PRISM

Positioning Hydrogen

GLOBAL HYDROGEN ENERGY CONFERENCE AND EXHIBITION- 2023

November 27-29, 2023 | Melbourne, Australia

Melbourne Convention and Exhibition Centre (MCEC)

www.hydrogenconferenceaustralia.com

Advisory Board Members

Paul Hodgson
Interim CEO, Scaling Green Hydrogen Cooperative Research Centre, Australia.

Craig Ehrke
CEO
Skai Energies Pty Ltd., Australia.

Joe L Spease
CEO
WindSoHy, LLC
USA

Andrew Dicks
AHRN Coordinator
Griffith University
Australia

Vision

Promoting and creating long-term sustainability by upskilling the hydrogen industry and improving safety and emergency response services throughout the whole value chain

Mission

Collaboration with the global regulatory ecosystem via strategic objectives, innovative technology, and a dynamic approach that combines standards, codes of conduct, and other tools to allow trade and export flexibility

Welcome to *Positioning Hydrogen – 2023 In Melbourne, Australia*

Positioning Hydrogen 2023, the 3rd Global Hydrogen Energy Conference and Exhibition, is a highly anticipated and crucial event that has captured the attention of the global energy community. This prestigious gathering will take place at the Melbourne Convention and Exhibition Centre in Australia, a fitting venue for such an impactful occasion. With a scheduled date of November 27–29, 2023, As the hydrogen industry continues to gain momentum as a key player in addressing climate change and meeting the world's energy demands, this conference and exhibition serve as a platform for open collaboration and knowledge exchange among key stakeholders in the hydrogen sector.

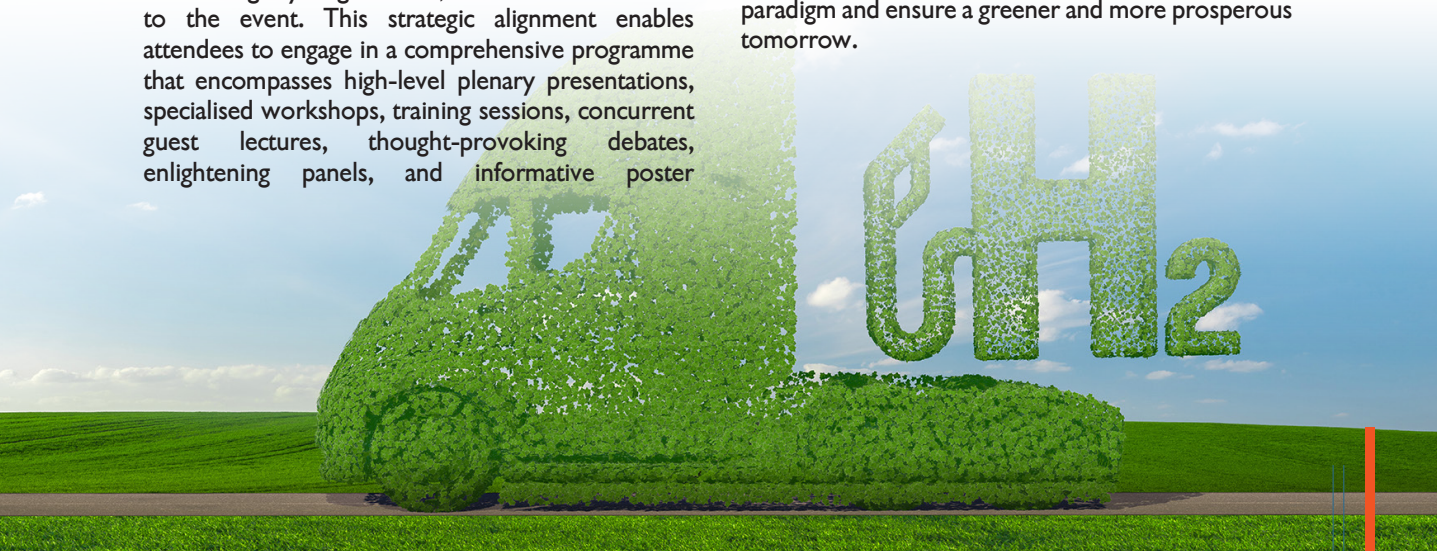
The urgency to find sustainable energy solutions amidst the pressing challenges of climate change makes the Positioning Hydrogen 2023 event all the more significant. One of its primary aims is to accelerate the transition of hydrogen from pilot projects to fully-fledged bankable ventures. This ambitious goal attracts global leaders from both the public and private sectors, drawing in a diverse range of participants representing various facets of the hydrogen value chain.

At the core of the conference is the mission to showcase cutting-edge solutions and innovations that contribute to low-carbon hydrogen production, efficient storage, secure distribution, and robust safety and emergency services. As hydrogen applications span across diverse industries, the event provides a unique opportunity to explore the myriad of ways this versatile energy source can revolutionise sectors such as transportation, manufacturing, and power generation.

Energy Oceania 2023, held concurrently with Positioning Hydrogen 2023, adds even more value to the event. This strategic alignment enables attendees to engage in a comprehensive programme that encompasses high-level plenary presentations, specialised workshops, training sessions, concurrent guest lectures, thought-provoking debates, enlightening panels, and informative poster presentations. This comprehensive approach covers a wide spectrum of energy research topics, ranging from fundamental physics principles to advanced engineering strategies for energy production, storage, and transportation. Furthermore, participants will delve into discussions on economics, regulations, and safety aspects, all of which play pivotal roles in shaping the future hydrogen economy.

The immense potential of hydrogen is evident as major economies worldwide recognise the benefits of hydrogen strategies and investments. Forecasts indicate a staggering $700 billion in hydrogen-related investments by 2030, underscoring the magnitude of this emerging industry. Despite such optimism, there remain hurdles to overcome, including uncertainties surrounding policies and frameworks, dynamic supply-and-demand dynamics, ambiguous financing options, and a need for further infrastructure development. These challenges underscore the importance of events like Positioning Hydrogen 2023, as they facilitate constructive dialogue and collaboration among key stakeholders, aiming to streamline the path to a global clean hydrogen economy.

Global market and industry leaders are acutely aware of the enthusiasm surrounding hydrogen's potential, and they are actively utilising it to drive policy changes, shape discourse, and influence the energy landscape for a sustainable future. Positioning Hydrogen 2023 serves as the focal point for these influential voices to foster cooperation and knowledge sharing, ultimately accelerating the deployment of hydrogen technologies and driving the transition towards a cleaner and more sustainable energy future. By unifying expertise and commitment, this event holds the potential to reshape the global energy paradigm and ensure a greener and more prosperous tomorrow.



Themes Defining Positioning Hydrogen-2023

The global hydrogen potential and leadership:

With the plunging cost of renewables, the potential for green hydrogen is enormous. To establish a hydrogen economy, representatives in policy, investment, energy, and industry must work together to take advantage of the opportunity and incorporate the global energy environment.

Net zero-emission objectives:

Due to the constraints of electrification, skyrocketing oil prices, is hydrogen the future fuel? What are the objectives to achieve the hydrogen demand and what off-takers methods or subsidy assistance are required to boost demand? Hear from industrial off takers in metallurgy, manufacturing, industrial applications, shipping, aerospace, and automobiles about their approach to the hydrogen economy and how it fits into their massive net zero objectives.

Projects and production:

Like any other product, green and low-carbon hydrogen are priced competitively. Although worldwide electrolyzer capacity benchmarks have been established, how will companies ramp up production to achieve these targets and support net-zero goals? Meet the leading innovators and leaders of gigantic initiatives aiming for $2 or less hydrogen and learn from them

Infrastructure:

Massive capital investments are required for hydrogen storage and mass transportation over land and sea. Gas pipeline leads have demonstrated that hydrogen blending with natural gas is fully viable, while hubs, port facilities, and clusters have cropped up around the world to highlight the benefits of hydrogen being consumed near where it is produced. Learn about the foremost obstacles to establishing hydrogen-ready infrastructure and how to tackle them.

Funding for the hydrogen economy:

The Energy transitions commission estimated that between now and 2050, $15 trillion would be needed to support the hydrogen economy. Despite the current buzz surrounding green and blue hydrogen, only a few project financing deals have been completed. Learn how the hydrogen economy can take advantage of the current wave of green financing, as well as the off-take agreement models that will make projects marketable.

Hydrogen Industry skill development:

Skills training is the time invest in cultivating one's ability and staying future-ready, any capabilities pursued as a passion, and the capacity to complete a mission with a higher rate of success at the right time. The current hydrogen industry requires skill enhancement.

Safety, risk and emergency management:

The hydrogen industry is going through an era of transition as technologies across the value chain. The societal perceptions start changing, and risks are constantly evolving in the hydrogen industry. So that community should prepare for hydrogen hazards by learning about its dangers and adjusting the risk and emergency management framework.

What to Expect?

- Engage with decision makers
- Advanced product demonstration
- Excellent speaker line-up
- Generate new business leads
- Green financing
- Interact with the experts
- Interactive technical learning
- Latest research insights
- One-to-one match making
- Technology transfer

Glance at Key Topics:

- Global and Australian government projects and international policies
- Overseas hydrogen shipments and local fleet markets
- Finance, investment and incentives
- Global green hydrogen projects
- Sustainable "Zero emission mobility"
- Advanced fuel cell technologies
- Stationary hydrogen production
- Heavy industry decarbonisation
- Hydrogen storage technologies
- Hydrogen refuelling infrastructure
- Project safety, risk, and regulations
- Ammonia and other hydrogen carriers
- Water resource management
- Carbon capture and utilisation
- Advanced hydrogen sensors and regulator materials
- Green Maritime Corridors
- Hydrogen industry upskilling

Who will you meet?

Industry

- Component manufacturers and end users
- Domestic hydrogen infrastructure providers
- Electrolyser manufacturers
- Energy producers
- Engineering, procurement and construction companies
- Financial stakeholders and investors
- Fuel cell companies
- Oil/Gas companies
- Government officials
- Hydrogen refuelling infrastructure developers
- Hydrogen suppliers
- Mobility OEMs
- Off-takers
- Societies and associations
- Sustainability and mobility technology providers
- Utilities / IPPs

Job Role

- Academia
- Advisors
- Bushiness Development Managers
- C level executives
- Customer engagement
- Directors, managing directors and non-executive
- Directors.
- Executive and mid-level management.
- Founders and co-founders.
- Government affairs and advocacy.
- Hydrogen transformation partners.
- Manufacturing.
- Marketing and sales.
- Presidents and vice presidents.
- Principal engineers, asset advisory, team lead.
- Product communications.
- Project management.
- Risk management.
- Supply chain.
- Technical services.

Global Hydrogen Market

In an energy-hungry world, the significance of clean hydrogen as a viable and competitive fuel is projected to grow significantly after 2030. According to leading energy experts, the cost of producing, storing, transporting, and consuming clean hydrogen is expected to become comparable or even lower than that of fossil fuels in various sectors, including transportation, energy production, and industrial applications.

Projections indicate a remarkable expansion in hydrogen consumption, reaching 500-800 million tonnes per year by mid-century. This growth is anticipated to account for 15-20% of global final energy demand, a substantial increase from the current 115 million tonnes. Japan, recognizing the potential of hydrogen, plans to import up to 10 million tonnes of hydrogen annually by 2050. Moreover, countries like the Republic of Korea, China, and the United States are expected to see millions of hydrogen-powered vehicles on their roads, illustrating the increasing interest in hydrogen as a sustainable transportation solution.

The European Union is firmly committed to achieving net-zero carbon emissions by 2050, with hydrogen playing a pivotal role. It aims to leverage hydrogen in heating, transportation, and industrial applications to achieve this ambitious target.

The industrial sector is a major consumer of hydrogen worldwide, with multi-billion-dollar investments in hydrogen delivery to various industrial customers across the globe. The demand for hydrogen has consistently increased since 1975, quadrupling over the years. Currently, approximately 6% of global natural gas and 2% of global coal contribute to hydrogen production, with fossil fuels serving as the primary source.

Dedicated hydrogen production is expected to reach over 115 million tonnes annually, accounting for around 6% of total world natural gas consumption. The cost of manufacturing hydrogen from natural gas depends on various technical and economic factors.

Clean hydrogen, often referred to as “renewable hydrogen,” is projected to cost around $2 per kilogramme, making it comparable to fossil hydrogen. The Australian Government’s national hydrogen plan sets a goal to achieve commercial renewable energy at this cost level. Moreover, there are prospects for hydrogen exports by 2030, with renewable hydrogen currently priced between $6 and $9 per kilogramme. To achieve the $2/kg target, the Australian government has already committed approximately $146 million to hydrogen projects.

Australia, being a prominent player in the hydrogen space, presently generates around 650 ktpa of hydrogen primarily through natural gas steam methane reforming (NG SMR). Of this, 65% is utilized directly in ammonia synthesis, and the remaining 35% is used in crude oil refinery plants.

The global hydrogen energy landscape is poised for significant transformation, with clean hydrogen emerging as a key contender in the transition towards sustainable energy solutions. Governments, industries, and researchers worldwide are actively pursuing hydrogen-related initiatives to capitalize on its potential and drive the world towards a greener and more sustainable future.

Promoting Hydrogen Production and Utilization

Australia has been engaged in multinational and regional organisations dealing with hydrogen-related concerns. To give our hydrogen industry the best chance of developing and competing on a global scale, Australia will prioritise participation in discussion boards that demonstrate governance, shape the rules for hydrogen business and finance, foster increased sharing of best practises across research, development, implementation, and community engagement, and encourage private sector participation in hydrogen production and use.

Leadership: The G20 as well as the hydrogen energy ministerial have demonstrated strong leadership in growing globalisation funding for industry development. Australia is an active member of both organisations and plans to continue its involvement.

Shaping the Rules: Australia will take part in forums such as the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE) and others that focus on technical hydrogen industry standards and protocols to promote trade and investment. Such challenges include developing safety standards, legislation, codes and standards, and certification, as well as trading and statistical benchmarks, intellectual property protection, and the recognition of education and talents.

Sharing Best Practices: Australia will utilise platforms such as the clean energy ministerial, mission innovation, and the centre for hydrogen safety and handling procedures to promote international coordination, collaboration, and the sharing of best practises, notably in emergency response. Encouraging industry participation and providing prospects for research and development collaboration

Fostering Private Sector Investment: Australia will work with the clean energy ministerial and the leadership group for industry transition to encourage private sector investment in changing carbon-intensive industries like steel production from fossil fuels to hydrogen.

Speakers

Paul Hodgson
Interim CEO, Scaling Green Hydrogen Cooperative Research Centre, Australia

Jeremy Stone
Non-Executive Director & Advisor, J-Power Australia

Hans-Josef Fell
President
Energy Watch Group
Germany

Geoffrey Drucker
Managing Director
Countrywide Renewable Hydrogen Limited, Australia

Kerrin Pryor
Project Manager,
Swinburne University of Technology, Australia

David Green
Founder and Partner
Climate Impact Capital (CIC)
Australia

Jihyun Hwang
Professor, Korea Institute of Energy Technology (KENTECH)
Managing Director
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Craig Ehrke
CEO
Skai Energies Pty Ltd.
Australia

Joe L Spease
CEO
WindSoHy, LLC.
United States

Andrew Dicks
AHRN Coordinator
Griffith University
Australia

Ben Hankamer
Professor, The University of Queensland, Australia

Stuart Allinson
Energy transition Partner
Startupbootcamp, Australia

Glen Doorey
Manager
R & L Smith Plumbing
Australia

Shuyi Li
Manager
RMI, China

Kedem Levy
Chairman
Australian Institute of Energy
Australia

Sandeep Chandra
Managing Director
Hydrozen2050, Australia

Speakers

Jose Javier Lopez Cascales
Professor, Universidad Politecnica de Cartagena, Spain

Bianca Grabner
Project Manager
HyCentA Research GmbH
Austria

Bernardene Smith
Deputy Principal Consultant
Global CCS Institute
Australia

Satiesh Muniandy
Principal Risk Engineer
Draeger, Australia

Nicholas O'Day
Founding Partner
Climate Impact Capital
Australia

James Khong
Co-founder & COO
Galaxy FCT, Malaysia.

Aniruddha Kulkarni
Founder & CEO
Cavendish Renewable Technology, Australia

Seyed Mohsen Razavi
Energy Technology Analyst
Gas Exporting Countries Forum, Qatar

Srikanth Mateti
Research fellow
Deakin University
Australia

Arnaldo Sanchez
ZEB Specialist
Volgren Australia Pty Ltd.
Australia

Furat Dawood
Hydrogen Scientist
Murdoch University
Australia

Lennie Klebanoff
Technical Staff,
Sandia National Laboratories,
United States

Jason Amiri
Senior Engineering Manager
Nacap, Australia

CONFERENCE AGENDA

DAY – 1 27TH, NOVEMBER, 2023

09:00-09:30 Opening remarks

09:30-10:30 **Session: Australian States Hydrogen Industry Action Plans for 2024**

- A Comprehensive Review of Australia's National Hydrogen Strategy
- Overview of current hydrogen industry in Australia
- Plans and initiatives by different Australian states to promote hydrogen adoption
- Insights into the challenges and opportunities in the Global hydrogen market

Speaker Include: **Hans-Josef Fell**, President, Energy Watch Group, Germany

10:30-11:00 Coffee break

11:00 - 11:30 **Sponsor Spot**

- Introduction to the conference sponsors and their contribution to the hydrogen industry
- Showcase of sponsor products and services related to hydrogen
- Opportunity for attendees to connect with sponsors and explore potential collaborations

11:30 - 12:00 **Topic: Hydrogen technology – continuing research and innovation in Australia**

Speaker Include: **Andrew Dicks**, AHRN Coordinator, Griffith University, Australia

12:00-12:30 **Topic: Gippsland Hydrogen Hub: Updates, Lessons, and Triumphs from the HESC Project**

Speaker Include: **Jeremy Stone**, Non-Executive Director & Advisor, J-Power, Australia

12:30 - 13:00 **Topic: Hydrogen Fuel Cell Technology for Maritime Applications: From Feasibility Studies to First Demonstrations**
Lennie Klebanoff, Principal Member of the Technical Staff, Sandia National Laboratories, United States

13:00-14:00 Lunch break

14:00-14:30 **Session: Pathways to Decarbonization: Asia's Hydrogen Revolution and Australian Investment Opportunities Emissions reductions model using Green Hydrogen**

Topic: Emissions reductions model using Green Hydrogen
Speaker Include: **Geoffrey Drucker**, Managing Director, Countrywide Renewable Hydrogen Limited, Australia

Topic: Scaling up Green Hydrogen-Based Industry Cluster in China: Development Pattern and Early Opportunities

Speaker Include: **Shuyi Li**, Manager, RMI, China

14:30-15:00 **Session: Electrolyzer Manufacturing from Megawatts to Multigigawatts**

- Examine the latest trends and innovations in electrolyzer manufacturing, from megawatt to multigigawatt scale
- Discuss the technical and economic challenges of scaling up electrolyzer manufacturing to meet the increasing demand for green hydrogen
- Analyze the potential benefits and drawbacks of different manufacturing strategies and technologies

Topic: Developing the future generation of electrolysers: Fundamental research, prototyping and implementation

Speaker Include: **Bianca Grabner**, Project Manager, HyCentA Research GmbH Graz, Austria

15:00-16:00 **Session: Blue/Green Low Carbon Hydrogen Production**

- Explanation of blue/green hydrogen production and the role of CCUS in reducing carbon emissions
- Discussion of different blue/green hydrogen production methods and their respective advantages and disadvantages
- Case studies of successful blue/green hydrogen projects and their impact on carbon reduction

Speaker Include: **Ben Hankamer**, Professor, The University of Queensland, Australia
Aniruddha Kulkarni, Founder & CEO, Cavendish Renewable Technology, Australia

16:00-16:30 Coffee break

16:30-17:30 **Topic: Blue hydrogen (with CCS) in the context of the Australian Safeguard Mechanism (Crediting) Amendment Act**

Speaker Include: **Bernardene Smith**, Deputy Principal Consultant - Finance and Policy - Global CCS Institute, Global CCS Institute, Australia

DAY – 2 28TH, NOVEMBER, 2023

09:00 - 09:30 **Topic: Leadership and the Hydrogen Transition**

Speaker Include: **Kedem Levy**, Chairman, Australian Institute of Energy, Australia

09:30-10:00 **Session: Sustainable zero emission mobility**

- Hydrogen advancements in heavy haulage trucks
- Advanced FCEV technologies
- Military and aerospace applications
- Fast-tracking hydrogen mobility through global partnership

Topic: Hydrogen Fuel Cell buses manufacturing in Australia

Speaker Include: **Arnaldo Sanchez**, ZEB Specialist, Volgren Australia Pty Ltd., Australia

10:00-10:30 **Session: Hydrogen Fuel Cells**

- Overview of Hydrogen Fuel Cell Market
- Fuel Cell Systems Analysis
- Reducing the Cost of Hydrogen Fuel Cell

Speaker Include: **Jose Javier Lopez Cascales**, Professor, Universidad Politecnica de Cartagena, Spain

10:30-11:00 Coffee break

11:00-11:30 **Topic: Hydrogen Storage: Innovations, Collaborations, and Regulations for Scaling H2 Supply Chains**

Speaker Include: **Joe L Spease**, CEO, WindSoHy, LLC., United States.
Stuart Allinson, Energy transition Partner, Startupbootcamp, Australia

11:30-12:30 **Session: Hydrogen Carriers: Ammonia, Methanol, Liquid Hydrogen, LOHC, Storage**

- Compare and contrast different hydrogen carriers and storage technologies, including ammonia, methanol, liquid hydrogen, and LOHC
- Discuss the technical and economic trade-offs of each option, and how they can be used to address specific market needs
- Analyze the role of hydrogen storage in enabling the integration of intermittent renewable energy sources into the grid

Speaker Include: **Srikanth Mateti**, Research fellow, Deakin University, Australia

12:30-13:30 Lunch break

13:30-14:00 **Topic: Korea green energy island project with near shore hydrogen production & liquefaction platform; the most economical solution for hydrogen production and storage**

Speaker Include: **Jihyun Hwang**, Professor, Korea Institute of Energy Technology (KENTECH); Managing Director, FIP-H2ENERGY@KENTECH, South Korea

14:00-14:30 **Session: Australian Hydrogen Energy Trading: New Era of Global Energy Supply Chain**

- Discuss the opportunities and challenges of Australian hydrogen energy trading as a new player in the global energy supply chain
- Explore the potential benefits of creating new markets and business models for hydrogen trading, and the implications for existing energy markets
- Evaluate the regulatory framework and policy support needed to develop a sustainable and competitive hydrogen energy trading system
- Introduction to the concept of hydrogen energy trading and its potential to transform the global energy market
- Analysis of the current state of hydrogen energy trading and the opportunities and challenges ahead
- Showcase of successful hydrogen energy trading projects and their impact on the energy supply chain

Topic: Solid H2 Logistics & the emerging ecosystem

Speaker Include: **James Khong**, Co-founder & COO, Galaxy FCT, Malaysia

14:30-15:30 **Session: Hydrogen supply chain infrastructure**

- Smart grids and off grid infrastructure
- Industrial plant technologies
- Power lines, pipelines, storage tanks

Speaker Include: **Jason Amiri** , Senior Engineering Manager, Nacap, Australia

15:30-16:00 Coffee break

16:00-16:30 **Session: Hydrogen Refuelling Stations Infrastructure**

- Current status and future developments in hydrogen refuelling stations
- Technical and safety requirements for hydrogen refuelling stations
- Innovative solutions for hydrogen refuelling infrastructure

16:30-17:00 **Panel Discussion: Hydrogen Refueling Stations (HRS) and Infrastructure**

DAY – 3 29TH, NOVEMBER, 2023

09:00-10:00 **Session: Hydrogen Value Chain Skillful Infrastructure Engineering and Workforce Management**

- Explore the skills and infrastructure needed to build a robust and sustainable hydrogen value chain, from production to consumption.
- Discuss the key engineering challenges and solutions for designing and operating a safe and reliable hydrogen infrastructure, including pipelines, storage facilities, and refueling stations.
- Analyze the workforce development needs and strategies for building a skilled and diverse hydrogen workforce.

Speaker Include: Kerrin Pryor, Project Manager, Swinburne University of Technology, Australia.
David Green, Founder and Partner, Climate Impact Capital (CIC), Australia.

10:00 -10:30 **Safeguarding the Future: Advancements in Hydrogen Safety Standards 2023**

- Hydrogen Leakage Safety Risks

Speaker Include: Satiesh Muniandy, Principal Risk Engineer, Draeger, Australia

10:30-11:00 **Hydrogen: Revolutionizing Plumbing in Australia- Replacing Natural Gas with a Sustainable Future**

Speaker Include: Glen Doorey, Manager, R & L Smith Plumbing, Australia.

11:00-11:30 Coffee break

11:30-12:00 **Accelerating Hydrogen Initiatives in Hard-to-Abate Industries: Showcasing Success Stories in Logistics and Mining, Mobility, Steel, and Rail.**

12:00-12:30 **Reshaping Waste: Unlocking Energy through Reforming**

12:30-13:30 Lunch break

13:30-14:00 **Green Steel: Revolutionizing the Steel Industry towards Sustainability**

14:00-14:30 **Session: Advanced hydrogen regulator materials, control systems and tools**

- Hydrogen safety systems and flow components
- Hydrogen sensors
- Vacuum technologies
- Hydrogen valves and gauges

14:30-15:30 **Panel Discussion: Infrastructure to Create and Connect Global Hydrogen Hubs**

- Strategies for developing and connecting global hydrogen hubs
- Case studies of successful global hydrogen hub projects
- Opportunities for international collaboration in the development of hydrogen infrastructure

15:30-16:00 Closing remarks

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