciona Ingeniería (Spain)
- 18:50 **Selection of LOHC and reactor configuration for the optimization of the hydrogenation step in chemical hydrogen storage**
Adrián García, Pablo Marín, Salvador Ordóñez
University of Oviedo (Spain)
- 19:10 **Large scale hydrogen distribution via Liquid Organic Hydrogen Carriers (LOHC)**
Rafael Schmidt
Hydrogenious LOHC Technologies GmbH (Germany)



Oral Presentations

Thursday, 19th May. Parallel Session 5 (17:30-19:30)

Room D. Fuel Cells & Hydrogen Systems Modelling

17:30 **SOC-based microgrid: development of medium level controls in a multilevel algorithm framework**

Marco Califano, Fabiana Califano, Marco Sorrentino, Marc Allen Rosen, Cesare Pianese

University of Salerno (Italy); University of Ontario Institute of Technology (Canada)

17:50 **A Hybrid 1D-CFD Numerical Framework for Hydrogen-based Fuel Cell and Electrolysers**

Markel Peñalba, Joanes Berasategi, Ricardo Blanco-Aguilera, Manex Martínez, Mounir Bou-Ali, Valentina Shevtsova

Mondragon Unibertsitatea (Spain); Ikerbasque (Spain)

18:10 **Parameter fitting of a reversible Solid Oxide stack model**

Ignasi Lleonsi, Lucile Bernadet, Marc Torrell, María Serra

IRI-CSIC-UPC (Spain); Catalonia Institute for Energy Research (Spain)

18:30 **Green liquid hydrogen supply chains for future aviation – A techno-economic well-to-tank assessment**

Lucas Sens, Fabian Carels, Ulf Neuling, Martin Kaltschmitt

Hamburg University of Technology (Germany)

18:50 **Risk Assessment and Ventilation Modelling of Hydrogen Installation and Generation Units**

Daniel Prasetyo, Alberto Costilla Álvarez, Aurora García Jiménez

CIRCE Foundation (Spain)

19:10 **Power to Gas and distribution strategy: Technoeconomic assessment for an MSW biogas upgrading plant**

Francisco Luño, Andrés Sanz-Martínez, Paúl Durán, Eva Francés, Javier Herguido, José-Angel Peña

Aragon Institute of Engineering Research, University of Zaragoza (Spain)



Oral Presentations

Room E. Stationary & Other Applications

17:30 **AVL's Solid Oxide Cell System Solutions for a Hydrogen Based Energy System**

Martin Hauth, Bernd Reiter

AVL List GmbH (Austria)

17:50 **The future of power generation starts today - the stationary fuel cell system by Bosch**

Wayne-Daniel Kern, Sebastian Budischin

Robert Bosch GmbH (Germany)

18:10 **Decarbonization of the Steelmaking Industry via Hydrogen based Technologies**

Itsaso Auzmendi Murua, Juan Blanco Requesens

Sarralle Engineering (Spain)

18:30 **Biogas upgrading by intensified methanation (SESaR): reaction - desorption cycles with Ni-Fe/Al₂O₃ catalyst and zeolite**

Víctor Daniel Mercader Plou, Mar Rincón, Andrés Sanz Martínez, Paúl Durán, Eva Francés, Javier Herguido, José Ángel Peña

Aragon Institute of Engineering Research, University of Zaragoza (Spain)

18:50 **Activity of bi-metallic hydrotalcite derived materials for photocatalytic CO₂ methanation**

Rafael Canales Larrazabal

University of the Basque Country (Spain)

19:10 **Ni supported on Ferrierite and ITQ-6 zeolites for catalytic methanation of CO₂. Effect of delamination on the catalytic performance**

Raul da Silva, Antonio Chica

ITQ-CSIC-UPV (Spain)



Oral Presentations

Thursday, 19th May. Parallel Session 5 (17:30-19:30)

Room F. Hydrogen Production: Catalysts

17:30 **Dry reforming of ethane over Ni catalysts supported on Al_2O_3 modified with MgO , CaO and La_2O_3**

Anastasios I. Tsiotsias, Nikolaos D. Charisiou, Víctor Sebastián, Safa Gaber, Steven J. Hinder, Mark A. Baker, K. Polychronopoulou, María A. Goula

University of Western Macedonia (Greece); Nanoscience Institute of Aragón and Materials Science Institute of Aragón, University of Zaragoza-CSIC (Spain); Khalifa University of Science and Technology (UAE); University of Surrey (UK)

17:50 **Hydrogen production by oxidative steam reforming of acetic acid on Ni catalysts: Influence of the support and La addition**

Anabel Morales Cabezas, Pedro Julio Megía Hervás, José Antonio Calles Martín, Arturo Javier Vizcaíno Madríguez, Alicia Carrero Fernández

Rey Juan Carlos University (Spain)

18:10 **Kinetic modelling for the dehydrogenation of formic acid on Pd/C catalysts considering the deactivation**

Celia Martín, Asunción Quintanilla Gómez, José Antonio Casas

Universidad Autónoma de Madrid (Spain)

18:30 **$\text{Ni}^0/\text{Mg}(\text{Al})\text{O}$ catalysts derived from layered double hydroxides for H_2 production by cellulose aqueous phase reforming**

Andrea Fasolini, E. Orfei, Francesco Basile

University of Bologna (Italy)

18:50 **Influence of catalysts, temperature and gasifying agent on H_2 production from palm kernel shell**

Juan C. Acevedo, Erika Arenas, Fausto Posso, Carlos Imbach

Universidad de Santander (Colombia); Universidad Pontificia Bolivariana (Colombia); Universidad Nacional de Litoral (Argentina)



Oral Presentations

Room F. Hydrogen Production: Catalysts

19:10 **Role of catechols and guaiacols on the deactivation of NiAl_2O_4 catalyst in bio-oil steam reforming**

L. Landa, Aingeru Remiro Eguskiza, N. García-Gómez, G. Elordi, B. Valle, A. Gayubo, J. Bilbao

University of the Basque Country (Spain)

Friday, 20th May. Parallel Session 6 (11:30-13:30)

Room A. Hydrogen Production: Renewable / Electrolysis

11:30 **Optimal Coupling of Solar Electrolysis Systems. Multi-Objective Optimization of Component Relative Sizing**

Felipe Gallardo, José García, Andrea Monforti Ferrario, Justin NW Chiu, Gabriele Comodi

Royal Institute of Technology, KTH (Sweden); Marche Polytechnic University (Italy); ENEA (Italy)

11:50 **Modelling and Performance Analysis of a SOE System integrating PV, Concentrating Solar Heat and Thermal Energy Storage**

Beatriz Herrero, José González-Aguilar, Manuel Romero

IMDEA-Energy (Spain)

12:10 **Green hydrogen production by means of solar heat and power in high temperature solid oxide electrolyzers**

A. Giaconia, M. Della Pietra, P. Moreno, M. Testi, C. Pellegrini, S. Diethelm, M. Romero, José González-Aguilar, M. Robino, J. van Herle, B. Morico, J. Dobrée

ENEA (Italy); Capital Energy S.L. (Spain); Fondazione Bruno Kessler (Italy); SOLIDpower S.A. (Switzerland); IMDEA-Energy (Spain); Snam SpA (Italy); Ecole Polytechnique Federale de Lausanne (Switzerland); NextChem Srl (Italy); Stamicarbon BV (The Netherlands)

12:30 **Optimal Integration of Co - Electrolysis in a Power-to-Liquid Industrial Process**

Angel Molina-García, José Javier López-Cascales, José Sánchez-Luján

Polytechnic University of Cartagena (Spain)



Oral Presentations

Friday, 20th May. Parallel Session 6 (11:30-13:30)

Room A. Hydrogen Production: Renewable / Electrolysis

12:50 [Measures to improve electrolyser's competitiveness](#)

Luis Manuel Santos Moro, Luis Del Barrio Castro, Ana Márquez Altemir
EDP España (Spain); Arthur D. Little S.L. (Spain)

13:10 [VITALE PROJECT, One of the first mass green hydrogen production plants in Europe becomes a reality](#)

Fernando Román, Ricardo Izquierdo, Philippe Guinot
pHYnix Iberia (Spain); pHYnix SAS, París (France)

Room B. Hydrogen Production: Bio Hydrogen / Bio Gasification

11:30 [Clean syngas as precursor to green hydrogen from a versatile commercial-scale two-stage gasification and plasma refining](#)

M. Bacon, S. Saberi, Jordi Gallego
OMNI Conversion Technologies (Canada); OMNI Conversion Technologies (Spain)

11:50 [Process simulation of renewable hydrogen production by Sorption Enhanced Steam Reforming \(SESR\) of Biogas](#)

Alma Capa, Yongliang Yan, Fernando Rubiera, Covadonga Pevida, María Victoria Gil, Peter Clough
INCAR-CSIC (Spain); Cranfield University (UK); Newcastle University (UK)

12:10 [H₂ production via Glycerol Sorption Enhanced Steam Reforming](#)

Gemma Grasa, Claudia Navarro, José Manuel López, Isabel Martínez, Ramón Murillo
ICB-CSIC (Spain)

12:30 [Analysis of the integration of bioethanol production plants with bioethanol steam reforming processes to produce hydrogen](#)

Elena Castilla, D. Sopeña, H. Olmedo, A. Horrillo
CIDAUT (Spain); University of Valladolid (Spain)



Oral Presentations

Room B. Hydrogen Production: Bio Hydrogen / Bio Gasification

12:50 [Numerical simulation of ethanol thermal partial oxidation in a mesochannel-based reactor to produce hydrogen-rich syngas](#)

Daniel Fernández-Galisteo, Eduardo Fernández-Tarrazo, Carmen Jiménez, Vadim N. Kurdyumov
CIEMAT (Spain); Universidad Carlos III de Madrid (Spain)

13:10 [Integrated Membrane Reactor for hydrogen separation](#)

Jon Meléndez, José A. Medrano, Igor Egaña, Andrés Galnares
Hydrogen Onsite S.L. (Spain)

Room C. Hydrogen Storage

11:30 [Analysis of potential strategies to improve hydrogen recovery from LOHC systems](#)

José María Sánchez-Hervás, Carla Pravos Gonzalo, Marta Maroño Bujan, Esperanza Ruiz Martínez
CIEMAT (Spain); Complutense University of Madrid (Spain)

11:50 [Decalin-naphthalene as promising chemical hydrogen carrier: optimization of dehydrogenation steps](#)

Pablo Rapado-Gallego, Eva Díaz, Salvador Ordóñez
University of Oviedo (Spain)

12:10 [Accelerating global demonstration and commercialization of large-scale underground hydrogen storage under IEA's Hydrogen Technology Collaboration Programme](#)

Serge van Gessel, Remco Groenenberg, Maartje Boon, Carla Robledo, Maarten Huijgen, Marina Holgado, Hadi Hajibeygi
TNO (The Netherlands); Technical University of Delft (The Netherlands); Ministry of Economic Affairs and Climate Policy (The Netherlands); Ariema Energía y Medio Ambiente (Spain)



Oral Presentations

Friday, 20th May. Parallel Session 6 (11:30-13:30)

Room C. Hydrogen Storage

- 12:30 **Techno-economic requirements for underground renewable hydrogen storage in porous media**

Jan Michalski

Ludwig-Bölkow-Systemtechnik GmbH (Germany)

- 12:50 **A novel methodology to estimate dispersivity in Underground Hydrogen Storage**

Marco Maniglio, Alberto Pizzolato, Paola Panfili, Alberto Cominelli

Eni S. p. A. (Italy)

- 13:10 **Hystories project: technical developments and deployment outlooks for pure hydrogen storage in depleted fields and aquifers**

Arnaud Réveillère, Jan Michalski, Bernd Löder, Ceri Vincent, Martin Wagner, Jesús Simón, Katarzyna Luboń

Geostock (France); Ludwig-Boelkow-Systemtechnik GmbH (Germany); Montanuniversitaet Leoben (Austria); Co2geonet (France); MicroPro GmbH (Germany); Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón (Spain); Mineral and Energy Economy Research Institute of the Polish Academy of Sciences (Poland)

Room D. Fuel Cells & Hydrogen Systems Modelling

- 11:30 **Levelized Costs of Storage (LCOS) for a Green Hydrogen System**

Celia Martínez de León, J. Javier Brey, Carlota Ríos

Universidad Loyola Andalucía (Spain)

- 11:50 **Multizone thermodynamic model to design piston compressors for hydrogen at high pressures**

Diego Fernández Chéliz, Miguel Castaños Calleja, Daniel Ballorca Juez, Alfonso Horrillo Güemes

CIDAUT (Spain); Hiperbaric (Spain); University of Valladolid (Spain)



Oral Presentations

Room D. Fuel Cells & Hydrogen Systems Modelling

- 12:10 **A Simulation Toolchain for the Refueling of Hydrogen Vehicles**

Klaus Esser, Julius Rauh, Nejc Klopčič, Markus Sartory, Alexander Trattner

HyCentA Research GmbH (Austria)

- 12:30 **Hydrogen substitution potentials inside the energy systems of aviation industry sites**

Lars Baetcke, Piyush Rangani, Fabian Carels, Lucas Sens, Ulf Neuling, Adrian Herberger, Daniel Holsten, J. Jepsen, K. Taube, T. Klassen

Helmholtz-Zentrum Hereon GmbH (Germany); Hamburg University of Technology (Germany); Airbus Operations GmbH (Germany)

- 12:50 **Integration of hydrogen into the energy infrastructure of aviation industry sites - The determination of a cost-optimized ramp-up**

Fabian Carels, Lucas Sens, Lars Baetcke, Piyush Rangani, Ulf Neuling, Martin Kaltschmitt

Hamburg University of Technology (Germany); Helmholtz-Zentrum Hereon GmbH (Germany)

- 13:10 **Analysis of production cost under uncertainty for an integrated wind power-to-hydrogen-to-methanol system**

Sajjad Yousefian, Parisa Javadi, Tubagus Aryandi Gunawan, Rory F. D. Monaghan

National University of Ireland (Ireland); National University of Ireland (NUI) (Ireland); SFI Centre for Energy, Climate and Marine Research (Ireland); Princeton University (USA)

Room E. Commercialization, Codes and Standards

- 11:30 **Status of Regulations on the use of Fuel Cells and Hydrogen in the Merchant Fleet**

Antonio Villalba-Herreros, Vladimir L. Meca, Rafael d'Amore-Domenech, Teresa J. Leo

Polytechnic University of Madrid (Spain)



Oral Presentations

Friday, 20th May. Parallel Session 6 (11:30-13:30)

Room E. Commercialization, Codes and Standards

- 11:50 **Advances in fuel cells standardization from the National Committee CTN 222**
Jesús Martín Pérez, Ana M. Mariblanca Sánchez, Antonio Martínez Chaparro
 Centro Nacional del Hidrógeno (Spain); UNE (Spain); CIEMAT (Spain)
- 12:10 **Development of integrated renewable hydrogen value chain at national level**
Tomás Malango
 Repsol (Spain)
- 12:30 **Gaps and opportunities across hydrogen end-uses: a bottom-up analysis of the existing business activities in Europe**
Davide Tonelli, Simone Braccio, Daniele Proverbio, Paolo Pino, Piera Della Porta
 Engineer College Italy (Italy); Catholic University of Louvain (Belgium); Grenoble Alpes University CEA (France); University of Luxembourg (Luxembourg); Politecnico di Torino (Italy)
- 12:50 **Present and future scenarios of Hydrogen storage in microgrids: A techno-economic assessment**
Ander Martínez Alonso, Daniele Costa, Fatma Zahra Sallawi, Guillermo Matute, Lieselot Vanhaverbeke, Maarten Messagie, Thierry Coosemans
 Vrije Universiteit Brussel (Belgium); Instrumentación y Componentes S.A. (Spain)
- 13:10 **SEAFUEL; green hydrogen production from solar and seawater**
Pau Farràs Costa
 National University of Ireland (Ireland)



Oral Presentations

Room F. Associations, Countries & Assessments

- 11:30 **The International Energy Agency's Hydrogen Technology Collaboration Programme**
Paul Lucchese, Marcel Weeda, E. Ohira, Marina Holgado
 CEA (France); TNO (The Netherlands); NEDO (Japan); ARIEMA Energía y Medioambiente S.L (Spain)
- 11:50 **LIFE3H: Maing Hydrogen Valleys a reality**
Chiara Barchiesi, Iris Flacco, Giovanni Cinti, Enrico Bocci, Gabriele Giustiniani, Raffaele Alfonsi, Antonino Tripodi
 Regione Abruzzo, Service of the President's Cabinet (Italy); University of Perugia (Italy); Guglielmo Marconi University (Italy); UNeed.IT Srl (Italy)
- 12:10 **H24NEWAGE – Development of advanced technologies for hydrogen production, storage and distribution, and technology transfer to Industry for the new era of hydrogen in Spain**
Ekain Fernández, Carmen Bartolomé, Gonzalo G. Fuentes, Ismael Lozano
 TECNALIA (Spain); University Institute of Mixed Research CIRCE (Spain); AIN (Spain); CARTIF Technology Center (Spain)
- 12:30 **Prospects for renewable Hydrogen in the implementation of the EU hydrogen strategy in Sweden and Spain – An analysis of current and future projects**
Sergi Contelles, Karl Hillman, Katja Tasala Gradin, María Cabrelles
 DEKRA Process Safety Spain (Spain); University of Gävle (Sweden)
- 12:50 **Integrated modelling for supporting long-term energy and climate planning. The role of hydrogen in the decarbonisation of the Basque industry**
Diego García-Gusano, Eneko Arrizabalaga, Joan Manuel F. Mendoza, Iñaki Arto
 TECNALIA (Spain); Mondragon Unibertsitatea (Spain); IKERBASQUE (Spain); Basque Centre for Climate Change (Spain)
- 13:10 **A framework for evaluating hydrogen export potential: Hydrogen Competitiveness Index**
Dawood Hjeij, Yusuf Bicer, Muammer Koc
 Hamad Bin Khalifa University (Qatar)



Poster presentations

Hydrogen Production: Solar Hydrogen / Renewable Hydrogen

Poster 1 **Where is Golden Hydrogen in the current clean hydrogen momentum?**

M. Júlia Terra Miranda

National University of Ireland (Ireland)

Poster 2 **Green Hydrogen Viability from Off-peak Grid Periods for Fuel Cell Vehicles: The Dominican Republic Case Study**

Junior Alexis Villanueva-Rosario, Angel Molina-García,
José Javier López-Cascales

Universidad Politécnica de Cartagena (Spain)

Poster 3 **Production of renewable or low-carbon hydrogen from an industrial perspective by TECNICAS REUNIDAS**

Miguel Angel Vega Pacho, Ernesto Simón Camacho, Carmen Jiménez-Borja,
Ana Nieto Prado, Elisa Alcolea Coronel

Técnicas Reunidas, S.A. (Spain)

Poster 4 **Understanding photo-catalysts performance for green hydrogen generation from H₂S splitting**

Lourdes Vega, Yuting Li, Daniel Bahamon, Ismail I. I. Alkhatib,
Mutsem Sinnokrot, Khalid Al-Ali, Lourdes Vega

Khalifa University of Science and Technology (UAE)

Poster 5 **Structure and Activity of Pt-loaded B-doped g-C₃N₄ Catalysts for Sunlight-driven Production of Hydrogen**

Uriel Caudillo-Flores, Irene Barba-Nieto, María Natividad Gómez-Cerezo,
Enrique Rodríguez-Castellón, Marcos Fernández-García, Anna Kubacka

ICP-CSIC (Spain); University of Málaga (Spain)

Poster 6 **Hydrogen photoproduction of TiO₂-based systems through co-deposition of Pt and SnS₂**

Irene Barba-Nieto, Konstantinos C. Christoforidis, Marcos Fernández-García,
Anna Kubacka

ICP-CSIC (Spain); Democritus University of Thrace (Greece)



Poster presentations

Hydrogen Production: Solar Hydrogen / Renewable Hydrogen

Poster 7 **Thermo-photo production of hydrogen using ternary Pt-CeO₂-TiO₂ catalysts**

Uriel Caudillo-Flores, Irene Barba-Nieto, Mario J. Muñoz-Batista, Debora Motta Meira, Marcos Fernández-García, Anna Kubacka, Konstantinos C. Christoforidis,
Marcos Fernández-García, Anna Kubacka

ICP-CSIC (Spain); National Autonomous University of México (México); University of Granada (Spain); Argonne National Laboratory (USA); Canadian Light Source Inc. (Canada)

Poster 8 **Reticulated porous ceramic (RPC) structures of La_{0.8}Al_{0.2}NiO_{3-δ} perovskite for H₂ production by thermochemical water splitting**

Alejandro Pérez Domínguez, María Orfila del Hoyo, María Linares Serrano,
Raúl Sanz Martín, Javier Marugán Aguado, Raúl Molina Gil,
Juan Ángel Botas Echevarría

Rey Juan Carlos University (Spain)

Poster 9 **Scaling up and demonstration of a compact bioethanol processor for renewable hydrogen production and purification**

Elisa Alcolea Coronel, Carmen Jiménez-Borja, Diego Ubeda, Ana Nieto Prado,
Jorge Carrero, Juan Manuel Sanchez, J.L. Carreras, D. Blanco, A. Escobar,
Alejandro Correal, G. Monjas, Y. Remírez, M.A. Vega

Técnicas Reunidas, S.A. (Spain)

Hydrogen Production: Electrolysis / Electrolyzers

Poster 10 **Methanol electrolyser and direct methanol fuel cell test bench**

Vladimir L. Meca, Óscar Santiago Carretero, Antonio Villalba-Herreros,
Rafael d'Amore Domenech, Teresa J. Leo Mena

Polytechnic University of Madrid (Spain); University of Bremen (Germany)

Poster 11 **Waste heat from electrolyzers to produce fresh water**

Agustín Torralba

Alfa Laval (Spain)



Poster presentations

Hydrogen Production: Electrolysis / Electrolyzers

- Poster 12 **Challenges and strategies for large-scale hydrogen production by alkaline water electrolysis using wind energy**

Ernesto Amores Vera, Nuria Rojas, Margarita Sánchez-Molina, Gema Sevilla, David Abad, Gonzalo Manjavacas, Luis Diego García, F. J. Ramírez, J. Fernández de Manzanos

NORDEX Energy Spain (Spain)

- Poster 13 **HANNEL-progress towards development of a cost-efficient hydrogen production unit based on anion exchange membrane (AEM) electrolysis**

Thulile Khoza

Sintef Industry (Norway)

Hydrogen Production: Bio Hydrogen / Bio Gasification

- Poster 14 **Techno-economic assessment of manure to hydrogen plants: a real case study based on a cattle farm in an isolated location**

Filippo Racanella, Guillermo Matute, Marta Gandiglio, Julio Guillén Angel

Politecnico di Torino (Italy); Instrumentación y Componentes S.A. (Spain); CIRCE – Research Center for Energy Resources and Consumption (Spain)

- Poster 15 **Long-term biohydrogen production from soft drink industry non-conforming products**

Santiago Barreiro-Vescovo, Mónica Figueroa, Angela Rodríguez Abald

EnergyLab (Spain)

- Poster 16 **Utilizing the sewage sludge as a zero emissions energy source for production of hydrogen**

Andelina Bubalo, Dražen Vouk, Danica Maljković

University of Zagreb (Croatia); Dok-Ing Energo Ltd. (Croatia)



Poster presentations

Hydrogen Production: Bio Hydrogen / Bio Gasification

- Poster 17 **H₂ production by sorption enhanced steam reforming (SESR) of biogas containing H₂S**

Alma Capa, Roberto García, María Pilar González-Vázquez, De Chen, Fernando Rubiera, María Victoria Gil, Covadonga Pevida

INCAR-CSIC (Spain); Norwegian University of Science and Technology (Norway)

- Poster 18 **Modeling and experimental study on the H₂ production from biomass gasification in a bubbling fluidized bed**

María del Pilar González Vázquez, Roberto García Fernández, María Victoria Gil Matellanes, Fernando Rubiera González, Covadonga Pevida García

INCAR-CSIC (Spain)

Hydrogen Production: Catalysts

- Poster 19 **Hydrogen production by aqueous phase reforming of glycerol**

Raquel Raso Roka, L. García, J. Ruiz, M. Oliva, J. Arauzo

Aragon Institute for Engineering Research, University of Zaragoza (Spain)

- Poster 20 **Methanol steam reforming in a membrane reactor for high purity hydrogen production**

Alejandro Cifuentes López, R. Torres, J. Llorca

Polytechnic University of Catalunya (Spain)

- Poster 21 **Production of hydrogen over CuZnOx-based methanol reformers for fuel cell applications**

Konstantinos Kappis, Joan Papavasiliou, Marcin Kuśmierz, Grzegorz Słowik, Wojciech Gac, George Avgouropoulos

University of Patras (Greece); Foundation for Research and Technology-Hellas (Greece); Maria-Curie Skłodowska University (Poland)



Poster presentations

Hydrogen Production: Catalysts

- Poster 22 **Low temperature steam reforming of methanol over hydrothermally prepared CuZn oxide catalysts**

Konstantinos Ar. Papageorgiou, Marcin Kuśmierz, Grzegorz Słowik, Wojciech Gac, Joan Papavasiliou

University of Patras (Greece); Maria-Curie Skłodowska University (Poland)

- Poster 23 **"Hydride cycle" as an Effective Method for Synthesizing Hydrogen-storage Alloys in Ti-V, Ti-V-Mn and Ti-V-Cr Systems**

Anahit Aleksanyan, Seda Dolukhanyan, Davit Mayilyan, Ofelya Ter-Galstyan, Nune Mnatsakanyan

A.B. Nalbanyan Institute of Chemical Physics of Armenian (Armenia)

- Poster 24 **TiFe alloys produced by "Hydride Cycle" method**

Davit Mayilyan, Anahit Aleksanyan

A.B. Nalbanyan Institute of Chemical Physics of Armenian (Armenia)

- Poster 25 **Chemically reduced graphene oxide as a promising candidate for hydrogen storage**

Rodolfo Fernández-Martínez, María Belén Gómez-Mancebo, César Augusto Maffiotte, Laura Jiménez Bonales, Natalia Brea, Antonio Molinero, J. M. Barcala, S. Fernández, N. González, J. Cárabe, A. Boscá, J. Pedrós, G. Conte, A. Policicchio, J. Martínez, F. Calle, A.J. Quejido, Isabel Rucandio

CIEMAT (Spain); Astrobiology Center CSIC-INTA (Spain); Institute of Optoelectronic Systems and Microtechnology (Spain); Polytechnic University of Madrid; University of Calabria (Italy)

- Poster 26 **Dehydrogenation of the LOHC perhydro-dibenzyltoluene in a microstructured reactor**

Ellen Gapp, J. Thönnissen, P. Pfeifer

Karlsruhe Institute of Technology (Germany)



Poster presentations

Hydrogen Storage: Gas / Liquefaction

- Poster 27 **Feasibility of cryoadsorption on Metal-Organic Frameworks for large-scale hydrogen storage: construction and operation costs comparison with compressed gas technology**

José Antonio Villajos Collado

Federal Institute for Materials Research and Testing (Germany)

- Poster 28 **A study of temperature and flow measurement using fiber optic sensor in cryogenic environment**

Michael Lee, Joseph Chul Chung

CyToniQ (USA); CyToniQ (Korea)

- Poster 29 **Different ways to store massive quantities of hydrogen**

Louis Londe, Arnaud Réveillère

Geostock (France)

- Poster 30 **Large-scale hydrogen storage methods: a reasoned comparison**

Carlota Ríos, Celia Martínez de León, Tamara Guerrero, J. Javier Brey

Universidad Loyola Andalucía (Spain)

Electrocatalysts / Electrodes (Fuel Cells and Electrolyzers)

- Poster 31 **Structure optimized Catalyst Coated Membranes for PEM-FC and PEM-WE applications**

Nadine Zimmerer, Philipp Quarz, Philip Scharfer, Wilhelm Schabel

Karlsruhe Institute of Technology (Germany)

- Poster 32 **Surface and bulk analysis of electrosprayed catalyst layers for PEMFC**

Susana Merino, Esmeralda Muñoz, Gonzalo de Diego,

M Antonia Folgado Martínez, Luis Duque, Antonio Martínez Chaparro

CIEMAT (Spain)



Poster presentations

Electrocatalysts / Electrodes (Fuel Cells and Electrolyzers)

- Poster 33 **Boosting hydrogen technologies with femtosecond laser structured catalysts**
V. Hoffmann, D. Hüne, L. Hoffmann, L. Lentz, W. Schade, T. Turek,
Thomas Gimpel
Clausthal University of Technology (Germany); Fraunhofer Heinrich Hertz Institute (Germany)
- Poster 34 **Facile synthesis of nitrogen-doped carbon decorated NiFe_2O_4 with enhanced OER performance**
Gebrehiwet Abrham Gebreselase, María Victoria Martínez-Huerta, David
 Sebastián, María Jesús Lázaro
ICB-CSIC (Spain); ICP-CSIC (Spain)
- Poster 35 **Oxygen reduction reaction at 2D electrocatalysts**
 Sergio Fajardo, Stefan Delgado, Yapci Remedios Díaz, Carmen Arévalo, Gonzalo
 García, Elena María Pastor Tejera
University of La Laguna (Spain)

Fuel Cells Components & Stacks

- Poster 36 **Proposal of a new technique to obtain some fuel cell internal parameters using polarization curve tests and EIS results**
 Guillermo Gómez, Jesús Maellas Benito, Pilar Argumosa, Adrián Correro
National Institute of Aerospace Technology (Spain)
- Poster 37 **A study of the eCoCell diffusion layer with different graphene content in the MPL**
Andrés Jerez Navarro, Modesto Aguirre Gómez, Carol Anne Mateau Ortín,
 Ángel Molina García, José Javier López Cáscales
Universidad Politécnica de Cartagena (Spain)



Poster presentations

Fuel Cells Components & Stacks

- Poster 38 **Sol-gel organic-inorganic acid blends based on styrene-ethylene-butylene-styrene block copolymer SEBS and (MPTMS-GPTMS) for PEMFCs**
Carmen del Río, Faber Díaz, Enrique Morales, Mario Aparicio, Jadra Mosa
ICTP-CSIC (Spain); ICV-CSIC (Spain)
- Poster 39 **Process parameters influencing the membrane direct coating of catalyst coated membranes (CCM)**
Philipp Quarz, Nadine Zimmerer, Philip Scharfer, Wilhelm Schabel
Karlsruhe Institute of Technology (Germany)
- Poster 40 **Feasibility of using titanium-based materials for PEMFC bipolar plates**
Carlos Romero, Elena Gordo
Universidad Carlos III de Madrid (Spain)
- Poster 41 **Application of bipolar HiPIMS to enhance the durability performance of carbon coatings in metallic bipolar plates**
José Antonio Santiago Varela, I. Fernández, P. Díaz-Rodríguez, M. Panizo,
 M. Morales, C. Molpeceres, J.C. Sánchez-López, L. Mendizabal, G. Sevilla, M.
 Sánchez-Molina, N. Rojas
*Nano4Energy (Spain); Polytechnic University of Madrid (Spain); ICMS-CSIC-University of
 Seville (Spain); IK4-Tekniker (Spain); National Hydrogen Center (Spain)*
- Poster 42 **Water management and component selection for alkaline membrane fuel cells - an optimisation study**
Claudia Käding, Kevin Obermann, Henrike Schmies, Corinna Harms
German Aerospace Center DLR (Germany)
- Poster 43 **Multi-scale modeling of anode-supported solid oxide fuel cells**
Dong Hyup Jeon, Sangwon Kim
*Dongguk University (Republic of Korea); Korea Institute of Science and Technology Europe
 (Germany); Saarland University (Germany)*



Poster presentations

Fuel Cells Components & Stacks

Poster 44 **Increasing the Electrical Power of a Carbon-Air Solid Oxide Fuel Cell through the Fabrication of Mesoporous Mo-doped CeO₂ Anodes**

Isaac Díaz-Aburto, Carola Montecino Bacigalupo

Universidad Tecnológica Metropolitana (Chile); Universidad de las Américas (Chile)

Poster 45 **Operation of 2 kW solid oxide fuel cell using anode-supported planar cells**

Tomás González-Ayuso, M José Escudero Berzal, José Luis Serrano

CIEMAT (Spain)

Fuel Cell & Hydrogen Systems Modelling

Poster 46 **A Dynamic Model for Air-breathing Polymer Electrolyte Fuel Cell**

Fatma Calili-Cankir, Mohammed S. Ismail, Derek B. Ingham, Lin Ma, Kevin Hughes, Mohamed Pourkashanian

University of Sheffield (UK)

Poster 47 **Full Range Dynamic Equivalent Circuit Model for PEM Fuel Cell Stacks**

Lukas Baum, Florian Grumm, Marc Schumann, Detlef Schulz

Helmut Schmidt University/University of the Bundeswehr Hamburg (Germany)

Poster 48 **Application of PEMFC and SOFC to a combined electricity and heat production system powered by bioethanol**

Pablo Sánchez, Diana Puchol, Enrique Romero, Jaime Soler

Aragon Institute of Engineering Research, University of Zaragoza (Spain)

Poster 49 **Optimal power dispatch model of hybrid power-to-power hydrogen storage systems for isolated microgrids: A case study**

Ander Martínez Alonso, Guillermo Matute, José Maria Yusta, Maarten Messagie, Thierry Coosemans

Vrije Universiteit Brussel (Belgium); Instrumentacion y Componentes S.A. (Spain); University of Zaragoza (Spain)



Poster presentations

Fuel Cell & Hydrogen Systems Modelling

Poster 50 **Prospects for the price of renewable hydrogen and evolution of its value in the world context and its implication for industrial revamping**

Francisco Carro de Lorenzo, Raúl Rodríguez Parra

Tresca (Spain)

Poster 51 **Feasibility study of a hydrogen generation facility for use in a southern European home**

Modesto Aguirre Gómez, Andrés Jerez Navarro, Paula López Marchante, Ángel Molina García, José Javier López Cáscas

Polytechnic University of Cartagena (Spain)

Transportation and Aerospace Applications

Poster 52 **Compliance of a fuel cell based EPU with aeronautical regulations**

A. Correro Ricard, J. Maellas, Pilar Argumosa Martínez, G. Gómez

National Institute of Aerospace Technology (Spain)

Poster 53 **Improving the Air Supply and Hydrogen Dilution Control of a Fuel Cell Electric Vehicle with Explicit MPC**

Maximilian Karl Eisner, Zheng Zhou, Volker Formanski, Ralph M. Kennel

Technical University of Munich (Germany); BMW Group (Germany)

Poster 54 **Fuel cell power systems based on green hydrogen and methanol for cargo ships: techno-economic insight**

Rafael d'Amore-Domenech, Vladimir Luis Meca, Antonio Villalba-Herreros, Teresa J. Leo

Polytechnic University of Madrid (Spain)

Poster 55 **Performance, cradle-to-grave emissions and durability evaluation of fuel cell vehicle architectures for passenger car applications**

José M. Desantes, Ricardo Novella, Benjamin Pla, Marcos López-Juárez

Polytechnic University of València (Spain)



Poster presentations

Applications of Hydrogen as fuel

- Poster 56 **Demonstrating the whole value chain of producing synthetic fuels using CO₂ and renewable hydrogen as raw materials**

Alfonso García de las Heras

Repsol Technology Lab. (Spain)

- Poster 57 **Presentation of the H₂ Combustion HUB Madrid: Intelligent, decarbonized and low emissions power and heat generation**

Mario Sánchez Sanz, Eduardo Fernández Tarrazo, César Huete, Daniel Martínez Ruiz, Víctor Muntean, Carmen Jiménez, Vadim Kurdyumov, D. Fernández-Galisteo, R. Gómez Miguel, José Hermida

Universidad Carlos III de Madrid (Spain); CIEMAT (Spain); Universidad Politécnica de Madrid (Spain); Instituto Nacional de Técnicas Aeroespaciales (Spain)

- Poster 58 **Combustion assessment of low carbon fuels in a spark ignition engine with CFD**

Rafael Ortiz-Imedio, Víctor Manuel Maestre Muñoz, Alfredo Ortiz Sainz de Aja, Daniel Gorri Cirella, Inmaculada Ortiz Uribe

University of Cantabria (Spain)

- Poster 59 **Hydrogen distribution for agricultural and construction machinery**

Steffen Wieser, Mathias Böhm, Michael Halfen, Florian Heckert

German Aerospace Center DLR (Germany); Deutz AG (Germany)

- Poster 60 **Biogas upgrading through CO₂ methanation in a polytropic - distributed feed fixed bed reactor**

Paúl Durán, Andrés Sanz-Martínez, Eva Francés, Javier Herguido, José- Ángel Peña

Aragon Institute of Engineering Research, University of Zaragoza (Spain)

- Poster 61 **Air temperature effect in steady state regime ammonia combustion by diffusion**

Marcos Sánchez, A. Pérez, J.I. Domínguez, Miguel Castaños Calleja, A. Horrillo

CIDAUT (Spain); University of Valladolid (Spain)



Poster presentations

Other Applications

- Poster 62 **Grasshopper: A Modular and Flexible Hydrogen PEM Power Plant for Grid Balancing Services**

María Tejada Valderrama, Germán Nieto Cantero, Belén Sarmiento Marrón

Abengoa Innovación (Spain)

- Poster 63 **A performance comparison of different configurations of a Fuel Cell mCHP system in terms of energy, emissions and costs**

F.V. Tinaut, M. Reyes, P. Gabana, J.I. Domínguez

Polytechnic University of València (Spain); University of Valladolid (Spain); CIDAUT (Spain)

- Poster 64 **Fuel cell based range extender for cargo bikes in inner city transportation**

Markus Kordel, Inga Bürger, Julian Käß, Torsten Knöri, Tilo Maag, Mathias Schulze, Jörg Weigl

German Aerospace Center DLR (Germany); Unicorn Engineering GmbH (Germany)

Hydrogen Infrastructure & Environmental Impact

- Poster 65 **Cost of decarbonizing an aviation manufacturing site by green hydrogen**

Piyush Rangani, Lars Baetcke, Fabian Carels, Lucas Sens, Ulf Neuling, Adrian Herberger, Daniel Holsten, J. Jepsen, K. Taube, T. Klassen

Helmholtz-Zentrum Hereon GmbH (Germany); Hamburg University of Technology, (Germany); Airbus Operations GmbH (Germany)

- Poster 66 **Prospective carbon footprint of hydrogen from grid-powered electrolysis in different countries**

Antonio Valente, Zaira Navas-Anguila, Diego Iribarren, Javier Dufour

IMDEA-Energy (Spain); Rey Juan Carlos University (Spain)

- Poster 67 **Hydrogen Economy and Impact on Chilean health**

Carola Montecino Bacigalupo, Isaac Díaz Aburto

Universidad de las Américas (Chile); Universidad Tecnológica Metropolitana (Chile)



Poster presentations

Safety & Commercialization

Poster 68 **H₂LDAR – Hydrogen Leak Detection Tests and Results**

Víctor del Coso, Raúl Oliveira, Luis Carlos Gutierrez

EHS Techniques, S.L. (Spain); Enagás, S.A. (Spain)

Poster 69 **Monitoring system definition for optimizing alkaline electrolyzers O&M within the framework of OCEANH2 Project**

S. Alvarez-Buylla, Luis Piqueras González-Tejero, Alfonso Jurado Fuentes, Rodrigo Pérez, Roberto Yubero

TSI Técnicas y Servicios de Ingeniería (Spain); ARIEMA Energía y Medioambiente S.L (Spain)

Poster 70 **Development of a new spot online analysis method to control H₂ quality on Hydrogen Refueling Station**

Etienne Basset, Mathilde Rizand, E. Bulot, C. Panel, S. Quesnel, Quentin Nouvelot

ENGIE (France)

Hydrogen Infrastructure & Environmental Impact

Poster 71 **Innovative plastic materials for the green hydrogen economy**

Vicente B Vert, Marta Pérez, Begoña Galindo, Alicia Monleón, Joaquín Castán, Eva Verdejo, Laura Martí, A. Crespo, F. Martí

Plastics Technology Centre (Spain)



Poster presentations

Strategies & Assessments

Poster 72 **Deployment of hydrogen mobility in Europe: a comparative assessment of the approaches followed in six reference countries**

Guillermo Matute, Julio Guillén Angel, Luis Correas

Instrumentación y Componentes S.A. (Spain); CIRCE – Research Center for Energy Resources and Consumption (Spain); Walqa Technology Park (Spain)

Poster 73 **Comparison of deployment policies for the use of hydrogen as an alternative fuel in road transport**

Abel Rosales-Tristancho, Ana Fernández Carazo, Raúl Brey, J. Javier Brey

Universidad de Sevilla (Spain); Universidad Pablo de Olavide de Sevilla (Spain); Universidad Loyola Andalucía (Spain)



Side Events



Spanish Hydrogen Technology Platform

19th-May 15:00-16:00h EHEC 2022

PTEH₂ Side-Event

The Spanish Hydrogen Technology Platform (PTEH2) is an initiative promoted by the Spanish Hydrogen Association and supported by the Spanish Ministry of Science and Innovation. Since its launch in 2005, PTEH2 brings together representatives from the entire hydrogen value chain to constitute a technological and scientific meeting point where valuable information, recommendations and actions in R&D topics can be discussed. Its three main objectives are to constitute a forum of scientific-technical reference knowledge, to link the Public Administrations and R&D activities and to act as a promoter of national and international cooperation. The PTEH2 is structured around seven Working Groups, where entities contribute with their experience, expertise, and vision for the elaboration of documents, allowing the establishment of scientific, technological, and industrial guidelines.

In this dedicated side-event held in Duque de Pastrana Palace, (2*See map), the PTEH2 will be introduced to the international attendants and the Catalogue of Technologies 2022 will be presented. This report sets out reference entities taking part in the Platform and their working technologies, making up the structure of the Spanish Hydrogen R&D ecosystem.



Deployment of a Hydrogen Ecosystem on the Island of Mallorca

18th-May, EHEC 2022



Green Hysland Side-Event

GREEN HYSLAND project aims to deploy a fully functioning Hydrogen ecosystem in the island of Mallorca, Spain, turning the island into the first H2 hub in Southern Europe. This will be achieved by producing green hydrogen from solar energy and delivering it to end users, such as the island's tourism, transport, industry, and energy sectors, including gas grid injection for green heat and power local end-use. The project will also deliver a roadmap towards 2050 that compiles a long-term vision, demonstrating sector coupling and sectorial integration, and moving towards full decarbonization of the economy.

In this dedicated side-event held in Duque de Pastrana Palace, (2*See map), Enagas, as the leader of the project consortium, will present the main achievements and milestones of the project, along with other partners and institutional representatives of the Balearic Government.



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