Q4 Energy Newsletter

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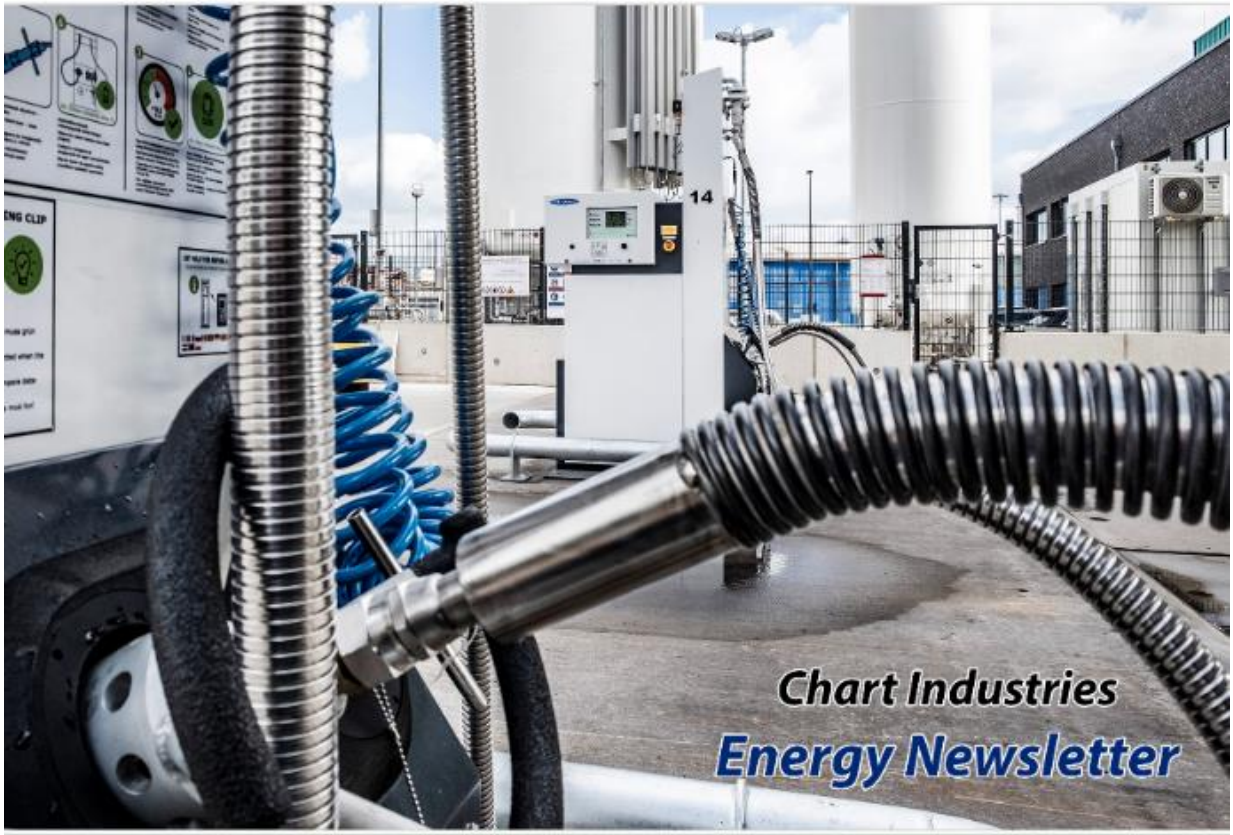

Clean Energy in Australia

"Working for one of the best and most innovative Cryogenic companies in the world, has been a wonderful experience over the last 16+ years. Over the time, I have worked across all our divisions and feel the enthusiasm and professionalism around the world when I visit a Chart location. I am truly blessed to work for Chart Industries, and feel proud to represent Chart on a global basis, out of my small office in Australia."

-Mark McKechnie, Director of Hydrogen Sales - Asia

The clean hydrogen industry is enjoying considerable momentum in Australia. Projects to prove and develop hydrogen's potential in emerging uses are already underway globally and in Australia. Australia ratified the Paris Agreement in 2016, committing to achieve a 26-28% reduction in greenhouse gas emissions by 2030. Hydrogen is only one of the technology options that can play a role in helping Australia meet these decarbonisation targets. Australia is blessed with a significant land mass (the size of Mainland USA), with a tenth of the population of the USA, with an abundance of land, sun and wind. This makes Australia a key player in the Hydrogen space, while attracting a large number of overseas companies, seeking to utilise these natural treasures to export hydrogen to fuel the world.
Australia has the resources and skills to build an economically sustainable domestic and export

hydrogen industry. Countries such as Germany, Japan and South Korea have signaled an intention to import low-emissions hydrogen for energy and transport purposes and all have their eyes on Australia to provide this hydrogen.

The Japanese Government has a target to procure 300,000 tonnes of low-emissions hydrogen annually by 2030. South Korea is aiming to produce 6.2 million hydrogen cars for domestic use and export, as well as build 1,200 refueling stations by 2040. The global market for renewable hydrogen is expanding, presenting an important economic opportunity for Australia. Parts of Australia have the highest solar output in the world and states like Western Australia, being on the western coast of Australia, have an abundance of wind power. With a vast land mass, and low population density, Western Australia is leading Australia's hydrogen export push.

In 2018, Western Australia was the second largest exporter of LNG in the world and has established a strong reputation internationally as a capable and reliable partner. This established industry and its ability to develop collaborative and globally competitive supply chains, has resulted in many of the world's largest oil and gas companies having a local presence in Western Australia. Many of these companies have also expressed an interest in joining the green Hydrogen movement.

In September this year, the Australian Government announced that it would support seven hydrogen hubs, with a funding amount of $464 million. Seven locations have been suggested, with a final decision to be made in 2022. Applicants for funding are expected to be consortia of Australian and international industry players. Favorable locations will be those with large scale industrial energy demand, a skilled workforce, existing infrastructure that can be utilised, and proximity to energy resources. Chart is working with several of these players now to position our equipment for use in these hubs, as final decisions are being made.

The industry may appear to be slowly finding its feet, with disaggregated projects from a number of sectors looking to develop links across the supply chain, but the future of the hydrogen industry over the coming decade looks bright, as it aims to take its first steps from crawling to walking.

Horizontal Liquid Hydrogen (HLH2) Fuel System

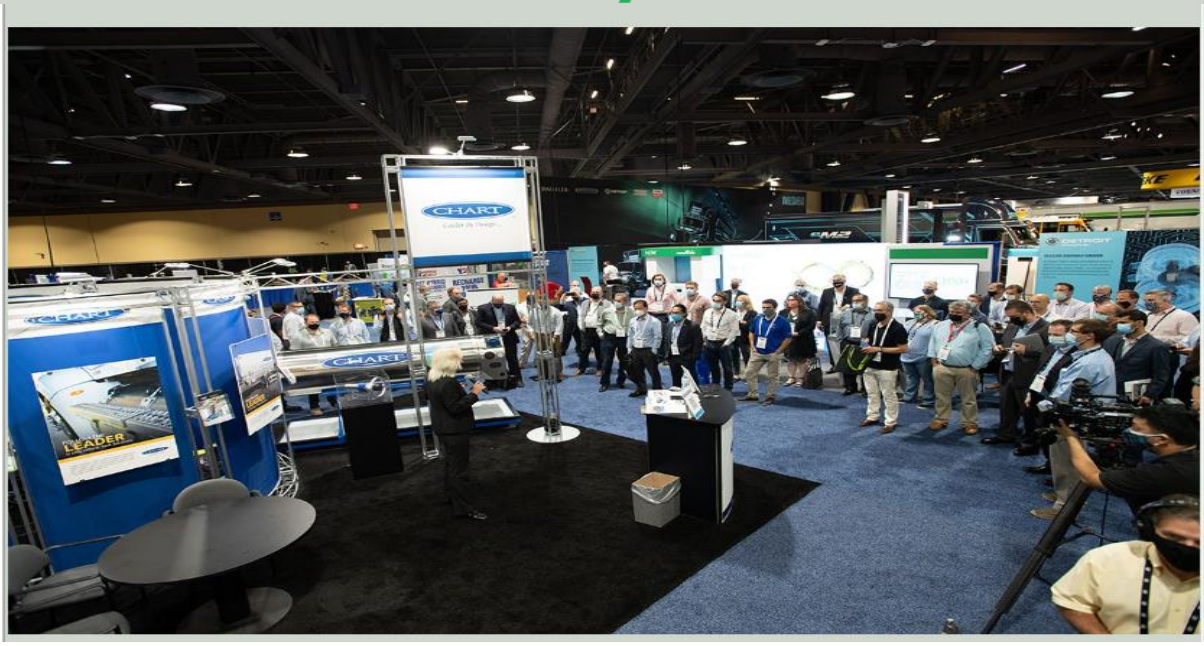

Chart Industries Introduces On-Board Vehicle Liquid Hydrogen (HLH2) Fuel System at the ACT Expo, Long Beach, California USA, September 1, 2021

Chart Industries launched a new product line for heavy-duty trucks, our onboard liquid hydrogen (HLH2) fuel system. Chart's HLH2 fuel system, now available for commercial use, is intended to meet growing market demand for a variety of fuel cell and internal combustion engine applications.
This product is engineered and manufactured in Ball Ground, GA (the birthplace of Chart's onboard natural gas (HLNG) fuel system) and tested in New Prague, MN (the birthplace of Chart's hydrogen products). It brings together our decades of experience in onboard HLNG fuel systems and our over 50 years of experience in liquid hydrogen fuel storage. Chart offers this new HLH2 onboard product with a global capacity for more than 25,000 units per year.

Similar to HLNG (vs. CNG), HLH2 requires roughly half of the space and weight of comparable H35 or H70 compressed hydrogen storage. This means HLH2 will be the ideal solution for heavier loads and longer ranges. At ACT Expo, the display demonstrated that dual-side mounting can provide adequate range, just like a conventional diesel tank. We also offer other configurations to suit our customers' needs and designs.

Chart's Theodore "TEDDY" Trailers & Tanks Celebrates One Year Anniversary

October marks the first anniversary of Chart's purchase of Teddy Trailers & Tanks. Located near the gulf coast in Alabama USA, the Teddy facility currently builds Chart-designed hydrogen bulk tanks and the James Russell liquid hydrogen trailer design.

The Chart acquisition has turbo-charged production. Upon acquisition, the facility was staffed and equipped to produce around six trailers per year and the best twelve-

Trailer Model	17600STL155P	8500STL110P
Capacity (water volume)	17,600 gal	8,500 gal
Payload	9,665 lbs	4,608 lbs
Tare Trailer Weight	50,560 lbs	26,740 lbs
Tractor Weight (est)	11,000 lbs	11,000 lbs
Total Weight (tractor + trailer(s) + payload)	71,225 lbs	73,696 lbs
MAWP	155 psi	110 psi
Overall Length	50'-1" (53' Class)	27'-11" (28' Class)
Width	8'-6.25"	8'-6.25"
Height	13'-0"	13'-0"

And custom sizes!

month performance had been the production of nine trailers. Chart recognized the pending demand for hydrogen trailers to support the new liquefiers coming online in the US and immediately began making investments in equipment and increased staffing.

We have also realized significant synergies with our existing technology and business. We have improved our trailer vacuum conditioning process and reduced heat leak utilizing Chart vacuum technology. The Teddy facility has also plumbed out bulk tanks rolled in New Prague providing additional delivery capacity.

The results are astounding. We are producing trailers quicker than ever before (currently averaging 20 weeks in production) and we are delivering more than we ever have – 17 trailers year-to-date versus a previous full-year best of 9 trailers. With a significant increase in production capacity, we are also turning our focus globally – making sure we have the capacity (targeting 100 trailers per year), designs, and approvals in place to support liquefiers as they come on-line around the world.

H2 Technologies

- LNG Americas (November 2-4)
- North American Gas Forum (November 8-10)
- LNG Bunkering Summit (November 15-17)
- LNG India Summit (November 18-19)

- Hydrogen test site in New Prague, MN which will serve as the home base for hydrogen product and R&D testing.
- Hydrogen ISO containers for overseas transportation.
- Vehicle fueling stations to support the latest in hydrogen fuel cell vehicles.
- Hydrogen bulk tanks, some as large as 172,000 gallons!

-Elizabeth (Beth) McCall, Engineering Manager – Hydrogen and Road Mobiles, Chart Industries

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Chart's Liquid Hydrogen fueling dispenser

- **World LNG Awards (November 30- December 3)**
- **Connecting Green Hydrogen APAC (December 7-9)**

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