EU Affairs 2022

Empowering generations with clean energy forever

¾ of the Sun is made from hydrogen

What we experience as sun rays on Earth are the direct result of hydrogen atoms fusioning together to form Helium.

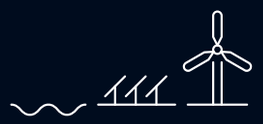
Our mission

We unlock the potential of renewables and enable global decarbonization

Our vision

Empowering generations with clean energy forever

Our businesses



Renewable energy

Learn about storage solutions

Hydrogen production

Learn about our world-leading water electrolysers

Hydrogen fueling

Discover our modular and multipurpose hydrogen refueling stations (HRS)

Foreword

The past few years have borne witness to an ever-increasing momentum for the hydrogen industry in Europe and across the globe. It started with the European Commission's Hydrogen Strategy and the 2x40GW initiative announced in July 2020. More recently, tragic events on the European Union's (EU) borders, namely the invasion of Ukraine, meant that the EU has had to step up its efforts to reduce the continent's dependence on Russian fossil fuels. As such, the European Commission's RePowerEU plan sets a renewable hydrogen production target of 20 million tons by 2030 (10mt in Europe and 10mt imported from outside the EU). This means scaling up installed electrolyser capacities from 3GW to approximately 300GW by the end of this decade. Now more than ever, the spotlight is on the electrolyser sector. Renewable hydrogen has become a key pillar in EU energy, industrial & climate policies and is recognised as a key enabler in the EU's efforts to transition to a climate neutral society by 2050.

At Nel, we believe that our technologies and equipment are the key to unlocking the full potential of renewable energy and enabling global decarbonization. Renewable hydrogen produced by electrolysers provides a means to flexibly transfer energy across sectors, time, and place. We will contribute to the decarbonization of our economies and making renewables relevant in new areas not accessible in the past. Moreover, we can store excess electricity generated from renewable power, thus providing grid balancing or seasonal storage whilst making the overall energy system of the future more efficient.

In January 2021, Nel announced its objective to deliver a renewable hydrogen cost target of $1,5/kg by 2025, bringing renewable hydrogen to cost parity with traditional fossil-based hydrogen. Through innovation, experience with large scale projects and our long-standing history in the sector, we have already begun cutting costs dramatically in our equipment and operations. This is exemplified in our state-of-the-art manufacturing facility in Herøya, Norway: the first fully automated electrolyser manufacturing facility in the world, which was inaugurated in April 2022. Notably, the technology being produced in Herøya is not dependent on any rare earths or exotic materials.

The electrolyser sector can become a new industrial champion for Europe.

It is imperative that we maintain Europe's current technological leadership position in electrolyser manufacturing and seize the momentum, ensuring the development of a strong European home market for electrolysers and promoting Europe as the birthplace of a newly emerging global hydrogen economy. The unfolding of EU legislative proposals linked to RePowerEU, the Fit for 55 Package and the Hydrogen and Decarbonized Gas Package will be critical determining factors for the success of the EUs energy, industrial and climate policies, the future of hydrogen in Europe and the world.

It's time to turn Europe's hydrogen ambition into a reality. We need a clear and predictable regulatory framework which provides certainty and appropriate financial incentives for renewable hydrogen technologies. In this brochure you will find more information about our vision, what we do, as well as our views on the development of relevant legislation. We look forward to being active stakeholders in current and future EU initiatives. We are committed & ready to deliver on the promise to help make Europe the first climate-neutral continent in the world.

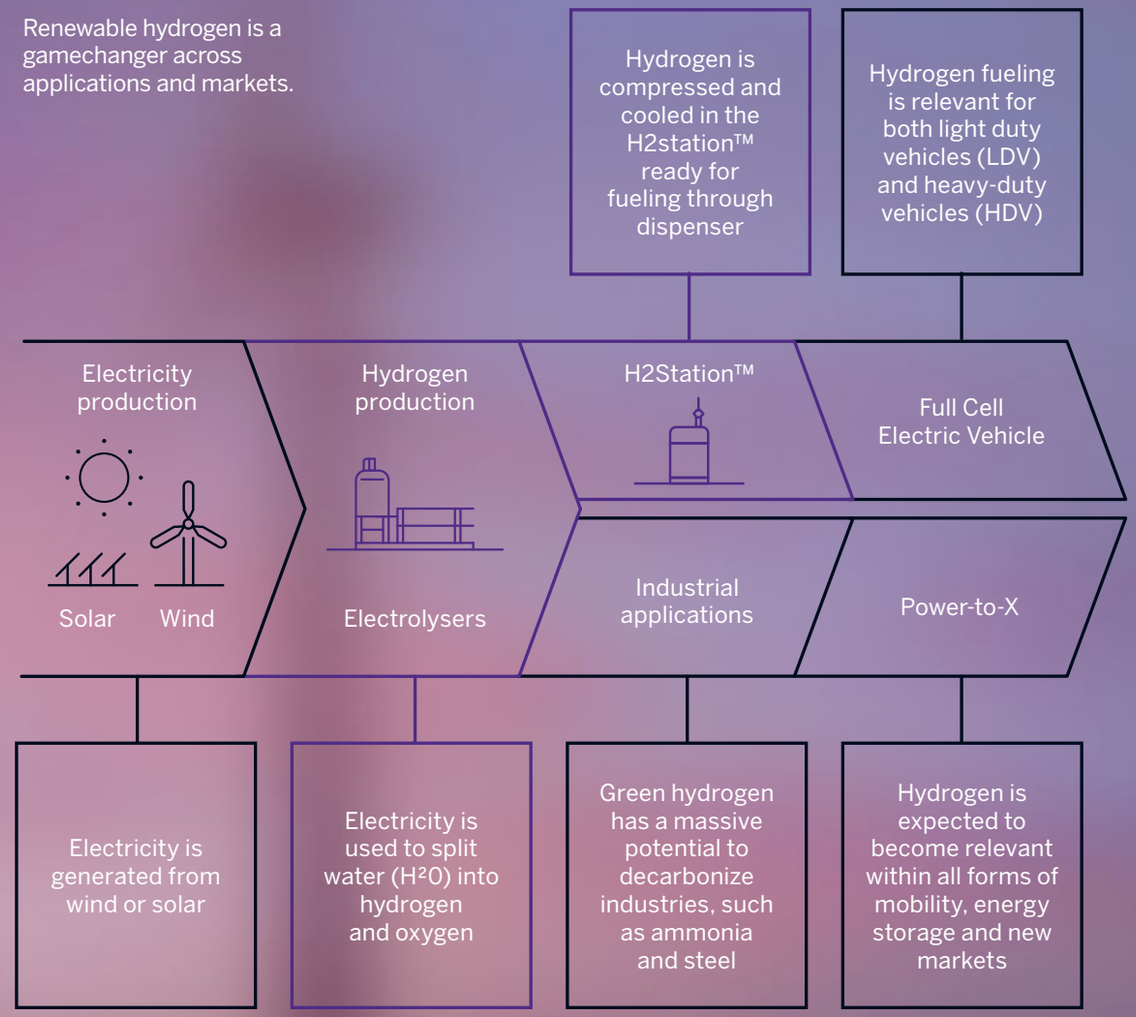
Thorsten Herbert
Director Public Affairs & Market Development

Constantine Levoyannis
Head of EU Affairs

Unlocking the potential of renewables

The fundamental challenge with renewable energy, is that it follows its own cycles and logic, independent of when we wish to use it. So, we need a way to harness and utilise it to its maximum potential and store excess energy.
The development of renewable hydrogen opens new business opportunities for players in the energy space and gives our planet a real chance to fully phase out the use of fossil fuels, decarbonize our economies and to live in a world where global warming is limited to below 1.5 degrees Celsius.

Renewable hydrogen is a gamechanger across applications and markets.



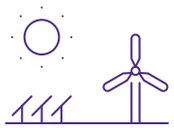
Did you know?

"Hydrogen is also an integral part of the natural water cycle. Renewable electricity and water transformed into hydrogen and oxygen become pure water and electricity again when used in a fuel cell."

Making renewable hydrogen happen everywhere

Game-changing industrial decarbonization

- Achieving climate neutrality will require a massive effort to decarbonize the heavy industries that facilitate the functioning of our economies, including inter alia steel, aluminium, refining, fertilisers and chemicals.
- We have the experience and know how to develop large scale products based on industry 4.0 principles that enable deep decarbonization and bankability of projects.
- We deliver our customers products that are safe, robust and reliable. Our products are scalable, cost-effective and do not rely on rare earths and exotic materials.



Enabling a fully renewable and efficient energy system

- There is an ever-increasing need to capture curtailed power and balance the electric output to the grid and offer seasonal storage.
- For large scale storage of renewable energy, hydrogen is by far the most suitable alternative – increasing the lifespan of electricity from zero to infinity.
  - In Germany in 2020, an estimated €1.35 billion worth of offshore wind energy was curtailed due to insufficient transmission grid capacity.
  - In Great Britain, during the last 12 months (October 2020-October 2021), 2,5TWh of renewable electricity was curtailed at a cost of 172 million GBP. With replacement generation, the cost goes up.

Decarbonizing heavy duty transport

- When used in vehicles, renewable hydrogen is a zero-emission fuel that offers the same range and convenience and fast charging offered by fossil fuels today.
- Hydrogen and hydrogen derivatives also known as synthetic fuels will have a crucial role to play in cutting emissions in the aviation and maritime sectors, propelling decarbonization both in the air and at sea.
- Modular and multipurpose, Nel's hydrogen refuelling station, H2Station, is compact.
  The unique modular design makes it as easy to build as with Lego® bricks.

Herøya, an industrial gamechanger

The world's **first fully automated** electrolyser manufacturing facility, designed according to lean manufacturing and industry **4.0 principles**.

Industrial scale production of the **most efficient electrolysers** in the market, at a game-changing cost.

Large scale production line, name plate capacity of more than **500 MW** with room to expand to **2 GW** annually.

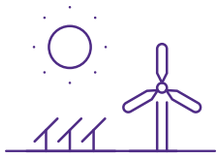
Annual **CO2 reduction potential** for our customers in line 1 (500MW) of 1.000,000 tonnes – with 2 GW, 4-5 million tonnes.

Leading the race towards fossil parity.

No use of rare **elements, exotic materials or platinum group metals.**

Policy positions

Key recommendations !



Renewable Energy Directive (III) Revision

! Maintain binding 50% renewable hydrogen target in industry

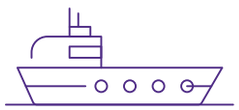
- Our industry needs clear demand signals to give business and investor certainty moving forward.
- An intermediary target of 30% renewable hydrogen in industry in 2026 would give further clarity and a clearer trajectory towards the 50% target.

! Provide clarity ASAP on the RED II delegated act for additionality, geographic and temporal correlation.

- A workable and realistic framework is needed. Without clarity on the accounting rules and what counts as renewable hydrogen, there can be no clarity on renewable hydrogen targets.

• Ensure the existence of a coherent and consistent certification scheme, recognisable on a global level.

- At present, there are too many competing certification schemes with different methodologies being used and developed to scientifically determine and calculate the greenhouse gas (GHG) emissions and life cycle assessment (LCA) of hydrogen.
- Efforts ought to be streamlined on a global level to avoid distortion of the future hydrogen market. A global standard is required to promote a global hydrogen economy.



Mobility

• Alternative Fuels Infrastructure Regulation:

- Maintain targets defining minimum distance requirements between hydrogen refuelling stations: every 150km on the core network and urban nodes.

• Trans-European Networks for Transport Regulation (TEN-T):

- Support synergies between the TEN-T and Trans-European Networks for Energy Regulation. This will enable cross border flows of hydrogen as an energy vector, the decarbonization of the energy grid whilst facilitating the decarbonization of Europe's transport sector on the road, at sea and in the air.

• Sustainable Aviation Fuels Regulation & FuelEU Maritime

- Set common minimum standards, and allow member states to set more ambitious targets, both at domestic and international level, while ensuring that high minimum levels set forth in the regulation are met.

EU funding

! A dedicated EU fund for electrolyser manufacturing

- National & European schemes should focus on reducing investment risk and on establishing the serial production of electrolysers in a manner that supports technologies that are scalable and cost effective. Electrolyser manufacturers should benefit from the same support afforded to other energy infrastructure categories in the past. A dedicated fund for electrolyser manufacturing would contribute towards accelerating the upscaling of manufacturing capacities.

• State Aid

- The European Commission should consider making technology suppliers legally eligible for assistance via state aid exemptions if they support & facilitate investment activities contributing to EU climate objectives and the REPowerEU ambition.

• A role for the European Investment Bank (EIB)

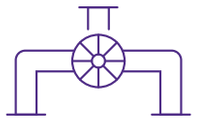
- The EIB should envisage a mechanism for a fast-track procedure with regards to the approval process for loans at favourable rates for investments into hydrogen infrastructure (as defined in TEN-E).
- Grants should also be duly considered with regards to feasibility and FEED studies.

• Emissions trading scheme (ETS) and carbon tax

- Free allowances should be re-invested into technologies that contribute towards achieving the objectives of the EU Green Deal.
- Should ETS reform not trigger the desired shift to green technologies, policy makers should consider adding hydrogen to the list of products carbon border adjustment mechanism to ensure a level playing field for renewable hydrogen.
- The ETS Innovation Fund application process should be clarified & simplified to facilitate access to financing for manufacturers.
- Carbon contracts for difference scheme (CCFD) must be accelerated, with CCFD's being applied on the end-user side.

Did you know?

"Hydrogen is the element with the highest gravimetric energy density. Three times higher than gasoline. 150 times higher than a lithium-ion battery."



Hydrogen & Decarbonization of gas markets package

• Definitions

- Clarity is needed with regards to the definitions of renewable and low carbon hydrogen and their GHG footprint. Proposing a delegated act in 2024 to develop a methodology calculating the emissions savings of low carbon hydrogen comes far too late.

• Renewable hydrogen is the EU's strategic priority

- Renewable and low carbon hydrogen should not be treated as equal when it comes to tariff discounts. When injecting renewable hydrogen into the grid, renewable hydrogen should receive a higher discount than low carbon hydrogen.

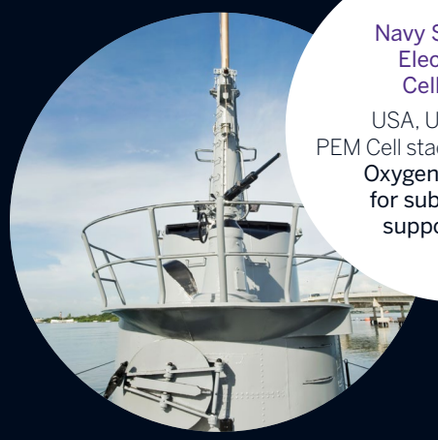
Project examples

H100 Fife
Scotland
5MW/2.5t per day
World's first 100% hydrogen-to-homes
Heating network

Dolphyn
United Kingdom
10MW/4.2t per day
Offshore wind-to-hydrogen on floating platform

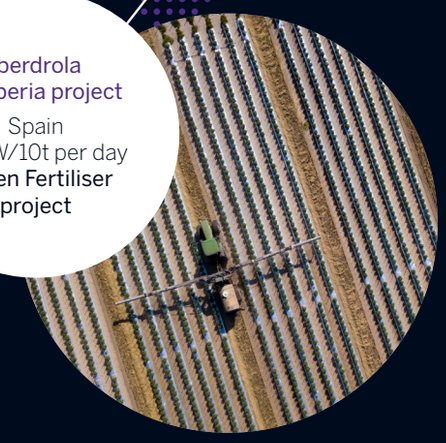
H2Synergy
Denmark
20MW/ 8t per day
Green refinery project

HyBrit
Sweden
4.5MW/2t per day
Green steel



Navy Submarine Electrolyser Cell Stacks
USA, UK & France
PEM Cell stacks/various sizes
Oxygen generation for submarine life supportproject

Polisilicon Plant
Malaysia
25MW/11.5t per day
Silicon rods manufacturing



Iberdrola Fertiberia project
Spain
20MW/10t per day
Green Fertiliser project

Energy Observer
France
28KW/0.008t per day
1st ever fully autonomous catamaran

About us

- Nel is a pure play hydrogen technology company listed on Oslo Stock Exchange (NEL.OzqSE).
- At Nel we have a long story of providing safe and reliable H2 systems to our customers since 1927. Safety comes first in everything we do, everyday.
- We are a globally recognised player delivering optimal solutions for the production, storage and distribution of renewable hydrogen around the world.
- We are the world's largest electrolyser manufacturer (alkaline and PEM), with >3,500 units delivered in 80+ countries since 1927.
- Nel is a leading manufacturer of hydrogen refuelling stations, with 110+ H2StationTM solutions delivered/in progress to 13 countries.
- In January 2021, we were the first to announce the objective of reaching a cost target of $1.5/kg for renewable hydrogen in 2025.
- At the end of Q1 2022, we had 526 employees and we continue to grow as a global company.
- Nel is a European company with manufacturing facilities located in Norway, Denmark and U.S., with an established global sales network.

"For more than a century we have exploited solar energy, stored as hydrocarbons over millions of years, causing critical levels of CO2 in the atmosphere today. From now on however, we will produce unlimited amounts of renewable, clean energy, everywhere – for all purposes, for all eternity."

Source: Nel Hydrogen website

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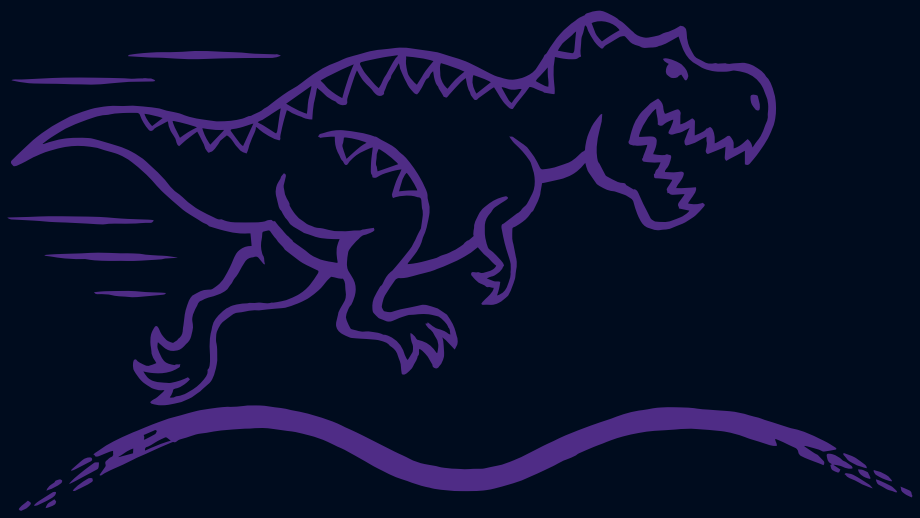

“Thanks for the ride dinosaurs we’ll take it from here”

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