



# NEL ASA

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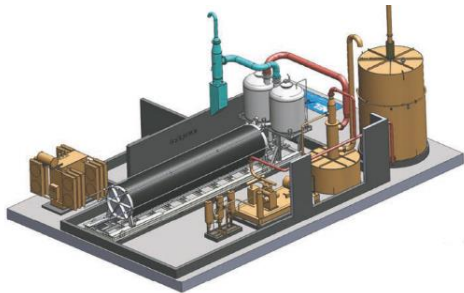
Vice President Market Development and Public Relations



# A PURE-PLAY HYDROGEN COMPANY



## Nel Hydrogen Electrolyser



HYDROGEN PRODUCTION TECHNOLOGY



## Nel Hydrogen Fueling



HYDROGEN REFUELLING TECHNOLOGY



## Nel Hydrogen Solutions



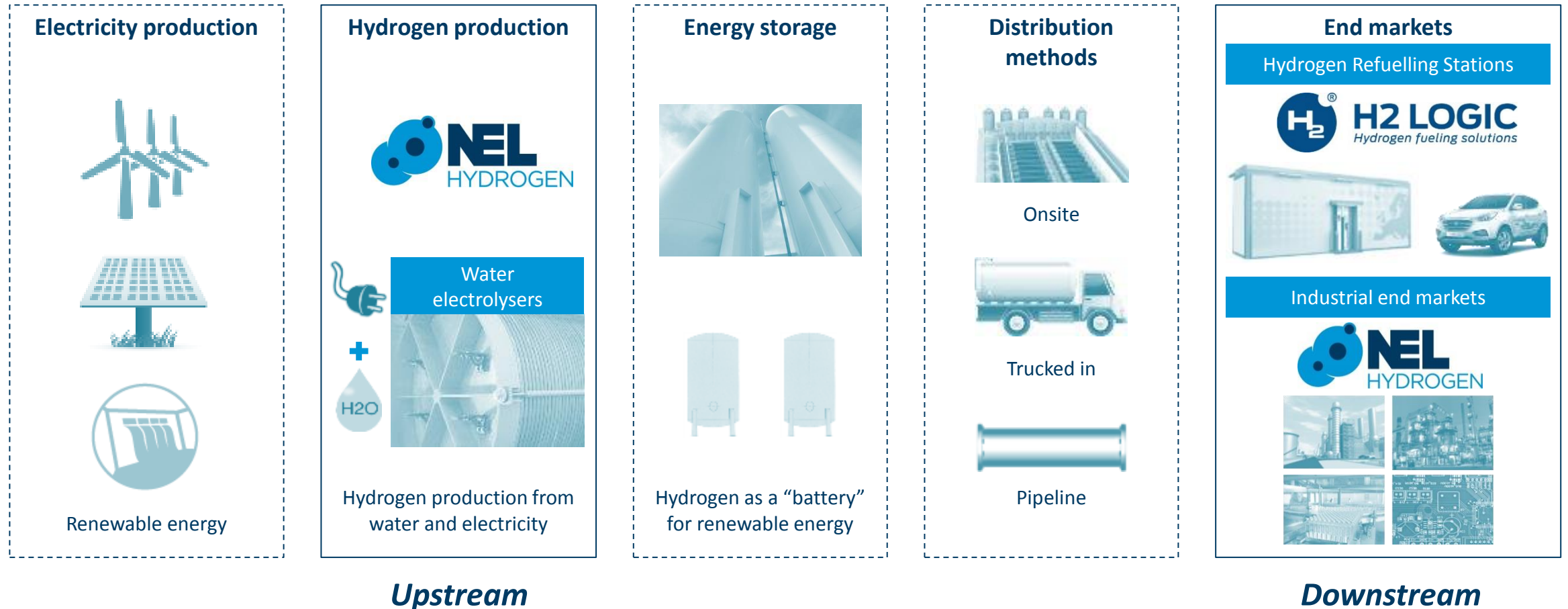
SYSTEM INTEGRATION  
PROJECT DEVELOPMENT  
FINANCING & OWNERSHIP



# HYDROGEN VALUE CHAIN



## Addressing all end markets for hydrogen



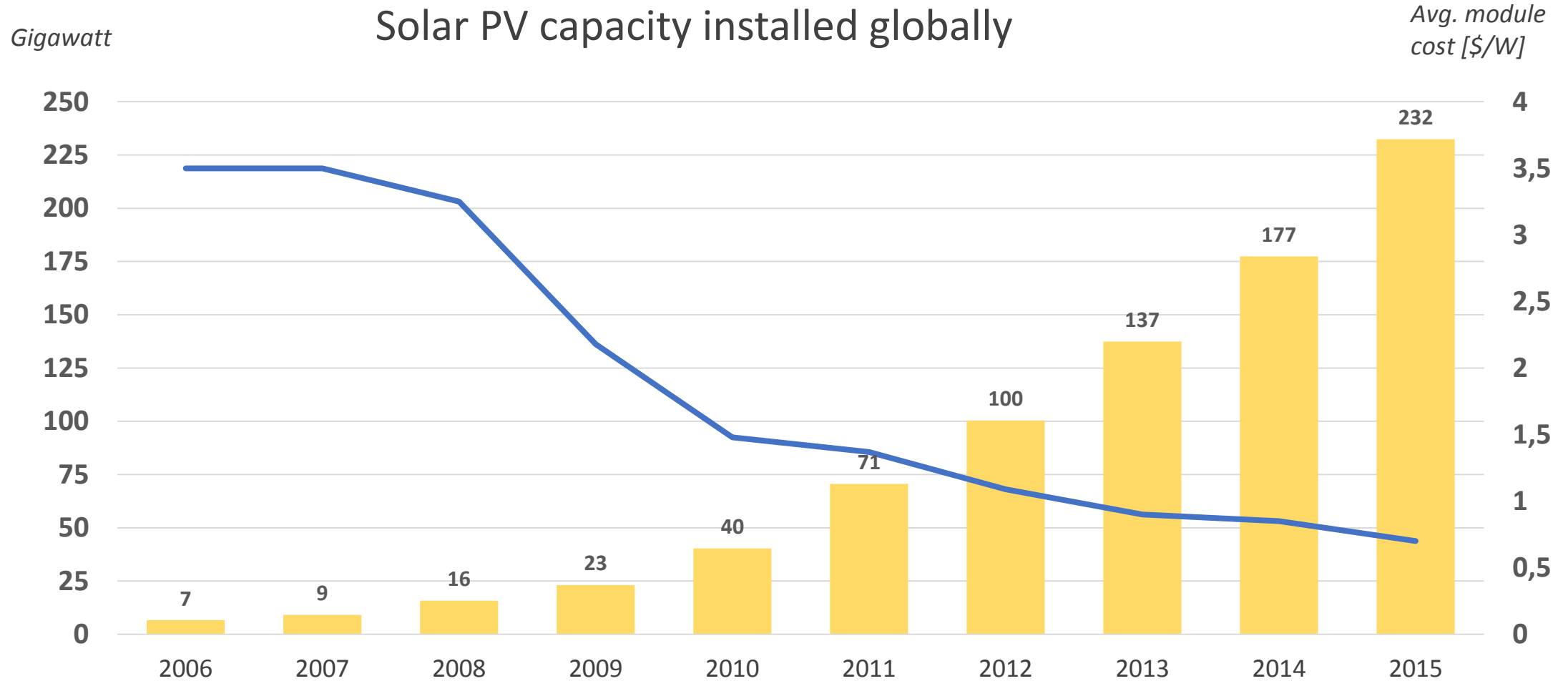
# TWO MAIN DRIVERS



1. RENEWABLE ELECTRICITY IS BECOMING COMPETITIVE
  - Needs storage solutions to realize the full potential
  - The key is not the cost of energy, but the cost of storage
2. HYDROGEN CARS BECOMING AVAILABLE AND AFFORDABLE
  - Focus on zero emission transport
  - Major car companies launching ambitious programs



# RENEWABLE ELECTRICITY BECOMING COMPETITIVE



# HYDROGEN CARS BECOMING AVAILABLE & AFFORDABLE

- Hyundai, Toyota, Honda, BMW, Daimler, GM, Nissan, Ford, Audi, and Volkswagen have all launched, or announced launch, of FCEVs
- **Formidable cost reductions enable introduction:** *“The Toyota Mirai’s powertrain is 95% cheaper to build than the fuel-cell system in the 2008 Highlander fuel cell SUV”<sup>1</sup>*



2014



TOYOTA

2015



HONDA

2016



2017



Audi



2018 - 2020

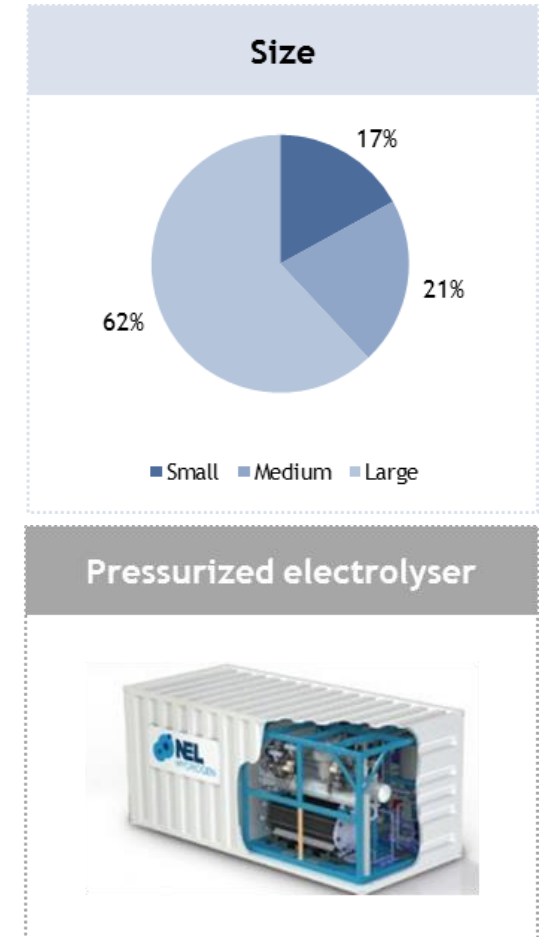
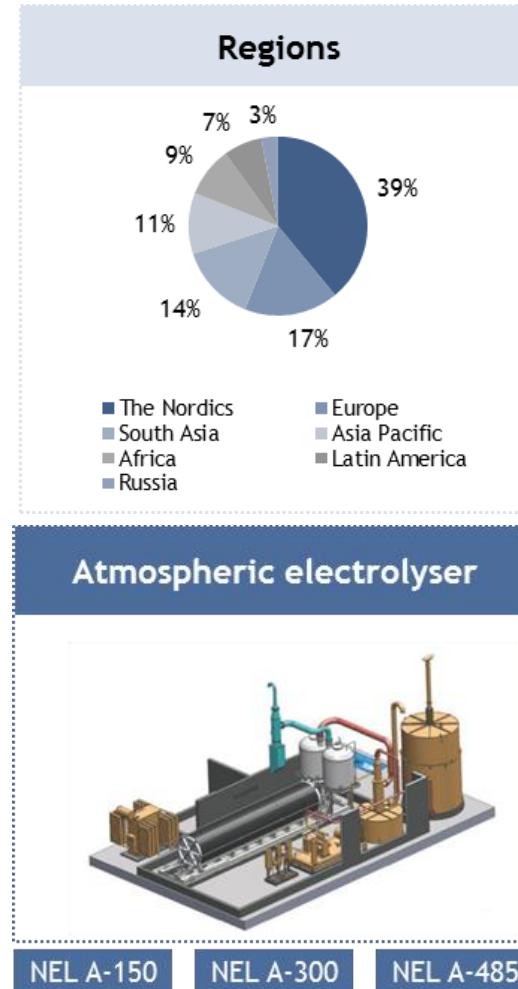
<sup>1</sup>Source: Satoshi Ogiso, Toyota managing officer at the L.A. auto show (November 2014), announcements 2016

# NEL HYDROGEN PRODUCTION (UPSTREAM)

## ABOUT THE PRODUCTS

- Global leader within large scale hydrogen electrolyser plants
  - **Highest uptime, lowest conversion cost, robust and reliable**
- New technologies:
  1. Pressurized electrolyser, containerized solution, pre-assembled before delivery - reduced time for installation and commissioning
  2. Compact game-changing technology - Rotolyzer

## CUSTOMERS



# NEL HYDROGEN FUELING (DOWNSTREAM)

## H2 LOGIC

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- World leading supplier of hydrogen fuelling stations
- More than 29 stations delivered in 8 countries across Europe
- More than 14.700 refuellings (33 tons of hydrogen)
- Strategic collaboration with Mitsubishi Kakoki Kaisha in Japan
- Currently developing market entry strategy for California

## H2STATION<sup>®</sup> CAR-200 FOR CARS

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- One-module system with fast installation
- 3x capacity, 1/3 footprint of previous model
- Standardized and module based design
- Industrial production
- Patented technology



## H2STATION<sup>®</sup> FOR LARGE VEHICLES

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- Easy and fast installation
- 35MPa fuelling for large and small fleets of industrial vehicles or buses
- Flexible hydrogen supply
- Patented fueling technology





# NEL HYDROGEN SOLUTIONS

## PRODUCT AND SERVICES

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- System integration, project development and sales
- Operation, maintenance, ownership and financing solutions
- Particular focus on new markets like California, Japan
  - But also existing markets like Germany and Scandinavia

## REFUELLING NETWORKS

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- Develop entire refueling networks, incl. renewable hydrogen production
- Network monitoring services
- Service and maintenance



## RENEWABLE HYDROGEN & STORAGE SOLUTIONS

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- Energy storage solutions and “constant” renewable supply
- Production based hydro, wind or solar
- Large, medium or small scale





## THE H2-20 PROJECT

Uno-X Hydrogen with target to build 20 hydrogen refuelling stations in Norway by 2020.

**Uno-X Hydrogen** - joint Venture between:

- Uno-X (41%)
- NEL (39%)
- Praxair (20%)

Currently in dialogue with Enova regarding the establishment of a public-private partnership to reach target.



# 1 OF 20: LIGHT HOUSE PROJECT, SOLAR-TO-H2

COLLABORATION WITH ASPLAN-VIAK & ENTRA, SUPPORTED BY ENOVA & AKERSHUS CC





- ✓ Launched next generation fueling station with standard modular design, ideal for industrial production, according to continuous improvement principles
- ✓ Build the organization, align activities, and capture the synergies across the NEL group
- Continue to capture market shares, both upstream and downstream, with increased focus on renewable hydrogen production and energy storage
- Execution of market penetration strategy for California, both upstream and downstream, work together with selected partners or directly in the market





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