



Enabling the transition to a **low carbon future**

October 2024

ASX.PV1

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This presentation was authorised by the CEO for release on 16 October 2024

Significant opportunity to develop safe, efficient and scalable supply chains to support 2030 emission targets



Provaris offers a unique investment to gain **exposure to Europe's low-carbon transition**



Australian Public Co. (ASX.PV1) located in Sydney & Oslo (**Provaris Norway AS**)



Strategically focused on European market where policy for energy security and decarbonisation depends on new bulk storage and transport solutions



Proprietary tank IP and innovative ship design prioritise simplicity and energy efficiency reducing storage and transport costs



Collaborating with German utilities on regional compressed hydrogen supply chains that offer the lowest transportation cost in Europe



Strategic partnership to innovate **CO₂ storage and transport**, enabling higher volumes over long distances



Large addressable markets with multiple revenue streams and monetisation pathways

Hydrogen and CCS are seen as essential components to meet global decarbonization goals

Policy, Industry and Funding established for H2 and CO₂ focused on hard-to-abate industries



Steel
Glass
Smelters



Refineries



CCGT Power
Generation



Mobility
(HDVs, Maritime)

Future focused on eliminating emissions ...

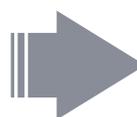
- > Zero-emission energy source with scalable potential
- > Demand for Bulk-scale storage and transport solutions
- > Building Infrastructure to support global supply chains
- > Flexible solutions essential for scaling with industrial demand
- > Leveraging +50 years of Compression technology
- > Simplicity of Compression eliminates capital and energy intensity of alternative carriers

Focused on reducing existing emissions

- > Established infrastructure for CO₂ capture, transport and injection
- > Rising carbon market prices and strong policy support
- > Growing Demand outlook for CO₂ shipping is robust
- > Current CO₂ tank capacity set at 7,500 cbm
- > Liquefaction is the proven transport and storage vector, with **new scale of storage tank solutions required**

Integrating H2 and CO₂ strengthens Provaris' leadership in the energy transition...

Advanced development of compressed H2 carriers and supply chains, delivering the lowest cost regional green H2 supply



Leverage tank IP to design low-pressure, high-volume CO₂ tanks cutting storage and shipping costs

Beyond unique ship design – developing integrated solutions driving Global supply chain development

Strong partners and complementary roles in H2 and CO₂ storage and transport, vital for 2030 decarbonisation goals

Offtake, Ports & Distribution

H2 Production & Export

Proprietary H2 Carriers

Industrial H2 Tanks

CO₂ Storage and Transport

H2 development is our core focus

Adapting IP for H2 and CO₂ tank solutions



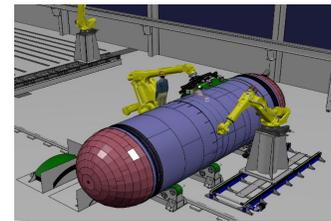
- > Secured Three MOUs with German utilities for H2 supply
- > Collaborating on developing Rotterdam import terminal
- > Long-term offtake underwrites H2 supply and shipping assets



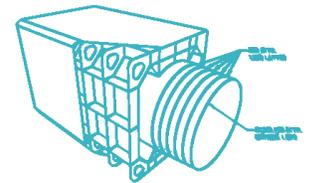
- > Collaborating for H2 Supply projects
- > Leveraging stable, low-cost renewable energy for Nordic H2 supply
- > Use of compression to provide lowest delivered cost



- > Proprietary tank design for bulk-scale storage & transport
- > Advanced Class approvals and safety studies for H2 carriers
- > Shipowners to fund and operate under LT charter

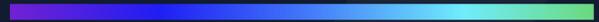


- > Innovative Design and fabrication for industrial H2 storage tanks
- > Utilising robotics and laser-hybrid technologies to optimise costs
- > Establishing a prototype tank facility (Norway) for future production and sales
- > Focus on Maritime and Industrial sectors



- > Co-development with Yinson Production bulk CO₂ tank
- > Larger scale liquid CO₂ tank for marine transport and storage
- > Leverages H2 Tank design
- > CO₂ infrastructure already established in Europe

Europe established as a leading hydrogen market,
relying on imports for 70% of demand



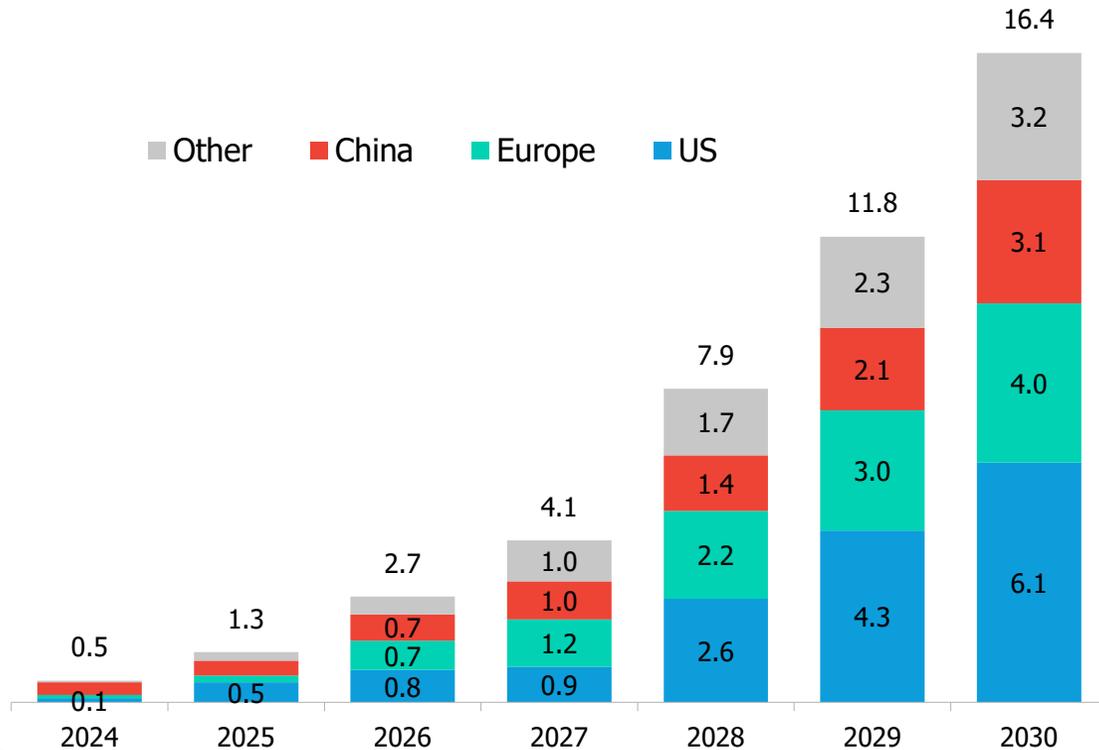
www.provaris.energy

Hydrogen sector continues to rapidly evolve and remains a crucial component to meeting energy transition goals

Three markets set to dominate low-carbon hydrogen supply this decade

Forecast annual low-carbon H₂ supply by market and commissioning year (May 2024)

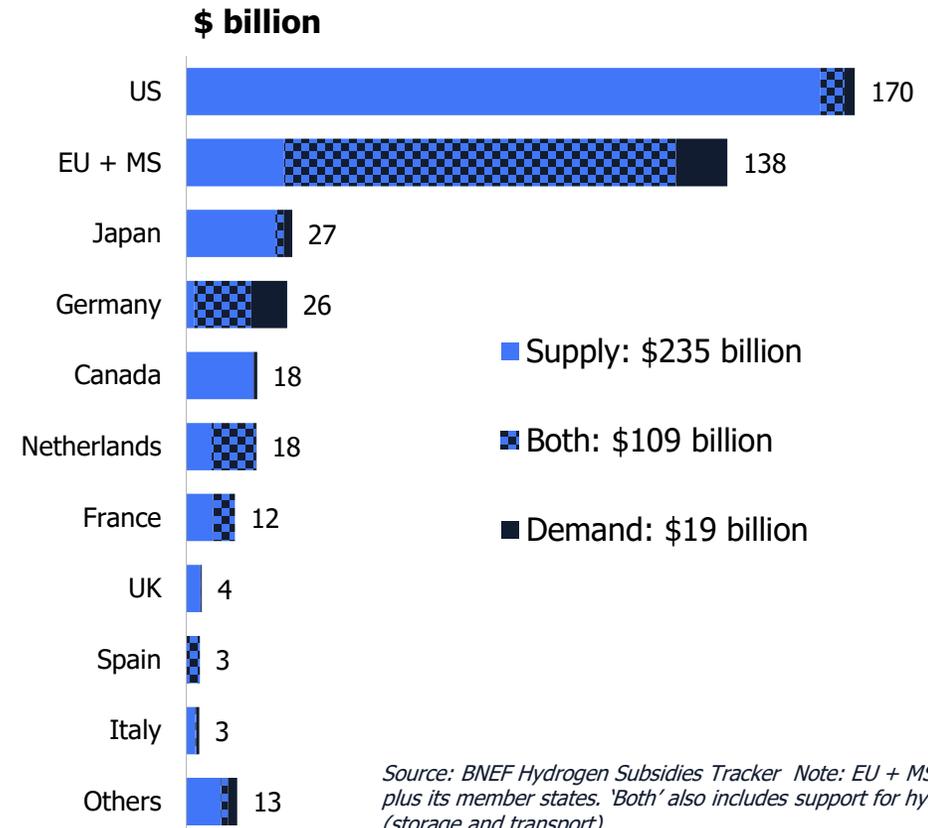
Million metric tons per year



Source: BNEF

More than \$360 billion is now available for hydrogen, with a focus on supply

Government support for hydrogen by market and target area



Source: BNEF Hydrogen Subsidies Tracker Note: EU + MS = European Union plus its member states. 'Both' also includes support for hydrogen midstream (storage and transport).

Europe's dependency on energy imports has increased to 60% with hydrogen to follow

Germany, EU's largest power market committed to phase out coal, banned uranium, and reliant on imported LNG



Europe prioritising development of green hydrogen

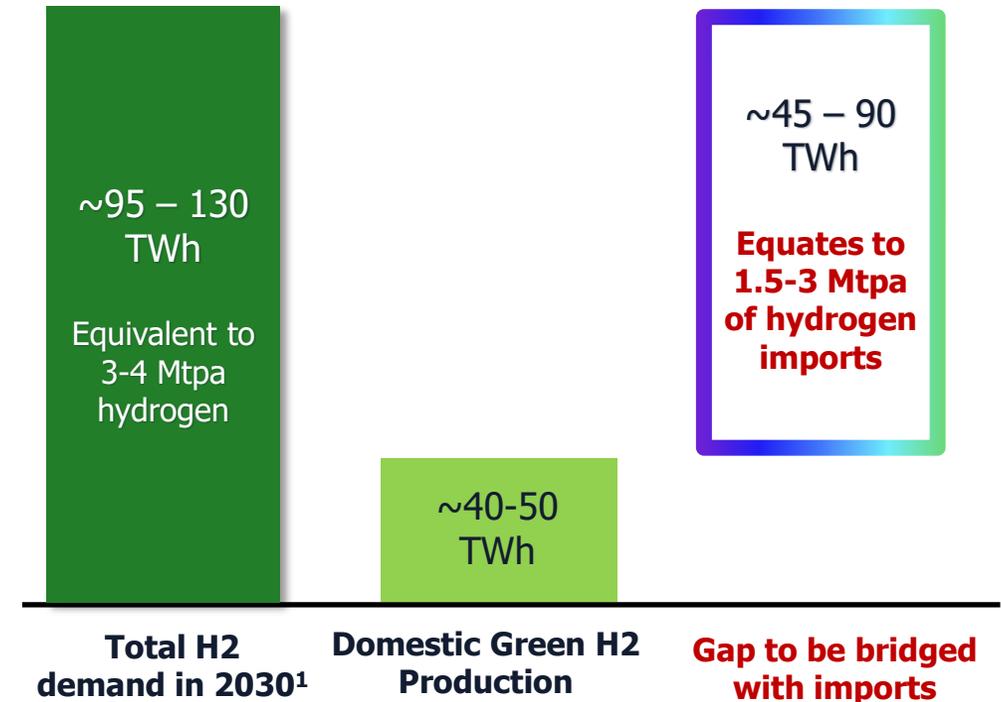


- > **Focus on decarbonization of hard-to-abate industries**
- > **EU committed €138 billion** to support industry (Innovation Fund; Horizon Europe; EU Hydrogen Bank; H2Global)
- > **Implementation of regulatory frameworks** set quotas for demand, stimulate investment and supply (RED III)
- > **Major power utilities announced +€40B investment** in energy transition projects by 2030, including hydrogen
- > **Over €1 billion funding issued in 2024** to incentivise supply and demand
- > **'Core H2 network' for transport infrastructure** under development includes ports and pipelines
- > **Provaris addressing the challenges of scaling up hydrogen: Complexity, Cost and Industry Demand**
- > **3 MOUs entered with German utilities, including Uniper**



Germany's National Hydrogen Strategy (in TWh)

"Meeting German demand solely through domestic supply would neither be technically nor economically viable". NHS 2023



Source **BMWK** | ¹ Includes forecast demand for H2 derivatives such as ammonia, methanol, synthetic fuels and other sustainable fuels.; 33 TWh = 1 Tonne H2

Partnering with Uniper for supply and offtake of RFNBO compliant hydrogen from the Nordics to NW Europe

Tri-party agreement Norwegian Hydrogen & Uniper (August 2024) to develop hydrogen supply chains from Norway and other Nordic sites, to import locations in North-Western Europe

H2 Supply

- **+40,000 tonnes per annum** (~300 MW electrolysis) from the Nordics, capitalizing on RE potential
- **RFNBO compliant H2** based on EU regulations
- **10-year contract tenure** for offtake by Uniper

Storage & Transport

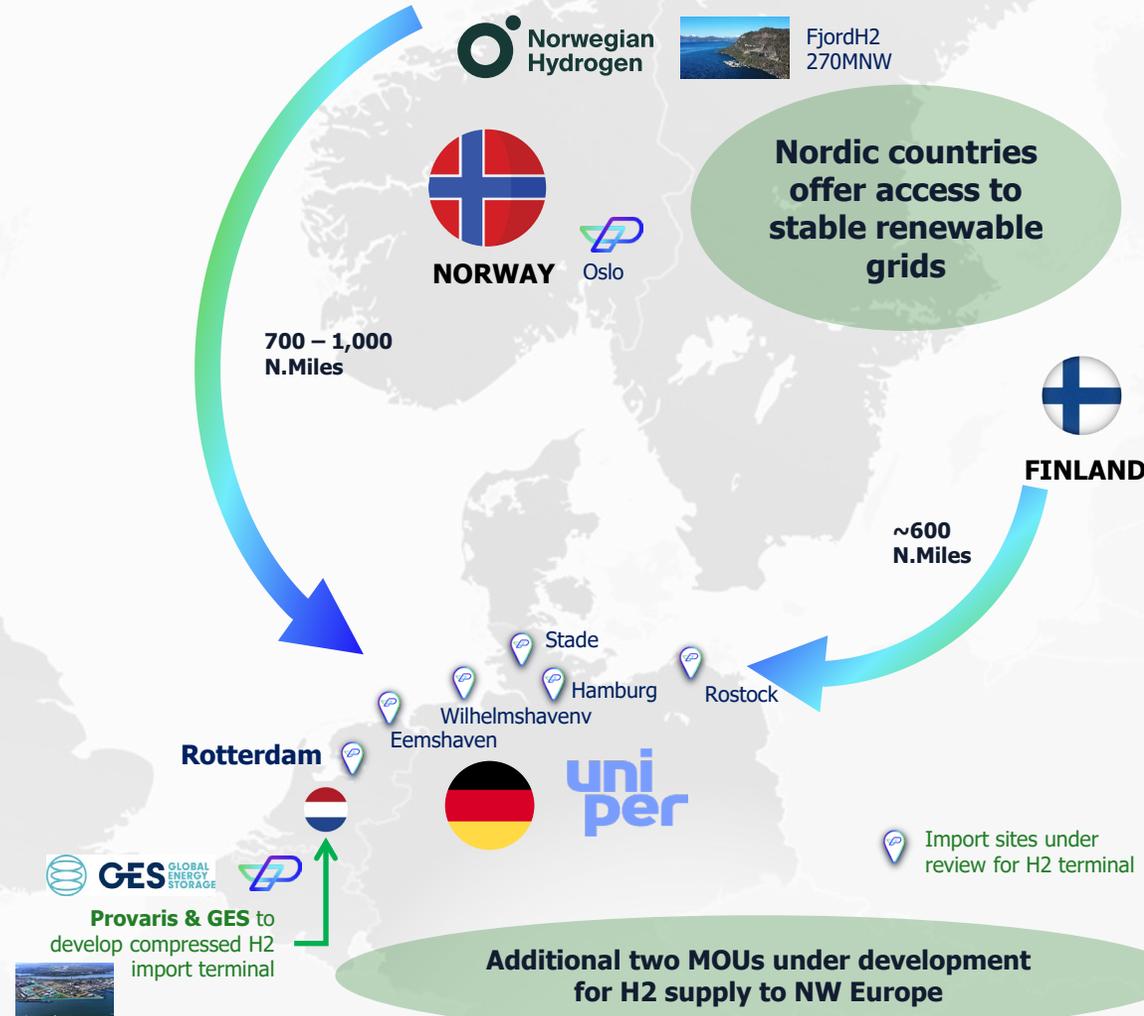
- Two **H2Neo carriers** and one **H2Leo barge** dedicated for storage and round-trip transport
- **Long-term charter** aligned to 10yr offtake

Import & Distribution

- **Uniper to define import location** and manage port and pipeline capacity
- GES Rotterdam terminal included for feasibility

Milestones

- Q4 2024: Term Sheet for hydrogen SPA and shipping agreements**
- Q2 2025: Binding contractual agreements**
- 2029: First hydrogen cargos delivered**



Concept Design Study reaffirms simplicity of compressed hydrogen enables energy efficient, low-cost supply chain for Europe

Outcomes for a 540MW renewable grid connected site, sailing 1,000 Nm, when compared to the ammonia supply chain (delivered as gas), confirms capital and energy efficiency benefits



50% more gaseous hydrogen

delivered to the customer
(only 2.8% used for compressed, remaining 97% H2 production)



20% reduction in capital intensity

(€/kg H2 delivered)



~20% lower delivered cost

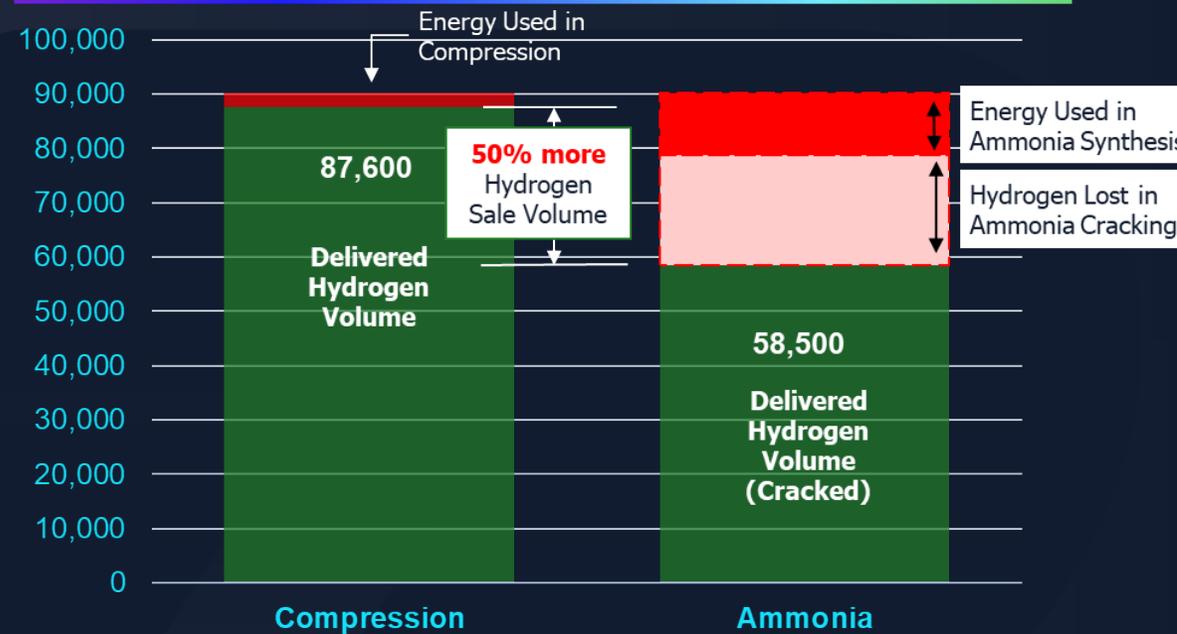
(~€ 1.40/kg discount)



5-10x the value of grid connected site

through higher net-back price received over 20yrs

Delivered Hydrogen Volumes (tpa)



Delivered Price of Hydrogen (€/kg; 20 Yrs / 12% Project IRR)

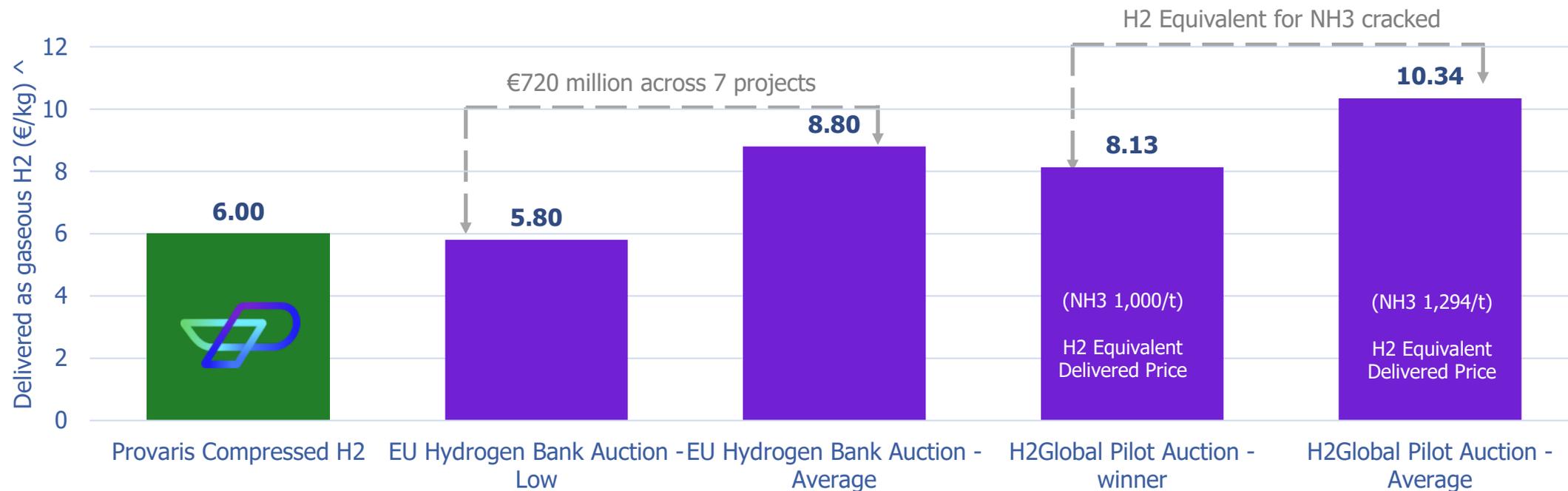




Compressed Hydrogen demonstrates superior cost advantage against regional projects successful in EU funding rounds

In 2024, +€1 billion in funding for green ammonia and hydrogen projects highlight a H2 cost range of €6-10/kg

Provaris delivered cost at €6/kg³ for green hydrogen competitive against 2024 results for EU Hydrogen Bank Auction & H2Global Pilot Auction



Source: * H2Global, BloombergNEF; ^ Provaris Analysis

- July 2024: Germany's H2Global pilot auction** awarded Fertigllobe as the sole recipient of €394 million to support a 7yr supply contract of at least 259,000 tpa of NH3 (equivalent to 37,000 tpa of H2).
- April 2024: EU Hydrogen Bank awarded a combined €720 million across 7 projects;** set to produce a collective 158 ktpa of hydrogen by 2029. Portugal, Spain, Norway and Finland were the selected locations. Winning bids submitted to the auction suggest **average levelized costs between €5.8/kg and €8.8/kg**. A second €1.2 billion auction is planned for late 2024.
- September 2024: Provaris Energy: Design Concept Study,** 87,000 tpa, Norway to Germany. <https://wcsecure.weblink.com.au/pdf/PV1/02847279.pdf>

Growth in funding with second €1.2 billion EU Hydrogen Bank auction planned for 2025

Proprietary hydrogen carrier unlocking regional supply chains at lowest delivered cost

Our Advanced H2Neo hydrogen carrier gaining the strong acceptance of supply and offtake partners

H2Neo Compressed Hydrogen Carrier

Conventional MR tanker hull

Cargo capacity: 27,000m³ (450t net); 250 Barg (No boil-off)

Hybrid electric propulsion system including LNG, Battery & H2 Fuel Cell

Extensive FEED and safety studies completed

Class Approvals: (AIP and FEED Design Approval in 2021 and 2022)

Target Operations in 2028 (subject to H2 project FID)

All design drawings are protected by copyright: ©2023 Provaris Energy Ltd Group



Illustration of longitude tank.

Technical Partners & Advisors include:



Proven compression technologies enable flexible and low capex jetty solutions



H2Leo (barge storage used for loading site)
AIP from Class (300-600 t H2)

Extension of tank IP into industrial hydrogen storage applications



Compressed H2 storage
1 – 10 tonne capacity
250 barg



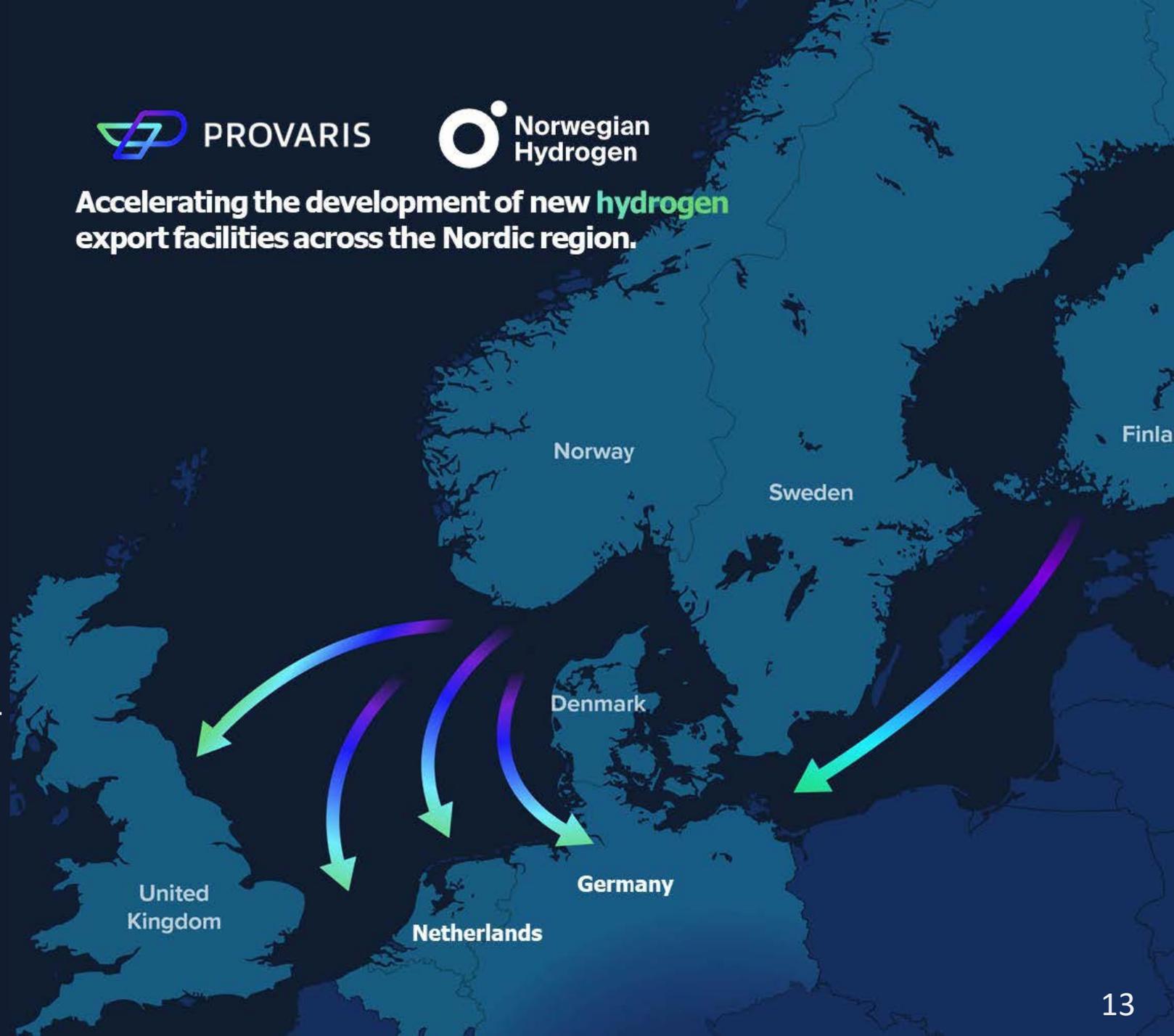
Provaris and Norwegian Hydrogen : Powering Large- Scale Green Hydrogen Exports from the Nordics

Proven experience in developing production hubs across Nordics

Collaboration projects include equity participation for Provaris in H2 supply



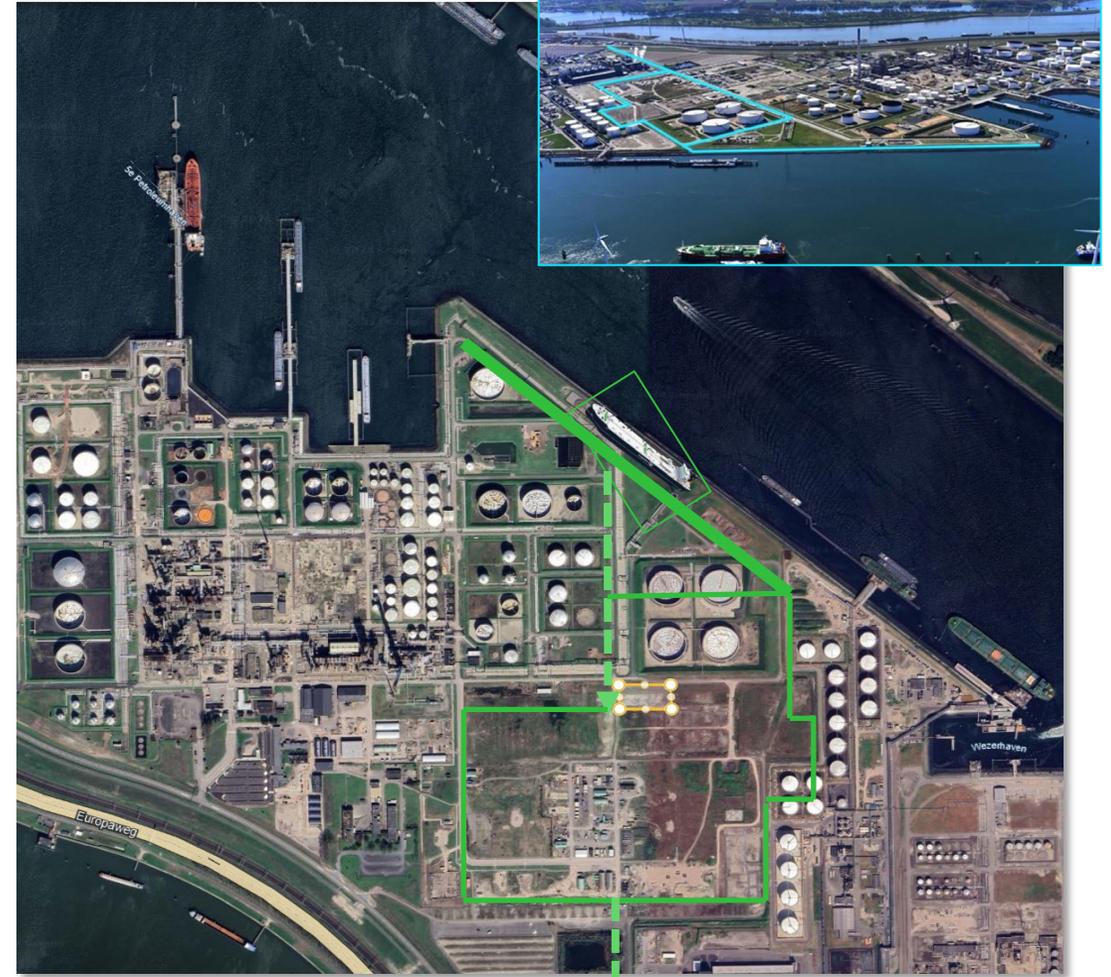
Accelerating the development of new **hydrogen** export facilities across the Nordic region.



www.nh2.no

Provaris and GES partner in developing a bulk-scale hydrogen import facility within Rotterdam's global energy hub

- > Supported by Bluewater Energy and White Deer Energy, leaders in new energy storage operating four storage assets
- > Strategically located in the world's largest energy terminal an established H2 market hub
- > Located next to the HyNetwork H2 pipeline under construction with access to road, rail and barge for port-wide distribution
- > Pre-feasibility study and co-marketing for during 2024
- > Targeting **full** access to European markets by 2028



www.gesgroup.global



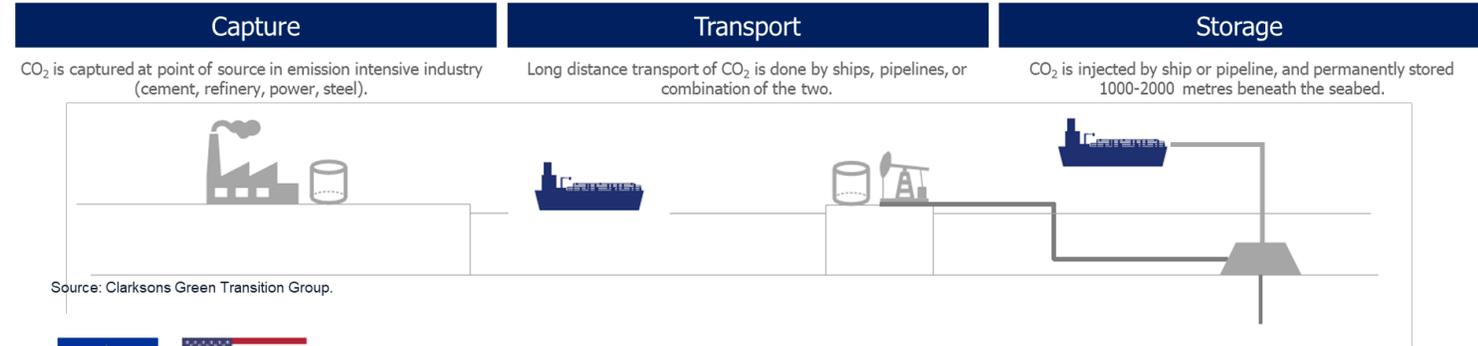
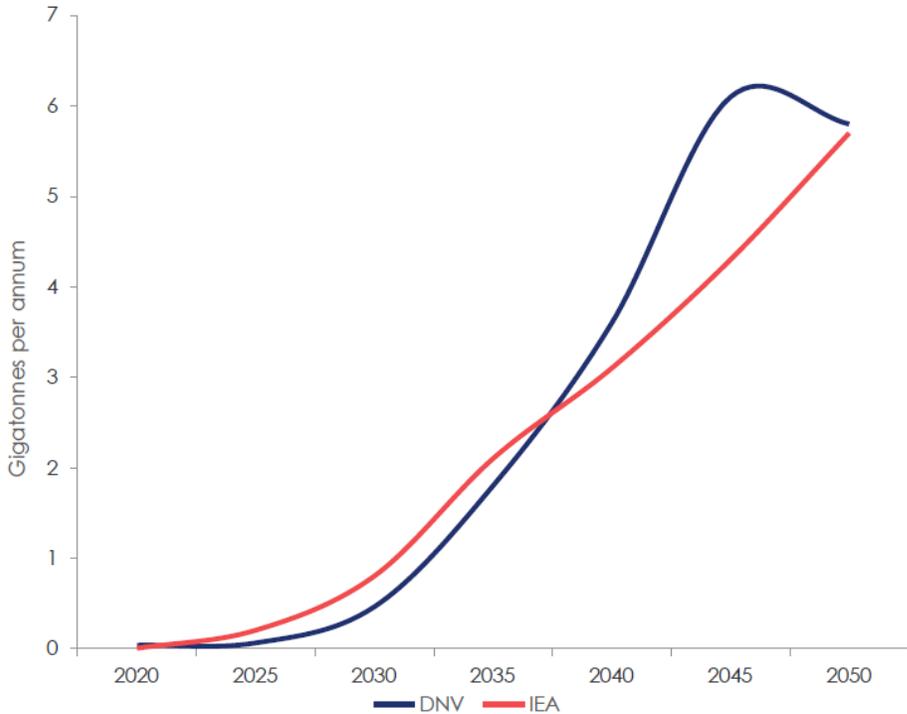
Joint development of innovative CO₂ Tank Designs leveraging Provaris H₂ Tank IP

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Carbon Capture and Storage (CCS) value chain already well established

A vital component in achieving decarbonisation for Hard-to-Abate industries

Projected growth in CCS capacity post 2030



EU & US dominating the capture markets short-term

42.6 / 201.4
mtpa

Capture capacity of operational & pipeline projects

44%

Increase in capture capacity from commercial projects past 12 months



Growth in capture to follow in regions with well mapped seismic data

Source: Clarksons Green Transition Group.



"In our view, scaling up global CCS capacity will require a fleet of specialized tankers with the ability to collect CO2 from capture sites operated by many different industrial segments."

Shipping solutions are critical to unlocking CCS global scale and growth potential

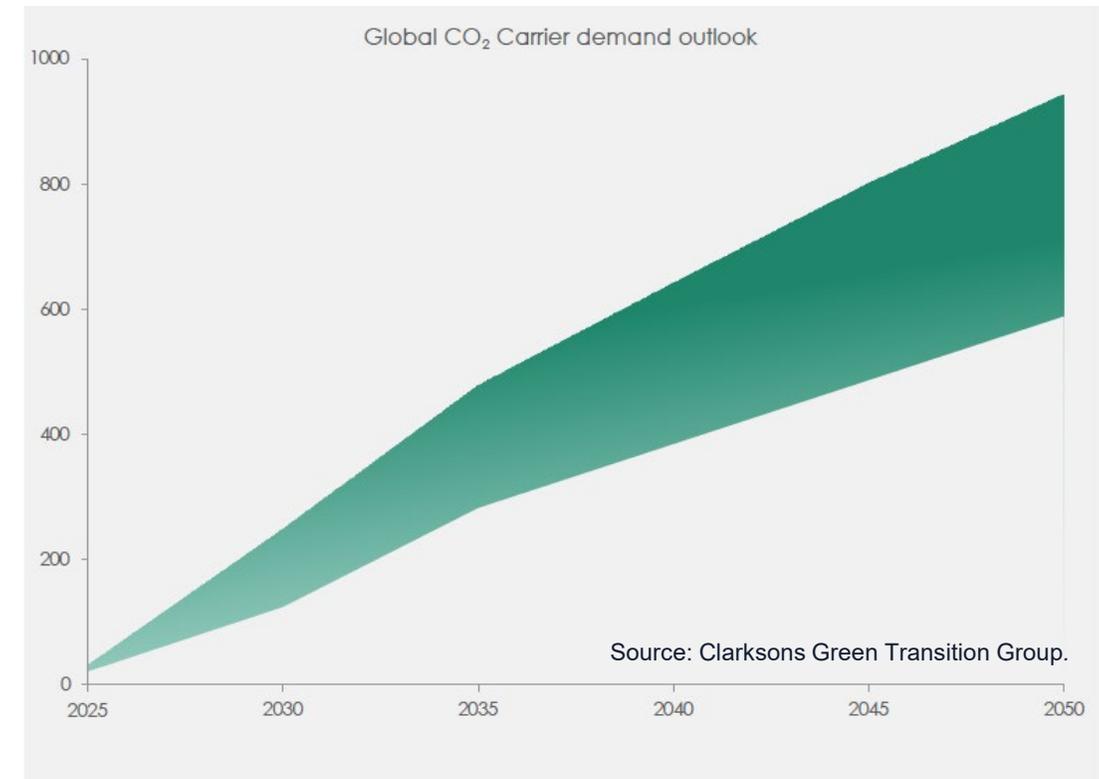
Provaris and Yinson Production - Innovating CO₂ storage and marine transport solutions for maximum efficiency

New tank designs enable CO₂ transport at lower pressure and temperature, required for long voyages and larger cargo volumes – **maximizing storage and transport efficiency**

Adapting Provaris Tank IP for CO₂ market

- > Binding Agreement to evaluate the feasibility of transforming Provaris' technology for bulk liquid CO₂ storage and transport.
- > Yinson is a global energy infrastructure and technology company: FPSOs, Renewables and GreenTrch
 - > Strong track record in financing, constructing, and operating 9 FPSO vessels; order backlog USD 21.9 billion
 - > Focused on green shipping technology and developing the full carbon capture supply chain – EU & Asia
- > Industry currently constrained by CO₂ tank capacity 7,500 cbm
- > **Provaris 'multi-layer tank IP' will allow for larger volume tanks, and reducing cost and improving efficiency**
- > **Milestones include techno-economic feasibility early-2025**

Rising Demand for CO₂ Carrier to 2050¹



Commercial potential for new tank design extends to ships, barges, and onshore storage

Why invest in Provaris



www.provaris.energy

Building on proven foundations to capitalise on growing demand for hydrogen and

What we achieved so far...



Proven technology and unique IP for cost-effective hydrogen storage and transport solutions



First mover advantage with proprietary ship design and compression technologies



Strong strategic partners enhances our credibility in delivering hydrogen to market



Positioned as Europe's **most economical regional supplier**



Multiple **MOUs upgrading to Term Sheet affirm** growing engagement in shipping and offtake opportunities



Leveraging tank IP into the established **CO₂ market increases our opportunities** to commercial success

Upcoming Catalysts 2024-25

1. Advancing signed term sheet for H2 supply, offtake and shipping agreements
2. Prototype tank testing, to obtain Final Class Approvals (H2Neo)
3. Announcing additional H2 supply chain collaborations
4. Completing Design for new CO₂ Tank
5. Securing binding H2 Sale and Purchase Agreement (SPA) and Shipping Time-Charters
6. Developing small-scale tank production in Norway

Corporate Overview



www.provaris.energy

Board & Management

Global experience in energy and gas infrastructure, utilities, ship newbuilds, operations, and capital markets



Martin Carolan
Managing Director
& CEO

Commercial
& Capital Markets

SYDNEY / OSLO



Greg Martin
Chairman

Business Leader, Energy, Infrastructure,
Governance

SYDNEY



Andrew Pickering
Non-executive
Director

Shipping, Newbuilds,
Tankers, LNG

SYDNEY



David Palmer
Non-executive
Director

Shipping, Commercial, Financing

LONDON



Per Roed
Chief Technical Officer

Newbuilds, Tankers, LNG, Ports,
Operations

OSLO



Mats Fagerberg
Business Development -
Europe

Commercial, LNG, Infrastructure,
Shipbroking

LISBON



Garry Triglavcanin
Product Development
Director

Engineer, LNG, Project Development

PERTH



Norman Marshall
Group Commercial Manager

Legal, Commercial,
Project Finance

PERTH



John Stevenson
Group Financial Controller

Accounting,
Finance

SYDNEY



Jessica Roed
Operations Manager,
Norway

Shipping, Logistics

OSLO

Corporate Overview

Capital Structure

Ordinary Shares on Issue (PV1.ASX; WS90.BE)	631 M
12mth Share price range (high-low)	6.5c to 1.8c
Market Capitalisation (at 2.5c)	A\$ 14.5 M
Cash (30 June 2024, incl. SPP funds)	A\$ 1.7 M
Macquarie Bank – Bond Facility (standby) ¹	A\$2,500,000
Convertible Bonds On Issue ¹	A\$290,000
Unlisted Options ²	49.5 M

1. A\$3 million Two-year standby facility with Macquarie Bank, announced 3 May 2024.
2. Unlisted Options: 9M at 18.75c, Expiry November 2024;; 2.5M at 7c Expiry Mar 2025; 2.5M at 14c Expiry Mar 2025; 23.75M at 7.5c, Expiry March 2026; 8.2M at 7.5c Expiry Jul 2026; 4M at 6.6c, Expiry May 2027

Membership Organisations



Norsk
Hydrogenforum



Arena H2Cluster
The Norwegian Hydrogen Cluster



Norwegian
Energy Partners



AHK

Shareholding (Undiluted)

OC Funds	4.9%
HNW/Family Office	17.0%
Board & Management	7.0%
Total top 20	38%
Total top 50	50%

Office Locations



Oslo, Norway

Sydney, Australia



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Appendices



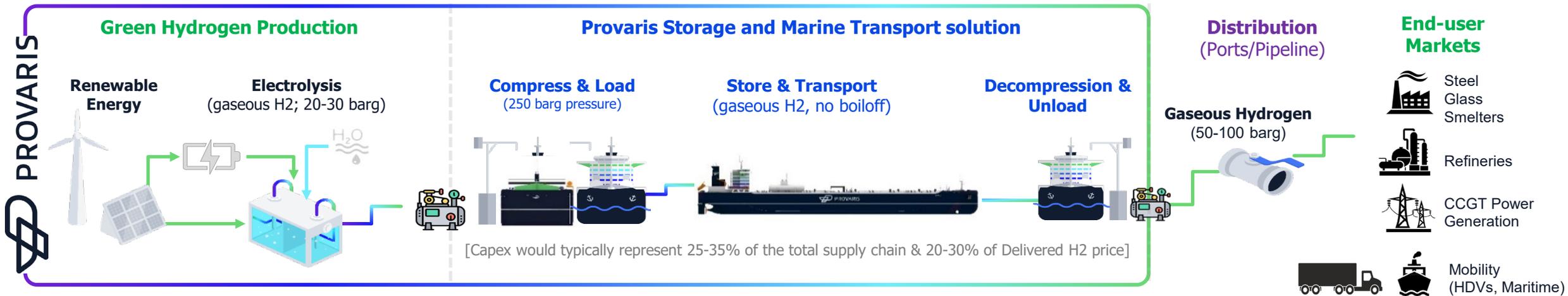
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Compressed hydrogen is focussed providing a simple and energy efficient solution for the bulk-scale supply of gaseous H2

Production of Hydrogen

Proprietary Shipping & Storage Solutions

Provaris' unique business model operates across the supply chain...



Compression the lowest cost regional carrier for delivery in Europe



Safe
and proven method for storage and transport of hydrogen



Efficient
for regional production and delivery reducing capital and energy intensive processes



Flexible
to 'load follow' the variability and volatility in renewable energy generation



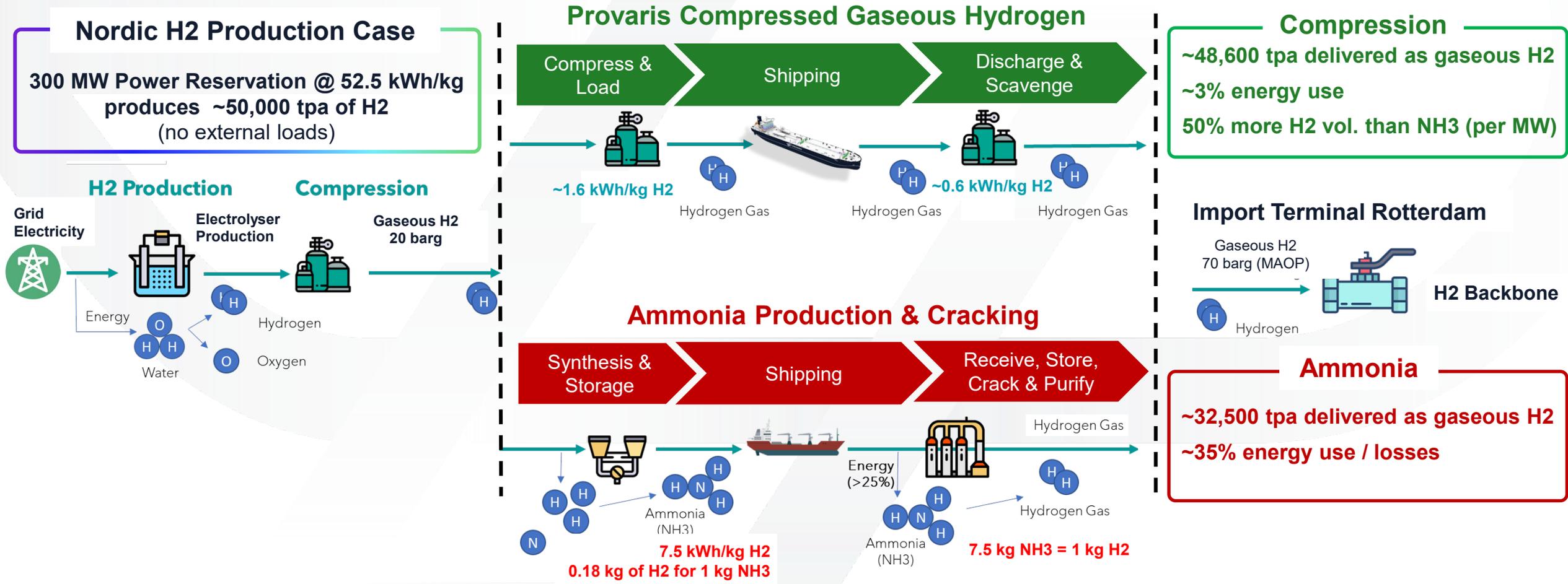
Simple
process enables low capex design, build and repeat



Delivers gaseous H2
required for decarbonisation of industries

Energy efficiency benefits of a compressed hydrogen supply chain in the Nordics delivers up to 50% more hydrogen

Compression required a 3% energy use over the entire supply chain vs 35% for NH3 when delivered as gas



Advanced development of bulk-scale hydrogen carrier pending final approvals

Unique Proprietary tank design 'unlocks' significant market opportunity for low-cost storage and transport

2021

AiP received
(Approval in Principle)



H2Neo carrier

Conventional MR tanker

Cargo capacity: 27,000m³ (450t)

Hybrid electric propulsion system including LNG dual-fuel, Battery & H2 Fuel Cell

Satisfies RED II compliance on emission intensity (round-trip NOR-GER)

Extensive FEED and safety studies completed

2022

FEED Design Approval
(Construction ready subject to Prototype Test)

2024

Class Approval Program

- Prototype Tank Construction
- LOI Shipbuild Contract
- Develop industrial tank market

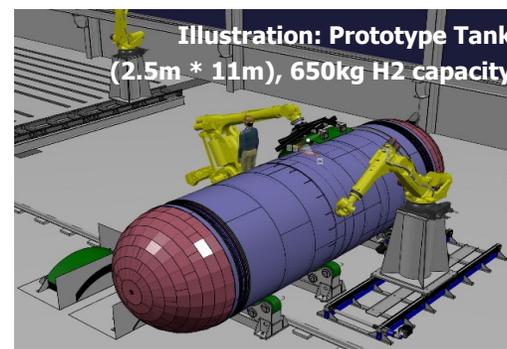


Illustration: Prototype Tank (2.5m * 11m), 650kg H2 capacity

2025

- Complete Prototype tank testing
- Final Class Approvals
- Shipyard LOI
- Develop production of small-scale tanks
- FID H2 Project
- Charter contract +10yrs
- Shipbuild contract

2027/28

- Hydrogen export projects based on Provaris hydrogen carriers
- Shipping operations aligned to H2 Export project
- Revenue share of production and shipping contracts

Marine Classification

Technical Partner



RED II Compliance demonstrated for Compressed H2 supply chain

Compressed hydrogen supply comfortably below the stringent requirements set forth by the EU's RED II and RFNBO, based on 1,600 Nm round trip, Norway to Germany



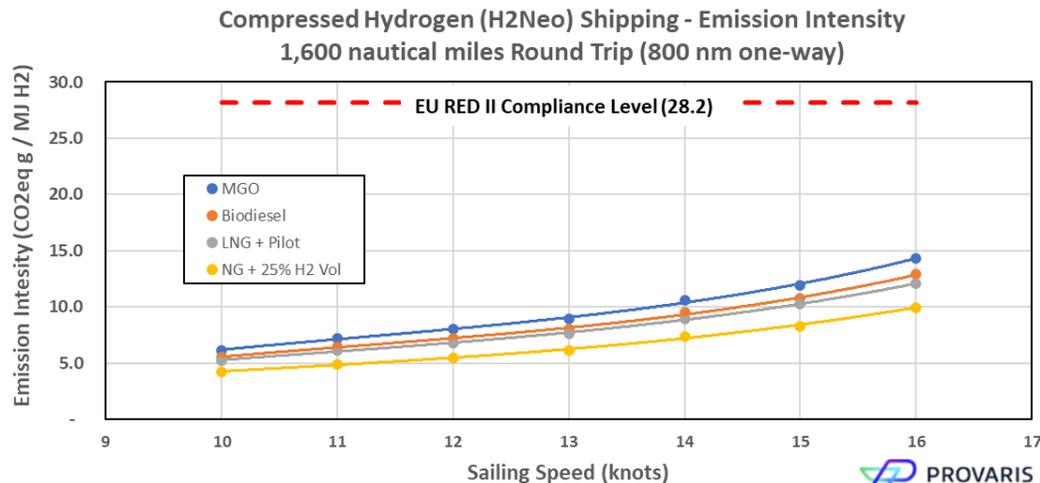
Required carbon intensity for EU REDII compliance

28.2 g CO2e/ MJ H2

Estimated carbon intensity emission level for H2Neo

7.6 g CO2e/ MJ H2

Emission intensity results illustrated below vs. speed for differentiating fuel types:



- > **Supporting analysis from Wärtsilä** in estimating the CO2e emission per kg H2, including methane slip values from test bed.
- > **Selection of available hybrid electric propulsion plant with modern 4-stroke LNG Dual Fuel generating sets.** Options for future hydrogen blending also assessed based on existing generator set options, and further for when fuel cell / and generating set technology matures.
- > **Carbon (equivalent) intensity** estimated for proposed "LNG +pilot" propulsion plant over a 1,600 nautical mile roundtrip; typical sailing speed of 13 knots.
- > **Further 20-30% emission reduction identified** through future technology including 3,000 kW hydrogen fuel cell into the propulsion plant.

Choice of automated robotic laser welding to 'crack the code' on low-cost storage tanks through industrial scale production

Use of proven laser-hybrid welding procedures and materials approved for use by DNV for marine and industrial applications



Increased productivity (~20x vs manual TIG)



Reduced heat & energy costs



100% quality assurance (NDT)



Reduction in CO2 footprint



Reduction in construction costs
capacity from the same production cell)

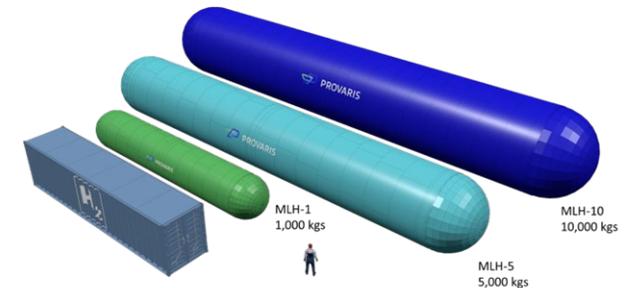
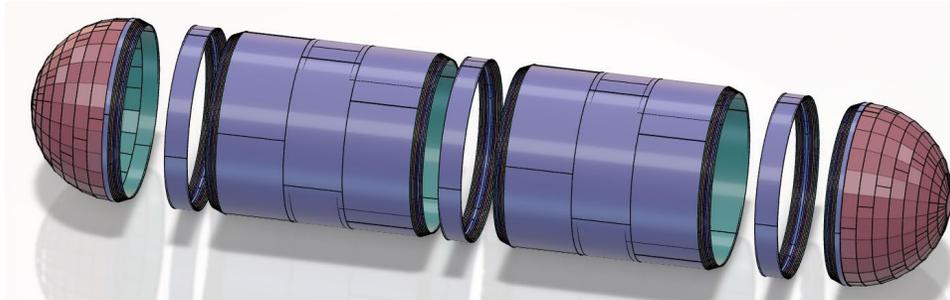


Extends IP to new applications (tanks 1-5t)



Fiska, Norway

Construction of a prototype scaled tank underway, following by fatigue and pressure testing to achieve Class Approvals



Supported by partners:



Prototype Tank Specifications:

2.5m * 11m

650 kg H2 capacity at 250 bar

Constructed as 4 sections and then joined for final assembly

8 layers of 10mm Carbon Steel;

Internal liner of 3mm Stainless Steel.

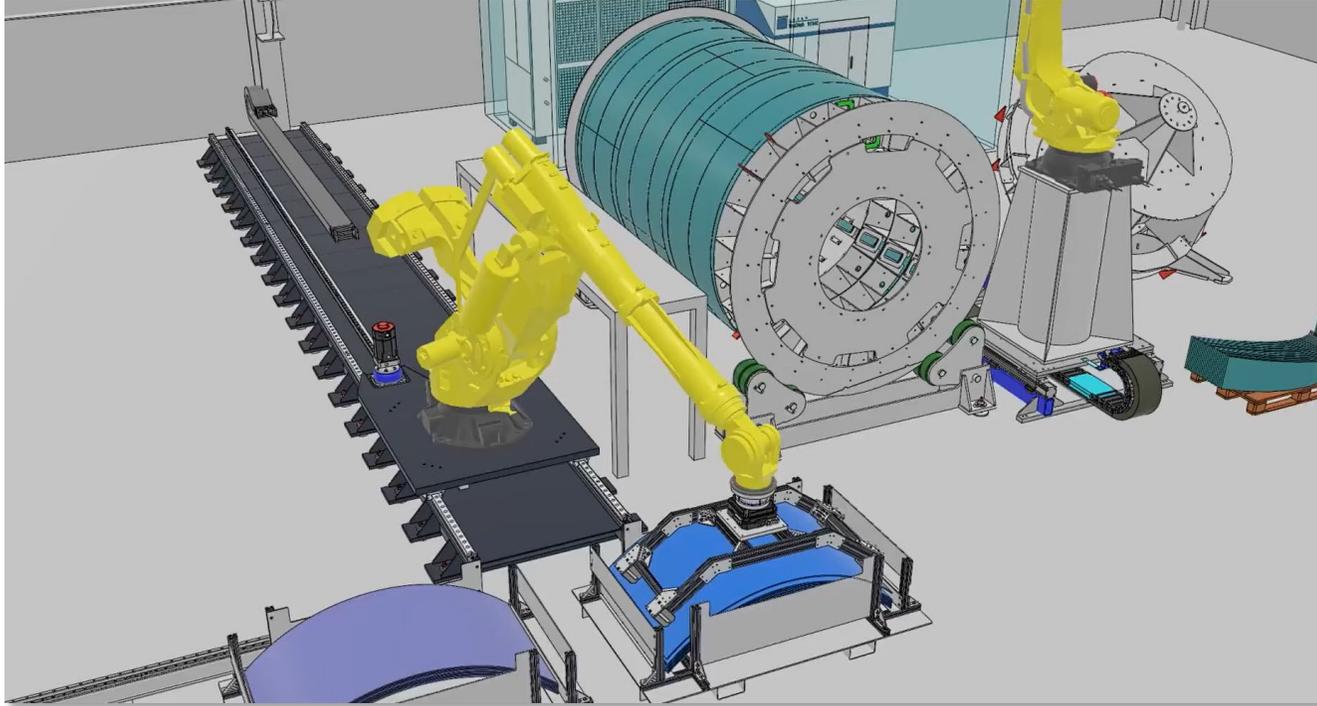
Small Scale Tanks:

Layered carbon steel

Phase 1: 1 to 5 tonne capacity (2.5m diameter)

Phase 2: 10 tonne capacity (4m diameter)

Extensive design and programming to complete a 'digital twin' prior to construction. Optimisation through the prototype phase results in a fully automated robotic cell ready for full scale production line.

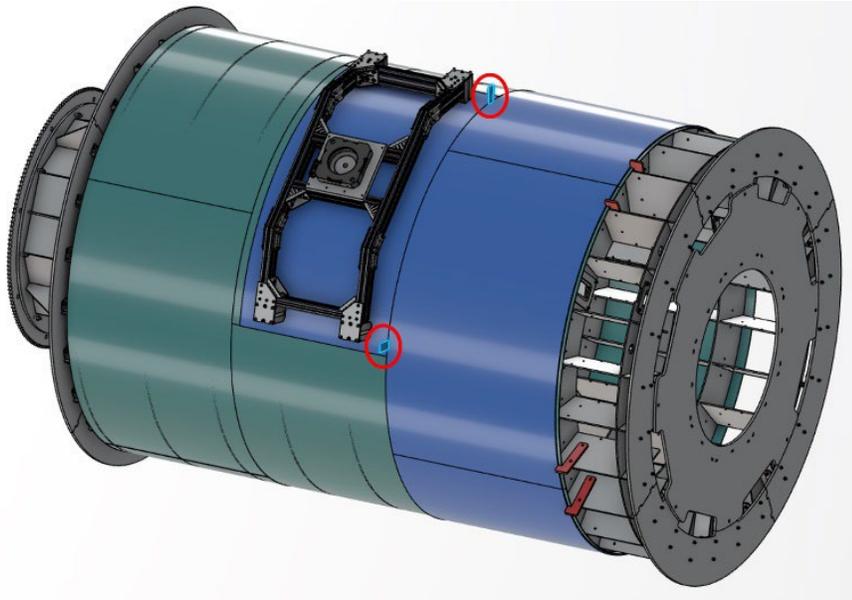


Robotic-laser welding is key to lowering the capex for the tanks and by eliminating significant amount of labour cost.

(Provaris target 25% - Industry standard 50%)



Robots programmed for nano-meter accuracy, verified through construction, and allowing for a very high quality of welding



Large addressable market for industrial applications seeking alternatives to high-cost composite hydrogen solutions

Development for a production cell facility in Norway to provide early revenue opportunities in 2025

Large addressable market focused compression

- > Buffer storage for intermittency or maintenance creates flexibility and lowers the cost of hydrogen
- > Long-term storage is focused on caverns which takes time and capital
- > Existing market applications focus on small-scale (sub-1-tonne) high-cost composite tanks, short duration, localized storage or conversion to hydrogen alternatives.



1-tonne capacity tank vs 40t container solution



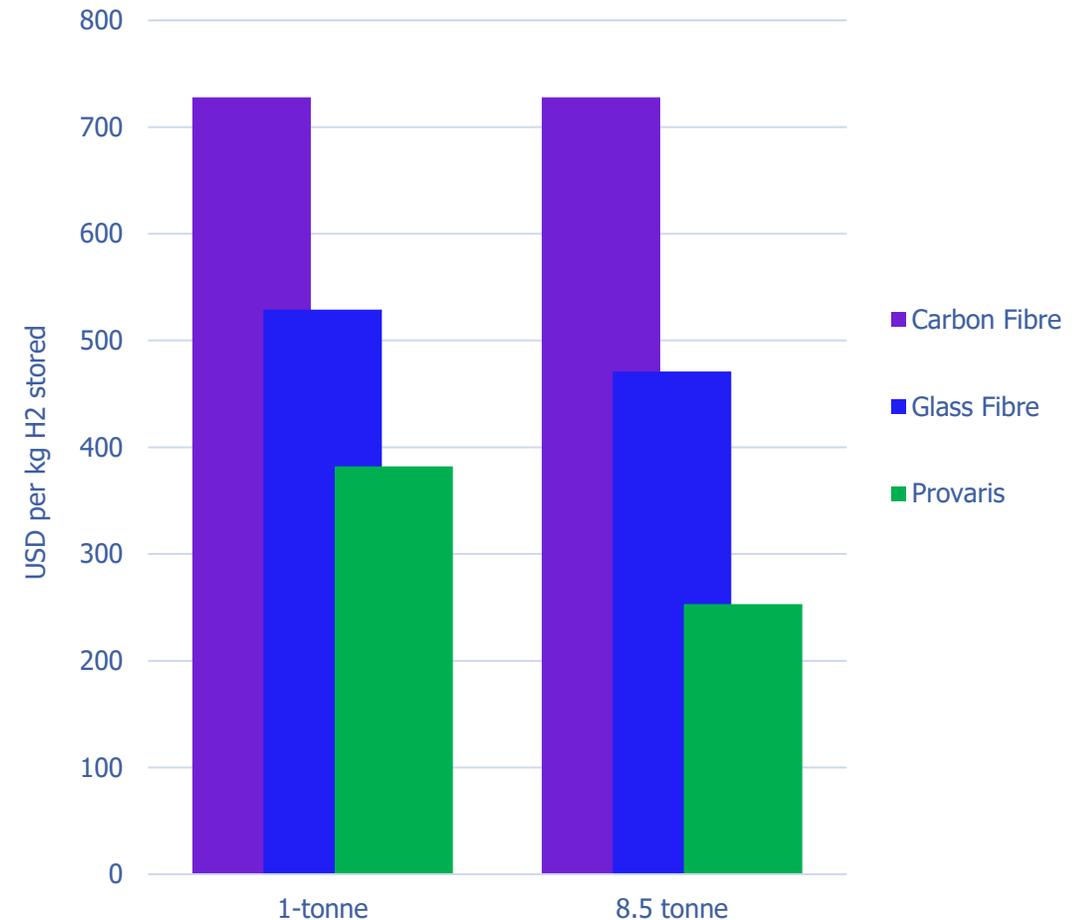
Illustration 1,5,10 tonne tanks



Example of Europe refueling market opportunity:

- > AFIR legislation passed by the EU in Sept. 2023
- > Stipulates **minimum 1-tonne H₂ storage capacity for 657 HRS sites** to be deployed across 27 member states by 2027.
- > Deployment must start in 2025.

Maximise the volume of hydrogen stored at lowest capital cost ¹



¹ Longspur Research, 2024