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Nel Hydrogen

Jon André Løkke CEO Nel Hydrogen 8 October, 2020



Leading pure play hydrogen technology company



The frontrunner in hydrogen technologies

Alkaline and PEM electrolysers

Converting water and electricity to hydrogen and oxygen – for industry, mobility and energy purposes



Hydrogen fueling stations

The H2Station[™] from Nel is the world's most compact fueling stations, capable of fueling any kind of vehicle and simple to ingrate with other fuels



Strong field know-how & manufacturing capacity

PEM electrolysers

Wallingford, USA



Systems delivered: 2,700+ Nameplate capacity: ~40MW/year

Alkaline electrolysers Notodden/Herøya, Norway



Systems delivered: 800+ Nameplate capacity: ~40MW/year → ~500 MW/year (~2GW/year)

Hydrogen refuelling stations

Herning, Denmark



Stations delivered: **80+** Nameplate capacity: **~300 HRS/year**

KEY DEVELOPMENTS

Electrolyser manufacturing scale-up project progressing well

- Optimization of manufacturing process
 - Reduction of process steps
 - Optimization of time aspects
- Automation of manufacturing with robot cells
- Manufacturing capacity potential from 360 to 500 MW/year per line
- Exploring potential for scale up of electrolyser platform



Example of standardized 100 MW green hydrogen production building block

Standardized large-scale offerings

- Standardized the following electrolyser configurations (limits the E&P&C in EPC, Engineering, Procurement and Construction)
 - 20 MW, 50 MW, 100 MW, 250 MW
- Other key aspects (partner network within EPC, financing/leasing, service & maintenance, operations, performance guarantees, etc.)



Example of standardized 100 MW green hydrogen production building block

Already engaged in key projects for the major, future markets





Photos: Yara, Equinor, IAV, Norcem, SSAB, Nexofin, TU, DN, SinkabergHansen



Hydrogen fueling moving into bigger applications

Hydrogen fueling for HDV trucks... To achieve the same fast fueling and long haul as diesel

New technology building blocks enabling:

- From 350 700 bar
- From 3 5 kg per fueling to 50 100 kg
- From ~45 min per fueling to 10 15 min
- -> 1kg/min to >5 kg/min
- Improve reliability & robustness incl. TCO
 - Eliminating need for LH2 on standard truck applications
- Building blocks are also relevant for other markets...
 - Trains, ferries, etc.



Consortium for developing fueling protocol for heavy duty trucks

70 MPA HDV FUELING STANDARD BEING ESTABLISHED



Hydrogen is becoming relevant for all forms of transport, especially for heavy duty applications



~25% of CO₂ emissions

Photos: Hyundai, Nikola Motor, Brødrene AA, Ruter, ALSTOM, Viking Cruises, Toyota, Themarketherald, Norled



SUMMARY

Hydrogen markets are accelerating faster than anticipated We are ready to deliver!

- Gigawatt projects seem to be closer than earlier anticipated
- Cost leadership position capex enables fossil parity
- Longest experience within both PEM and alkaline electrolyser platforms, especially large-scale
- A billion++ of operating hours in the field, bankable with performance guarantees
- Key partnerships established, and engaged in projects for the most important future, large markets
- Longest experience within fueling; LDV and HDV
- Developing next generation core fueling technologies, building blocks for a range of future applications

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