



# WHITE PAPER

H2Q Launch of the  
**START UP MEET UP**  
Hydrogen Industry Innovation  
and Start Ups Working Group



## PURPOSE OF THE PAPER

*This paper is a summary of the H2Q and Endua Innovation workshop held on Wednesday 2<sup>nd</sup> November 2022. The information collected reflects the discussions from attendees at the event and is captured here to provide information on the challenges and issues faced by Hydrogen start ups in Supply chain and end user demand development to help inform action and provide reference to interested industry and stakeholders.*

## SUMMARY

H2Q have recently formed a partnership with Endua. A key purpose of the partnership is to provide the opportunity for other innovation and start up companies in Hydrogen to lean into discussions that help accelerate the product and service development across the Hydrogen value chain.

The first meet up successfully saw over 30 people in attendance, including engaging 3 of the 5 Hydrogen Connect Summit Pitch Battle entrants, as well as other start-ups and supporters from industry and government to talk about the key issues and challenges facing start-ups. The workshop focus areas included supply chain and end-user / customers.

In Supply Chain, it's clear that start-ups continue to grapple with relevant and accepted Australian standards and certification of equipment and engineering in order to bring their business plan to life, because the standards don't yet exist. Many are finding they can rely on EU standards, and get support from authorities but this is not widely known and is time consuming to navigate.

Training of a skilled labour force to meet demand across the supply chain is also critical, as is the need to determine quickly if industry will 'make or buy' the required equipment with constraints identified both domestically and internationally.

Manufacturing products and components could be recognised as a possible solution, although one that may come at a higher price, which would challenge the economics of the end product offer.

Collaboration between organisations and/or vertical acquisition to 'own' as much of the supply chain as possible was suggested as a mechanism to bring down costs, taking out the need to create a profit at every step of the supply chain.

In discussions about customers, there was an overwhelming sense of uncertainty and much of this was put down to customer awareness, access to information and education. The workshop identified the variability to the types of uses for Hydrogen and how this changes the requirements of the pressurisation of the gas, or even may change the molecular compound for transport or use i.e. NH<sub>3</sub> instead of H<sub>2</sub>.

The competition between Electrification of everything v. Hydrogen is also a perceived threat to industry development, with most seeing it as one or the other and not fully understanding the opportunities based on use cases. There is a real need for leadership that is coordinated and

provides clear direction. This was seen as critical for creating a pipeline of talent (skilled and trained workforce) as well as for investment.

Two themes emerging from both areas were the need for government involvement and creating certainty through supporting reliable and affordable supply chain development in markets for off-takers to commit to purchasing Hydrogen.

The groups observed that greater leadership from federal and state government in the discussion of electric v hydrogen was sorely needed, and that a strategic choice will influence infrastructure investment and send signals to the market downstream to build out supply chains based on the Infrastructure being supported (Pipelines v transmission).

In addition, policy to support proof of origin, development of manufacturing for 'make' of products where supply constraints exist and to increase domestic demand was noted as critical to the industry to overcome the current paradox.

## ACTIONS FOR H2Q FROM THIS SESSION

- Distribute the white paper to the H2Q Ecosystem
- Share information with other H2Q working groups for use in developing activities for industry
- Broadcast insights with Industry at events and other engagement opportunities
- Discuss themes of support and action with key QLD Government departments including the Office of the Chief Entrepreneur and Scientist as well as the Engagement Director in Hydrogen for the Department of Energy and Public Works.

## WORKSHOP NOTES

The following themes and their subsequent points were identified and discussed by the working group participants, when asked to talk about the challenges and issues for start - up's in the Hydrogen Industry. They are points raised on which the summary first 2 pages were based.

## SUPPLY CHAIN CHALLENGES AND ISSUES

### STANDARDS, CERTIFICATION

- Lack of Standards - Australian standards don't address the equipment that is being brought in
- European standards are further advanced, and generally accepted by Australian authorities
- Certification of equipment, design and labour is immature
- Training - still developing and not yet a truly known and recognised set of qualifications exist for those who want to work in Hydrogen
- Proof of origin - using block chain and other methods not yet mature or supported by government or industry - needs leadership
- Influences in supply chain development include whether we are looking at large scale molecule or electrons movement is influencing supply chain development - pipelines v transmission network

### SKILLED LABOUR FORCE

- Shortage of experienced and clever labour force
- In oil and gas, process automation improved efficiencies in some parts of their operations by more than 90%, leading to 1 person being able to perform the role of 10. The same needs to be considered up front for hydrogen as we won't have access to the same numbers of trained and skilled labour force.

### MANUFACTURING - MAKE V BUY

- Material supplies for construction across the Hydrogen value chain are in short supply from global suppliers and sadly not being manufactured here i.e. Carbon fibre
- Global supply chains face constraints
- Pricing (higher demand globally is leading to increased prices across the board)

- Lead times
- Local manufacturing may not be price competitive

## GOVERNMENT'S ROLE

- Lack of Government support to date has been experienced by many of the organisations who attended the workshop
- Demand increasing in other regions (ie USA) that are faster to move or have more government support could see supply becoming more challenging in other regions
- Government needs to play a role and not just be in it for the photo opportunities

## HOW TO DEVELOP?

- Balance between export and domestic opportunities - a strong pipeline of hydrogen export projects helps build certainty and therefore strengthens the domestic market. And vice versa - if Australia has strong H2 infrastructure it makes export projects more attractive and commercially viable.
- Vertical Integration of equipment production - Pilots to demonstrate the whole supply chain can be broken up and redundancy built into the supply chain with multiple suppliers once the case for economic delivery is proven
- Have supply chain participants considered circularity in the supply chain / s - How might we use all inputs in the production process including waste?
- What are the negative impacts to mitigate the choices that are made on how hydrogen is produced, the inputs and various solutions for supply chain ie do we create other issues like a scarcity of new economy minerals or create unrecyclable waste etc

## HYDROGEN END USER / CUSTOMERS

### USE CASE IDENTIFICATION / CLARIFICATION

- First, best Use cases and how these compare to the current input energies and the conditions for identifying the next use cases for hydrogen needed with economic analysis
- Hydrogen Compression varies depending on the end user, use cases. Different requirements for gas pressure / or liquification exists for
  - Steelworks v manufacturing
  - Education and research
  - transport / mobility and
  - export
- Where hydrogen can add value into existing business products and services

### RISK AND UNCERTAINTY

- Revenue Certainty Policy and offtake certainty Supply chain certainty
- A lot of uncertainty on the offtake side still one way to get around that would be Education and marketing
- Trusted information to guide investment decisions - ie end user demands
- Lower risk business models for early opportunities
- "system" provides several opportunities for different end users (O2 H2)

### SKILLED LABOUR FORCE

- Pipeline of talent Raising awareness and inspiration early so school leavers choose a career supporting the hydrogen value chain.

### MOVING TO GREEN / RENEWABLES

- End users and transition phase will evolve and transition the industry from current sources of energy to renewable sources

### ELECTRIC V HYDROGEN

- Possible competitors to hydrogen use and scaling - electrification 85% hydrogen 15% will be used where high instantaneous energy demand is needed and hydrogen can be stored more densely ie \shipping, transport
- Hydrogen powering generators with gas for market response as this offers agility - how do we replace current use of gas with Hydrogen?

## H2Q HYDROGEN QUEENSLAND

Hydrogen Queensland is a non profit, industry led organisation committed to the acceleration of hydrogen adoption and the development of clean energy solutions to deliver new jobs, regional prosperity and the decarbonisation of our industries and communities. Our Working groups lead the identification of priority industry development actions that participants collectively identify as the most important to address.

Our Start Up, Meet Ups will be hosted quarterly by H2Q in Brisbane and online in a hybrid delivery, with the next Meet up in February 2023.

Have a burning platform? Looking for an introduction? Or need specific support / information for your start up? If you would like more information, please reach out to H2Q CEO Heidi Breen - [heidib@h2q.com.au](mailto:heidib@h2q.com.au)