

Newsletter



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

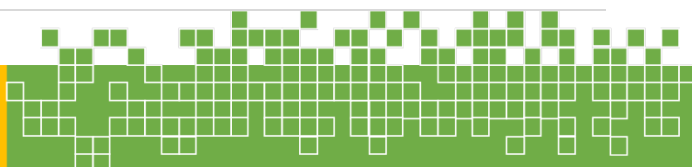
We value the support of our Corporate Members, and are proud of the contributions which they are making in our transition to cleaner energy, not just in Australia but globally. Welcome to our **Gascoyne Green Energy**, our newest Corporate Enterprise Supporter.

On the 8th of October, as the world marvels at the significance of the number 1.008 – the atomic weight of Hydrogen – we in Australia will celebrate our vision, our commitment, and our journey in leading the hydrogen revolution. Join us in-person for the **5th (Inter) National Hydrogen and Fuel Cell Day** on Sunday 8 October 2023 at Murdoch University in Perth.

One of our HSA initiatives is to help bridge the gap between industry and academia, through a series of online webinars referred to as **Hydrogen Links – Industry Focused Academic Research**. The objectives of this initiative are to raise the level of industry awareness and expertise and deepen the relationships between industry and academia within the HSA. Session 5 was a hybrid event with face-to-face networking at the **University of New South Wales**, and the presentations broadcast online across the country (refer to page 5). This was well attended and served as an excellent kickstart for the **HSA NSW Chapter**. An overview of the upcoming hybrid event at **QUT (Session 6)** is provided on Page 9, which will be used as a platform to launch the **Australian Hydrogen Research Network (AHRN)**, in collaboration with H2Q.

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/>



Australia Hydrogen Day – 5th (Inter) National Hydrogen and Fuel Cell Day – 08 Oct 2023

The **Hydrogen Society of Australia (HSA)** is pleased to facilitate a collaborative event with **Murdoch University and Innovate Australia** on October 08 (**Australia's 5th (Inter) National Hydrogen and Fuel Cell Day**). This free in-person event will include networking over lunch and refreshments. The following lineup of speakers will share their knowledge and perspectives on the role of hydrogen in facilitating our energy transition:

- Lorie Jones, Vice-President Hydrogen Society of Australia (event moderator)
- Hon. Bill Johnston, Minister for Mines and Petroleum; Energy; Hydrogen Industry; Industrial Relations
- Peter Kasprzak, Chairman, Innovate Australia; HSA Board Director
- Professor Peter Klinken, Chief Scientist of Western Australia (video recording)
- Anthony Sutton, Executive Director, Hydrogen and New Energies, DJTSI
- Ghazal Avijegon, Commercial Lead- Renewable Fuels, ATCO Gas Australia; HSA Steering Committee
- David Cavanagh, Managing Director, Integrated Energy Pty Ltd; Chief Hydrogen Officer, Hydrogen West and Davyd Hoopel, Hydrogen West
- Patrick Hartly, Leader, CSIRO Hydrogen Industry Mission (video recording)
- Stephen Gauld, Managing Director & CEO at Infinite Green Energy
- Martin Anda, Chair of Environmental Engineering, Murdoch University
- Andrew McCluskey, Executive General Manager Hydrogen, Siemens Ltd AU NZ; HSA Chairman

The event will kickoff with a Welcome to Country from an Indigenous Leader and will conclude with a guided tour of the Boola Katitjin facilities, delivered by Pratik Shrestha, Principal, Building Structures, Aurecon.

Go to our website for more details (click on link below). Register now to secure your seat:

<https://hydrogensociety.org.au/product/australia-hydrogen-day-5th-international-hydrogen-and-fuel-cell-day/>



AUSTRALIA HYDROGEN DAY
Australia's 5th (Inter)National Hydrogen and Fuel Cell Day
8TH OCTOBER
2023
Fuelling a Brighter Tomorrow, Today

 **Hydrogen Society of Australia**  **MU Murdoch University**  **INNOVATE AUSTRALIA**

Members Spotlight – Hydrogen Connect Summit 2023 – Highlights of the Tours (Arshdeep Kaur and Lorie Jones)

Lorie Jones (HSA Vice-President) and Arshdeep Kaur (HSA Steering Committee member) were pleased to represent the Hydrogen Society of Australia (HSA) at the recent Hydrogen Connect Summit in Brisbane (5 to 7 September). This was an excellent 3-day event delivered by the H2Q Team. Lorie and Arshdeep particularly enjoyed Day 1 of the conference which included several site tours in the Brisbane region.



BOC: Hydrogen Electrolysis Production in Action (Bulwer Island production site).

The first site visited was the Renewable Hydrogen Production and Refuelling Station funded by Australian Renewable Energy Agency (ARENA). This project is aiming to reduce emissions from transportation in Australia. Also, it aims to commercialize hydrogen usage in vehicular transportation. The green hydrogen will be produced by a 220kW electrolyser powered by solar energy generated onsite.

BP Lytton Hydrogen Refueller: BP Truckstop in Lytton: This was the second site visited after the electrolyser production plant. The BP Lytton Hydrogen Refueller station is a combined project of BOC (a Linde company) and BP Australia. For hydrogen refuelling, it is the first service station in Australia. The supply and installation is being supported by BOC, as it will dispense green hydrogen from the Bulwer Island production site, which is just 10 minutes from the BP Truckstop in Lytton.



Wildfire Energy: MIHG Waste to Hydrogen Pilot Plant Launch

The third site visit was to the Wildfire Energy Waste to Hydrogen Pilot Plant. This is Australia's first waste to hydrogen plant and was recently awarded a significant amount of money by the Queensland government to ramp up for production. The plant uses moving injection horizontal gasification technology (MIHG) to convert biomass and organic solid wastes into a synthesis gas (syngas). The gas is purified using standard equipment and hydrogen is separated out. The remaining gases are converted into electricity and heat. The desired outcome is to convert non-recyclable waste into hydrogen for use in fuel cell vehicles and power generation. Other benefits include decarbonising municipal, industrial and community operations, extension of existing landfill capacities and reduction in GHG emissions.

Endua

The Endua project is a self-contained energy storage system that is generating electricity from 100% renewable energy. Like diesel generators they have built sustainable and reliable electricity on demand. This project demonstrates that the choice of green hydrogen offers the flexibility to scale up electrolyzers and store energy in large quantities for long periods of time.



Key Takeaways: In summary, Lorie and Arshdeep took home a number of key learnings from the site tours. The tours provided onsite knowledge and demonstrated that hydrogen production plants are working. There are key challenges such as large-scale hydrogen storage that will need to be addressed. It was certainly an exciting and unforgettable day with the memories of hydrogen production and use cases. Great networking opportunities in the hydrogen space. Well done to the H2Q Team!



Hydrogen Links: Industry Focused Academic Research Session 5: Green Hydrogen Production from Water Electrolysis – Challenges and Opportunities [delivered on 2023 September 21]

The **Hydrogen Society of Australia (HSA)** was pleased to facilitate a collaborative event with **University of New South Wales (UNSW)** in partnership with the **ARC Training Centre for the Global Hydrogen Economy** on September 21 (**Hydrogen Links – Industry focused Academic Research Series – Session 5**). This was a hybrid event, with the presentation broadcast online, followed by an in-person networking event over lunch, and tours of the UNSW laboratories:



Professor Chuan Zhao is the Professor of Chemistry for Clean Energy and Sustainability at UNSW. Prof Chuan Zhao gave us a fantastic and well-attended talk on the challenges of electrolyzers **Green Hydrogen Production from Water Electrolysis – Challenges and Opportunities**.

This presentation by Professor Chuan Zhao highlighted the current challenges and opportunities for water electrolysis from a material perspective and showcased the Zhao's group efforts in developing electrocatalysts for the oxygen evolution and hydrogen evolution reactions in alkaline and acid electrolytes, as well as their investigations of the catalytic processes and the gas bubble behaviours.

The commercialisation of some of the Zhao's group work for the water electrolyser industry also was also introduced to highlight the significance of material design from atomic to macroscopic to industrial scale.

We learnt about Prof Zhao's groundbreaking catalysts with record-breaking efficiency. Following these details, Prof Zhao discussed his current research, understanding how these perform when facing industrial conditions, which our industry audience found very relevant. Then Prof Zhao told us how these catalysts have been commercialized in the last decade and concluded with an overview of the way forward for high-efficiency and low-cost electrolyzers.



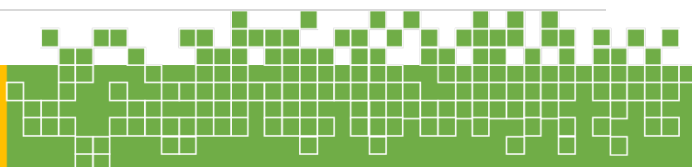
Above Left to right: Quentin Meyer, Kamran Dastafkan, Yanan Li and Ibrahim Ai



After an interesting Q&A and a light lunch, this was followed by a lab tour from **Dr Quentin Meyer** (HSA NSW Chapter Leader) and our HSA member **Dr Kamran Dastafkan**. We saw how catalysts are prepared and tested in real electrolyzers. The facilities in Prof Zhao's group are very impressive, and we learnt a great deal about how research gets done!

This was a successful launch of our NSW Chapter in-person events, and we look forward to more!

Recordings of this event will be available soon...



Career Opportunities:

There are a number of academic and employment opportunities highlighted in our 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/>

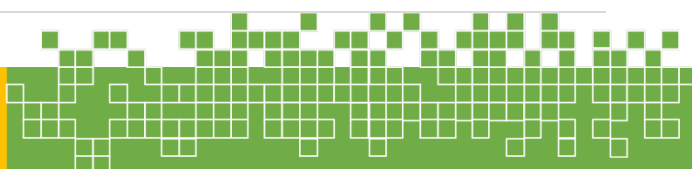
For the full list of opportunities currently advertised on the HSA website, [click on this link](#)

Member Benefit – WA Business News Subscription (free guest access and discount)

The Hydrogen Society of Australia (HSA) has an established relationship with Business News (BN), to explore and collaborate on opportunities to promote hydrogen initiatives to professionals and the broader community. Business News is a respected, trusted, and credible independent news source for WA businesses and for any Australian with an interest in commerce, politics, and industry. Business News would like to offer HSA members guest access for 4 weeks to explore our full content and features so that key individuals can gain a better insight into why Business leaders choose to engage with us year on year.

If you are interested to have free guest access for 4 weeks to explore Business News, please select the WABN subscription product within our HSA Members Only portal:

<https://hydrogensociety.org.au/product/hsa-members-benefit-wa-business-news-subscription/>



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

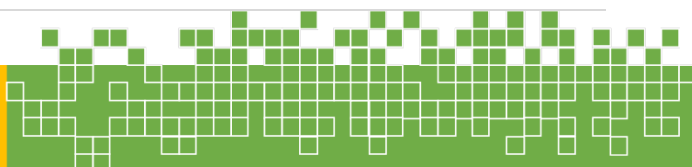
Log in to your password protected HSA members portal and you can access the videos and PowerPoint presentations from past events in the **Knowledge Centre**: <https://hydrogensociety.org.au/knowledge-centre/videos/>. HSA members can also view the event proceedings and find the links to the various presenters 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 masterclass for all current or aspiring hydrogen industry specialists, delivered by Australia's leading hydrogen industry experts. Get 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, refuelling, hydrogen process safety and more.

More information will be coming soon – save the date in your calendars!



Upcoming Hydrogen Events

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 this Issue 20, page 5.

Hydrogen Links - Sessions Upcoming:

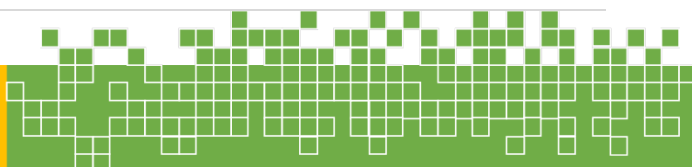
- QUT / AHERN (**Andrew Dicks**) – date confirmed for October 19. [Click here to register now](#)
- CO2CRC (**David Whittam**) – date confirmed for December 05. Registration will open soon.
- HYSATA (**Gerry Swiegers**) – date confirmed for January 30.

[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); 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 U Tube at the following link: [Click here for GlobH2E webinars](#)



Hydrogen Links – Industry focused Academic Research Series – Session 7 – QUT & AHRN

Join Dr. Andrew Dick as he discusses practices and opportunities to accelerate development of the Hydrogen industry in Australia through collaboration. This presentation will give a unique perspective from Australian Hydrogen Research Network (AHRN) and valuable insights into the active landscapes of research and collaboration.

Brisbane-based individuals are invited to join the presentation in-person at QUT Campus for networking, QnA, and a tour of the laboratory facilities. [Click here for more information and to register](#)

Hydrogen Safety and Technology Workshop – Sydney – 25 October 2023

HSA's corporate enterprise supporter Gexcon is hosting a Hydrogen Safety and Technology Workshop which will be held on 25 October 2023 at the Doltone House - Harbour in Sydney. The Hydrogen Safety and Technology Workshop 2023 brings together engineers, consultants, researchers and regulators from all corners of the hydrogen industry for a day of collaboration, learning, and networking. The topics that will be discussed in the workshop include:

- Hydrogen safety 101 and the latest research findings.
- Lessons learnt from hydrogen incidents.
- Consequence and risk modelling to assess hazards of new energy carriers.
- Software for the safety analysis of new energy carriers with application examples.
- The best practice in combining CFD and integral modelling.
- Regulatory compliance for hydrogen safety in Australia.
- [Click here for more details and to register](#)

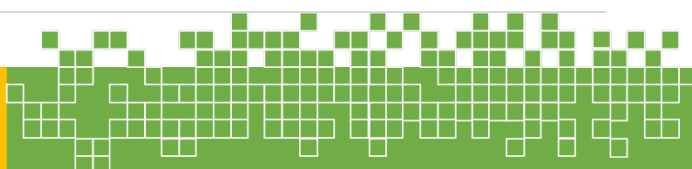
Asia Pacific Hydrogen 2023 Summit and Exhibition- Sydney – 26 to 27 October 2023

The Sustainable Energy Council in partnership with the Australian Hydrogen Council and with the support of Austrade and NSW Government, are delighted to announce that the Asia Pacific Hydrogen 2023 Summit and Exhibition will be taking place on 26 – 27 October at the ICC in Sydney, Australia. Gathering global hydrogen leaders to meet with the region's policy makers and energy stakeholders, Asia Pacific Hydrogen 2023 is the must attend event to access the latest project and technology developments and sign new partnerships to drive the industry forward. Join us in Sydney to meet and do business with Asia Pacific's hydrogen pioneers and establish key supply chains in the region to deliver our Net Zero ambitions.

The Hydrogen Society of Australia is pleased to participate in this event as a key supporting organisation. [Click here for further information](#)

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

The Hydrogen Society of Australia has partnered with the organizers of the first natural hydrogen worldwide Summit. The HNAT2023 event will take place on 27 and 28 November at the Esplanade Hotel in Fremantle. The theme of the Summit is 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 our state can boast about. [Click here](#) for more information and to register at Early Bird rates.



Snippets of Hydrogen making moves around the world

2023 09 01_Electricity reliability and blackouts remain big challenges as the energy landscape changes_ABC News

AEMO's latest outlook warns that the risk of blackouts in Victoria and South Australia this summer is higher than previously forecast. The outlook is double-edged, and flags both increased risks (in terms of reliability) and increased opportunities (for generators) over the decade. AEMO's latest snapshot captures the National Energy Market (NEM) at a moment of major change, as it weans itself off fossil fuels and moves towards other sources of power. "With up to 62 per cent of its coal fleet now expected to close before 2033, Australia's NEM is perched on the edge of one of the largest transformations since the market was formed," the report states. [Click here for full article](#)

2023 09 03_EPA backs Woodside's 500MW solar plan_BN

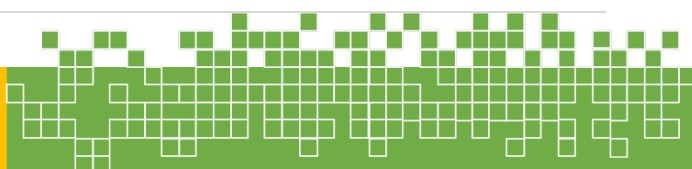
The oil and gas giant is proposing to build an up to 500 megawatts solar photovoltaic farm and battery energy storage system at the Maitland Strategic Industrial Area 15 kilometers south-west of Karratha. Fortescue Future Industries, Yara International, Hexagon and Perdaman Chemicals and Fertilisers have been approved as proponents for the industrial area by the state government. The Environmental Protection Authority today announced it had recommended approval for Woodside's solar project subject to conditions to mitigate impacts on flora, fauna, foraging vegetation and Aboriginal heritage. The environmental watchdog's report to the Minister for Environment will now be subject to a three-week public appeal period until October 5. The minister will then make a final decision on the solar project proposal. [Click here for full article](#)

2023 09 06_Resources industry report card spruiks 'climate action'_BN

Vegetable oil, old mining shafts to store energy and turning coal into hydrogen are among the technologies being trialled to reduce emissions in the resources sector. A climate action report released by the Minerals Council on Wednesday marks the first three years of the industry's net-zero by 2050 efforts. Other more contentious case studies include Glencore's project that would use coal and carbon capture and storage to make hydrogen and ammonia. The resources sector is also competing for a share of the \$15 billion National Reconstruction Fund and \$1.9 billion Powering the Regions Fund, which are key planks of federal Labor's push to reduce nationwide emissions by 43 per cent by 2030. [Click here for full article](#)

2023 09 07_Gascoyne joins WA EV network_BN

The Gascoyne region is now part of Western Australia's electric vehicle network, with a new fast charger launched in Carnarvon today by Horizon Power. The 150-kilowatt DC fast charger, supported by a 22kW back-up AC charger, make up the charging station installed at the Carnarvon Visitor Centre. Carnarvon is the first of six Gascoyne locations to receive a fast charger from Horizon as part of the WA EV network, which between Horizon and Synergy is installing 98 stations across 49 locations at an average distance of 200km. It follows yesterday's launch of an EV charging station at Kings Park, the first unveiled in Perth as part of the network. There are now 10 EV charging stations active in the WA network, including sites at Broome, Albany and Geraldton, with the full network to span 7,000km from Kununurra to Esperance and out to Eucla on completion. [Click here for full article](#)



2023 09 07_Hydrogen development can unlock new industries for Australia but only with urgent action_The Australian Business Review

The development of hydrogen as a fuel source could be a catalyst to new industries emerging in Australia, but only if the government seizes the opportunities, warns the boss of Australian Industry Group. In a speech that underscores growing concern within Australia's business community that the country is at risk of losing out in the race to be a hydrogen leader, Ai Group chief executive Innes Willox said the development of hydrogen could be a catalyst for new industries to develop in Australia. *"The same physics problems that make seaborne hydrogen trade unattractive for cost-sensitive industrial customers could make it much more attractive for those industries to relocate to where the hydrogen they need is made,"* Mr Willox said at the Hydrogen Connect Summit in Brisbane. *"We have to deliver major projects fast and reasonably cheaply. The cost of renewables is in building and financing, not operations. Exporting hydrogen doesn't pay, unless electricity here costs half what it does there. We'll fail that test without social licence, timely planning, supply chains and skills,"* he said. [Click here for full article](#)

2023 09 11_2023 on track to be world's hottest year on record, temperatures exceed 1.5C above preindustrial levels for first time_ABC News

This year is now almost certain to become Earth's warmest on record after a hot July and August saw global temperatures reach the Paris Agreement target of 1.5 degrees Celsius above pre-industrial levels for the first time. It's not just air temperatures at unprecedented levels this year. Major global climatological records have fallen at a rapid rate across the Earth's atmosphere, hydrosphere and cryosphere, including:

- Record-high monthly air temperatures in June, July and August
- All-time record daily air temperature, passing 17C for the first time
- Record-low Antarctic sea ice in May, June, July and August
- Record-high monthly ocean temperatures in April, May, June, July and August
- All-time record daily ocean temperature, passing 21C for the first time

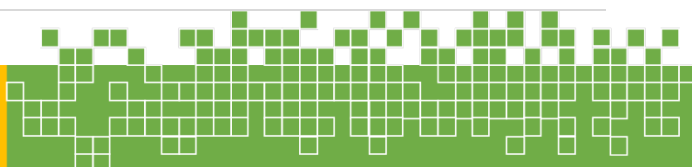
[Click here for full article](#)

2023 09 11_Mike Cannon-Brookes vows to deliver on Sun Cable vision of renewable energy from Darwin to Singapore_The Australian Business Review

Under the plans for the project, Sun Cable will develop Australia's largest solar farm near Tennant Creek and then ship the clean energy to Darwin via a 6.4GW, 800km overhead transmission line. The energy will be supplemented with 36-42 gigawatt hours of battery storage. Mr Cannon-Brookes said the first stage development will see 900MW of electricity remain in the NT to service demand from industrial customers in the Middle Arm Sustainable Development Precinct in Darwin, Northern Territory. The Middle Arm Sustainable Development Precinct is the centrepiece of the NT's economic growth plan. It wants to lure development in renewable hydrogen, advanced manufacturing, carbon capture and storage, and minerals processing, which will all need significant amounts of electricity. A further 1.75GW of electricity will be delivered to Singapore, and Mr Cannon-Brookes said the venture has secured interest for about six times of the energy on offer. [Click here for full article](#)

2023 09 12_NSW to spend \$1.8bn to accelerate energy transition_The Australian Business Review

NSW will spend \$1.8bn to accelerate the development of renewable energy as the state's transition away from fossil fuels languishes. The Labor government said it will create the Energy Security Corporation, a state-owned investment vehicle for renewable energy projects and it will have a budget of \$1bn. NSW said it will invest another \$800m to accelerate development of transmission infrastructure for its Renewable Energy



Zones (REZ). Early spending of the new funds will be concentrated on the CentralWest Orana REZ. NSW's plan is to develop so-called "renewable energy zones" (REZ) that contain a mix of concentrated zero-emission sources allowing the state to minimise on building new transmission lines. [Click here for full article](#)

2023 09 12_ 'Strong interest' : Pure Hydrogen inks +\$700k deal for two battery electric buses as order book continues to grow_Stockhead

Pure Hydrogen (ASX:PH2) plans to supply hydrogen fuel to both Australian customers and regional Asia Pacific markets through the production of Green, Emerald, and Turquoise hydrogen. It is building a network of hydrogen production facilities across the country while also accelerating its "go-to-market" strategy, supplying high-quality BEV and hydrogen fuelled buses and trucks to the Australian market. In its latest development, PH2 has executed a sales agreement for the supply of two electric, 18-seater mini-buses to Sapphire Coast Bus lines in NSW on a cash basis, with the buses expected to be delivered during the first quarter of 2024. [Click here for full report](#)

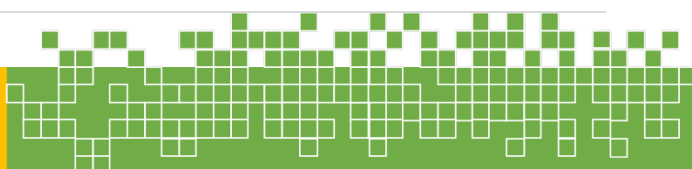
2023 09 11_ 'Seriously underestimated' | Vast amounts of hydrogen will be required for back-up power in net-zero system: Accelerate Hydrogen newsletter

Hydrogen will play a critical role in a net-zero electricity system, as other energy storage methods will not be able to provide the scale of back-up power required, according to a new study from the London-based Royal Society. Britain would need caverns containing about 2-3 million tonnes of H₂ to keep the lights on during prolonged periods of low wind and sunshine, says Royal Society. The report, simply entitled Large-scale electricity storage, determined that up to 100TWh of storage would be needed by 2050 if the UK were to meet its legally binding net-zero target — enough to power a quarter of the country's current electricity demand and the equivalent of 5,000 copies of the UK's largest pumped hydro plant at Dinorwig in Wales. The report recommends that construction of large-scale green hydrogen storage should begin now. "Other countries have ambitious plans to develop hydrogen storage starting now. If the UK does not emulate them, the electricity storage necessary to ensure low carbon, reliable and affordable energy supply will not be available when it is needed," it explains. "Construction of a large green hydrogen production and storage facility would appear to be a no-regrets option. It would provide a much better idea of what hydrogen will cost and set Great Britain on the road of cost reduction through learning. The construction of others should follow quickly." [Click here for full article](#)

2023 09 14_ Hydrogen Insights_Accelerate Hydrogen newsletter

Hydrogen Insight has compiled a list of the 11 largest renewable H₂ projects yet announced — based on data exclusively provided by research house BloombergNEF (BNEF), as well as publicly available information — which, if fully built out, would provide more than 100 million tonnes of green hydrogen a year, roughly a third of the amount the IEA says will be needed in 2050 to reach net-zero emissions. Canada, Egypt, Australia, and Mauritania each have two projects on the list, with the rest spread between Oman, Mozambique and Kazakhstan. The two Australian projects which have made it onto the top 11 are:

- **4th: Western Green Energy Hub.**
 - *Location:* Western Australia, specifically, the Goldfields-Esperance region in the southeast of the state
 - *Developers:* InterContinental Energy (based in Singapore), CWP (founded in Serbia), the Mirning Traditional Lands Aboriginal Corporation, and potentially South Korean power company Kepco
 - *Estimated annual production:* 3.5 million tonnes
 - *Electrolyser capacity:* 35GW (BNEF estimate)
 - *Power source:* 50GW of wind and solar



- **10th: Australian Renewable Energy Hub**

- *Location:* The Pilbara region in the north of Western Australia
- *Developers:* Oil major BP, Australian-headquartered bank Macquarie, InterContinental Energy, and CWP
- *Estimated annual production:* 1.6 million tonnes
- *Electrolyser capacity:* Estimated to be 14GW

[Click on this link for further information](#)

2023 09 15_Up and coming technology hydrogen is supporting the energy transition_Wood Mackenzie

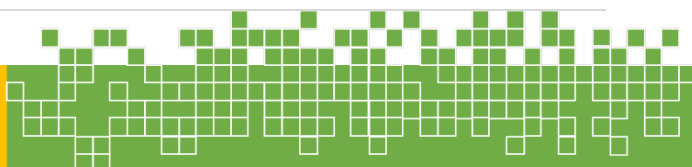
Hydrogen is the hottest emerging low-carbon fuel. Hydrogen's potential to play a critical role in the transition can't be understated: it's capable of delivering 20% of the emissions reductions needed for net zero by 2050 from a standing start. But it will be a decade before capacity reaches material scale. The project pipeline tallies over 90 Mtpa currently and needs to grow six-fold. Developers are now shifting from the concept stage to execution; use-cases have multiplied. The initial focus on the transport and steel sectors has widened into projects across dispatchable power, aviation, marine and long-duration energy storage. So far, few have reached final investment decision but the crystallisation of government support will change this. Larger proposals, however, will simply take time to secure sufficient offtake and financing, and will grapple with integration into the current energy system. Some developers will look to bring external capital in at the development stage including Big Oil. [Click here for more information](#)

2023 09 19_Hydrogen refresh reflects rapid change_BN

Rapid change in the hydrogen context on a national and global scale and technological feasibility are among the reasons cited for the state's decision to refresh its Renewable Hydrogen Strategy. A four-week public consultation period was announced today, with a paper released for feedback and stakeholder input on the strategy. It comes after the state hit all its targets for 2022 as mapped in the previous Renewable Hydrogen Strategy, which was one of just five strategies of its kind when released. The state's 2019 strategy set four focus areas, being export, remote application, hydrogen blending in natural gas networks and transport. "The overall vision remains, however the changing international environment including significant global policy shifts, and the completion of the 2022 strategy goals necessitate a refresh to Western Australia's Renewable Hydrogen Strategy," the consultation paper said. The new strategy will consider the objectives of decarbonisation and diversification, and whether broader market measures are needed. New pillars will be set to reflect the development of the hydrogen industry since 2019, and aspirational goals for 2030 are also being considered. "Western Australia has established itself as a global leader in the emerging renewable hydrogen industry in less than four years," hydrogen minister Bill Johnston said. [Click here for full article](#)

2023 09 26_Pilot closes in on regulatory approval for Mid-West CCS project_Stockhead

Pilot Energy is on the homestretch to receiving approval in the coming months from the Australian government for its Cliff Head oil field in WA's Mid-West to be converted into a clean energy project, starting with the stage one carbon capture and storage (CCS) project, capable of storing over 1 million tonnes per annum (Mtpa) of CO₂ starting in 2026. Pilot lodged its application to the National Offshore Petroleum Titles Administrator (NOPTA) to have Cliff Head declared as an identified greenhouse gas storage formation late last year. The submission was the first to be made under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 and the Offshore Petroleum and Greenhouse Gas Storage (Greenhouse Gas Injection and Storage) Regulations 2011. [Click here for full article](#)

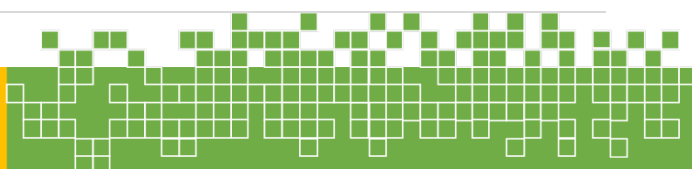


2023 09 26_Sydney Water studying hydrogen generator_Inside Water

Sydney Water, along with construction partner, John Holland, is conducting a 28-day trial of a revolutionary hydrogen generator. It will help power the construction of the \$1.2 billion-dollar Upper South Creek Advanced Water Recycling Centre at Kemp Creek (AWRC). The utilisation of a 100 kVA hydrogen generator in place of a traditional diesel-powered generator for a working year would eliminate 152 tonnes of greenhouse gas emissions being released into our atmosphere. Transitioning to clean emitting Hydrogen Generators is equivalent to taking 50 cars off Australian Roads every year. The GEH2 Hydrogen generator utilises a hydrogen fuel cell and a lithium-ion iron phosphate battery and has the equivalent power of a diesel generator. The 100kVA hydrogen generator can power over 70 homes at any one time. It can be used on-site to power cranes, and other heavy equipment. The carbon-neutral gas is produced in Australia and emits water vapour as a by-product. [Click here for full article](#)

2023 09 28_Quantum 'jellybeans' to green hydrogen: Four new tech developments_EA Create

New efficiencies in generating hydrogen from solar energy have been achieved at the US's Rice University via a new photoreactor that brings electrocatalysts together with halide perovskite semiconductors. Using an anti-corrosion barrier to insulate the device's semiconductor from water, the team was able to convert solar energy to hydrogen with a 20.8 per cent efficiency. "All devices of this type produce green hydrogen using only sunlight and water, but ours is exceptional because it has record-breaking efficiency and it uses a semiconductor that is very cheap," Rice University doctoral student Austin Fehr said. "We designed a system that absorbs light and completes electrochemical water-splitting chemistry on its surface." The team's breakthrough came when it produced a barrier with two layers: one to protect the semiconductors in water and another to facilitate a continued flow of electrons. [Click here for full article](#)



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