Nel ASA presentation

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Chief Executive Officer, Nel ASA
Hydrogen fundamentals

- **#1 element in periodic table**
- **14x lighter than air**
- **150x higher energy density than lithium batteries**
- **Most abundant element in the universe**
- **100% renewable and made from water**
- **Everything can be fueled by hydrogen**
Energy density matters

• With 1000 kg of a given energy carrier, how much useful energy can be recovered?
  • Battery: $< 140$ kWh
  • Diesel: $\sim 4000$ kWh
  • Hydrogen: $> 16500$ kWh (increasing with FC efficiency)

• High energy density makes hydrogen relevant in all forms of transportation
  • The longer the distance and the heavier the load, the more relevant hydrogen becomes

* For marine applications, batteries tend to have $\frac{1}{2}$ the kWh capacity compared to cars due to stricter durability requirements (i.e. $\sim 60$ kWh)
Current transport system is wasting energy (1 kg hydrogen replaces ~10 liter diesel/petrol)

Norwegian example:

**NOW:**
- 90% fossil fuel: \(~60 \text{TWh}\)

**50/50 hydrogen/battery:**
- 100% renewable: \(~20 \text{TWh}\)

- Annual electricity production in Norway is around \(~130 \text{TWh}\)
- Electricity surplus of \(-10 \text{TWh}\) currently in Norway
- Annual grid-losses of \(~10 \text{TWh}\)
Large opportunities for growth within existing hydrogen market

- ~50 million ton/year market
- Only 1% from water electrolysis
- Large potential for growth, driven by increasing focus on climate and renewable energy
- The entire market would represent ~2,800 TWh of electricity and ~450 GW, equivalent to more than 200,000 of Nel’s largest electrolysers (NEL A-485)
Nel in brief
About Nel Hydrogen

- Pure-play and financially strong hydrogen company listed on the Oslo Stock Exchange
- ~100 employees in Norway, Denmark and US with world-class experience and skills
- 3 divisions offering hydrogen technology/solutions for industrial and energy applications
- World #1 on hydrogen electrolysers and fueling – unrivalled performance and track-record
Nel Hydrogen Electrolyser

- Global leader in hydrogen prod. plants - highest uptime, lowest conversion cost, robust and reliable
- More than 850 hydrogen solutions delivered in 60 countries world wide since 1927
- Scalable production capacity for industrial and energy/transport applications – small scale to large scale solutions

C-Series
Small scale turn-key modules
Up to 600kg/day

Electrolyser
Scalable and modular

A-Series
Large scale plant solutions
Up to any capacity size
Past product range, both tailored and turnkey

Nel Hydrogen Electrolyser

**TAILORED ELECTROLYSER SOLUTION**

- Scalable and modular
- Up to any capacity size

**TURNKEY ELECTROLYSER SOLUTION**

- Small scale turn-key modules
Nel + Proton OnSite: Creating the world’s largest electrolyser company

• Have signed the final share purchase agreement to acquire U.S.-based hydrogen technology company, Proton OnSite and successfully closed private placement - target to close in Q2’17

• Settlement to be done through a 20 MUSD cash payment and a fixed number of Nel share with lockup for 12 and 24 months after closing

• Nel will be able to offer any type of electrolyser in the market

• Combined pro forma FY 2016 revenues of NOK ~345 million (vs Nel 2016 revenue of NOK 114 million)

“Nel will be a one-stop-shop completely independent of technology preference, and the combined sales teams will be a global force to recon with”
**Rotolyser® status**

Nel Hydrogen Electrolyser

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**Project running according to plan**

- Design and technical solutions improved to facilitate higher capacity and commercial hydrogen production
- Currently building/installing at Nel Electrolyser Test Center
  - Test center is equipped with infrastructure dedicated for testing of advanced electrolyser systems
- Initiate long-lifetime tests during fall of 2017, assuming improved design is verified (incl. performance/business case)
- Target commercial launch in 2018 (10 Nm3/h)
  - Continue development to increase scale over time

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100x smaller than ATM from high pressure and centrifugal effect

~50 cm

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*Proprietary Information*
Product and technology roadmap – more to come

Nel Hydrogen Electrolyser

Rotating pressurized alkaline

- Stack size 1:100 vs. atmospheric
- Opens new market opportunities

Pressurized alkaline

- Stack size 1/4 vs. atmospheric
- To be tested during H2’17, improved efficiency and lower cost

Proprietary information
<table>
<thead>
<tr>
<th></th>
<th>XS</th>
<th>S</th>
<th>M</th>
<th>L</th>
<th>XL</th>
<th>XXL</th>
<th>XXXL</th>
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<tbody>
<tr>
<td>Capacity</td>
<td>2 kg/d</td>
<td>20 kg/d</td>
<td>200 kg/d</td>
<td>1000 kg/d</td>
<td>12 ton/d</td>
<td>25 ton/d</td>
<td>200 ton/d</td>
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Atmospheric alkaline

Pressurized alkaline

Rotating pressurized alkaline (Rotolyzer®)

PEM

- Any type of electrolysers in any size – allow the customer to make their own choice
- Leading cost position across portfolio (CapEx/MW) w/continued cost reduction opportunities
Nel Hydrogen Fueling

- Global leader within hydrogen fueling solutions for vehicles, first to adapt the newest fueling standards
- Delivered more than 30 stations in 8 countries across Europe since 2003
- Highest reported availability and innovative, in-house developed technologies

High capacity, smallest footprint
200 kg/day, 10m²

Flexible installation, smallest footprint
50 m from station, 1/3 size of normal dispenser

Largest manufacturing facility
300 station per year capacity
Fueling station modules – designed for volume manufacturing
Nel Hydrogen Fueling

- Compact modular turn-key system with flexible site integration
- Designed for volume manufacturing for EU & USA
Currently installing production equipment into new plant
Nel Hydrogen Fueling

- Development of Herning facility continues on budget & schedule
- Investments related to plant takeover/rebuild/ construction amounts to NOK 85 million, start of production in Q3’17
- Name-plate production capacity of ~300 stations/year
- Just started installing production equipment
Nel Hydrogen Solutions

• Unified delivery of complex renewable hydrogen solutions, efficient system integration, project development and sales across segments

• Only provider of integrated solutions along the entire value chain:

1. Fueling Networks
   • Develop entire fueling networks, incl. renewable hydrogen production
   • Service and maintenance
   • Network monitoring services

2. Renewable Hydrogen & Storage Solutions
   • Renewable hydrogen
   • Production based hydro, wind or solar
   • Large, medium or small scale
   • Storage solutions and “constant” renewable supply
Creating JV - Scandinavian Powerhouse on Hydrogen
Nel Hydrogen Solutions

The hydrogen specialists in Scandinavia join forces to create a JV, taking advantage of each party’s respective technologies and competencies to develop world-class, integrated hydrogen solutions.

- Leading company on hydrogen production and fueling technologies
- Leading company on composite hydrogen storage solutions
- Leading company on fuel cell technology

- Strategically important cooperation, working with global market leaders with specialized technology and competencies
- One-stop-shop for world-class hydrogen solutions tailored for selected emerging, high growth hydrogen energy markets
Solid backlog for 2017

- Orders received March end 2017: NOK >190 million
- Main order announcements to date:
  - Iceland EUR >4 million
  - Royal Dutch Shell Plc (California) NOK >140 million
  - H2 Frontier Inc. USD >1 million
  - Service/replacement/maintenance orders
- **Q1’17 order backlog of NOK ~260 million**
  - Backlog including Proton of NOK ~400 million

Shell and BMW design works newly developed hydrogen dispenser
The hydrogen opportunity
1. Renewable electricity is becoming competitive
   • Cheap renewable = cheap hydrogen, creating “fossil parity”

2. Hydrogen technology is cheap, FCEV’s are available and affordable
   • High global focus on zero-emission transportation
Renewable energy becoming cheap

The hydrogen opportunity

Renewables are undergoing substantial cost reductions, transforming electricity markets

- Levelized Cost of Electricity (wind/solar) on level or below conventional fossil power in many markets
- High and fluctuating quantities of renewable electricity in the power grid reduces the average price - benefiting hydrogen

Cumulative solar PV capacity installed globally

Renewable hydrogen has reached “fossil parity” in multiple markets

The hydrogen opportunity

Renewable hydrogen is set to outperform gasoline on a cost basis, due to substantial cost reductions for renewables & hydrogen technologies.

Assumptions:

- Pump price for hydrogen is converted to a €/litre equivalent.
- Incl. both CapEx and OpEx without subsidies.
- Electricity and gasoline prices incl. applicable energy taxes, excl. VAT.
- Capacity utilization makes the difference, assumes utilization of 70% on installed equipment.
Available and affordable
The hydrogen opportunity

• All major car manufacturers are deploying Fuel Cell Electric Vehicles (FCEVs)
• Hyundai, Toyota and Honda have already started FCEV sales & lease in California at affordable prices
• Additional car manufacturers are expected to launch FCEVs models in the coming years

$499/month lease (incl. hydrogen)
$349/month lease (incl. hydrogen)
$369/month lease (incl. hydrogen)

Learn more at: www.toyota.com/fuelcell or www.hyundaisusa.com/tucsonfuelcell or http://automobiles.honda.com/clarity
Record range and low cost achieved
The hydrogen opportunity

- Hyundai recently launched next generation FCEV
- Range of >800 km
- Second generation FCEV from Hyundai will receive fourth generation fuel cell tech.:
  - ~20% lighter fuel cell
  - ~10% more efficient
  - ~30% higher effect density
  - >65% total (tank-to-wheel) efficiency
- Commercial launch in 2018, second generation Hyundai FCEV

*Hyundai 2018 model concept FCEV: >800 km range*
Fuel cell efficiency improvements massively boosts energy output

Hydrogen fundamentals

- With 1000 kg of a given energy carrier, how much useful energy can be recovered?
  - Battery: <140 kWh
  - Diesel: ~4 000 kWh
  - Hydrogen: >16 500 kWh

- Within hydrogen, *small* improvements in fuel cell technologies gives *large* improvements in recovered energy
  - Ref. graph: increase from 50% to 70% fuel cell efficiency increases energy output by 6 500 kWh

*For marine applications, batteries tend to have ½ the kWh capacity compared to cars due to stricter durability requirements (i.e. ~60 kWh)*
Other recent hydrogen heavy-duty truck initiatives

The hydrogen opportunity

TOYOTA’S STILL SERIOUS ABOUT HYDROGEN—IT BUILT A SEMI TO PROVE IT
Project examples
There is a trend toward converging of fuels toward hydrogen

Project examples
Standardization allows for improvements in cost and performance

Project examples

We have designed our H2Station® to fill them all

one, global standard for fueling of passenger vehicles already in place
Showcase Denmark
Project examples

The world’s first country-wide network in daily operation:

- Nel constructed entire network
- Nel undertakes service, maintenance and surveillance
- Collaborating with leading oil, energy and gas companies*

Key facts:

- 100% of hydrogen from electrolysis
- 6 stations with onsite electrolysis
- 5 stations with centralized Nel electrolysis
- All stations approved by OEM’s

* Partners: Air Liquide, OK, Strandmøllen, Vestforsyning
Applying the winning formula in Norway
Project examples

Uno-x hydrogen AS

- JV between Uno-X (41%), NEL (39%) and Praxair (20%)
- Target to build at least 20 hydrogen stations in Norway by 2020
  - A minimum of infrastructure (stations) needs to be in place for customers to buy an hydrogen vehicle
  - Very high interest from cities and regions all over Norway
- Strong partners with complementing knowledge and experience, Nel to provide hydrogen technology and competence
- Support from Enova is crucial for realisation
Awarded contract by Icelandic Hydrogen for three H2Station® hydrogen fueling stations and one NEL C-series electrolyser

- Icelandic Hydrogen is the customer, JV between Nel and oil retail company Skeljungur
- Skeljungur 90% and Nel owns 10%
- Aim to expand the network along with FCEV deployments
Agreement with Royal Dutch Shell Plc.

Project examples

• Entered exclusive framework contract with Shell in partnership with Toyota Motor Corp. for supply, construction and maintenance of hydrogen fueling stations
  • Total value depends on no. H2Stations® and scope of equipment and services
  • First purchase order received after closing of quarter, with value in excess of NOK 140 million
  • H2Stations® to be shipped in 2017 and 2018
• California Energy Commission contributing 16.4 MUSD in grants towards 7 locations in San Francisco area, Shell/Toyota will contribute the remaining

Map of current hydrogen stations in CA

Green = open
Yellow = under construction

Source: California Fuel Cell Partnership
Multi purpose hydrogen station to ASKO

Contract with ASKO, Norway's largest grocery wholesaler with 600 trucks on Norwegian roads

- ASKO facility at Tiller, Trondheim
- Locally produced renewable hydrogen from electrolysis
  - Will be tied to solar power from warehouse roof
  - Containerised C-150 electrolyser
- H2Station® with triple-fueling f
Case: 5 hydrogen busses to Bodø, Norway, with locally produced hydrogen

Project overview: 5 VanHool FC buses (EU financing in place), C-150 Electrolyser & 1 H2Station® with multi-purpose dispenser

Key figures:

- Price of dispensed hydrogen: 42 NOK/kg
- Price of diesel for bus: 10,50 NOK/liter
- FC bus consumption: 9 kg/100 km
- Diesel bus consumption: 40 l/100 km
- Annual driving range: 60,000 km

Enables fuel savings of >10%/bus/year
ALSTOM rolling out hydrogen trains

Project examples

Exchanging diesel with hydrogen trains makes both environmental and business sense

• Rather than high CapEx electrification, hydrogen is introduced at a fraction of the cost

• Opportunities in Norway:
  • Raumabanen (114 km), Rørosbanen (384 km), Nordlandsbanen (729 km)

• Range of 600 - 800 km and 300 passengers capacity

• More than 60 trains already ordered by regions in Germany

• Infrastructure can be shared with other transport modes

Coradia iLint – world’s first hydrogen train launched by ALSTOM during InnoTrans in 2016
Nel part of the Norwegian project “HYBRIDskip”

- Purpose of project: establish knowledge base for longer journeys/operational times in bigger vessels, based on battery and hydrogen technology
- Target to realize a hybrid-ferry in operation by 2020
- Nel role: provide information on fueling/bunkering, techno-economical analysis and safety considerations
- Other partners: Fiskerstrand Holding, AS, Fiskerstrand Verft AS, Multi Maritime AS, Stiftelsen SINTEF, Hexagon Raufoss ASA, DNV GL, Sjøfartsdirektoratet, Direktoratet for Samfunnsikkerhet og Beredskap (DSB), Møre og Romsdal Fylkeskommune
Partnership with SunPower Corp.

Project examples

- Nel entered into a framework agreement with SunPower to construct and operate renewable hydrogen production tied directly to solar
  - First project of its kind in the U.S., located in California
- Will serve the local market with 100% TRUE renewable hydrogen, target H2’17
  - Target to market the renewable hydrogen at the plant for $3-5/Kg
- Experience gained will allow for deployment of significantly larger plants going forward
Nikola One unveiled, Nikola Two announced

Project examples

Class 8 hydrogen truck unveiled December 1st 2016
- Up to 1,900 km range
- 100 kg onboard hydrogen storage & 320 kWh battery
- Surpassed $4 billion in pre-orders (as of Dec. 1, 2016)
- Norwegian orders:
  - Tine, Tenden Transport, VT Gruppen, Per E. Kristiansen
- Will build a network of 364 stations across the U.S. and Canada, and provide renewable hydrogen at $3.5/kg
- Fueling infrastructure can be shared with other transport modes

nel
Hydrogen can be produced at a very competitive price from renewable

Renewable power at <$50/MWh enables
production of H2 at plant <$3.5/kg (compared to
a pump price of $10-15/kg)
Project develop.: 400MW renewable H2 plant to outcompete natural gas reforming

Project examples

- Working on GIGA factory concept for renewable hydrogen production to outcompete natural gas reforming
- Largest electrolyser plant ever designed
- Addressing a USD ~ 150 billion market
- International industrial customer
- Tied to solar power
- CapEx of USD ~175 million
- Benchmark CapEx ratio:
  - 0.45 MUSD/MW
Nel acquires Proton OnSite
Proton OnSite transaction rationale

Nel Acquires Proton OnSite

Nel will become the **world’s largest** producer of electrolysers with a global outreach.

Nel will get **strong foothold in the U.S. hydrogen market** accelerating Nel’s growth ambitions.

Complementing Nel’s current business with **several areas of synergies**.

Nel will **cover relevant sizes and technologies** in the rapidly growing worldwide hydrogen market.

Nel will **more than double its revenue** and be a player with industry leading scale.

**Strong cultural fit** combining two organizations with stellar track-record in the hydrogen industry.

Optimally positioned to benefit from global opportunities arising within energy storage and hydrogen fueling.

Nel will get **strong foothold in the U.S. hydrogen market** accelerating Nel’s growth ambitions.
Two companies with strategic and geographic fit

Nel Acquires Proton OnSite

| ✓ Complementary sales organisation and market reach |
| ✓ Provide strong foothold in the U.S. and new markets |
| ✓ Complementary product offering, full range of electrolyser technologies |
| ✓ Extending range of product offering (XS, S, M, L, XL, XXL, XXXL) |
| ✓ Accelerating technological development |
| ✓ Cost reduction through sourcing synergies |
| ✓ Financial muscles to support ambitious development roadmap |
| ✓ Few areas with overlap both along product and market dimension |
Proton OnSite in brief
Proton OnSite in brief

- 2600+ Installations worldwide
- USD 27m 2016 revenue
- 75+ Countries with generators installed
- 20 Years of installation
- ~100 Employees
- 80 Registered patents

Proton OnSite: The leader in on-site gas generation.
This is Proton OnSite

Proton OnSite in brief

• Headquarters in Wallingford, Connecticut, U.S.
• World leader in Proton Exchange Membrane (PEM) hydrogen production technology
• Established in 1996, spin out of United Technologies Aerospace Systems (formerly Hamilton Sundstrand Division)
• 20 year track record of commercial success in industrial markets
• Fully developed product offering, recently announced the world’s largest megawatt PEM electrolyser deal

1 MW PEM electrolyser (containerised solution)
Proton OnSite key capabilities

Proton OnSite in brief

- Complete product manufacturing & testing
- Containerization and hydrogen storage solutions
- Turnkey product installation
- World-wide sales and service

Applications:
- Power plants
- Heat treating
- Semiconductors
- Complete systems
- Laboratories
- Storage solutions
- Government
Key product overview
Proton OnSite in brief

- Wide range of products sold to ~75 countries
- Customers range from industrial companies to laboratory institutes
- Also offers services, incl. installation training, service and maintenance
- More than 1 billion hours worth of operating experience on PEM
The PEM megawatt (MW) electrolyser
Proton OnSite in brief

Announced the world’s largest megawatt PEM electrolyser deal in December 2016, three systems to be delivered in 2017, possibilities for additional ten systems over next 18 months – total deal value for the 13 units in excess of USD 20m

Growing market, opportunities for additional systems to be sold in different markets

Several near-term opportunities for order wins

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Key fact sheet

<table>
<thead>
<tr>
<th>Key feature</th>
<th>M Series</th>
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<tbody>
<tr>
<td>Net production rate (Nm3/hr)</td>
<td>100 – 400+</td>
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<tr>
<td>Purity</td>
<td>99.9995%</td>
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<tr>
<td>Output Pressure</td>
<td>15 barg (218 psig) / 30 barg (435 psig)</td>
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<tr>
<td>Key features:</td>
<td>0-100% variable output, &gt; 99% availability</td>
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<tr>
<td></td>
<td>Cold start less than 5 minutes</td>
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<td></td>
<td>Full ramp up/ramp down in seconds</td>
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<tr>
<td></td>
<td>Indoor or outdoor options</td>
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<td></td>
<td>Instantaneous response to variable requirements</td>
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<td>Sense demand and automatically adjust production accordingly</td>
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The PEM megawatt (MW) electrolyser
Proton OnSite in brief
Key differentiating factors of Proton vs. PEM competitors

Proton OnSite in brief

• By far the largest PEM electrolyser producer in the world, 5-10 times larger than the closest competitor
  • Lowest cost position on PEM systems in the industry
• Long track record with more than 1 billion hours aggregated operational experience in the field
• Highly productized portfolio with volume production up and running
  • Experienced operational team
  • Lean manufacturing and quality system integrated into production
• Full differential pressure PEM electrolysers, hydrogen at 30 bar and atmospheric oxygen side simplifies design and reduces cost as well as improves safety
  • Robust technology roadmap to increase capacity and reduce cost going forward
  • More than 80 patents
• Global sales team with agents/distributors up and running

nel
Summary
1. Strong financial and strategic position, successful completed private placement (NOK >170 million) at 2.72 NOK/share

2. Acquisition of Proton makes Nel the world’s largest electrolyser manufacturer with a complete range of products in all relevant markets, on a pro forma basis, the combined FY revenues 2016 would be NOK ~345 million

3. All time high order backlog of NOK ~260 million at the end of the first quarter 2017, inclusive Proton the combined order backlog would be NOK ~400 million

4. The exceptional energy density makes hydrogen relevant in more and more markets - within transportation, hydrogen will not only be relevant in cars, but increasingly in busses, trucks, ferries and ships
Number one by nature