



# Hydrogen pro

**Q4 2020 report**

**Company update**

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**22nd February, 2021**

**Hydrogen pro**



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## I. Q4 Highlights

II. Q4 2020 financial results

III. Integration of ASP

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# Securing cost leadership and building organisation and further pipeline

## Q4 highlights from report

- Operating profit of NOK 2,9 mill for the 4<sup>th</sup> quarter exclusive of IPO associated costs
- Acquisition and integration of Advanced Surface Plating secures cost leadership in green hydrogen
  - Pilot plant for technical full scale verification under development
- HydrogenPro's high pressure alkaline technology will enable production of green hydrogen gas @ US\$ 1,2 per kilo in 2022
- Key executives appointed, organisational scale up develops according to plan
- Progressing build-up of electrolyser supply chain and fabrication in Europe and the US
- High market activity with numerous tenders and projects
- Current contracts moving forward - new initiative announced relating to the Normandy project
- On January 8<sup>th</sup>, HydrogenPro signed a Letter of Intent with Repsol S.A to develop a 100MW project in Bilbao dependent on allocation of European Green Deal funding
- Global travel restrictions and extraordinary measures related to Covid-19 continued to have a certain negative impact on customer/partner work and dialogue.



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# 4Q financial summary

## General

- Through an equity offering in October, the Company raised NOK 550 million in gross proceeds and was listed on the Oslo Stock Exchange Euronext Growth on 14<sup>th</sup> October
- ASP (Advanced Surface Plating ApS) was acquired in December and is fully consolidated in the Q4 and full-year 2020 financial statements. In the presentation below only the balance sheet is presented on a consolidated basis. The income statement shows HydrogenPro AS only as ASP had no material profit and loss impact.
- The number of shareholders in the company has increased from ~225 at the date of listing to 2,654 as of 18 February

## Financial report

- The Company had income of NOK 15.6m in the quarter and NOK 26.7m for the year
- Personnel costs were NOK 2.9m in the quarter and NOK 11.0 in 2020
- The operating profit for the quarter was NOK 2,9 million exclusive of costs associated with the IPO of NOK 5,1 million
- The operating loss for the year was NOK 0,85 million exclusive of costs associated with the IPO (NOK 5,1 million)
- The tax effect of the Company's accrued deferred losses of NOK 7,7 million was reversed in Q2 2020
- Following this reversal, the net loss for 2020 was NOK 15,9 million (inclusive of NOK 5,1 million of costs associated with the IPO)

# Income statement Q4 2020

NOK thousand

	HydrogenPro AS		
	Q4 2020	YTD 2020	2019
Revenue	15 595	26 694	25 156
Operating expenses excluding IPO related costs	-12 705	-27 548	-39 763
<b>Operating profit/loss</b>	<b>2 890</b>	<b>-854</b>	<b>-14 607</b>
IPO related costs	-5 100	-5 100	
Net financial items	324	-2 280	-2 013
<b>Result before tax</b>	<b>-1 886</b>	<b>-8 234</b>	<b>-16 620</b>
Tax	0	-7 726	3 749
<b>Result after tax</b>	<b>-1 886</b>	<b>-15 960</b>	<b>-12 871</b>

# Q4 2020 Balance sheet

NOK thousand

	HydrogenPro AS		Group	
	2020	2019	2020	2019
<b>Assets</b>				
Intangible assets	8 456	13 620	55 307	0
Property, equipment, plant and machinery	2 756	66	2 756	0
Investments in subsidiaries, shares and other securities	36 540	57	57	0
<b>Total fixed assets</b>	<b>47 752</b>	<b>13 743</b>	<b>58 120</b>	<b>0</b>
Current operating assets	5 724	3 332	5 724	0
Bank and cash equivalents	506 111	9 992	506 111	0
<b>Total current assets</b>	<b>511 835</b>	<b>13 324</b>	<b>511 835</b>	<b>0</b>
<b>Total assets</b>	<b>559 587</b>	<b>27 067</b>	<b>569 955</b>	<b>0</b>
<b>Equity and liabilities</b>				
Total equity	515 677	-15 536	515 677	0
Provisions	0	0	10 307	0
Current operating liability	43 910	19 339	43 971	0
Long term liability	0	23 264	0	0
<b>Total equity and liabilities</b>	<b>559 587</b>	<b>27 067</b>	<b>569 955</b>	<b>0</b>



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# Significant cost reduction step through integration of ASP

## Driving down cost of hydrogen

- 
- EU describes a target whereby green hydrogen is competitive with grey hydrogen in **2030**
  - **Cost calculation based on HydrogenPro's new high-pressure alkaline technology shows a cost of USD 1.2 USD/kg (\*)**
  - **Ready for the market in 2022**

(\*) Basis of calculation in Annex I

## Making green hydrogen competitive to grey hydrogen

- Applying current high pressure alkaline solution
- Combining with the new proprietary ASP technology
- Increasing the efficiency of the electrolyser to 93% of the theoretical maximum
- Scaling up and automatization will gradually drive down capex and further reduce production costs

Without use  
of noble  
metals

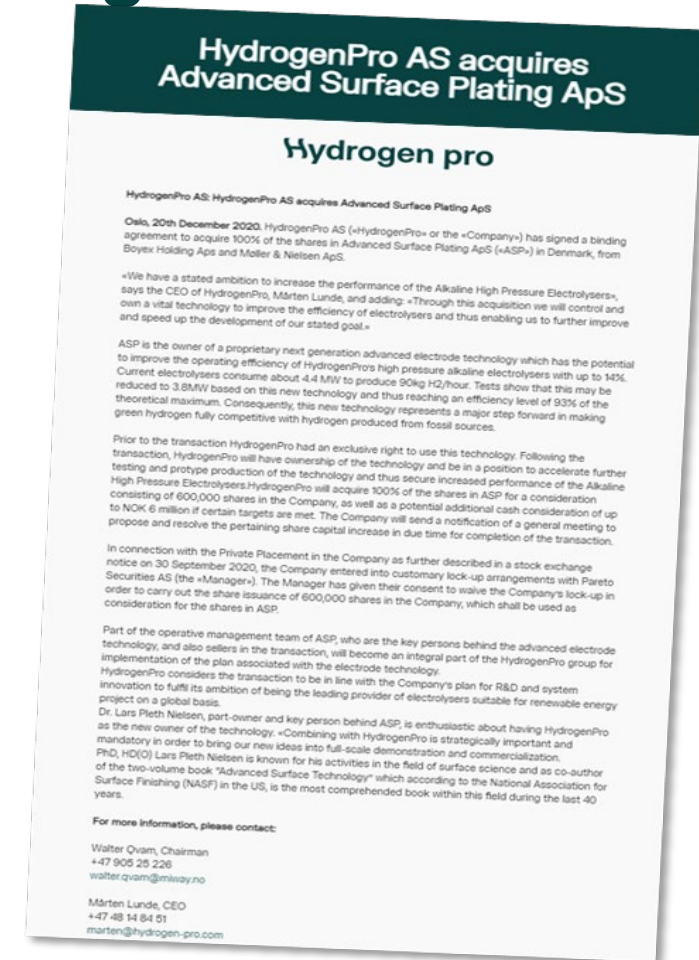
Accelerating the global energy transition



# Key component is the electrode technology acquired through the acquisition of Advanced Surface Plating

## Transaction in brief

- Acquisition of 100% of the shares in ASP in December 2020
- Ownership of technology
  - Proprietary next-generation advanced electrode technology
  - Lower the voltage for hydrogen formation -> increased efficiency
  - Potential to improve operating efficiency of electrolyzers with up to **14%**
    - Current electrolyzers consume **4.4 MW** to produce **90 kg H<sub>2</sub>/hour**
    - Tests show that this is reduced to **3.8 MW**
    - Reaching an efficiency factor of **93%** of theoretical maximum capacity
- Building a plating facility for full scale electrolyzer production



# Technology verification through full scale testing program



## Lab-scale research

Electrode size:  $\sim 2 \times 2 \text{ cm}^2$



## Pilot production (Up to 20 Nm<sup>3</sup>/h)

Electrode size: Ø0.6m



## Large scale units (4000 Nm<sup>3</sup>/h)

Electrode size: Ø1,8m

2009

Lab-scale research and testing during several hundred hours indicate volt reduction of **0.3 V**

2017

Short term testing of medium-scale electrodes confirms average improvement of **0.3 V**

2019

2021

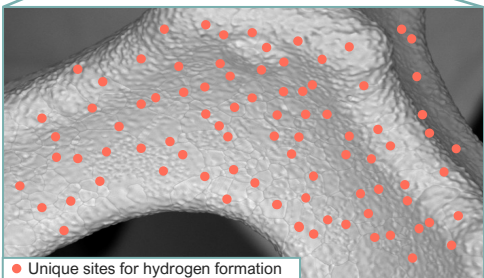
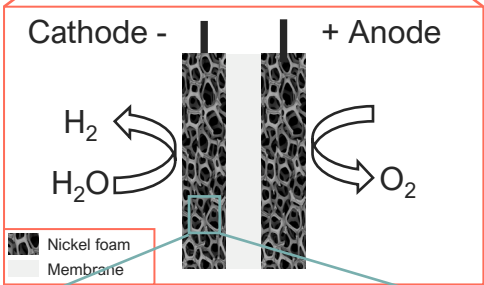
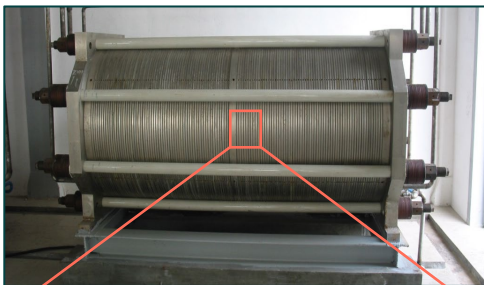
Full-scale demonstration and long-term testing based on electrodes from ASP's new pilot plating facility

Initial deliveries to the market in 2022



# First production of full scale electrodes in 2021, ready for market in 2022

## Purpose of the pilot plant facility



- Apply commercial Ni foam upgraded to high-performing Ni foam
- Supply the new electrodes to HydrogenPro's initial installations
- Demonstrate the lower voltage for hydrogen formation by 0.3V in large-scale HYPRO electrolyzers
- Test performance effects over time
- Yearly capacity close to 4,000 electrodes (Ø1.8m) corresponding to 100 MW electrolyser capacity

Illustration of active ASP sites for hydrogen formation inside an alkaline electrolyser

## Preliminary timeline

Preliminary timeline	2021			
	Q1	Q2	Q3	Q4
Conclusion on location	■			
Setting up R&D test plating		■		
Setting up R&D test facilities / QC for production		■		
R&D test plating of small-scale electrodes			■	
Testing and validating high-performance R&D electrodes			■	■

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# Securing key appointments and increasing organisational capacity

## Organisational update

Consistent with the information provided during the company's IPO process the organisation has been strengthened:

- New CFO starting 1 March
- New COO starting no later than 1 June
- QHSE Director started 1 February
- Automation & Commissioning engineers (2-3 persons)
- Electro engineer
- Two senior technical experts within Advanced Surface Plating (ASP)
- 6 highly experienced international experts from construction, commissioning and operation of electrolyzers

# Key appointments

## Organisational update, continued



Sindre Utne has been appointed as **COO**. Sindre comes from the role as General Manager at Wärtsilä where he is heading the global business of Power & Energy Management Systems. Sindre has broad experience from business operations, strategy development, risk management and cost control. Has been part of several management teams with a broad range of development- and operational responsibilities and has combined experience working through tendering, concept, definition and EPCI phases for complex multiportfolio projects. Sindre has a M.Sc. Offshore Safety and Risk Management

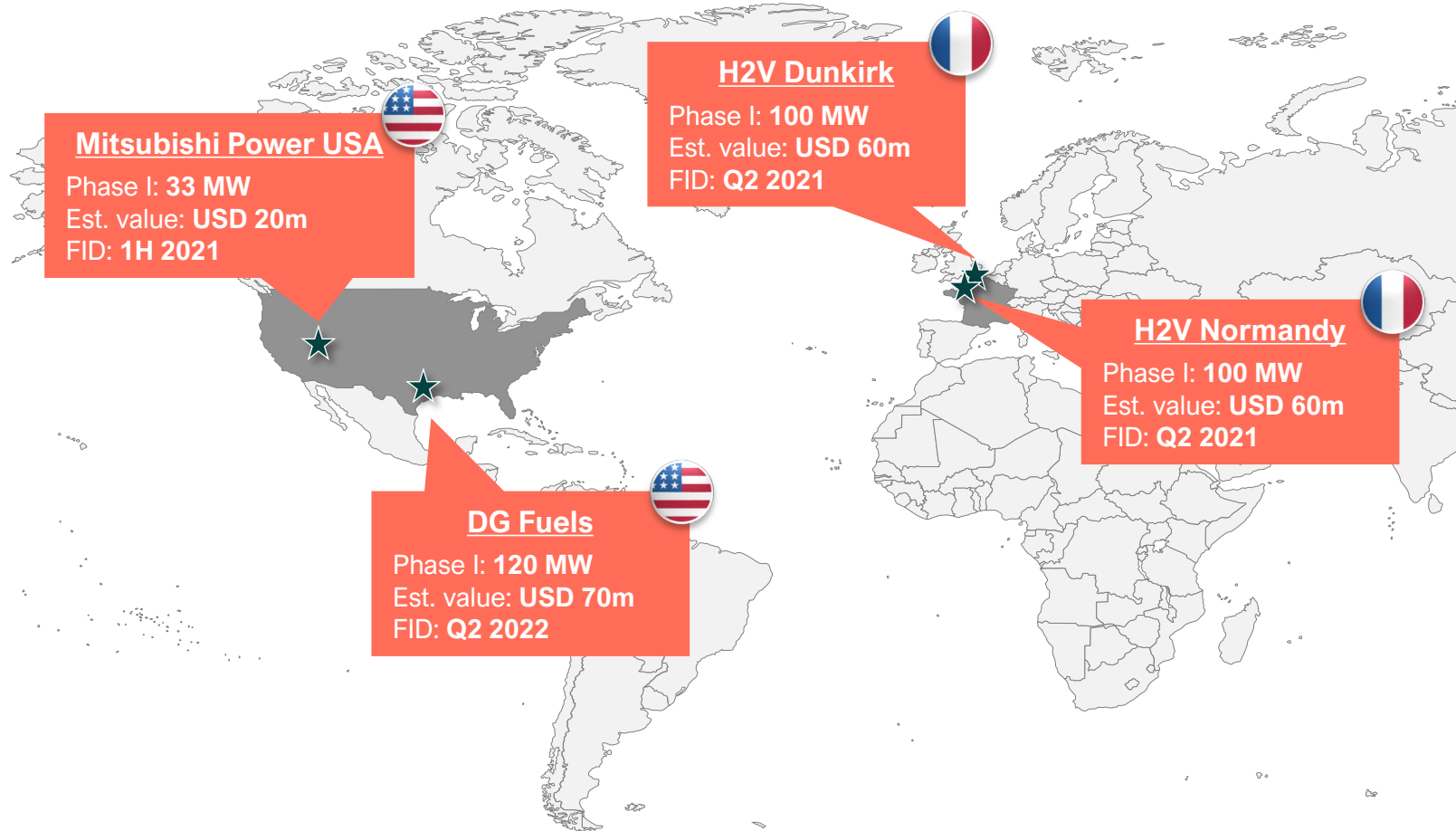


Martin Thanem Holtet was appointed as **CFO** in December 2020 and will join Hydrogen pro on 1<sup>st</sup> March 2021. Martin comes from the position as VP, Head of Treasury and M&A in Hurtigruten. Prior to this, he worked with strategy and M&A in Yara International and Corporate Finance in Carnegie. Martin holds a master's degree from Norwegian School of Economics (NHH) with a major in financial economics



# The 4 key projects are progressing according to plan

## Current status on the 4 key projects



### H2V

- Approval process with French authorities still ongoing for both projects
- HydrogenPro working on comprehensive ITB process
- Air Liquide (as 40% owner of Normandy project) announced MoU with Siemens on 8 February 2021 for PEM electrolyser co-operation. Normandy project mentioned as opportunity for Siemens PEM electrolyser
- Dunkirk not impacted by this MoU

### Mitsubishi Power

- Some delay on the pilot project in the US. Continuous and frequent dialogue about the project

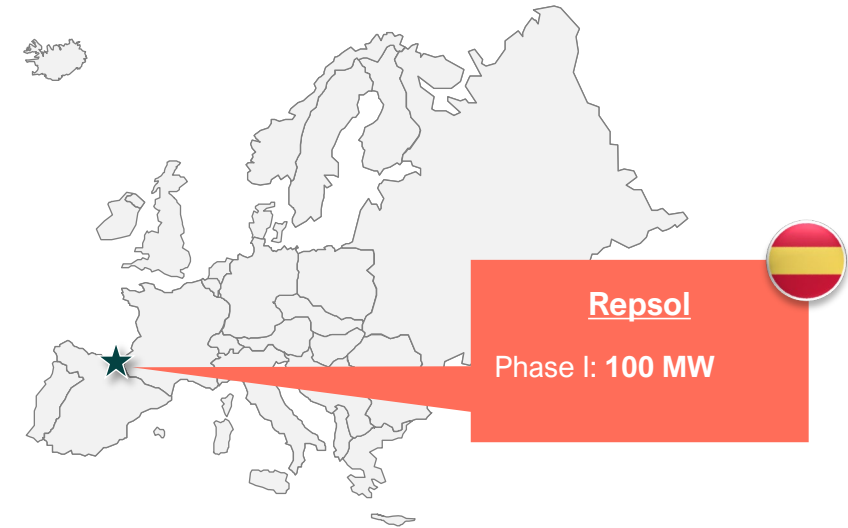
### DG Fuels

- Still in process and accelerated recently due to «green» re-focus in the US

# Signed MoU to develop joint hydrogen projects with Repsol and Ariema

## Contract in brief

- LOI with Repsol and Ariema
- Plan to develop joint hydrogen projects
- Possible 100 MW project for the Petronor refinery close to Bilbao, Spain
- A key component of the project is to implement the latest electrolyzer technology with improved efficiency to design an optimized 100 MW green hydrogen plant
- Ariema will support and assist HydrogenPro in establishing a supply chain for electrolyzer projects in Spain
- Subject to Green Deal funding
  - Application of European Green Deal financing
  - Application deadline on 26 January 2021, award Jun-Sep 2021
  - Possible production start in 2024



- **Repsol** is a global multi-energy provider with a net-zero emission target by 2050
- 25,000 employees across 34 countries
- A major player in the Spanish electricity and gas market
- Operates low-emission electricity generation assets and develops a wide range of renewable solar and wind energy projects



- **Ariema** is a Spanish company that works with hydrogen and fuel cell technology with 30 years of sector experience
- Offers advice, support, training and consulting all the way up to construction and installations



# Work with main pipeline is developing

Project	Location	FID	Client	Segment	Size (MW)
Pipeline #1	South America	2021	Energy major	Power-to-gas	14
Pipeline #2	EU	2021	Energy major	Power-to-gas	120
Pipeline #3	Norway	2021	Gas company	Fuel cell	15
Pipeline #4	EU	2022	Industrial major	Steel industry	70
Pipeline #5	EU	2022	Agriculture company	Ammonia	100
Pipeline #6	EU	2022	Industrial client	Power-to-gas	50
Pipeline #7	EU	2023	Energy major	Power-to-gas	100
Pipeline #8	EU	2023	Industrial client	Power-to-gas	100
Pipeline #9	North America	2023	Energy company	Power-to-gas	100
Pipeline #10	North America	2023	Energy company	Power-to-gas	200
Sum pipeline					869

**Huge flow of tenders and project opportunities**






















## Selected potential clients



Air Liquide



# Developing an European and US supply chain and fabrication

Components	2021	2022	2023
Electrolyser	China 	Semi-finished China 	Europe and the US  
Gas separator	China 	Europe 	Europe and the US  
Electrodes	China or Europe  	Europe 	Europe and the US  
Other	Europe 	Europe 	Europe and the US  
Installation	Europe 	Europe 	Europe and the US  

European and US supply chain in combination with local assembly





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[www.hydrogen-pro.com](http://www.hydrogen-pro.com)

# Annex I – basis for calculation of cost of hydrogen

- Efficiency of new electrodes from pilot plant facility @ **93%**
- Electricity price of **0,02 USD/kWh**
- Based on a **100 MW facility** comprising electrolyser, power electronics, control & safety system
- Hydrogen @ pressure of **15 bar**
- Civil work and auxiliaries not included (project specific)
- Interest costs not included (client specific)
- Use or sale of **pressurized O<sub>2</sub>** as a bi-product with possible economical upside (not attributed value in calculation)