## Hexagon Composites ASA 2018 DNB SME Conference



David Bandele, CFO Oslo, 21 March 2018 HEX.OL Market Cap: ~NOK 4 bn

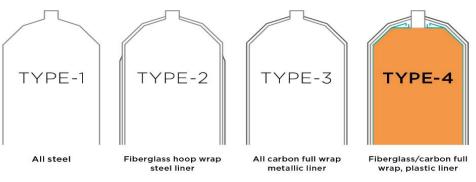
# Hexagon cleaner energy future



# HEXAGON

### DELIVERING ENERGY SOLUTIONS

Hexagon Composites delivers safe and innovative solutions for a cleaner energy future



### Safer & Lighter

# Adopting our leading technology to multiple mobility applications

**Fuel & Energy Sources** 





Type 4 low-pressure cylinder LPG Type 4 High-pressure cylinder CNG & H2

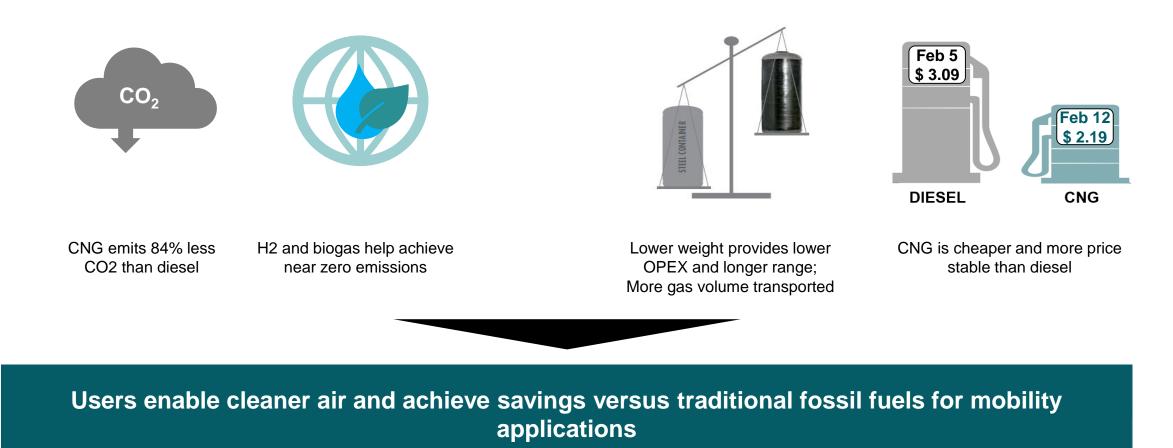
Fuel cylinders for automotive Light-duty vehicles, transit buses, refuse trucks and heavy-duty trucks		Compressed natural gas (CNG) Biogas Hydrogen		
Mobile Pipelines Storage and transportation cylinders and modules for off-pipeline applications				
		Compressed natural gas (CNG) Biogas Hydrogen		
Marine & Rail Fuel and storage cylinders for marine and rail				
		Compressed natural gas (CNG) Biogas Hydrogen		
Ground storage Cylinders for ground storage				
		Hydrogen		
Cylinders LPG cylinders for leisure activities, household and industrial applications				
		LPG (Propane and Butane)		

### User value proposition



### **GREENER & CLEANER**







## **Hexagon Composites Business Areas**

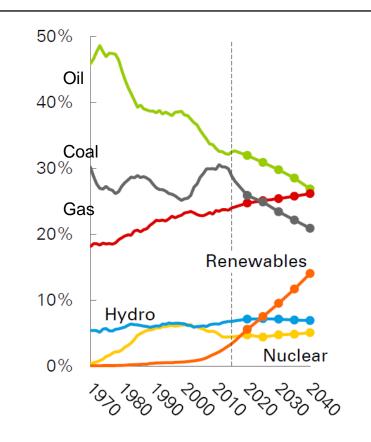




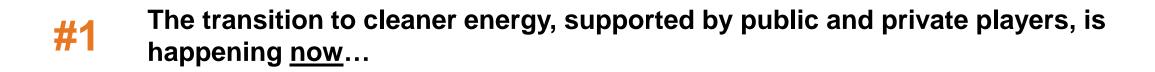


- Renewables the fastest growing energy source
  - Biofuels and hydrogen produced from clean primary sources
  - Japan, Germany, California, Scandinavia, major European cities and China are particular hot-spots
- High growth in natural gas usage
- Natural gas fastest growing fossil fuel (+1.9% p.a.)
- Natural gas set to overtake coal by 2035

### Global shares of primary energy



\*Renewables includes wind, solar, geothermal, biomass and biofuels Source: BP Energy Outlook, 2018 edition



## **#2** ...driving game-changing opportunities especially within Hydrogen...



...we are investing significantly in 2018-20 for attractive returns from 2022 onwards

- Switching from diesel to CNG reduces CO2 emissions by 84%
- Biogas is the most emissions-friendly fuel available today
- By 2050, hydrogen could meet 18% of the world's energy demands

## **#1** The energy transition is happening now



## **Market Drivers** The Hydrogen Council's views



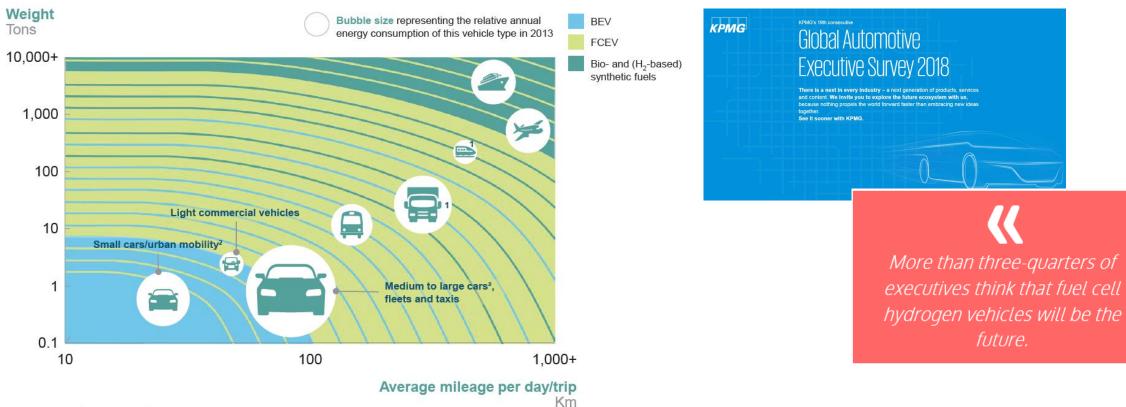
BMW GROUP ത്ത 31 ALSTOM AngloAmerican OSCH **CHN** ENERGY Air Liquide Invented for life GM Iwatani JXTG Nippon Oil & Energy HONDA DAIMLER engie Great Wall  $\mathcal{L}$ ΤΟΥΟΤΑ WEICHAI Statoil Kawasaki THE LINDE GROUP Τοται STOYOTA TSUSHO McPhy A Mitsubishi Corporation Insulaco. NCL POWER 0 HYDROG(E)NICS Faber faurecia **GORE** BALLARD<sup>®</sup> HEXAGON Hydrogen Council

- Significant cost/kW reduction over a 10 year period
- Commercial products available along the full hydrogen value chain
- Exponential growth is underway, supported by clear political backing
- Investments will multiply by 10 over the period and are required along full value chain

# Battery <u>and</u> Fuel Cell Electric Vehicles will play an essential role in decarbonizing transportation



**Projected economic attractiveness** 



1 Battery-hydrogen hybrid to ensure sufficient power

2 Split in A- and B-segment LDVs (small cars) and C+-segment LDVs (medium to large cars) based on a 30% market share of A/B-segment cars and a 50% less energy demand



## Numerous Hydrogen related plays...

Business

time

#### **United Kingdom** China US Japanese will reduce CO2 with majors speeding up aims to build a based Nikola plans \$1bn the Hydrogen Society hydrogen grid blend "hydrogen city" fuel cell truck factory The Telegraph ALL SECTIONS $\equiv$ Q TOYOTA - Global Newsroom 👤 🔍 🔳 gasworld TRUCKS.COM More ` LIELING YOUR MIND FOR THE ROAD Dec 12 2017 =ASCO New Company to be Established in Q = Mercedes Marketing Boss Details Strateg. ♠ > Business Spring 2018 with Focus on Full-Trucking Technology > Electric Vehicles Energy networks prepare to blend fledged Development of Hydrogen hydrogen into the gas grid for the first Nikola Plans \$1 Billion Arizona Fuel Cell Truck Factory Central China to gain hydrogen JERRY HIRSCH | JANUARY 50, 2018 **Recharging Station Network in** ELECTRIC VEHICLES, TRUCKING TECHNOLOGY city Japan $(\mathbf{f}_{\text{share}})$ $(\mathbf{y})$ $(\mathbf{b})$ $(\mathbf{in})$ $(\mathbf{m})$ 29 By Jemima Owen-Jones | 22 January 2018 Agreement signed by 11 companies News Release, Environment, Management 🚹 💟 🛅 🖾 🚍 f 😏 📴 🕂 ß According to widespread reports, Wuhan, the capital city of central China's Hubei Province, will gain a hydrogen (H<sub>2</sub>) energy industry which the city Toyota Motor Corporation development plan termed a 'hydrogen city'. Nissan Motor Co., Ltd. The redesigned Nikola Two electric truck. (Photo: Nikola) Honda Motor Co., Ltd. The reports state that the city is to advance research and f Facebook Linkedin 🖾 E-mail 🧐 Reddit JXTG Nippon Oil & Energy Corporation development (R&D) of core technology of H<sub>2</sub> production, Idemitsu Kosan Co., Ltd. Hydrogen-electric semi-truck startup Nikola Motor Co. plans Energy networks are preparing to dilute Britain's natural gas grid with lowstorage and transport, and improve H<sub>2</sub> infrastructure in to build a \$1 billion factory in a Phoenix suburb. carbon hydrogen for the first time Iwatani Corporation

California hit 3.000 **Toyota Mirai** 



PLANO, Texas, January 23, 2018 - Move over polluters, the Toyota Mirai, one of the world's first mass-produced hydrogen fuel cell electric vehicles, has surpassed 3,000 sales in the Golden State. Having reached this new milestone, Mirai make up more than 80% of all hydrogen fuel cell vehicles in the United States.

"Toyota remains at the forefront of developing and deploying hydrogen fuel cell technology, and we believe strongly in its potential to help realize

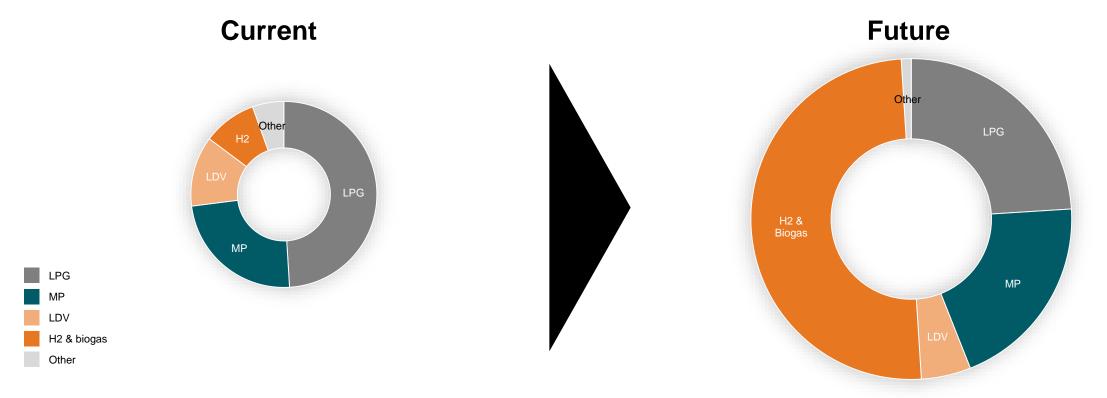


## **#2** ...opening up growth opportunities in hydrogen and biogas

# The cleaner energy transition will drive significant growth and distribution of revenue streams



Share of group revenue before eliminations (illustrative)



The total pie is expected to grow substantially; Hydrogen and Biogas expected to increase significantly in relative share



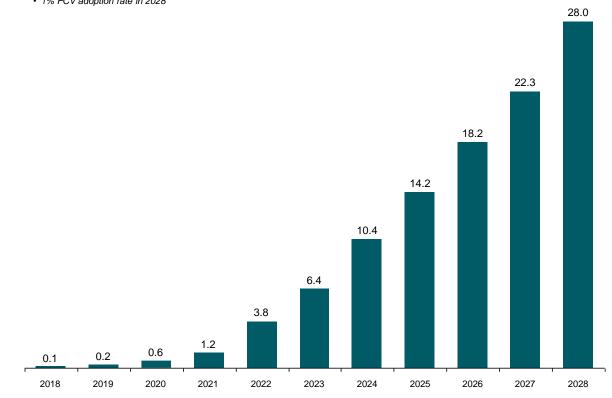
## Hydrogen potential | Light-duty vehicles illustration



- Hexagon has development/trial production contracts with several OEMs
- New contract for 2 new FCEV models ongoing through 2020
- Supplied several other OEMs with test tanks
- Building on leading position within production of CNG composite cylinders
- Unique production technology for mass production of composite cylinders
- Potential for scope beyond cylinder manufacturing (systems)

### Market potential | Hexagon estimate (NOKbn)

- USD:NOK @ 8.00
- ~1.9% CAGR for #LDV vehicles sold p.a.
- 1% FCV adoption rate in 2028

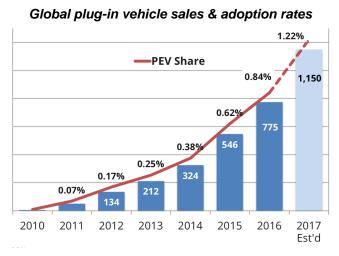


# Fuel Cell Electric Vehicle market penetration rate expected to follow adoption rates for BEVs

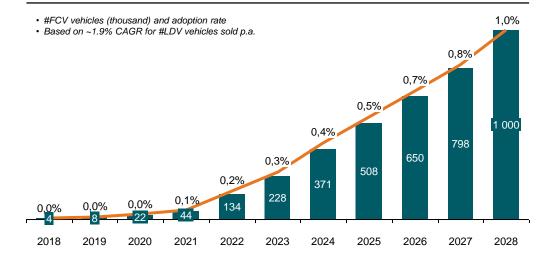


- Predicted growth validated by past performance (trailing 7 years) of BEV accomplishments
- BEV's currently have > than 1% market share in China, France, Netherlands, Norway, Sweden and UK
- Embedded OEM also predicting greater than 1% penetration rates for Light-Duty FCEVs

### **Demonstrated market adoption**



### Potential FCEV adoption



Source: evvolumes.com

## Battery (BEV) and Plug In Hybrid (PHEV) Electric Cars Co-Exist with Fuel Cell Electric Vehicles (FCEV)



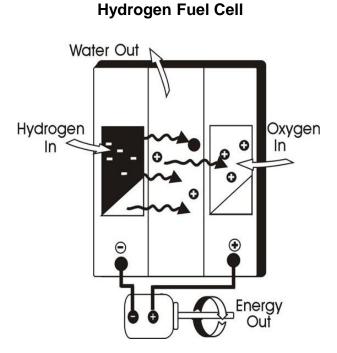
Common fuel	<ul> <li>Electricity</li> <li>Created onboard = Fuel Cell Vehicle</li> </ul>
	<ul> <li>Stored onboard = Battery Electric or PHEV</li> </ul>

	- Drive motors
Common drive train	- Power distribution
	- Battery present in both (large and heavy for BEV)

Varied fill time	- BEV/PHEV – plug in and wait for full fill
& range	- FCEV – Pressure up and go

Battery vs fuel cell sustainability

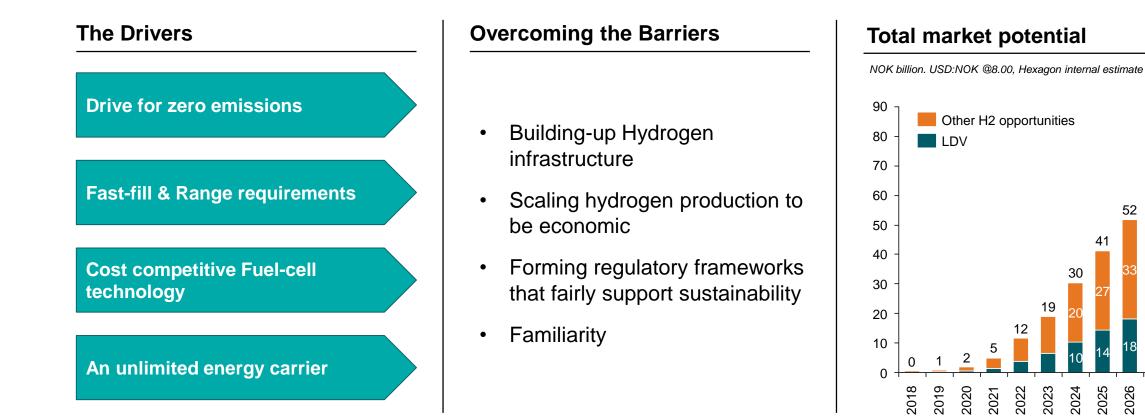
- Precious metal possible limitation







## Key to unlocking the market potential



The multiple opportunities in Hydrogen can be a game changer for Hexagon Composites

## Key enabler of growth opportunities



- Strategic Alliance with Mitsui & Co. & 25% shareholder
- Our Hydrogen business is a key strategic focus area within Mitsui's advanced materials sector
- Alliance secures a valuable and long-term minded partner
- Allows for deeper value-chain penetration
- Global footprint, geographic reach and leverage
- Directly leverage the Hydrogen opportunity



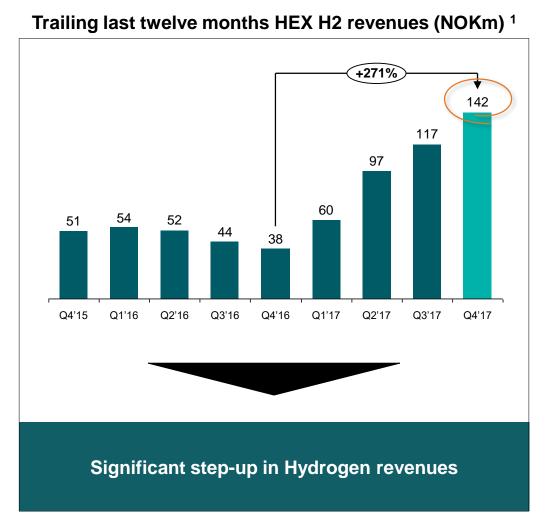


We are investing significantly in 2018-20 for attractive returns from 2022 onwards

#3



## Hydrogen opportunities now materializing in revenue

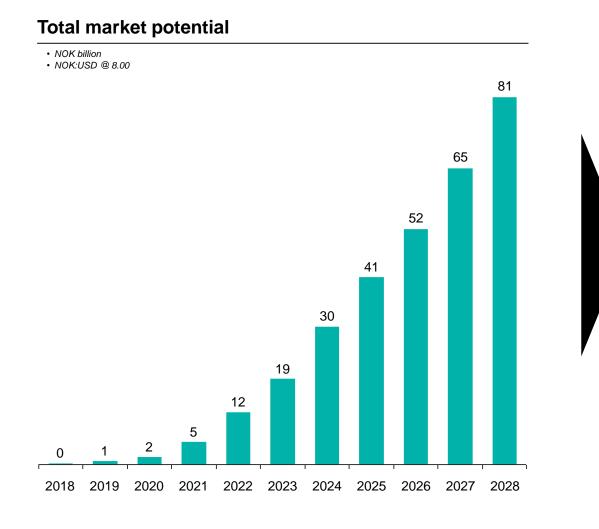




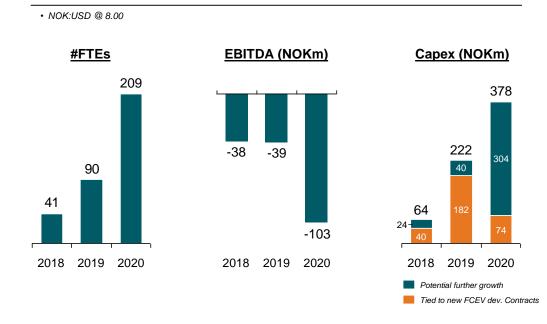
1 Revenues before eliminations



## Large Hydrogen market potential requires investments



#### Hexagon Hydrogen business unit



2018-2020 is a period of significant investment to pursue the Hydrogen opportunity and maintain market leadership



## Key focal points for our Hydrogen & biogas opportunities

Invest in the organization to meet market demand & maintain technology leadership

**2** Secure relationships with key LDV OEMs

3 Maintain market leadership for H2 cylinders within all applications

Pursue partnerships where relevant to offer integrated solutions



Significant investments in 2018-2020 will position attractive returns from 2022 and beyond