

Hydrogen infrastructure for any vehicle types

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VICE PRESIDENT MARKET DEVELOPMENT AND PUBLIC RELATIONS

90 years

..of hydrogen technology
experience and excellence

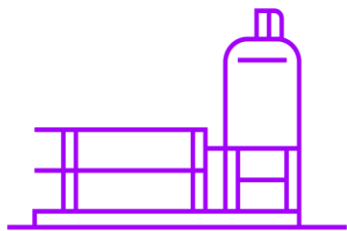
www.nelhydrogen.com

nel•



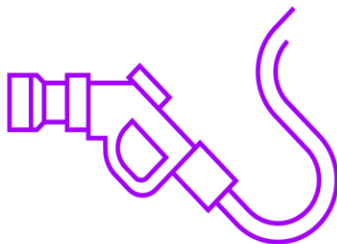
Nel today

Publicly listed (NEL.OSE), ~200 employees with offices in Norway, Denmark and U.S.*



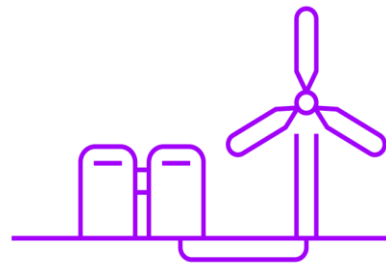
Electrolysers

3000+units to
75+ countries*



Fueling

30+ stations to 8
countries



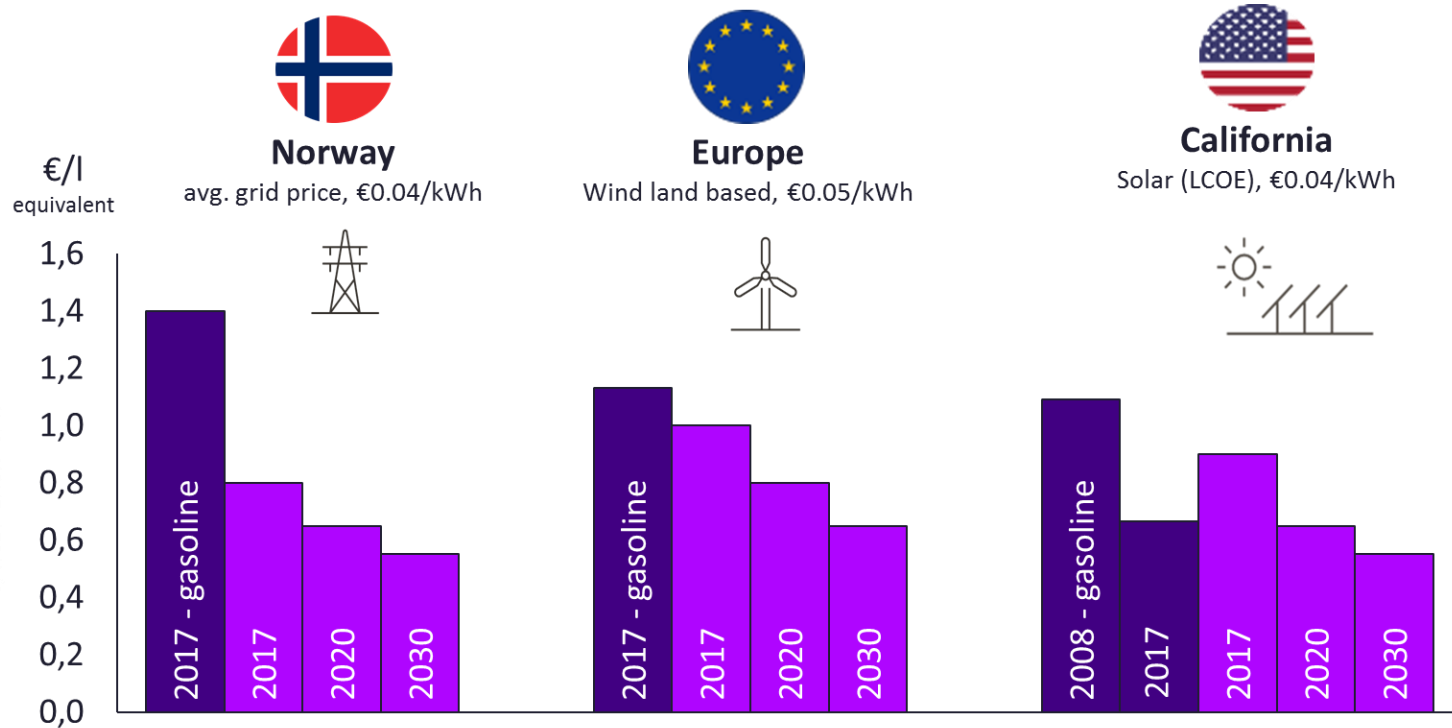
Solutions

Fueling networks &
renewable hydrogen
solutions

Fossil Parity:

*Renewable hydrogen outcompeting fossil fuels in the transport sector,
as well as fossil hydrogen for the industrial sector*

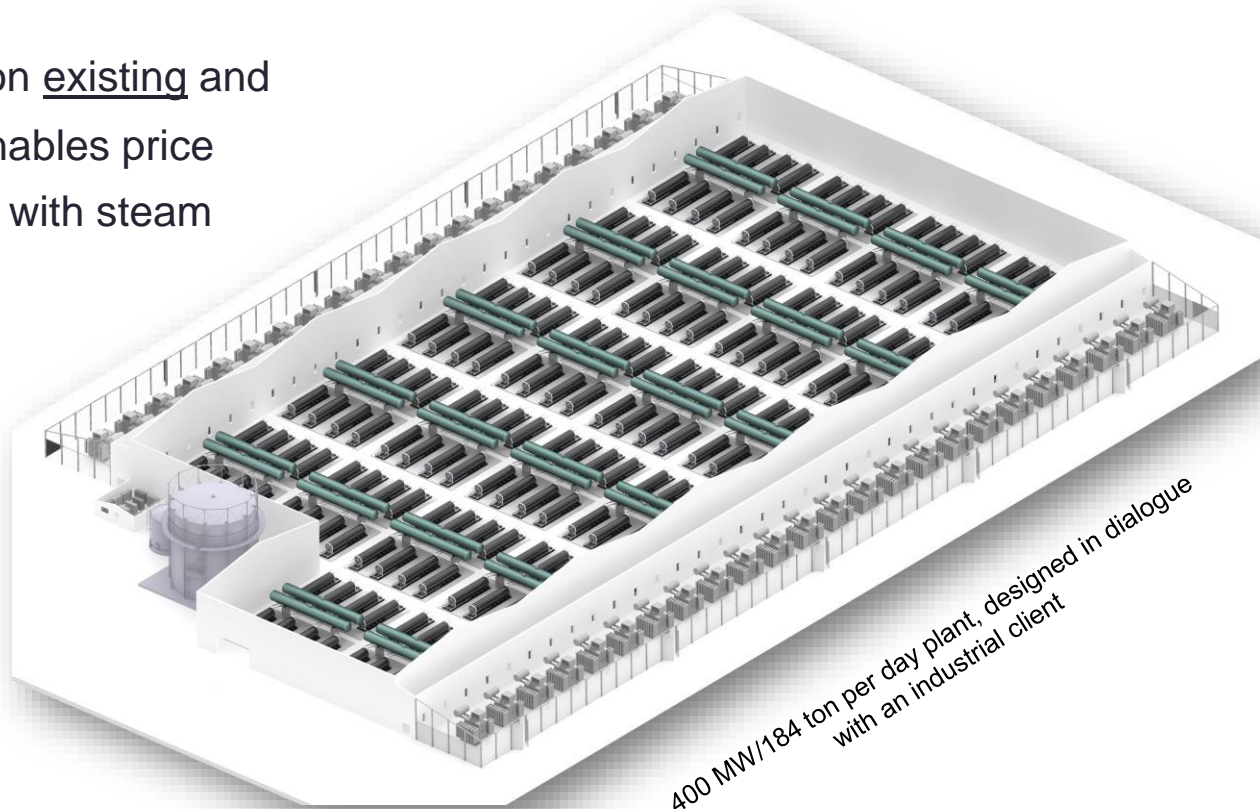
In the transport sector already – at 5 €/kg and sinking



Assumed 70% utilization of electrolyser and refueling station, includes CAPEX and OPEX w/out subsidies

..and soon in the industrial sector

400 MW plant, based on existing and proven Nel technology enables price below 500 \$/kW – on par with steam methane reformer.



400 MW/184 ton per day plant, designed in dialogue with an industrial client

Nel – exclusive partner in world's largest power-to-gas project

47.5 M€ framework agreement with H2V PRODUCT to deliver a **100 MW** electrolyser plant for power-to-gas in Northern France

- Largest power-to-gas project in history
 - Direct injection of hydrogen and biogas
- Installation during 2018 – 2020
- Plans for 600 MW of additional capacity in the period 2020 – 2022 equalling a contract value exceeding 310 M€
- Nel chosen due to: efficiency, reliability and price
- Location: Les Hauts and Normandie-regions in France



Modular Nel solutions maximize customer value

Customer example: ASKO

- ASKO is Norway's largest grocery wholesaler with 600 trucks on Norwegian roads
- Has ordered 4 hydrogen trucks from Scania & 10 hydrogen fork-lifts
- Hydrogen will be produced on-site:
 - Tied to solar power from warehouse roof
 - Containerised C-150 electrolyser
- H2Station® with triple-fueling functionality maximise utilization & value



Fuel cells are being put into larger and larger vehicles – need standards

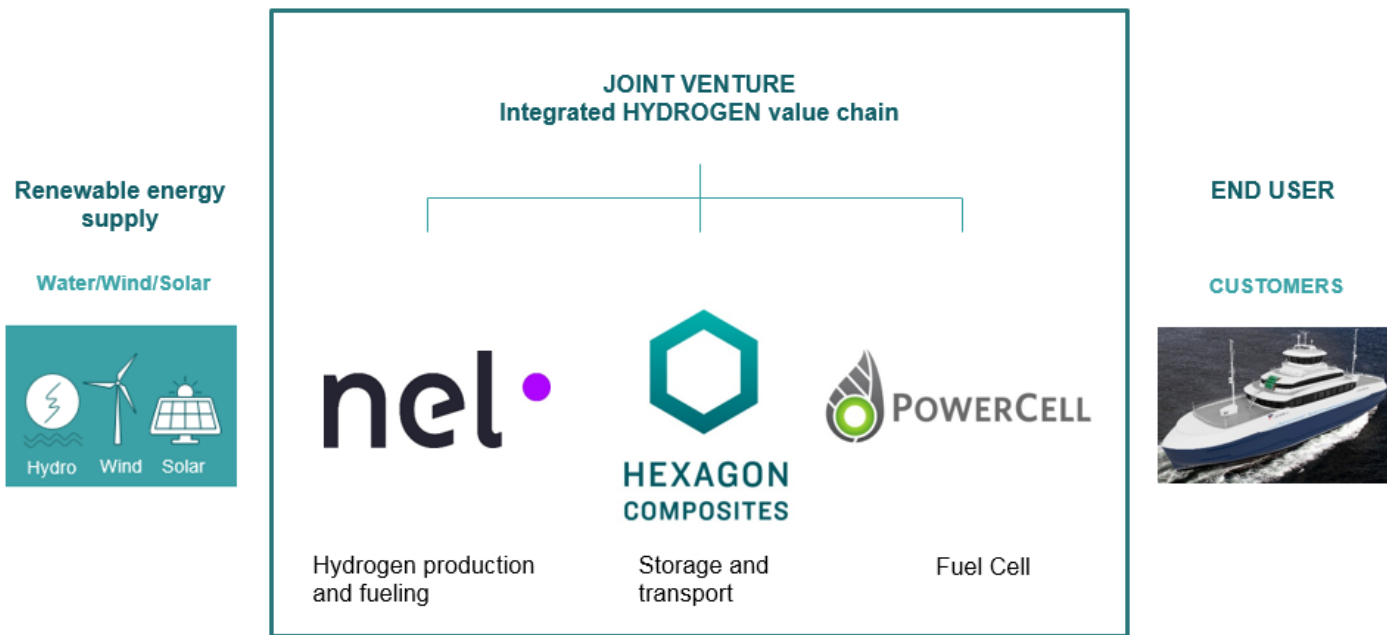


HDV & rail
50 – 200 kg

Maritime vessels
300 – 500 kg



New JV - Scandinavian Powerhouse on Hydrogen



The JV will combine specialized H2 know-how with integration capabilities to support complex configurations like e.g. ferries

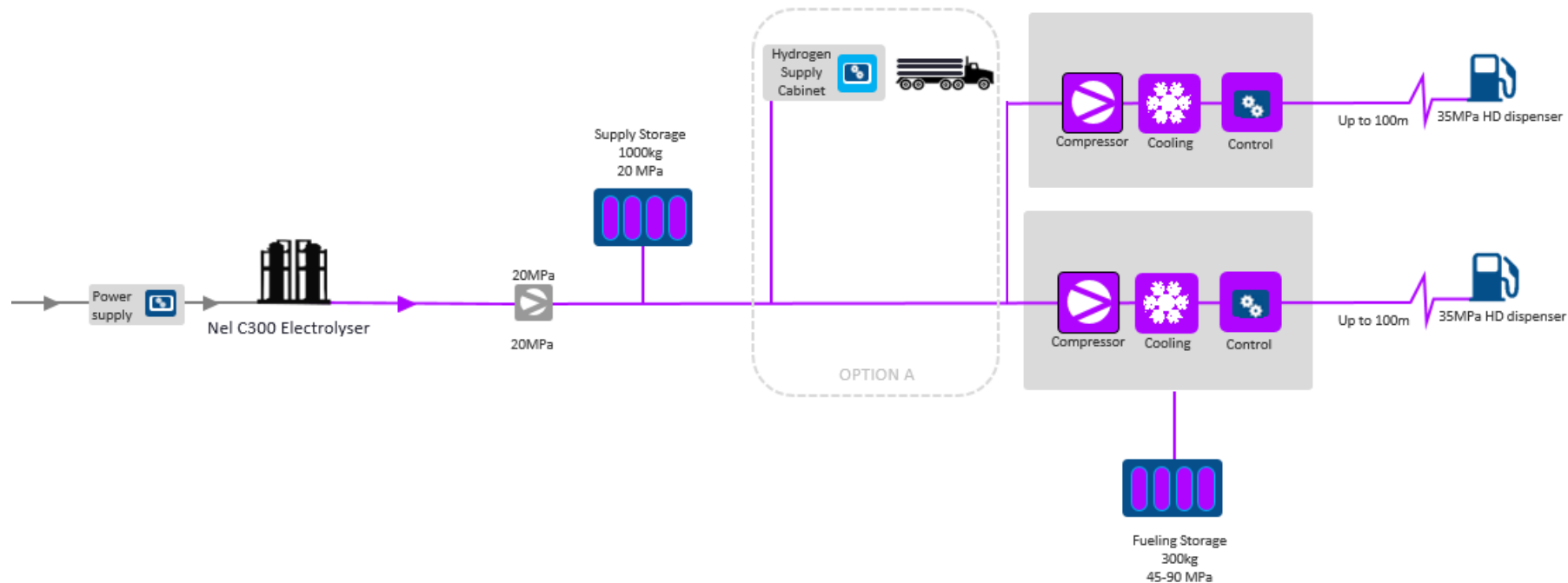
H2Station® station module is designed for flexible and fast 35/70MPa hydrogen fueling



footprint: 3.3 x 2.2 m

- 1/3 footprint and 3x capacity vs. previous generation
- 1 hose configuration with 200/600kg per day at 70/35 MPa
- Peak "rush hour" capacity of up to 100/300kg per hour at 70/35 MPa
- Compliant with the latest, international fueling standards
- Flexible dimensioning of hydrogen storage to fit any demand and supply sources ranging from on-site production to trucked delivery

Setup for fueling a passenger boat 300 & 600 kg/h



PowerCell - for Zero Emission Power Generation



“Maranda”

Power supply to electrical equipment and dynamic positioning.



“Nimbus”

Construction of a demo vessel for fuel cell propulsion.



“Photovoltaics”

A ship with integrated photovoltaics and fuels cells.

Project consortium:

- VTT Technical Research Centre of Finland Ltd
- Powercell Sweden AB
- ABB Oy
- OMB Saleri SPA
- PersEE
- The Finnish Environment Institute (SYKE)
- Swiss Hydrogen SA

Installation by partner Swiss Hydrogen

H2 TANKS SUITABLE IN BOATS AND CRUISE VESSELS

- **Hydrogen electric ship**
 - Flexible solutions
 - Suitable for short-sea



TITAN® H2 tanks

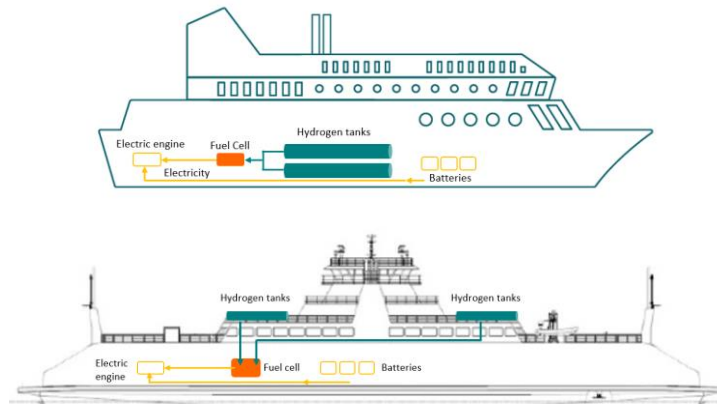


Photo: GKP7H2/Brodrene Aa

Issues to be solved for fueling of maritime vessels

Fueling large vehicles is no issue in itself - the larger the tank, the higher the fueling speed can be.

However, there is a need for the following:

- Establishment of standards:
 - Storage pressure
 - Fueling speed (protocol)
- Break-away coupling at vessel, not station
- Liquid hydrogen fueling systems and speed

Number one by nature