



Hydrogen
Society
of Australia

Looking backwards, looking forward!

Hydrogen is marching on – will you join us?

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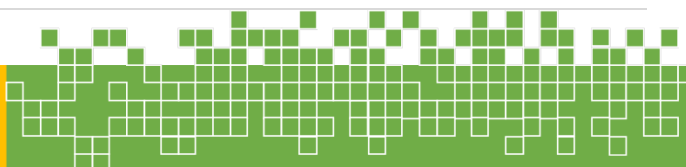
Message from the HSA President – Adam Osseiran

Your Society is healthy and is growing thanks to the contributions of the volunteers who are passionate about the role that we can play in the transition of Australia to cleaner energy sooner than later. Special thanks to our HSA WA Chapter Leader **Dr. Furat Dawood** [Pg 2].

The HSA Chapters in New South Wales, Victoria and Western Australia are now real, and their committees are actively working together. In the near future they will be joined by new HSA Chapters in South Australia and Queensland. A lot is happening in these states already, and we are eager to collaborate together under a national HSA banner. The inaugural event that kickstarted the Victorian Chapter (**Hydrogen Links Session 7**) was held on the 5th of December and was a collaboration of HSA with CO2CRC and CSIRO. You can read more about this event here [Pg 6]. The launch of the WA Chapter will be celebrated on 14 December in Perth. Consider joining us - [Click for more details](#)

There has also been an increasing number of events related to hydrogen in Australia. Lorie attended the **Positioning Hydrogen Conference** in Melbourne (27-29 November), and the **EA Climate Smart Engineering Conference** in Melbourne (29 – 30 November) while I attended the **HNAT 2023 Summit** in Perth (28-29 November). More details about these events can be found in this newsletter [Pg 3, 4 and 5].

Last but not least, we wish our readers all the best for the upcoming festive season and look forward to catching up with you again in the New Year. **If you are not yet a member of HSA, please consider joining us to get access to free or discounted events, training material and the latest information in the hydrogen space.** <https://hydrogensociety.org.au/members-portal/>



Members Spotlight – Furat Dawood – HSA WA Chapter Leader

The **Hydrogen Society of Australia (HSA)** is pleased to confirm that **Dr Furat Dawood** has taken on the leadership role as **Chair of the HSA-WA Chapter**. Furat joined the HSA in 2018 and has since been an active member on the HSA Steering Committee. He is now the Chair of the newly formed **HSA-WA Chapter**.

Dr Furat Dawood is career-minded with long years of diversified experience in engineering, highly trained, positive attitude, multi-tasking skills, industry-focused researcher, and projects initiator.

He possesses a B.Sc. in **Electronic Engineering**, a Master's in **Communication Engineering**, and a Postgraduate Diploma in **Energy and Carbon Studies**, with a great passion and enthusiasm for renewable energy. His passion has motivated him to complete a Doctor of Philosophy (Ph.D.) in **Chemical and Metallurgical Engineering** focused on **Hydrogen Energy Systems**.



Furat has made significant contributions to the hydrogen economy development in Australia and Globally. He has published many high-quality academic and industry-focused studies ([Link](#)). One of his published articles is now the most cited in the **International Journal of Hydrogen Energy** ([Link](#)). The Western Australia Government and Industries have funded some of his published research studies to research further and assess the feasibility of implementation:

- **Hybrid Solar PV-Battery-Hydrogen System for 100% Renewable Energy Standalone Microgrid Development** ([published](#)); and
- **Hydrogen Hub Study for the City of Karratha** ([published](#)).

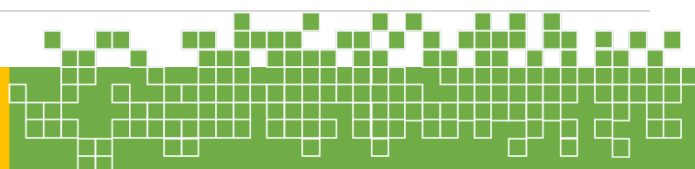
He also contributed to the design and implementation of **the Denham Hydrogen Plant** via his role as Senior Renewable System Engineer at **Horizon Power** until January 2023.

The Commonwealth **CSIRO–Hydrogen Industry Mission** contracted Furat to contribute to developing the Australian hydrogen knowledge-sharing platform ([Link](#)). Also, he was contracted by **National Energy Resources Australia (NERA)** to report on the formation of the hydrogen technology clusters in Australia.

Furat is a member of **Engineers Australia (TMIEAust)**, a committee member of the **Hydrogen Industry**, a Life member of the **World Renewable Energy Congress / Network (WREC/WREN)**, a contributor to the **Australia Hydrogen Research Network (AHRN)** conference 2024, and an active member of the EA-AIE-HSA Joint Organizing Committee of the **National Hydrogen Industry Technical Masterclass in WA**. He is the founder of the **Hydrogen Economy Group (H2E)**. Additionally, he is a member of the **Australian Institute of Energy (AIE)**, **Sustainable Energy Now (SEN)**, and the **Institute of Electrical and Electronics Engineers (IEEE)**.

Furat volunteers for the **International Energy Agency (IEA)** – Hydrogen TCP, the **International Association for Hydrogen Energy (IAHE)** – Green Hydrogen Division, and **Engineers Australia–Hydrogen Engineers** area of practice working group. He also donates his time to **Murdoch University** and the **Red Cross** in Western Australia.

The Hydrogen Society of Australia is a members-based and not-for-profit organisation which relies on the time and expertise of our committed volunteers, with Dr Furat Dawood an extraordinary example.



There is a lot happening in the Hydrogen Space in Australia!

Positioning Hydrogen 2023 - Melbourne – 27 to 29 November 2023

The 3rd Global Hydrogen Energy Conference and Exhibition brought together participants from the entire hydrogen value chain with the goal of exhibiting solutions and innovations for low-carbon hydrogen production, efficient storage and distribution, safety and emergency services, and applications in a wide range of industries. Industrial experts and decision makers from around the world presented their perspectives about the latest technologies, engineering solutions, and future trends. This was the second year that the Hydrogen Society of Australia had partnered with the conference organisers (Prism Scientific Services) and we had secured significantly discounted (50%) registration fees for HSA members.



Lorie Jones had some interesting discussions with delegates from Tanaka, the Bronze sponsor.



Luigi Bonadio did an excellent job in moderating the event, and facilitating the Q&A sessions.



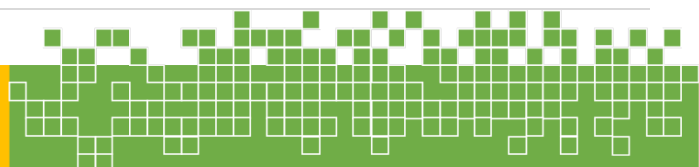
Our HSA Corporate Enterprise Supporter (**Draeger**) was represented by **Satesh Muniandy**, who gave an important overview on advancements in Hydrogen Safety Standards wrt hydrogen leakage safety risk management.



The student poster session was very engaging. There is so much important research underway in the hydrogen space! One of our key HSA initiatives is to help bridge the gap between industry and researchers.

Refer to our **Hydrogen Links** series [Pg 9].

Overall, the Positioning Hydrogen Conference provided an excellent opportunity to network and share knowledge. Well done to the conference organisers, and thanks to the supporters Tanaka (Bronze), Atlas Copco (Exhibitor) and Schnell Energy (Networking drinks Sponsor). Until next year...



First Natural Hydrogen Worldwide Summit (HNAT 2023) – Fremantle – 27 and 28 November 2023

The Hydrogen Society of Australia partnered with the organizers of the first natural hydrogen worldwide Summit (HNAT2023) on 27 and 28 November. This conference was held for the first time in person in Fremantle (Esplanade Hotel), as well as online after two years of virtual HNAT conferences. It was attended by 400 international and Australian participants. The theme of the Summit was natural hydrogen, a source of clean, low-carbon energy that is produced by the earth and can accumulate in geological reservoirs. Western Australia is very well positioned in this field, especially with the exploration expertise that Western Australia can boast about.

What is natural hydrogen? It is sometimes called geological hydrogen or white hydrogen. It can be found in certain geological formations in association with hydrocarbon deposits, such as natural gas reservoirs. In these reservoirs, hydrogen is often present in combination with helium, methane, and other hydrocarbons. In some geothermal systems, hydrogen can be present as a result of interactions between water and rocks at elevated temperatures. Extracting hydrogen from these reservoirs and rocks can be challenging.

These challenges were discussed throughout the two-day conference (www.hnatworldsummit.com).

Exploration and production of natural hydrogen has entered a new phase, following the explorations of Hydroma in Mali, then NH2 in the USA, and despite a slight slowdown during the COVID period, the number of permits issued has proliferated. The cost of extracting natural hydrogen was presented to be as low as \$1 per kg which is very competitive, if the concentrations are high enough. It is early days but the prospect of finding sustainable hydrogen in some remote areas could enable renewable energy and help develop local communities at a very low cost. Although data on hydrogen in the subsoil is still lacking in many basins, the key question is now focussed more on how to find an accumulation than where hydrogen could be generated.

Australia was the first country to adapt its law to include exploration and production of natural hydrogen. Today, many companies have exploitation blocks, and many service companies also offer drilling and exploration tools dedicated to hydrogen. Methods and tools to characterize the potential of natural-generating rocks and model hydrogen migration and accumulation are also emerging. The H-Nat Summit was the first opportunity for all market players to find out more about the developments associated with natural hydrogen.



Furat Dawood and Adam Osseiran manning the HSA Booth at the HNAT Summit

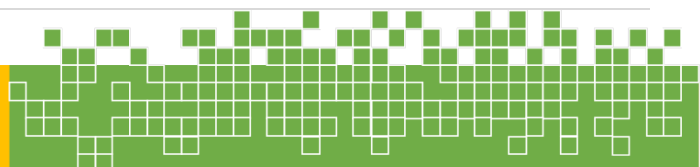
Climate Smart Engineering CSE2023 – Melbourne – 29 and 30 November 2023

The **Climate Smart Engineering Conference** is an annual event hosted by **Engineers Australia**. This was a jam-packed event held in Melbourne with concurrent streams of presenters, across the themes of waste management, emissions reduction, and renewable energy including hydrogen's role in the energy ecosystem.

One of the highlight events was the **Engineering Excellence Awards**, and we were pleased that the **Engineering Project of the Year** was awarded to Aurecon for the **Boola Katitjin** building at Murdoch University. This building was also featured by the HSA during the **Australian Hydrogen and Fuel Cell Day (AHD)** held at Murdoch University on October 08. We had arranged for a tour of this facility for the AHD participants but the tour was cancelled at the last minute due to a medical emergency. I'm pleased to advise that the HSA has been offered another tour of this award-winning facility for our members in the New Year. Further information coming soon...



*Right to left: Brian Haggerty (HSA Steering Committee member)
Lorie Jones (HSA Vice-President)
Pratik Shrestha (Principal, Building Structures, Aurecon)
Professor Parisa Bahri (Murdoch Pro Vice Chancellor)
Susan Kremer Pickford (Engineers Australia, GM WA Division)
Shalini Saldanha (Engineers Australia, WA Division President)*



Hydrogen Links: Industry Focused Academic Research - Session 7 on 05 December 2023

The most recent Hydrogen Links event was organized by **Victorian Chapter** of the HSA and took place at CSIRO Clayton. This was an excellent full house event featuring outstanding experts in hydrogen energy and storage. It was a collaborative event between **CO2CRC** and **CSIRO**, focusing on hydrogen production technologies and underground hydrogen storage. Participants had a chance to listen to the talk of two excellent speakers, **Dr Jonathan Ennis-King** (Senior Research Scientist, CSIRO) and **Dr Sarb Giddey**, (Group Leader, Thermal and Electrochemical Technologies, Energy, CSIRO). The great presentations were followed by a laboratory tour and a visit to the Hydrogen Technology Demonstration Facility at CSIRO. Thanks to our speakers, their colleagues at CSIRO and our enthusiastic participants for the great hydrogen day.



Dr Sarb Giddey,
(Group Leader,
Thermal and
Electrochemical
Technologies,
Energy, CSIRO)



Dr Jonathan Ennis-King
(Senior Research
Scientist, CSIRO)



Dr Sarb Giddey providing his insights



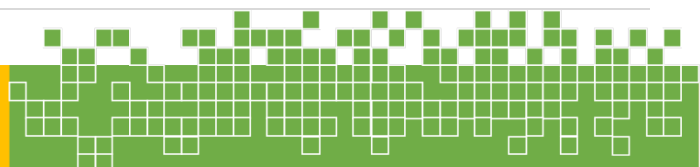
A hydrogen powered car



Tour of the Clayton hydrogen refueling station



Tour of the technology demonstration facility



Career Opportunities:

There are a number of academic and employment opportunities highlighted in our HSA Knowledge Portal including those listed below:

UNSW PhD Candidate

The University of New South Wales (Sydney, Australia) is looking for a PhD candidate to work on an Australian Research Council-funded project in Electrochemical Nitrogen Reduction in the School of Chemistry. Please apply if you have a passion for research and wish to pursue a career in the fields of clean energy and sustainability such as: Energy storage and conversion; Hydrogen economy; and Decarbonisation technologies. Click on the following link for further information: <https://hydrogensociety.org.au/phd-scholarships-on-electrosynthesis-of-ammonia-at-unsw/>

UNSW is also offering a number of PhD Scholarships on the following topics:

- Electrosynthesis of Ammonia [Click here for more information](#)
- Fuel Cells UNSW [Click here for more information](#)
- CO2 Electroreduction [Click here for more information](#)
- Water Electrolysis [Click here for more information](#)

Curtin University - Job opportunities with International Futures Lab – Redefine H2E (Munich)

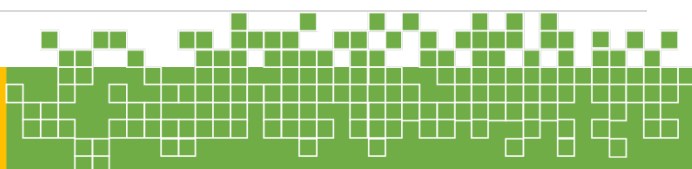
Expression of Interest for Researcher positions at the Technical University of Munich: An opportunity provided by the Technical University of Munich, Curtin University, and the International Future Lab: Redefine H2E. Working under the supervision of Professor Peta Ashworth (Director of the Curtin Institute for Energy Transition), we have an exciting opportunity available for a Core Scientist. Click on the following link for further information. <https://hydrogensociety.org.au/job-opportunities-with-international-future-lab-redefine-h2e-munich/>

For the full list of opportunities currently advertised on the HSA website, [click on this link](#)

Member Benefit – Hydrogen Standard subscription (HSA members discount)

The Hydrogen Society of Australia (HSA) has partnered with The **Hydrogen Standard** to offer HSA members a significant discount to gain access to the **Global Government Hydrogen Platform**, a renowned source of hydrogen policy data. <https://thehydrogenstandard.com/hydrogen-global-governance-platform/>

The Hydrogen Standard provides market insights, research and news for the hydrogen community to stay up to date with the latest developments. One of the flagship products is the hydrogen global governance platform that provides insights into government commitments to hydrogen on a country, regional and global scale. If you can't keep up with all the developments governments across the globe are providing on their hydrogen roadmaps, you are not alone. More than 50 countries worldwide have now a strategic hydrogen document and another two dozen or so are actively considering or preparing one. As such, Hydrogen Standard has developed the Hydrogen Global Governance Platform, which keeps track of all those individual developments daily.



Subscribers will have access to a global, regional and country specific overview on a host of topics outlined in various government hydrogen roadmap strategies, such as funding arrangements, R&D interests, infrastructure commitments, fuel cell vehicle targets, electrolyser capacity commitments, trade agreements and more.

Thanks to the collaboration between the Hydrogen Standard and the Hydrogen Society of Australia, HSA members will get a significant discount on the initial subscription to the platform (75% for students; 52% for individuals and 80% for Enterprise members). If you are interested in subscribing to the **Hydrogen Global Governance Platform** at a significant discount, please select the Hydrogen Standard subscription product within our HSA Members Only portal: [Click here for further information.](#)

Education and Knowledge Sharing – Past Events and Presentation Material

Log in to your password protected HSA members portal and you can access the videos and PowerPoint presentations from past events in the **Knowledge Centre**: <https://hydrogensociety.org.au/knowledge-centre/videos/> HSA members can also view the event proceedings and find the links to the various presenters under **Past Events**: <https://hydrogensociety.org.au/hydrogen-space-2023-networking-and-presentations/>

National Hydrogen Industry Technical Masterclass – 13th – 15 February 2024

The Hydrogen Society of Australia is collaborating with **Engineers Australia (EA)** and the **Australian Institute of Energy (AIE)** to facilitate a 3-day Technical Masterclass in Perth from **13th to 15th February 2024**. This is part of a national hydrogen industry technical training series that will be rolling out across Australia over the coming year.

Registration for the Perth Master Class is now open and a 30% discount will be available to members of the Hydrogen Society of Australia. Early bird registration closes on 29 December so consider registering now to maximise your discount. This will be an in-person event only, with strictly limited numbers of participants. [Click here to register now](#)

Many thanks to our HSA members who have made a significant and ongoing contribution to the planning of this technical series, in particular **Furat Dawood, Derek Cross and Jack Schubert**, supported by **Brian Haggerty** and **Lorie Jones**.



National Hydrogen Industry
**TECHNICAL
MASTERCLASS**
13th - 15th February 2024

A 3-day masterclass for all current or aspiring hydrogen industry stakeholders, delivered by Australia's leading hydrogen industry professionals.

Gain practical knowledge that you can take to the office tomorrow with lessons learned and insights garnered from real-world experience on hydrogen project delivery and design.

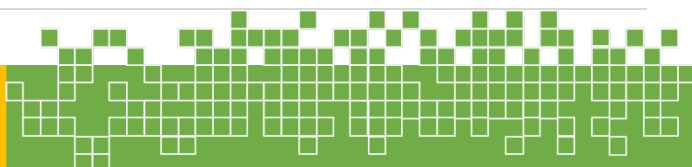
Hear from the experts on hydrogen electrolysis, compression, refueling, hydrogen process safety and many more key topics faced by Australia's burgeoning hydrogen sector.



Perth, Western Australia

A collaboration between

AUSTRALIAN INSTITUTE OF ENERGY ENGINEERS AUSTRALIA HSA Hydrogen Society of Australia



Upcoming Hydrogen Events organised by HSA

Hydrogen Links – Industry focused Academic Research Series

This is an evolving series of presentations, with our objective being to lock in one online presentation a month. Each talk will range from 30 to 40 minutes, with a brief Q&A session at the conclusion. The intent is to hold some of these as hybrid events, including food and networking, as well as laboratory tours. We are reaching out to academic research institutions to encourage their participation.



Hydrogen Links - Sessions Delivered:

- UNSW (**Quentin Meyer**) – How to make hydrogen fuel cells cheaper and more efficient [delivered - 25 May, refer to Issue 16, page 3]
- Washington State University (**Liam Turner**) - How to unlock zero waste liquid hydrogen storage through the cool properties of cryogenic Hydrogen [delivered - June 22, refer to Issue 17, page 3].
- MU and HBI (**Furat Dawood** and **Benny Abraham**) – Integrated Drinking Water and Renewable Energy based Power Supply for remote Aboriginal communities in WA. [delivered - August 01 – refer to Issue 18, page 3 and 4]. The full knowledge-sharing report (74 pages) has been published recently on the WA Government website [Click here for the full report](#)

- ECU (**Alireza Keshavarz**) – Hydrogen geo-storage: challenges and opportunities [delivered - August 31 – refer to Issue 19, page 3 and 4].
- UNSW (**Chuan Zhao**) – Challenges and Opportunities for Green Hydrogen Production from Water Electrolysis [delivered - September 21]. For more information, refer to Issue 20, page 5.
- QUT (**Anthony O’Mullane**) / AHERN (**Andrew Dicks**) / CSIRO (**Patrick Hartley**) - Accelerating Australian Hydrogen Industry through Research Collaboration [delivered – October 19, see page 5].
- CO2CRC (**David Whittam**) / CSIRO (**Jonathan Ennis-King** and **Dr Sarb Giddey**) [Delivered - December 05, see page 6].

Hydrogen Links - Sessions Upcoming:

- University of Wollongong (**Gerry Swiegers**) in partnership with **Powerfuels including Hydrogen Network** – date confirmed for January 25. [refer to page 10].

[Click here for more information about the Hydrogen Links series](#)

In addition to the academic research institutions, the Hydrogen Society of Australia is collaborating with like-minded organisations to foster collaboration and knowledge sharing between industry and academics, including: Australian Hydrogen Research Networks (AHRN); Global Hydrogen Economy (GlobH2E); GELS; and Commonwealth Scientific and Industrial Research Organisation (CSIRO).

The ARC Training Centre for the Global Hydrogen Economy (GlobH2E) is a research consortium established in 2021 and funded by the Australian Research Councils and industries. GlobH2E brings together leading Australian researchers and global research institutions, industry partners, hydrogen start-up and government agencies to work together to develop and ramp up new technologies and build nation’s skills in a short timeframe. The full playlist of GlobH2E webinars can be found on YouTube at the following link:

[Click here for GlobH2E webinars](#)

Hydrogen Links Session 8 – University of Wollongong (Gerry Swiegers) in collaboration with Powerfuels including Hydrogen Network – 25 January 2023 - “Bubble-Free Capillary Electrolysis”



Professor Gerry Swiegers

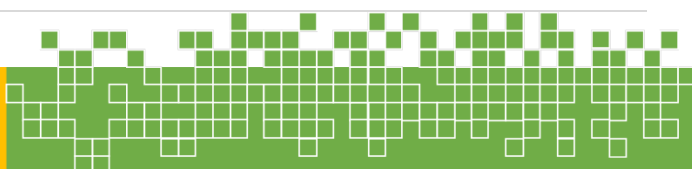
University of Wollongong

- Gerry Swiegers is a professor at the University of Wollongong specialising in the commercialisation of fundamental research and bridging the academia- to- industry gap.
- He leads an active program of fundamental research that focusses on the production of hydrogen from water using renewable electricity. He has founded seven spinoff companies and licensed or sold three new technologies in the last twenty years.
- His commercialisation activities have attracted an estimated \$150 million in private investment. He has published two scholarly books, 147 peer-reviewed contributions, and 60 patent families. Most recently Prof Swiegers was appointed as an Australia Research Council Industry Laureate Fellow.

Hold this date in your calendars, registration will be available soon. [Click here for the latest update](#)

Other upcoming hydrogen related events around the globe

- 2024 01 10 to 12_LCFS and Carbon Markets Workshop_San Diego [Click here for details](#)
- 2024 01 16 to 19_20th Americas Energy Summit and Exhibition [Click here for details](#)
- 2024 02 06 to 09_India Energy Week 2024 – Goa, India - [Click here for details](#)
- 2024 02 06_WA Clean Energy Forum (WACEF 2024)_Perth - [Click here for details](#)
- 2023 02 12 to 14_Sustainable Aviation Futures_Dubai - [Click here for details](#)
- 2024 02 19 to 21_EGYPTES - Egypt Energy Show – Cairo - [Click here for details](#)
- 2024 02 19 to 20 – H2 Forum 2024 – Berlin - [Click here for details](#)
- 2024 03 04 to 06 – 9th Annual Sustainability Week – London and virtual - [Click here for details](#)
- 2024 03 04_Energy Transition Summit – London - [Click here for details](#)
- 2024 03 06 to 07_Smart Energy Conference and Exhibition – Sydney - [Click here for details](#)
- 2024 03 04 to 07 – World Electrolysis Congress – Germany - [Click here for details](#)
- 2024 03 12 & 13_Sustainability Reporting Summit_Sydney - [Click here for details](#)
- 2024 03 12 to 13 – 3rd Annual Sustainability Week Asia – Bangkok and virtual - [Click for details](#)
- 2024 03 13 to 15 – AOG Energy 2024 – Perth Convention and Exhibition Centre - [Click for details](#)
- 2024 03 25 to 28 – 11th Annual Australia Domestic Gas Outlook – Sydney - [Click here for details](#)
- 2024 04 21 to 26 – World Renewable Energy Congress – Bahrain - [Click here for details](#)
- 2024 05 16 to 17 – Future Energy ASIA and Future Mobility ASIA – Bangkok - [Click here for details](#)
- 2024 05 01 to 02 – Sydney Build Expo – ICC Sydney - [Click here for details](#)
- 2024 05 21 to 22 – World Hydrogen Forum – Saudi Arabia - [Click here for details](#)
- 2024 05 21 to 23_Centre for Hydrogen Safety Americas Conference – Las Vegas [Click for details](#)
- 2024 06 11 to 14 – Australian Energy Week 2024 – Melbourne - [Click here for details](#)
- 2024 06 19 to 20_Australian Hydrogen Conference_Adelaide - [Click here for details](#)
- 2024 07 09 to 11_Connecting Green Hydrogen APAC 2024_Melbourne – [Click here for details](#)
- 2024 09 17 to 20_Gastech 2024_Houston – [Click here for details](#)
- 2024 10 23 to 24_All Energy Australia_Melbourne – for details contact info@all-energy.com.au
- 2024 11_Asia Pacific Hydrogen Summit and Exhibition in 2024_(location TBA)



Snippets of Hydrogen making moves around the world

2023 10 31_ New technology generates steady high-temperature heat from hydrogen without combustion or fuel cells_Hydrogeninsight

Australian innovation company Star Scientific has begun commercialising a new technology that turns room-temperature hydrogen and oxygen into steady 700°C heat, with the only output being pure water. The Hydrogen Energy Release Optimiser, known as Hero, uses a globally patented catalyst that quickly heats up in the presence of H₂ and O₂ and then reverts to its original state with zero degradation, without the use of fuel cells or combustion. The exact make-up of the catalyst is a trade secret, but Star Scientific global group chairman Andrew Hovarth told the Asia-Pacific Hydrogen Summit in Sydney that it “is made from relatively common non-toxic elements”. [Click here for full article](#)

2023 11 01_ New energy projects face infrastructure bill_BN

Energy Minister Bill Johnston has previously acknowledged WA’s electricity transmission network needs a huge upgrade to connect the multiple renewable energy projects planned for the state. The estimate is 4,000 kilometres of new transmission lines. The federal government recently allocated \$3 billion from its Rewiring the Nation program to fund cheap loans for some of these upgrades in WA. However, the state government has emphasised that industry will also need to pay as the expected increase in energy demand is driven by industry rather than households in the metro area. Project developer Infinite Green Energy has already recognised this reality. Chief executive Stephen Gauld said Infinite was planning to extend the electricity grid by about 50km north of Eneabba to connect its planned Arrowsmith project.

2023 11 01_ Significant concentrations' of natural hydrogen detected at Australia's first exploration well — raising hopes of world-first commercial exploitation_Hydrogeninsight

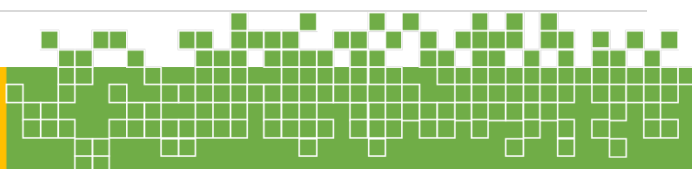
An Australian company hoping to find the world’s first commercially exploitable reserves of naturally occurring hydrogen has said that it has detected “significant concentrations” of up to 73.3% H₂ in gases emerging from its first exploration well in South Australia. This demonstrates that the site contains “an active hydrogen system”, said Brisbane-based Gold Hydrogen in a statement to the ASX exchange, suggesting that it is continuously producing new quantities of hydrogen. [Click here for full article](#)

2023 11 02_ Zempilas unveils hydrogen fuel plan_BN

City of Perth Lord Mayor Basil Zempilas is confident the planned installation of the state’s first public hydrogen vehicle refuelling station on Thomas Street will have a domino effect across the city. Mr Zempilas announced the city’s ambitious plan to install Perth’s first hydrogen refuelling station in West Perth under an in-principle partnership with ASX-listed Frontier Energy at a Committee for Perth lunch held as part of the World Energy Cities Partnership (WECP). Frontier Energy has been tapped to develop the station. Managing director Sam Lee Mohan told a press conference the company was excited to be involved with the plan. “When the station is actually approved and constructed it will be the first of its kind in Western Australia publicly available for refuelling hydrogen-fuelled electric vehicles,” Mr Mohan said. A private renewable hydrogen refuelling station was opened by ATCO and Fortescue Energy late last year, to fuel a fleet of Toyota Mirai as well as agreed third-party vehicles, including some from the WA Police.

2023 11 04_ Decarbonizing Mobility Forum: Amsterdam 2023 Outcomes Report_McKinsey

Senior leaders representing the full value chain of battery, hydrogen and mobility sectors gathered in Amsterdam on September 13 and 14 for the first **Decarbonizing Mobility Forum**. Here are some of the best



ideas on how to accelerate the transition to more sustainable transportation and the infrastructure and clean energy resources needed to support the journey. [Click here to access the Outcomes Report](#)

2023 11 06_Frontier Energy partners with City of Perth for WA's first green hydrogen refuelling station_Stockhead

An in-principal agreement has been reached between Frontier Energy (ASX: FHE) and the City of Perth to locate a green hydrogen refuelling station at a “convenient and accessible” site on Thomas Street in West Perth. Known as the home base for many junior resources companies, West Perth is just 2km from the Perth CBD and serves as the key access point for both the Mitchell and Kwinana freeways which connect the city’s northern and southern suburbs respectively. There are currently no publicly accessible green hydrogen refuelling stations for the fledgling fuel cell electric vehicle (FCEV) fleet that exists in WA. However, this is set to change with the incumbent State Labor Government seeking to introduce domestically produced green hydrogen in a bid to reduce its longstanding reliance on diesel. At last count, WA imports about 7.8 billion litres of diesel per year, equivalent to 2 billion kilograms of hydrogen. [Click here for full article](#)

2023 11 09_Siemens Energy officially opens 1GW PEM electrolyser factory in Berlin_Hydrogeninsight

Siemens Energy officially inaugurated its new 1GW PEM electrolyser factory in Berlin yesterday morning, in the presence of German Chancellor Olaf Scholz and Vice-Chancellor Robert Habeck. The plant — part of a 75:25 joint venture with French industrial gases giant Air Liquide — is expected to be ramped up to “at least 3GW by 2025 with potential for more”. The German company expects more than €1bn of revenue from its electrolyser manufacturing business in the medium term, a board member told journalists. [Click here for the full story](#)

2023 11 09_Woodside backs Scarborough's 2026 timeline_BN

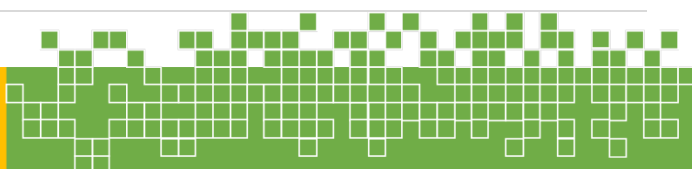
Woodside Energy continues to target first LNG production from its Scarborough project by 2026, despite recent regulatory setbacks and opposition from sections of the community. Scarborough’s setbacks and regulatory environment concerns were a key focus in questions from analysts at the company’s investor briefing on the east coast this morning. Overall, Woodside remains bullish on the outlook for LNG as part of the world’s energy mix. Ms O'Neill said the company’s strategy of delivering energy projects while progressing its new energy ambitions in hydrogen and carbon capture was also its climate strategy.

2023 11 13_A sector progress tracker for the net-zero transition_McKinsey

This interactive tracker aims to measure the progress and preparedness of ten key sectors on the path to achieving global net-zero emissions by 2050. It may be viewed as a contribution to the first global stocktake of progress against the Paris Agreement. [Click here to view the tracker](#)

2023 11 13_Fortescue's new plan for huge green energy hub_BN

Fortescue has staked more than 1,500 square kilometres of land near its Pilbara iron ore operations for a potential green energy hub, days after terminating an application for another site. The Andrew Forrest-backed miner last Monday laid claim to two huge parcels of land between Newman and Marble Bar, which together cover an area larger than Brisbane east of Fortescue's Iron Bridge mine. The applications were filed by Pilbara Energy, the same entity that made the application for the 5.4-gigawatt Uaroo renewable energy hub near Onslow, which was shelved days prior to this new application. Fortescue has forecast it would need up to 3GW of renewable energy and storage to meet its ambitious ‘real zero’ carbon goal for its iron ore operations by 2030.



2023 11 14_Australia's first hydrogen fuel cell prime mover is now available to buy_Stockhead

Pure Hydrogen (ASX:PH2) has hit a major milestone with its Australian designed hydrogen fuel cell powered prime mover, the Taurus, now available for sale. The Taurus is also the first HFC powered prime mover in Australia, and this new vehicle could transform Australian long haul transportation sector. The Taurus offers power, acceleration and range of more than 600km while producing zero emissions. Unlike electric vehicles, refuelling would take just 15 minutes instead of the hours that recharging a battery would take. [Click here for full article](#)

2023 11 14_Henrik Henriksson: Rapidly scaling a green steel start-up_McKinsey

The green business scale-up race is on—this was evident at McKinsey's recent Green Business Building Summit in Stockholm, where more than 500 green business leaders met to discuss the challenges and solutions for rapidly scaling climate technology. Henrik Henriksson, a keynote speaker at the summit, chatted to McKinsey senior partner Tomas Nauc ler and shared his experience of scaling up H2 Green Steel and out-executing in one of the hardest-to-abate industries. [Click here for full article](#)

2023 11 14_Ambition vs reality - Only a tiny proportion of the world's clean hydrogen projects have firm offtake deals_Hydrogeninsight

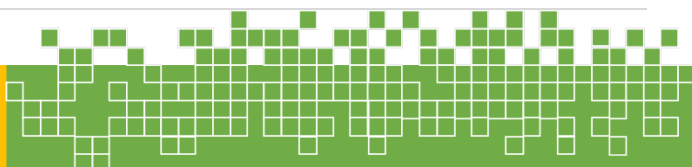
Hydrogen project developers around the world may have planned 47 million tonnes of annual clean hydrogen capacity by 2030 but only about one million tonnes of this is covered by binding contracts with offtakers, warns research firm BloombergNEF (BNEF). Offtake is generally considered a pre-requisite for hydrogen projects to reach final investment decision, with banks reluctant to sign off on loans without a clear source of revenue over the payback period. According to BNEF's database of hydrogen offtake, which tracks all announced projects with at least 20MW or 2,800 tonnes of annual production capacity, only 7.9 million tonnes a year has an offtaker attached, mostly through memoranda of understanding. [Click here for full article](#)

2023 11 16_Australian regulators greenlight offshore carbon capture and storage_Stockhead

Australia has key introduced legislative changes to enable offshore carbon capture and storage (CCS), signalling a milestone leap forward for projects in the pipeline. The legislation passed crucial amendments to the Environment Protection (Sea Dumping) Act 1981 designed to facilitate the injection and transportation of CO2 in Australian waters, a move that is set to de-risk the development of underground offshore storage initiatives. The capture and permanent storage of CO2 can play a critical role by providing a means to deliver direct, measurable emissions reduction as emission intensive industries transition to the use of carbon-free fuels and energy sources. Importantly, the amendments confirm the regulatory pathway for Pilot Energy's (ASX:PGY) Mid West Clean Energy Project. [Click here for full article](#)

2023 11 16_The roadmap to clean energy_Create

Reaching net zero requires a much bigger investment in clean energy solutions, according to former Australian Chief Scientist Dr Alan Finkel. However, as we move into a future powered by renewable energy, it also introduces a new problem. Oil, coal, gas and hydro power are all well-behaved sources of generation, Finkel said. But solar and wind, while wonderful in their lack of emissions, are terribly behaved. "We have to support them with storage," he said. "We have to support them with transmission lines. We have to support them with overbuilding [and] smart digitalisation of the operating system." A multi-pronged "solution is to use even more zero-emissions electricity, with water, to create hydrogen," Finkel said. [Click here for full article](#)



2023 11 17_BP's Kwinana hydrogen hub gains \$70m support_BN

The federal government has tipped \$70 million into bp's proposed Kwinana green hydrogen hub as the development enters the front-end engineering and design phase. The major funding announcement was made by federal Energy Minister Chris Bowen and Resources Minister Madeleine King amid the state's Energy Transition Summit in Perth. Bp's proposed hydrogen hub, dubbed H2Kwinana, would incorporate a 100-megawatt electrolyser, with the possibility to expand up to 1.5-gigawatt production through stages. Once operational, the endeavor could produce more than 14,000 tonnes of green hydrogen per annum for the industrial and heavy transport sectors.

2023 11 13_Sanjeev Gupta's GFG Alliance targets WA in low-carbon iron, steel race_The Australian Business Review

Sanjeev Gupta's GFG Alliance is hunting for land and iron ore supplies in Western Australia amid a sudden acceleration of interest in low-carbon iron ore and steel production, joining BlueScope Steel and international giants such as POSCO in a rush to establish a foothold in the resource-rich state. While WA's abundant renewable energy has made the state the target of a plethora of would-be green hydrogen producers, it is the state's vast natural gas reserves that have triggered the sudden interest in accessing industrial land and potential gas offtake in the west. The process seen as the most viable replacement for traditional blast furnaces is known as direct reduced iron, in which natural gas is used to convert magnetite iron ore into iron pellets – estimated to reduce carbon emissions from steelmaking by 25 per cent. In time, the natural gas used in the process could be replaced by green hydrogen to strip carbon emissions back to near nothing. [Click here for full article](#)

2023 11 20_Historic Bill Passes Parliament_SA Dept for Energy and Mining

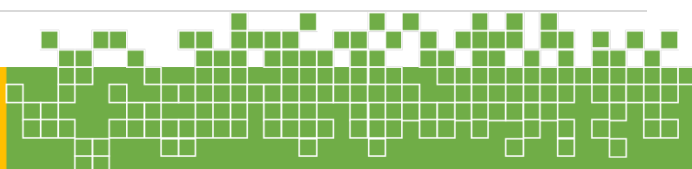
The world-first Hydrogen and Renewable Energy Bill 2023 has passed the South Australian parliament. This historic piece of legislation is set to open up global investment into the state's hydrogen and renewable energy industries, solidifying the state's position as a world leader in the global energy transition. The **Hydrogen and Renewable Energy Act 2023** will streamline the process for companies to invest in these industries, while ensuring that projects are carried out in ways that protect the social, economic and environmental needs of the state. <https://www.energymining.sa.gov.au/public-consultations/hydrogen-and-renewable-energy-act>

2023 11 21_Fortescue approves three green energy projects_BN

Fortescue Metals Group has pressed 'go' on two mid-scale hydrogen developments and a small trial project in WA but is not proceeding with the Gibson Island project in Queensland. Ahead of its annual general meeting in Perth, the company said it planned to invest \$US750 million (\$A1.15 billion) over the next three years on three green energy and green metals projects, in the USA, Queensland and WA. It also plans to "fast track" its work on three much larger hydrogen projects, at Pecem in Brazil, Project Chui in Kenya and Holmaneset in Norway. Today's update represents a scaling back of Fortescue's ambitious green energy plans. The company said its six projects would provide a "global glide path" for Fortescue Energy and its green hydrogen and adjacent technologies and industries to be firmly established.

2023 11 21_Hazer Group news release

Hazer Group Ltd ("Hazer" or "the Company") (ASX: HZR) is pleased to announce that construction of the Company's Commercial Demonstration Plant ("CDP") is complete and hot commissioning activities are underway. The Company confirms that the CDP remains on schedule to commence start-up and full hot operation, to produce hydrogen and graphitic carbon, in 2023.



2023 11 22_Half of all clean hydrogen produced globally could be transported long-distance by 2030_Hydrogeninsight

In a new “summary report” into global H2 trade, Global Hydrogen Flows 2023 Update, the Hydrogen Council speculated that global clean hydrogen production would reach 40 million tonnes by 2030, with 20 million tonnes transported between continents. This is a downgrade from the 70 million tonnes by 2030 it predicted in its 2022 report, due to a change in the modelling assumptions chosen by Hydrogen Council and its co-authors, consultancy McKinsey. The dampened outlook reflects a reality that cannot be ignored — despite positive trends, both producers and would-be users of hydrogen continue to face challenges, from increasing costs to technological uncertainties to a lack of coherent and stable regulation, including a global price on carbon, that impact the pace and buildout of the hydrogen economy. [Click here for full article](#)

2023 11 24_ Earth was 2 degrees warmer than pre-industrial levels for two days. What does that mean?_ABC News

On November 17 and 18, the world was, on average, 2 degrees Celsius warmer than pre-industrial levels for the first time in modern recorded history. Over the past 10 months, the average global temperature was more than 1.3C above preindustrial levels. Current greenhouse gas levels and emissions puts the planet on a trajectory to exceed Paris Agreement targets. [Click here for full article](#)

2023 11 24_GOT GAS: Toyota fires the first shot in hydrogen’s new offensive_Stockhead

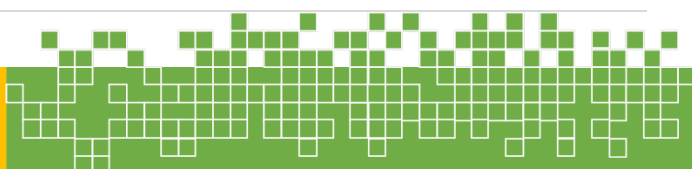
Some of the biggest proponents of hydrogen have come out swinging in recent weeks as they push to increase adoption of the green gas. Toyota, the world’s largest car maker and also the most stubborn in its advocacy for the use of hydrogen in consumer vehicles, unveiled a prototype of its HiAce van with a hydrogen-fuelled internal combustion engine in Australia. Let’s be clear. The Japanese car giant is not promoting hydrogen fuel cells that generate electricity to power motors; this is a petrol engine with minor changes to let it burn hydrogen instead of a fossil fuel to drive cylinders that move the van. However, the system still needs work with the van having a range of just 200km – far less than the 650km claimed by the company’s Mirai HFCEV.

2023 11 28_Germany does not know how it will fund its green hydrogen plans after court removes €60bn from federal budget_Hydrogeninsight

The status of the German government’s green hydrogen plans is unclear after the country’s constitutional court ruled earlier this month that the transfer of €60bn to the Climate and Transformation Fund (KTF) — which was due to finance a range of clean energy initiatives — was unconstitutional. Hydrogen Insight asked the German ministry for Economic Affairs and Climate Action (BMWK) how the ruling would affect the funding of schemes such as the H2Global programme, which aims to subsidise imports of green hydrogen, but a spokesperson was not able to say. [Click here for full article](#)

2023 11 30_Hard-to-abate sectors need to invest nearly \$5trn into clean hydrogen to reach net zero: World Economic Forum_Hydrogeninsights

Hard-to-abate industries around the globe will have to invest \$13.5trn into renewables, clean hydrogen and CCUS infrastructure, in order to reduce emissions to the point where the world can reach net zero by 2050, according to a new report by the World Economic Forum and Accenture. A total spend of \$4.88trn would be needed to build out the infrastructure required for the production and utilisation of green and blue hydrogen in hard-to-abate industries, while the study separately calculates that decarbonising existing grey ammonia is expected to cost an additional \$2.62trn. The switch to hydrogen and its derivatives would create a green



premium beyond what most sectors — except from oil & gas — could bear without significant subsidies, the report says. [Click here for full article](#)

2023 11 30_ Pure Hydrogen wins maiden US\$1.22m North American purchase order for two hydrogen fuel cell vehicles_Stockhead

Pure Hydrogen's majority owned hydrogen fuel cell electric vehicle company H-Drive International has received a US\$1.22m purchase order for two vehicles from a North American dealership. Under the deal with California-based Nutcher Hydrogen — a dealership specialising in supplying sustainable heavy fleet, machinery and equipment to heavy transport customers — H-Drive will supply a 6X4 prime mover and FC120C coach. Both vehicles are due for delivery during 1H 2024 and will be used as demonstration vehicles by Nutcher Hydrogen. The order is also the first into North America and represents a significant opportunity for the brand in one of the world's largest addressable markets. "This order substantiates our belief that there is large addressable market for clean hydrogen fuel cell technology, not only in Australia but throughout the world," managing director Scott Brown said. [Click here for full article](#)

2023 12 04_Hyped and expensive, hydrogen has a place in Australia's energy transition, but only with urgent government support_The Conversation

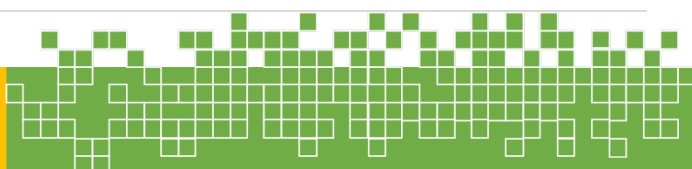
Australia is already struggling with the scale and pace of its energy transition. The scale of construction required to be a green energy superpower looks well out of reach. It's time to bring Australia's hydrogen dreams down to earth. Grattan Institute's latest report, Hydrogen: hype, hope, or hard work? identifies three hydrogen uses — ammonia manufacturing, high-temperature alumina processing - and green iron production — that Australian governments should focus on. Hydrogen is either the only or the most promising technical option to decarbonise these commodities. They would be large users of hydrogen, capable of producing viable export industries built on a supply chain big enough to lower costs. But for all three, the cost of using hydrogen instead of conventional fossil fuel is prohibitively high. Unless this cost gap is closed, these industries won't have a future in Australia. If governments want them as part of their "green superpower" vision, they need to act. [Click here for full article](#)

2023 12 05_ Gorgon \$40m fund for green tech_BN

The Gorgon Joint Venture will spend \$40 million to fund a new state-led green technology drive, as the gas producer seeks to make up for falling short of carbon capture goals. Announced by Innovation and Digital Economy Minister, and Science Minister Stephen Dawson at West Tech Fest conference's coast-themed day at Port Beach, the funding over four years will devote \$4 million to establishment of a new green technology hub while the bulk will be spent through a new Lower Carbon Grants Program — Gorgon Fund.

2023 12 12_ World's largest green hydrogen project 'has major problems due to its Chinese electrolyzers': BNEF_Hydrogeninsight

The world's largest green hydrogen project — Sinopec's 260MW Kuqa facility in Xinjiang, northwest China — has been operating at less than a third of its installed capacity due to various factors, including some missing safety features in the system design and lower-than-promised efficiencies, research house BloombergNEF (BNEF) tells Hydrogen Insight. The alkaline electrolyzers — supplied by three different Chinese manufacturers: Cockerill Jingli (120MW), Longi (80MW) and Peric (60MW) — each have their own technical issues, but all have one common problem related to their flexibility, according to BNEF analyst Xiaoting Wang. [Click here for full article](#)



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