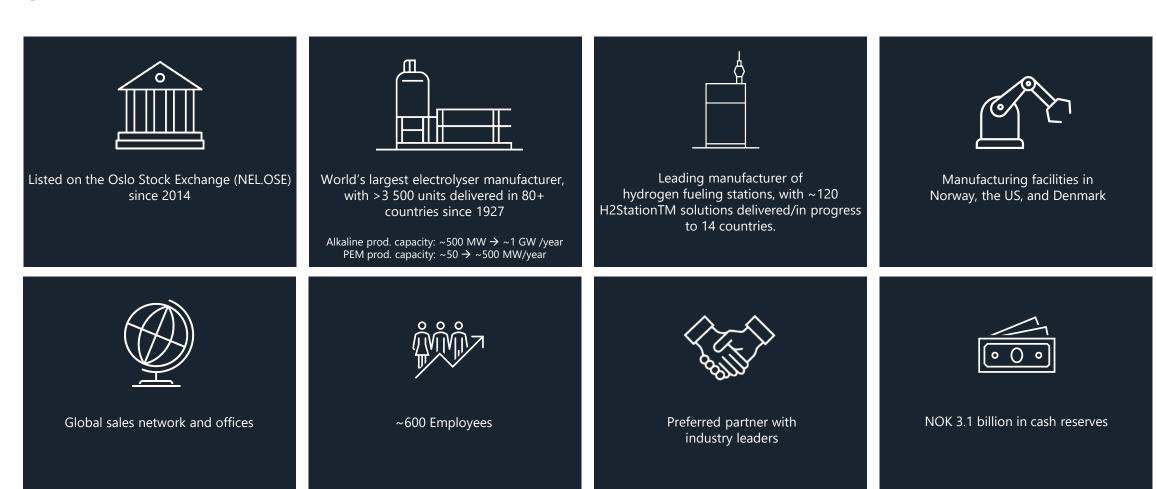
### nel.

Activities of international organisations and hydrogen companies

23 March 2023



# Leading pure play hydrogen technology company with a global footprint



#### The race is on



Race for technology leadership

Race for survival of EU industry

Race for subsidies & financial aid



### EU 2030 Objectives & key numbers

- 2030 targets for renewable hydrogen
   20 million tons

  - (10 domestically produced, 10 imported)
- 100GW of installed electrolyser capacity in EU
   Today less than 1GW installed
- Manufacturing capacity needed:
   est. 25-35 GW of annual output

  - 40% made in Europe target
- Aggregated manufacturing capacity based on announcements of ELY manufacturers:
  - est. 40-50GW by 2025
- EU Renewable Energy Directive Targets (to be finalised)
  - 42% renewable fuels of non-biological origin to be consumed in industry by 2030
  - 2.5-5.7% renewable fuels of non-biological origin to be consumed in transport sector by 2030





#### Moving from small- to large-scale



Market shifting from small to large-scale projects



nel

### Game-changing expansion at Herøya - on time and on budget



Fully automated and designed according to lean manufacturing and industry 4.0 principles



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



Large scale production line, name plate capacity of **more than 500 MW** 



Room to expand to ~2 GW annually



Annual CO<sub>2</sub> reduction potential in line 1 (pilot) of **1.000,000 tonnes** – with 2 GW, **4-5 million tonnes** 



## Automation: a key component for cost reductions

On track to reach the ambition to produce green hydrogen for \$1.5/kg by 2025, target to reduce CapEx cost by ~75%

Around half of this reduction relates to scale-up and cost-down through automation at sites like Herøya

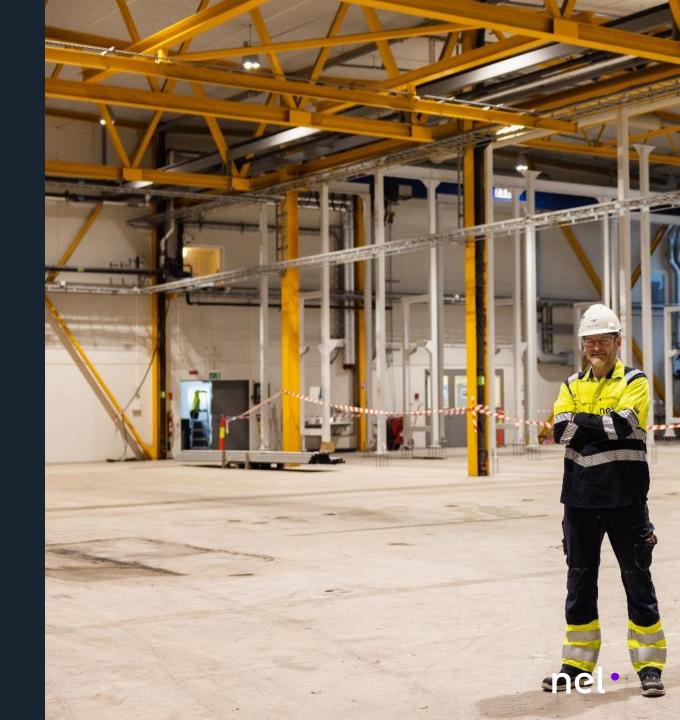
- ✓ Higher volume
- ✓ More efficient designs
- ✓ Less usage of materials
- ✓ No use of rare-earth/exotic materials





### Capacity expansion progress

- Construction of Herøya Line 2 (~500 MW) is running according to plan: April 2024
- Expansion of production capacity in Wallingford to be increased to ~500 MW by 2025 (Capex of NOK ~260 million)
- Site selection process for US Gigafactory in final phase (up to 4GW)
  - Three finalist sites across three states
  - Decision to be made shortly



## Signed a joint development agreement with GM to accelerate PEM development



- General Motors has invested substantially in fuel cell technology
- Combining GM's and Nel's knowledge the two companies are looking to reduce the cost and increase the efficiency of Nel's PEM electrolysers
- Cheaper and better electrolysers will in turn make it cheaper to fuel GM's hydrogen vehicles



### Key EU policies & instruments for renewable hydrogen

- Delegated Act on additionality, geographic & temporal correlation
- Renewable Energy Directive
- Critical Raw Materials Act
- European Hydrogen Bank
- Industrial Emissions Directive / Net Zero Industry Act
- Restriction on PFAS / "forever chemicals"
- Carbon border adjustment mechanism



### number one by nature

Contact info:

Constantine Levoyannis

Head of EU Affairs, Nel Hydrogen

onstantine Levoyannis@nethydrogen.com