

nel.



# EU Affairs 2023

Unlocking the potential of  
renewables & enabling global  
decarbonization



3/4 of the Sun is made from hydrogen

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

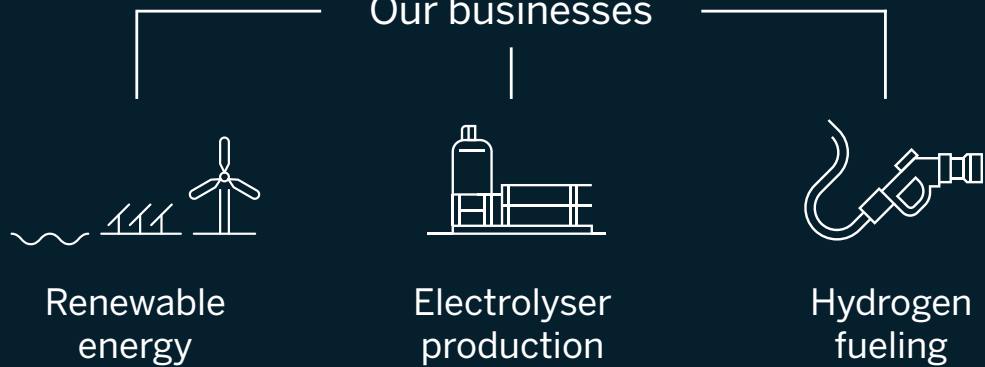
### Our mission

We unlock the potential of renewables and enable global decarbonization

### Our vision

Empowering generations with clean energy forever

### Our businesses



Renewable energy

We cater to power-to-gas, and power-to-industry markets, and more

Electrolyser production

Our electrolysers are for markets including fertilizer, green steel and cement

Hydrogen fueling

We provide fueling equipment for cars, trucks, buses and other markets

# Ready to deliver

Around the world today, governments grapple to develop fair and robust decarbonisation policies aimed at limiting global warming to below 1.5 degrees Celsius. To achieve this, ambitious climate objectives must go hand-in-hand with strong industrial policies.

Clean tech manufacturing is at the nexus of these efforts and a race for global leadership is underway. On the one hand, the United States of America is ready to inject \$370 billion into energy and climate programs over the next 10 years. On the other, China is imposing itself on the world stage once more as the country's economy gears up and emerges from the pandemic.

The EU entered the race as a first mover on renewable hydrogen and a global leader in electrolyser technology. Renewable hydrogen has become a key pillar in EU energy and climate policies and is recognized as a key enabler in the EU's efforts to transition to a climate neutral society. Amidst fierce competition, the Union is now called upon to complete a puzzle made up of a myriad of EU legislative and financial instruments. Our ability to piece the puzzle together in a coherent manner is a test for the EU's credentials as a climate leader and will determine the future of European industry.

The EU needs to deliver framework conditions that will spur the development of a strong European home market for electrolysers. Only in this way can the electrolyser industry become a new industrial champion for Europe, contributing to achieving EU climate goals and pathing the way for new employment opportunities for highly skilled labourers. Europe needs to level the playing field with the USA and China or risk falling behind.

To maintain Europe's global leadership in electrolyser manufacturing, we need to speed up EU decision making, scale up our industry and make smart choices.

Nel is a global leader in the manufacturing of electrolysers and hydrogen refuelling stations. In May 2022, Nel together with other European electrolyser manufacturers signed a Joint Declaration with the European Commission outlining a roadmap for achieving the EU's objective to produce 10 million tons of renewable hydrogen in the EU by 2030. Achieving this will require an increase in annual manufacturing capacity to the tune of 25GW.

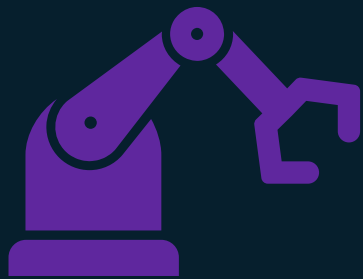
Through innovation, experience with large-scale projects and our long-standing history in the sector, Nel has already begun cutting costs dramatically. As we scale up we will continue to drive down the cost of renewable hydrogen with the aim of reaching fossil parity. This is exemplified in our state-of-the-art manufacturing facility in Herøya, Norway.

Now more than ever, we need a transparent and predictable regulatory framework to trigger final investment decisions for renewable hydrogen projects and set in motion the associated investments to scale up manufacturing capacities. In this brochure you will find our positions on key policy dossiers at EU level and information on how we plan to make Nel a **bigger, better** and more **focused** hydrogen technology company. With our global footprint, we are ready to draw on our experiences from different systems and build new success stories. We remain committed and ready to deliver on the promise to make Europe the first climate-neutral continent in the world and a leader in electrolyser manufacturing.

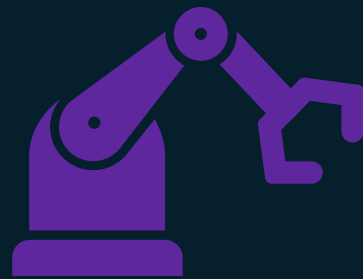


Håkon Volldal  
CEO

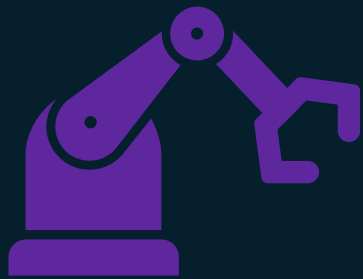
# BIGGER



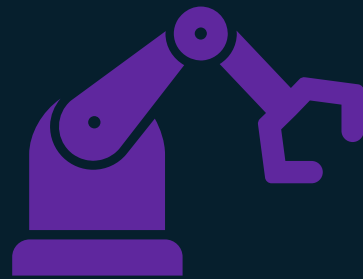
Up to ~2 GW  
at Herøya



Up to ~500 MW  
in Wallingford



Up to ~4 GW  
at the new site in the US



Prepare for new  
GW site

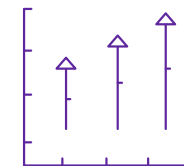
Aggressive scale up in manufacturing capacity

High capacity hydrogen refueling stations from 2025

Scale up to bring costs down



Market shifting  
from small to large-  
scale projects

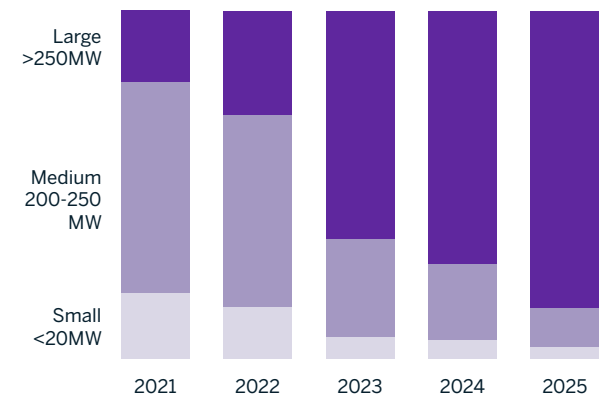


Manufacturing  
capacity to be  
scaled in line  
with demand

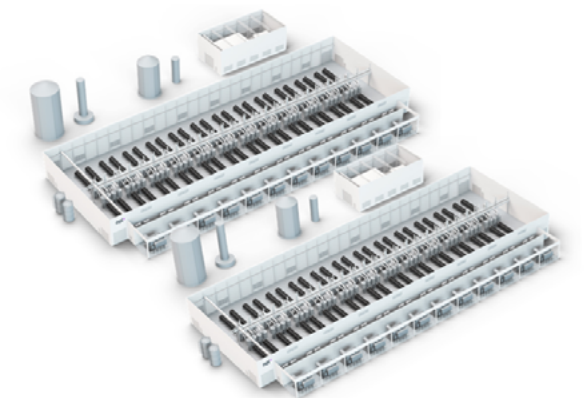


Grow  
profitability to  
be commercially  
sustainable

Electrolyzer orders (at FID)% of total GW



Source: Nel Quarterly Presentation Q4 2022

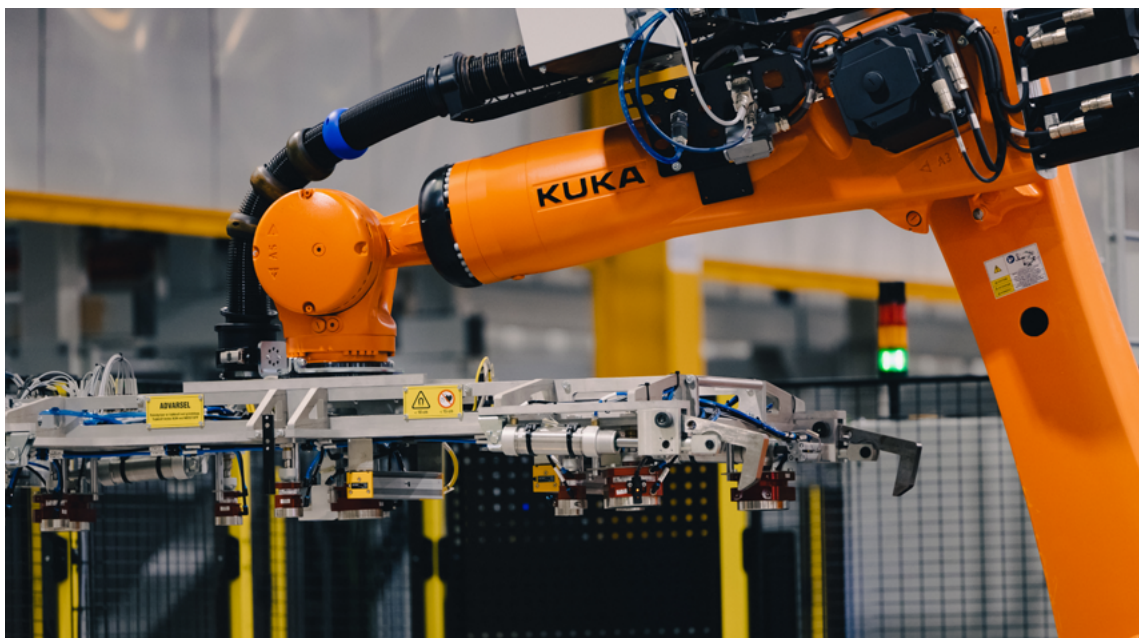
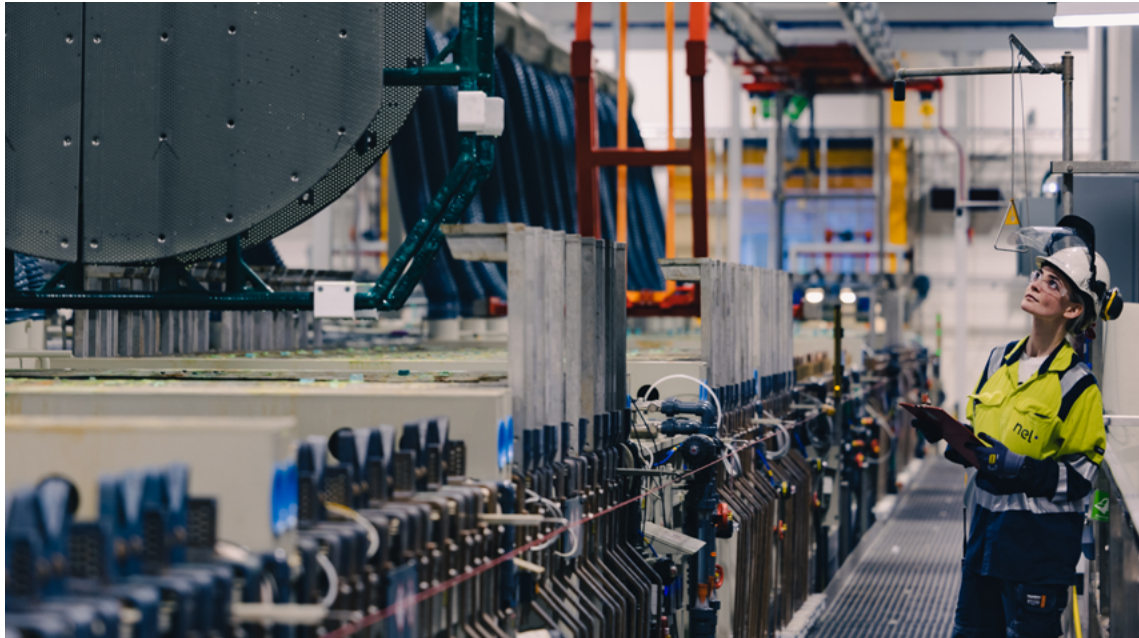


Our results are improving as a consequence of increased production volumes and the fact that better margins on our newest contracts have started to impact our financial results.

By forging strategic partnerships with key players in the renewable energy sector, we are expanding our market reach and driving higher demand for our cutting-edge electrolyser technology.

Growth in profitability will enable us to invest further in R&D, ensuring our product offerings remain competitive and commercially sustainable in the rapidly evolving hydrogen economy.

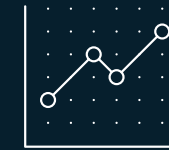
# Gamechanger in Herøya



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



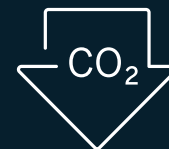
Industrial scale production of the **most efficient electrolysers** in the market, at game-changing cost.



Large scale production line with name plate capacity of more than 500MW annual output with room to expand up to 2GW. Construction has started on line 2 which will bring the factory's total annual capacity output to 1GW by April 2024.



At full expansion with 2GW, we estimate approximately 60 onsite direct jobs (FTE/year) and 660 indirect jobs (FTE/year) from supply chain effect.



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



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

# BETTER



**FUELING**  
Modular design  
Multipurpose  
Safe & fast  
70/35MPa  
refueling solutions

Improve performance  
to reduce ongoing  
operational costs for  
stations in the field

**ALKALINE**  
Hassle-free installation  
Scaleable solutions  
20-800MW



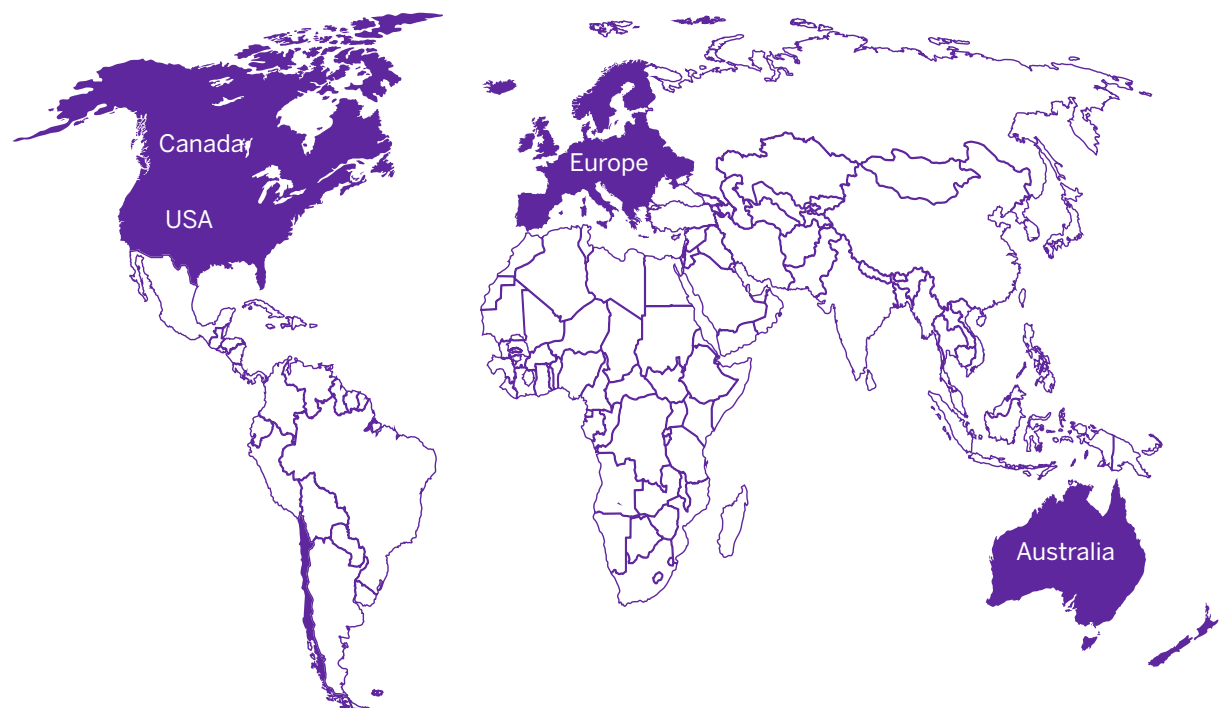
Continue to invest in alkaline and PEM to develop the most efficient and reliable electrolyser technology

Significantly reduce electrolyser stack cost

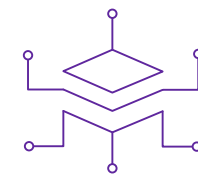


**PEM**  
Fast response time  
Operating flexibility  
Small footprint

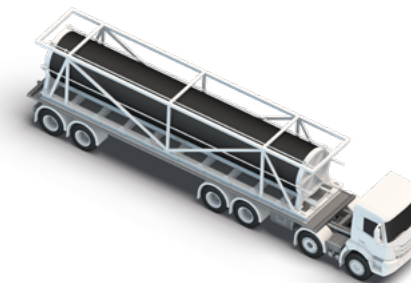
# FOCUSED



Focus on Europe and North America, and over time, Australia and Chile as export hubs



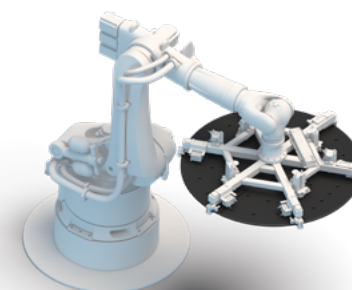
Reduced scope of supply



Focus on stack and balance of stack with a view to reducing stack costs and delivering the most efficient and reliable alkaline and PEM technology



More standardized deliveries



Delivering 20MW, 50MW, 100MW, 200MW module solutions for customers



Geographical focus

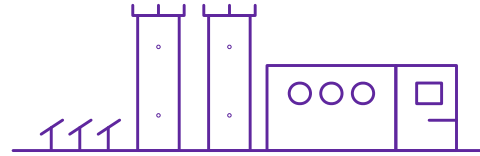
Delivering on European demand with our factory in Herøya

Preparing for market growth in the US with our new factory in Michigan and expansion in Wallingford

New factories to be built in line with demand

# Policy positions

## EU Industrial policy



### • Net Zero Industry Act

- Support more ambitious objectives for electrolyser manufacturing capacity made in Europe. A one-size fits all approach does not work.
- Make sustainability, ESG requirements and resilience contributions a core facet of EU industrial policy and efforts aimed at supporting the development of a European supply chain for electrolyser manufacturing.
- Procurement rules must incentivise and benefit European companies by rewarding sustainable and innovative manufacturing, in line with EU labour laws and core EU values, human rights in particular.
- The definition of renewable fuel of non-biological origin technologies should specifically include hydrogen compressors, hydrogen refuelling and stations and hydrogen storage tanks.
- The cost difference threshold for removing sustainability and resilience criteria from contracts should be raised from 10% to 25%.

The current objective of 40% electrolysers made in Europe translates to 10GW out of the 25GW annual manufacturing capacity needed to reach Europe's renewable hydrogen objectives.

The market for mass-manufactured clean energy tech is estimated to be worth around USD 650 billion a year by 2030 – more than triple today's levels (IEA).

Did you know?

Did you know?

A multi GW/year PEM market will need ~500 tons of Nafion/year.

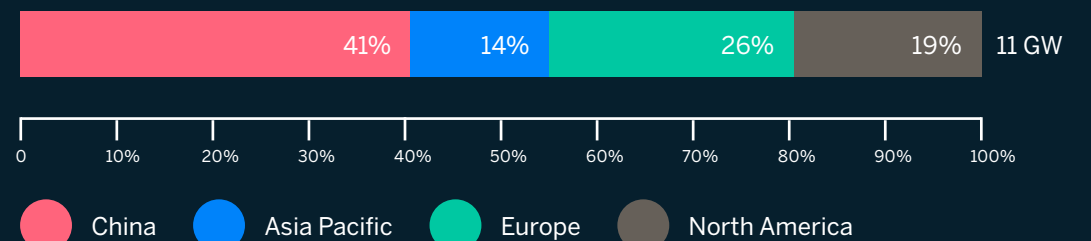
70% of our alkaline electrodes are made up of steel. Electrodes made in China rely on steel that is produced at a lower cost and higher environmental footprint.

Did you know?

- **Critical Raw Materials Act**
  - Support recycling obligations of rare earths and raw materials at end of life to reduce import dependency, increase the resilience of the EU supply chain and support domestic stockpiling.
- **Restriction proposal for PFAS chemicals**
  - A ban on fluoropolymers used in electrolysers would jeopardise the EU's hydrogen strategy and contradict efforts to scale up net zero clean tech.
  - Nafion membranes used in PEM electrolysers meet the OECDs criteria for polymers of low concern.
  - There are no alternatives to nafion membranes. Given the state of the art today, widespread deployment of hydrocarbon membranes suitable for electrolysis at scale is at least 15-20 years out. An imminent and major breakthrough is needed. The industry needs certainty today via a derogation.
- **Carbon Border Adjustment Mechanism**
  - The revision of the carbon border adjustment mechanism (CBAM) should propose the inclusion of electrodes into the list of downstream products covered by CBAM. This will help to ensure a level playing field.
- **Industrial Emissions Directive**
  - Given the push towards renewables and renewable hydrogen, electrolysers should be exempted from the scope of the Industrial Emissions Directive.

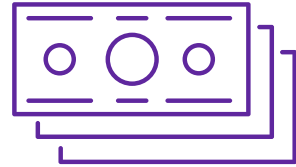
## Shares of manufacturing capacity by region, 2021

Source: IEA Technology Perspectives 2023



# Policy positions

## Funding



### • European Hydrogen Bank

- For the sake of simplicity and transparency, a one-stop shop for all renewable hydrogen project promoters seeking EU funding is imperative. The European Hydrogen Bank should become the EU's primary financing instrument for renewable hydrogen production only.
- Project developers should have a clear and well-informed overview of the financials related to the total investment costs of the project they are undertaking. In this regard, the requirement of a pre-FEED would help to ensure that the most mature and financially robust projects are prioritized.
- The minimum threshold for electrolyzers should be raised to 20MW, sending a clear message to investors that we are in a commercialisation phase. The European Hydrogen Bank is not another funding instrument to support research and development projects. The main purpose of the Hydrogen Bank is to facilitate scale up of renewable hydrogen and market ramp-up. As such, it's important to avoid confusing "pilot auction" with "pilot projects".

### • Sovereignty Fund

- A strong European fund is needed to balance national state aid and ensure geographic balance in distribution of funds. The Sovereignty Fund could act as a common debt instrument, similar to NextGenerationEU.
- The fund could play an important role in preserving the integrity of the Single Market by collectivising investments, while maintaining a necessary level playing field between Member States who do not have the same fiscal space to help de-risking investments in future technologies and industrial production capacities.





# Project examples



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



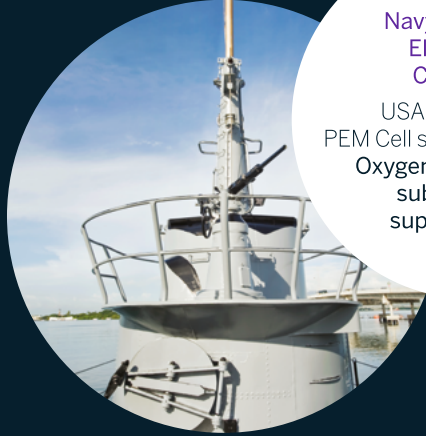
**Dolphyn**  
United Kingdom  
10MW/4.2t per day  
Offshore wind-to-hydrogen on floating platform



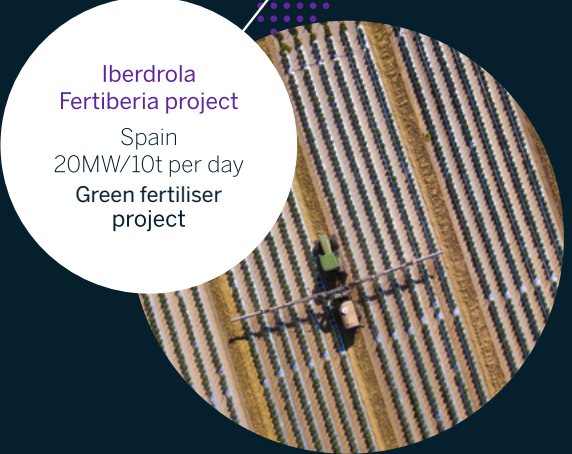
**H2Synergy**  
Denmark  
20MW/ 8t per day  
Green refinery project



**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 support project



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



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



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

# About us

- Nel is a pure play hydrogen technology company listed on Oslo Stock Exchange (NEL.OzqSE).
- At Nel we have a long history of providing safe and reliable H2 systems to our customers since 1927. Safety comes first in everything we do, every day.
- We specialize in electrolyser technology for production of renewable hydrogen, and hydrogen fueling equipment for road-going vehicles.
- Our product offerings are key enablers for a green hydrogen economy, making it possible to decarbonize various industries such as transportation, refining, steel, and ammonia.
- Nel is a leading manufacturer of hydrogen refuelling stations, with 120 H2Station™ solutions delivered/in progress to 14 countries.
- At the end of Q1 2023, we had 600+ employees and we continue to grow as a global company.

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.

## Key contacts

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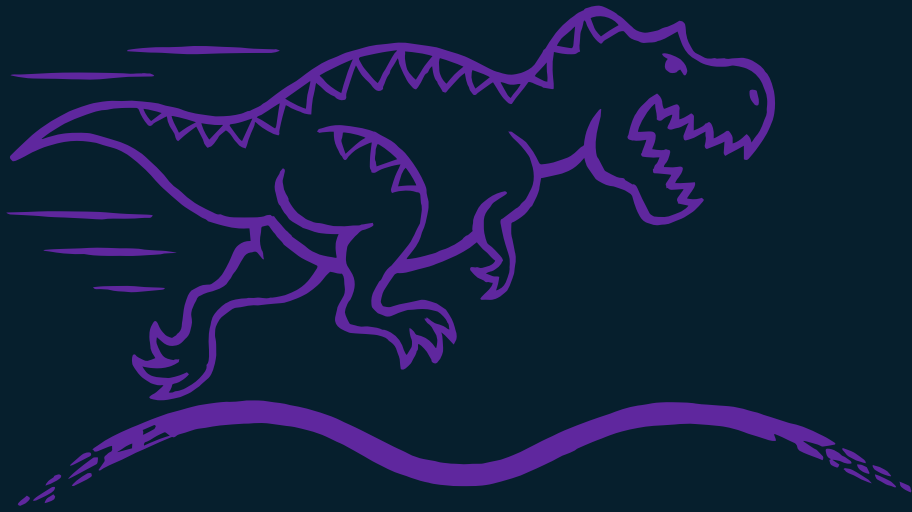
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Number one by nature

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"Thanks for the ride  
dinosaurs! We'll take it  
from here"

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