

# Hydrogen Safety & Hazardous Areas Conference

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10<sup>th</sup> & 11<sup>th</sup> August, 2023  
Parmelia Hilton Perth  
Perth WA, Australia

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# Your Keynote Speakers

## International Keynote | Michael Marrington

### Operations Manager | IndEx - Hazardous Area Ex Professionals

Michael Marrington is a distinguished expert in hazardous areas (IECEx, ATEX, CompEx, EEHA, UL STP & NFPA 505 Committee Member), specializing in the application of hydrogen systems for industrial processes. With a wealth of experience encompassing a wide range of sectors, including furnaces, gas turbine generators, electrolysis, feedstock, and the groundbreaking implementation of the world's first gas hydrogen passenger ferry (The Sea Change).



His extensive knowledge of hydrogen technologies, combined with a deep understanding of safety regulations and compliance requirements, while focusing on practical approach has enabled them to successfully navigate the complex landscape of hazardous environments.

Driven by a keen understanding of human factors, he continues to contribute significantly to the advancement of personnel competence, to ensure the safe and efficient integration of hydrogen into processes.

## National Keynote | Professor Peta Ashwoth OAM

### Director | Curtin Institute for Energy Transition

Prior to joining Curtin University, Professor Ashworth was the Director of the Andrew N. Liveris Academy for Innovation and Leadership, and Chair in Sustainable Energy Futures at The University of Queensland (UQ). Professor Ashworth brings over thirty years' experience working in a range of senior management, consulting and research roles. She was Chair of the Queensland Hydrogen Taskforce and is a member of CSIRO Hydrogen Mission Advisory Board.



Professor Ashworth is a globally-recognised expert in the fields of energy, communication, stakeholder engagement, and technology assessment. For almost two decades, Peta has been researching public attitudes toward climate and energy technologies, including wind, carbon capture and storage (CCS), solar photovoltaic, storage, geothermal and hydrogen. An accomplished speaker and facilitator, Professor Ashworth is actively involved in building energy literacy more broadly both within Australia and globally, and regularly provides input to policy briefings, think tanks, as well as educational events for the benefit of the broader community

## What You'll Gain From Attending:

- **Knowledge Sharing:** Through the exploration of key aspects of hydrogen its creation, storage, transportation, and usage. This knowledge sharing promotes a deeper understanding of how to effectively and safely harness the potential of hydrogen technologies.
- **An awareness of the inherent risks:** By demonstrating how hydrogen can be applied in a safe and sustainable manner. Examples from various projects in Australia and the Asia Pacific region emphasise the importance of prioritising safety while leveraging hydrogen's potential as a clean energy solution.
- **Project Success Stories:** Real-world examples and case studies, showcase successful projects like Hydrogen Park Gladstone and Hydrogen Park Murray Valley. These projects serve as practical illustrations of how hydrogen can be utilised effectively, inspiring and informing future initiatives.
- **Insight into Regulatory Compliance:** Through the Western Australian regulator's journey in the emerging hydrogen industry. Australian Standards and Codes of Practice, are also covered providing a sense of the regulatory landscape.
- **Expertise Sharing:** Through experience of Yara Pilbara who operate an existing hydrogen plant.

# Who Should Attend?

- › Instrumentation and Control Engineers
- › Engineering Managers
- › Process Plant Engineers and Technicians
- › Plant Managers and Project Managers
- › Process Maintenance Technicians
- › Risk Assessors
- › Chemical, Process and Mechanical Engineers
- › Instrumentation Technicians
- › Design Engineers
- › Manufacturers of Hazardous Areas Equipment
- › Safety Facilitators
- › Electrical Technicians and Managers
- › Process Control Specialists
- › Process Safety and Loss Prevention Managers
- › Government Safety Regulators/Inspectors
- › OHS/Training Managers
- › Tradies working in potentially explosive areas
- › Electrical and Instrumentation Tradies, Technicians and all Engineering Professionals who have an interest in hydrogen and hazardous areas technologies and safety

## Introduction to Hydrogen Safety & Hazardous Areas

The conference is a practical and informative platform to showcase best practice, new technologies, and the current standards and regulations for the safe use of hydrogen and for hazardous areas. It is an opportunity to be part of this rapid global move to renewables, where knowledge and safety are the focus.

The conference will concentrate on hydrogen and its cryogenic properties which require additional engineering controls and understanding to ensure its safe use. Hydrogen production, processing, transportation and utilisation will be covered, alongside stakeholder safety, equipment damage prevention and environmental protection. The public's positive perception of hydrogen as a viable, safe, and clean alternative to conventional energy systems is necessary for the successful commercialisation of these developing technologies. To this end adept management in this potentially hazardous industry is critical.

The conference speakers will also share their expertise on the safe use of instrumentation, electrical and mechanical equipment in hazardous, flammable or explosive environments. These sessions will highlight new technologies, best practice, and the updates to standards and regulations. Sessions will also cover the economic impact of accidents - such as explosions and fires - often caused by the ignition of flammable vapours, dust clouds or static electricity.



# Day One | Thursday 10<sup>th</sup> August, 2023

**8:00am** **Registration Opens**

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**8:30am** **Welcome Address**

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**8:45am** **Session One | Keynote Presentation**

## Realising Hydrogen's Decarbonisation Potential for Australia

**Professor Peta Ashworth OAM:** Director, *Curtin Institute for Energy Transition*

There is no doubt that in recent times hydrogen has found a new place in the world's aspirations for decarbonisation. Australia as a renewable energy powerhouse is well placed to be a credible stakeholder in achieving such potential. However, despite global aspirations, there are a number of challenges that exist for clean hydrogen to move from pilot scale to commercial projects. Professor Ashworth has been researching public attitudes to hydrogen through a range of engagement activities since the Australian Hydrogen Strategy was first developed. She will present some of the key findings that have emerged from her research, including some aspects that may prevent hydrogen becoming the success that so many are hoping for. This includes how safe the public perceive hydrogen to be, and where and when it will most likely be accepted. Professor Ashworth will also discuss what may prevent hydrogen from realizing its potential.



**9:30am** **Session Two**

## Hydrogen Blending With Natural Gas; Design, Risk and Technology

**Tim Aujard:** Head of Asset Performance, *AGIG*

AGIG owns and operates Hydrogen Park South Australia; it includes a 1.25MW electrolyser and a natural gas blending facility. AGIG has also completed the detailed design for Hydrogen Park Gladstone and the front-end design for Hydrogen Park Murray Valley.



Each hydrogen blending system design has similar design methods, technology selections and engineering trade-offs. We have followed a rigorous process to ensure the safety of our customers and personnel. In this session AGIG will share these design and technology selection processes, risk assessment methods and risk reduction techniques.

**10:15am** **Morning Tea**

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**10:45am** **Session Three**

## Application of Hydrogen in Asia Pacific

**David Cavanagh:** Managing Director, *Integrated Energy*

This session is inspired by work on more than seventy projects, for both private and government enterprises, which have demonstrated that hydrogen and renewable electricity are highly complementary.



For a significant number and range of cases we are able to demonstrate synergies which enable a safe, reliable, cost effective and sustainable pathway to near zero emissions by 2030 - considering requirements for both power and fuel, and link this to the UN ICCC synthesis report findings.

Based on the feedback we have received, there is a significant demand for hydrogen in the Asia-Pacific, and regional cooperation will be a key enabler.

This session will demonstrate how hydrogen can be applied in a safe and sustainable manner using examples from a range of projects in Australia and Asia Pacific.

## 11:30am Session Four

### Hydrogen Safety in an Operating Facility

Adrian Hansen: Senior Process Safety Engineer, Yara Pilbara

Yara Pilbara has 20 years' experience producing hydrogen and ammonia in WA and this has been built on over 110 years of global experience. Yara Pilbara, in partnership with Engie, has begun construction on a 10MW electrolyser, powered by solar, to produce green hydrogen in the Pilbara. The project named YURI, with funding from ARENA, will contribute to the development of a green hydrogen economy in Australia.



Green sounds great, but it is not a walk in the park. This session will present the challenges and achievements of Yara Pilbara's experience in operating an existing hydrogen plant, and designing and constructing a green hydrogen facility.

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## 12:15pm Lunch

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## 1:15pm Session Five

### Hydrogen Hazards Case Studies

Derek Cross: Gexcon Australia Team Lead, Gexcon



This session presents a number of high-level hydrogen release case studies and aims to provide a better understanding of the hazards associated with the various hydrogen uses. The potential control measures that can assist in mitigating the hazards will also be considered. The case studies that will be examined in this presentation include:

- Hydrogen Storage
- Hydrogen Refuelling Station
- Hydrogen Compressor Enclosure
- Hydrogen in Aviation

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## 2:00pm Session Six

### Understanding Compliance – Hazardous Areas & Hydrogen

(a Previous Technical Regulators Insights)

Travis Stewart: Managing Director, Zero Industries



To offset the risks inherent in the rapid adoption of hydrogen (as a suitable alternative renewable fuel) an understanding of the compliance issues relating to hydrogen projects is critical. A core barrier facing the industry is the consensus around regulation: which Act is to be followed? Is it a Work Health and Safety issue, or a matter for the Technical Regulator?

This session will provide clarity and guidance on the appropriate Act to follow and how to apply its intention. It will also explain:

- What the requirement is for Deemed to Comply.
- The meaning of the principle 60079.10.1 - applicable to hydrogen installations.
- Who is responsible and at which stage in the process.
- What evidence is needed.

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**2:45pm**

## Afternoon Tea

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**3:15pm**

## Session Seven

### The Regulator's Learning Journey in the Emerging Hydrogen Industry

**Anitha Gandhi, Principal Engineer Gas Utilisation, Building and Energy Division - Department of Mines, Industry Regulation and Safety**



Keeping pace with the constantly evolving regulatory landscape is challenging. As regulators we endeavour to keep this gap as narrow as is reasonably possible.

It is important to bear in mind that the regulations and technical standards provide a minimum benchmark to ensure the safety of consumers and the community. In Western Australia, when hydrogen is used as a fuel, it will be jointly regulated by the Building and Energy Division AND the Dangerous Goods Directorate - within the Department of Mines, Industry Regulation and Safety.

This session will provide an overview of the jurisdiction demarcation, some of our findings from Western Australia's latest hydrogen projects, the challenges faced by the proponents and regulators and how the agency has addressed them.

**Steve Emery, General Manager, Hydrogen and Alternate Energy Safety Dangerous Goods and Critical Risks Directorate**



Everybody involved in the Energy Transition wants new and existing projects to be safe. How you achieve this and how you demonstrate to the Safety Regulator is where problems arise.

The Safety Regulator has requirements that affect everything from engineering design to the people involved over the whole life of a plant. Gaining - and then keeping - a safety approval is often a complex, time consuming and confusing process to the uninitiated. If done incorrectly, it can cause cost hikes, schedule delays and reputation damage. This session considers risk mitigation and how to deal with the Safety Regulator.

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**4:30pm**

## Day One Close

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**5:00pm**

## Conference Soiree



## Day Two | Friday 11<sup>th</sup> August, 2023

### 8:30am                   Session Eight | Keynote Presentation

#### Hydrogen – The Practical Approach (Safety + Compliance)

**Michael Marrington:** Operations Manager, *IndEx - Hazardous Area Ex Professionals*



As the world transitions towards sustainable energy sources, hydrogen is touted as a viable option. However, ensuring the safe handling and compliance of hydrogen systems is paramount for its widespread adoption.

This presentation focuses on a practical approach to addressing safety and compliance considerations associated with hydrogen.

We explore key aspects such as hydrogen creation, storage, transportation, and usage, highlighting best practices and industry standards.

Drawing on real-world examples, historical data, and case studies, we discuss risk mitigation strategies, safety protocols, and regulatory frameworks that enable the safe integration of hydrogen technologies.

Join us to gain valuable insights into harnessing hydrogen's potential while prioritizing safety and adhering to compliance requirements.

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### 9:30am                   Session Nine

#### Static Electricity & Lightning - “The Shocking Truth”

**Carmello (Cem) Novella:** Managing Director, *Novella Group Pty Ltd*  
*TA Static Electricity Control*



Static electricity is generally regarded as a nuisance and its inherent dangers are often misunderstood or underestimated. This may be due to a lack of knowledge and experience, but often neglect and/or complacency can account for it.

In many branches of industry, hazardous atmospheres exist due to the presence of flammable liquid, gases, combustible dusts and fibres. No matter how the explosive atmosphere is classified, all potential ignition sources must be eliminated, with static electricity and lightning perhaps being the most insidious of them all.

Static electricity is the prime culprit for at least two serious fires or explosions in industry worldwide every day of the year. In the U.S. alone, static electricity causes on average of 280 industrial incidents each year. These result in injuries and fatalities, hundreds of millions of dollars in property damage, lost production or plant downtime, and environmental release issues. Lightning protection continues to be overlooked by designers and site owners with disastrous consequences.

In light of this, how can we better design and protect hazardous area facilities and processes (such as storage, loading and unloading) from static electricity and lightning? How will AS/NZS 1020, AS 1768 and newly adopted IEC TS 60079-32-1 standards affect the Australian and New Zealand Hazardous Area landscape? What do you need to know?

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### 10:15am                   Morning Tea



## 10:45am Session Ten

### Hydrogen Leakage Safety Risks

Satiеш Muniandy: Principal Risk Engineer, *Draeger Australia Pty Ltd*



Hydrogen is an elusive gas with many unique characteristics and this makes it challenging to manage. For starters hydrogen is 14 times lighter than air and has a large flammability range. It is odourless, burns with an invisible flame, and can self-ignite due to its low ignition energy.

A variety of processes, tools and technologies can be deployed to safely detect and manage hydrogen in the value chain. For example, fire and gas mapping can help to determine the technologies required and the number of detectors needed for optimum coverage to meet the protection objectives. In addition, technologies such as ultrasonic, catalytic point and multi IR flame detectors are good for early leak detection.

Due to our vast experience in this field, we understand that every site is unique and poses various challenges. Having the right subject matter experts involved - early on in the design phase - is critical to close the safety gaps.

This session will present a hierarchy of control for hydrogen and will consider the technologies that can be deployed to safely manage hydrogen in the value chain.

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## 11:30am Session Eleven

### How To Develop and Engineer a Hydrogen Project With a Critical View of the Safety and Explosion Aspects

Joel Albertson: Principal Mechanical Engineer, *Iris Engineering*



The rapid development of the hydrogen industry has created an increasing need for a robust and systematic approach, in order to create safe and economically viable projects. The dominant trends display a need for greater safety and adherence to the engineering design process in the initial stages of development.

Our processes are hewn from decades of capital project delivery experience and from four years of hydrogen project development. This session will articulate our approach to a project workflow which consists of key milestones, activities, and deliverables.

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## 12:15pm Lunch

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## 1:15pm Session Twelve

### Addressing Risks in Hydrogen Re-Fuelling Stations (Hrs) - A Case Study

Jatinder Ahuja, CEO and Engineering Manager, *PMV Engineering*

Shrikant Kilkarni, Lead Senior Process Engineer



PMV recently carried out a HAC (Hazardous Area Classification) for Atco's HRS project at Jandakot, WA, consisting of a newly installed compressor, 930bar storage vessels, Hydrogen dispenser, Chiller unit, Vent stack and controls. As the current Australian and International standards do not provide guidance on such high pressure plume dimensions, PMV carried out dispersion calculations using first principles. PMV carried out a risk assessment and validated the existing barriers, and recommended additional barriers to contain the risks, for the:

- a. HRS facility
- b. The original Clean Energy Hub project consisting of Battery Storage.



## 2:00pm                   Session Thirteen

### Internal Explosion Consequences for Hydrogen Vessels

**Julian Annett Chee: Process Safety Engineer, Gexcon**



Consequence modelling of hydrogen systems primarily focuses on the mistaken release of hydrogen from processing equipment or storage vessels – resulting in a flammable atmosphere and explosions or fire. The modelling also covers scenarios where flammable atmospheres form within hydrogen systems – when air penetrates – and causes accidents.

Preventative measures for internal vessel explosions usually entail suitable design, construction, commissioning, operational, maintenance and process safety management systems and practices. During operations such liquid hydrogen transfer, however, air ingress may be unavoidable.

This session will examine the consequences of internal vessel explosions, which have practical implications for the safe management of hydrogen systems.

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## 2:45pm                   Afternoon tea

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## 3:15pm                   Session Fourteen

### Placarding Under the WHS

**Vince Pececca: Chief Scientific Officer, Risk Management Technologies**



A decade on from Safe Work Australia's release of the model WHS Regulations, uniform placarding remains an issue between the States and Territories. This was most recently highlighted in March 2022, with the release of Western Australia's new Work Health and Safety Regulations. This session will review the placarding requirements in the States and Territories (including WA's new WHS Regulations), evaluate challenges associated with placarding based on GHS Classifications and showcase examples of placarding signage.

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## 4:00pm                   Session Fifteen

### Safety Culture Through Training, Leadership and Actions

**Jakes Jacobs: Manager, Hydrogen Skills Australia**



This presentation will outline how accredited and non-accredited hydrogen safety programs can contribute to a safety culture within the hydrogen sector. And it will provide some information on where to obtain guidelines such as Australian Standards and Codes of Practice.

Workforce credentialing will be explored, and will include the thorny issue of false workforce credentials and the risk to safety. The session will look at what the gas industry does to maintain the integrity, credibility and compliance of its workforce.

Finally, the session will consider the pathways to skill up the current CSG/LNG workforce to enable them to operate in the hydrogen sector.

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## 5:00pm                   Day Two Close

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# General Information

## Conference Venue & Accommodation

Parmelia Hilton Perth  
14 Mill Street, South Brisbane  
Perth, 6000  
Western Australia  
**Hotel:** +61 8 9215 2484  
**Web:** [www.hilton.com](http://www.hilton.com)



## Food and Beverages

All lunches, and morning and afternoon refreshments are part of your delegate registration. The networking soiree is also included.

## Tickets & Registration



### Early Bird Offer - 10% Off

Single ticket  
**\$1,440.00\*** per person

*\*Save 10% when you book on or before 30<sup>th</sup> June, 2023*



### Standard Pricing

Single ticket  
**\$1,600.00\*** per person  
*\*When you book after 30<sup>th</sup> June, 2023*

### Group Booking

**\$1,170.00\*** per person

*\*When you book for 2 (two) or more people on or before 30<sup>th</sup> June, 2023*

### Group Booking

**\$1,300.00\*** per person

*\*When you book for 2 (two) or more people*

