



*fuel solutions*

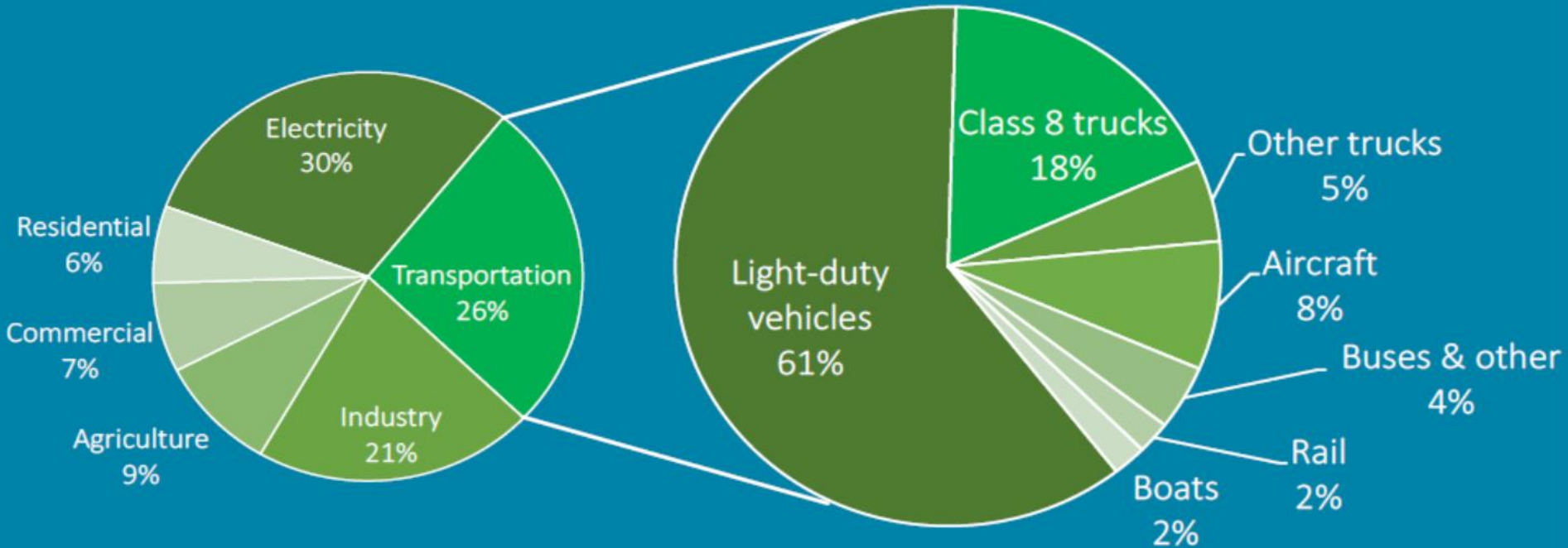
**Let's put all Clean new Automotive fuel technologies in context... and ask....**

**How can we maximize the impact to air quality and emissions in the next 10 years?**



# Effect of Emissions

## US emissions



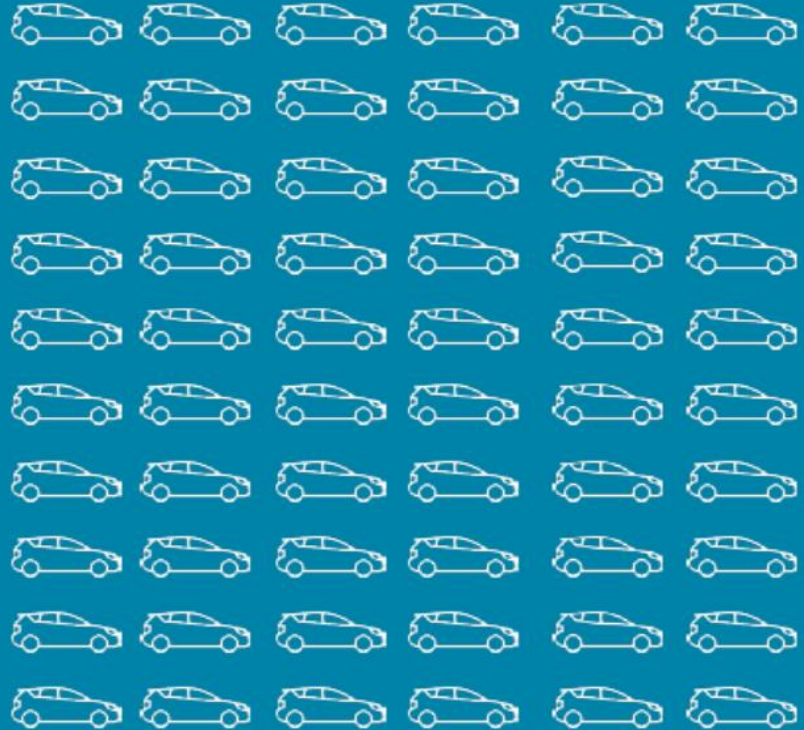
# Truck/Bus population with Cars

There are many more cars on the road

4M



240M



# Effect of Emission is closer

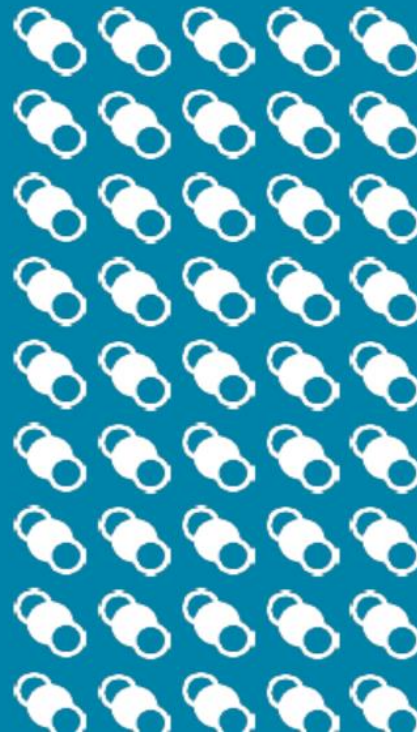
But emissions are much closer



407 Tg

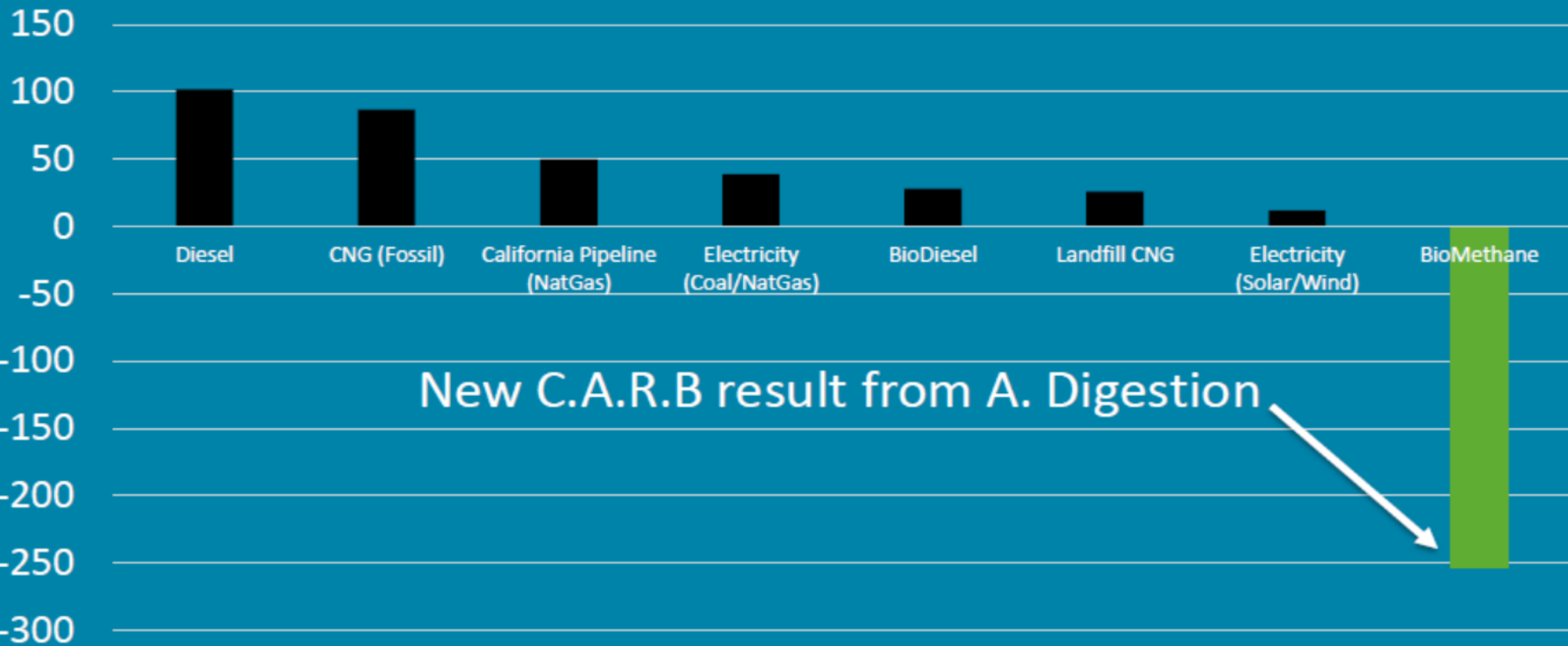


1,101 Tg



# Wellhead to tailpipe impact of different clean fuels

## Heavy Truck Carbon Intensity (g CO<sub>2</sub>e / MJ, EER adjusted)





# Factors that drive decisions

Can Be Incentivized

## R.O.I

1. Cost of Capital
  - a. Trucks
  - b. Infrastructure
  
2. Operating Costs
  - a. Fuel/Electricity
  - b. Maintenance
  - c. Downtime
    - i. Time to fill
    - ii. Off route miles

## Fleet Penetration

1. Range
  - a. 160 km (10% of fleet) versus 1,120 km (95% of fleet)
  
2. Performance
  - a. Horsepower/Acceleration/Brake
  - b. Time to “Energize” (Charge or fill)

# Future Fuel Options

## The Final Results...

### High Emitters



### Today

	160	480	800	1,120
1	<b>CNG Hybrid</b>	<b>CNG</b>	<b>CNG</b>	<b>CNG</b>
2	CNG	CNG Hybrid	CNG Hybrid	CNG Hybrid
3	All Electric	All Electric	All Electric	All Electric
4	H2 Fuel Cell	H2 Fuel Cell	H2 Fuel Cell	H2 Fuel Cell

### Clean Technology



### Take Rate



### 10 Year Stretch Goal\*

	160	480	800	1,120
1	<b>H2 Fuel Cell</b>	<b>CNG Hybrid</b>	<b>CNG Hybrid</b>	<b>CNG Hybrid</b>
2	All Electric	CNG	CNG	CNG
3	CNG Hybrid	H2 Fuel Cell	H2 Fuel Cell	H2 Fuel Cell
4	CNG	All Electric	All Electric	All Electric

Ranking

Ranking

\*\$4USD/g Diesel, €6/kWh,  
\$150/kWh battery \$3/kgH2,  
\$200/kWh Fuel Cell

If Stretch Goal is met, *all* of these technologies should be considered in playing a role to remove Diesel Trucks & Buses from our roads



# Merger of Two Leaders



HEXAGON  
COMPOSITES

CNG  
Automotive  
Division



**Coming together to create innovative transportation solutions**





# ABOUT HEXAGON COMPOSITES GROUP

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**High growth technology company manufacturing composite pressure tanks and assembling systems for storage of natural gas, hydrogen and propane**

- Headquartered in Aalesund, Norway
  - facilities in Norway, USA, Germany, Canada and Brazil
  - sales offices in India, Singapore and Russia
- 820 employees
  - of which 412 employees in Agility Fuel Solutions
- Listed on Oslo Stock Exchange (OSE:HEX)
  - market cap of approx. EUR 490-500 million



# HEXAGON GLOBAL BUSINESS AREAS



LOW-PRESSURE  
LPG

HIGH-PRESSURE  
CNG, BIOMETHANE & HYDROGEN

AGILITY FUEL  
SOLUTIONS

HYON

LPG CYLINDERS

MOBILE PIPELINE®

LIGHT-DUTY VEHICLES

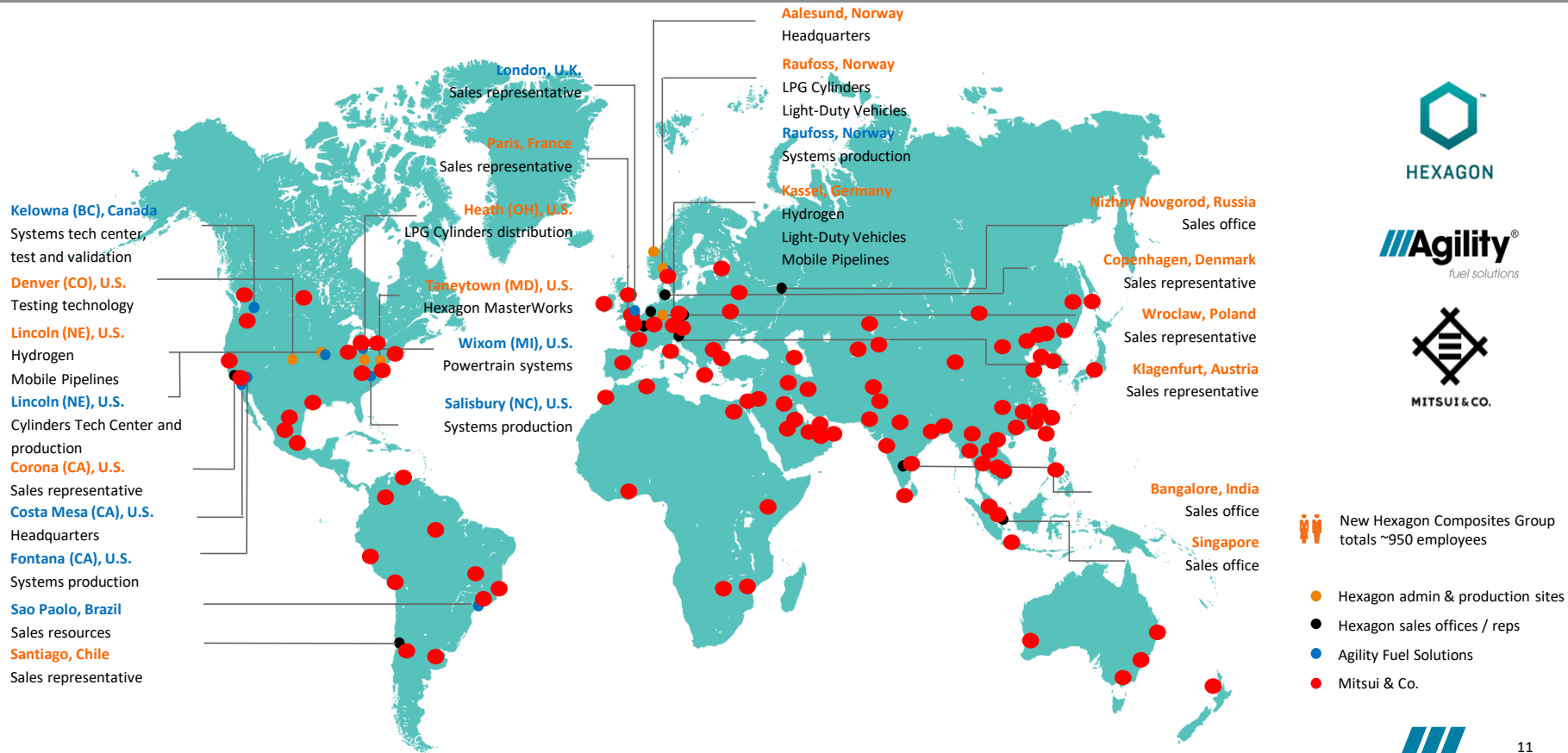
HYDROGEN PRODUCTS

HEAVY-DUTY VEHICLES

HYDROGEN FUEL CELLS



# Hexagon Global Footprint – With Mitsui



- New Hexagon Composites Group totals ~950 employees
- Hexagon admin & production sites
- Hexagon sales offices / reps
- Agility Fuel Solutions
- Mitsui & Co.



# Product Competencies

## Energy Storage

## Energy Mgmt

## Powertrain Integration

## Vehicle Integration

## User Interface

G-Mobility



Methane or H2 Cylinders



Agility Blue iQ



Certified natural gas,  
LPG engines



CNG/H2 Pack



CNG / H2 Covers /  
Design for Service

Fueling  
Interface

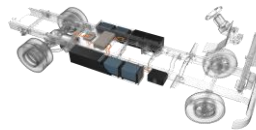
E-Mobility



Lithium-Ion Cells



BMS Controller



Electric drivetrain  
integration



Battery Pack



Electric Covers /  
Design for Service

Charging  
Interface

Complete system capabilities for energy storage, delivery and conversion



# Filling to Firing – Solution Provider



**Filling**



**Storage**



**Firing**

**Piping & Assembly**



**Electric Battery Packs**

**System Integration**





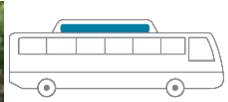
# LIGHT-DUTY VEHICLES

- Tier One supplier for Volkswagen, Opel, Volvo, Audi, Mercedes Benz, Skoda, Seat
- Over 100,000 systems annually
- Storage of CNG up to a pressure of 200 bar and H2 up to a pressure of 700 bar



Golf TGI  
Photo: Volkswagen AG

# Bus & Truck Systems



Item	No of Cyl	Total WC	Cyl Wt Kgs	Gas Kgs	Range Kms*
Bus	4	1500	424	255	765
Truck	4	1944	660	330	990
Truck	6	3144	1,070	535	1605



# MOBILE PIPELINE® STORAGE & TRANSPORTATION OF CNG, HYDROGEN & BIOMETHANE



## X-STORE® solution

- flexible modular design
- vertically assembled tanks
- available from 10 ft (9,500 l) up to 53 ft (63,000 l)
- ADR and ISO 11439 compliance
- ISO 668 compliance



## TITAN® solution

- largest Type 4 cylinders in the market
- horizontally assembled tanks
- available from 30 ft (24,600 l) up to 53 ft (45,600 l)
- trailer solution available (40 ft / 49,250 l)
- DOT and ABS compliance
- ISO 668 compliance on the containerized solution



- **Liquefied natural gas** or **LNG** is natural gas (predominantly methane) that has been chilled to -200F (or colder) to convert it to liquid form for ease of storage or transportation.
- LNG fuel is stored in a double walled, stainless steel tank, the space between the inter & outer tank is vacuum sealed much like a thermos.
- Except storage there is no difference between LNG and CNG systems
- LNG gives you longer range of 1500 kms
- LNG boil off in the hot Indian conditions is likely to be a issue given that even in USA there is a movement away from LNG to CNG



# HYDROGEN

- Hydrogen production & Fueling
- Hydrogen power generation by fuel cells
- Hydrogen storage systems
- CNG/Hydrogen fueled ships and CNG transportation ships
- CNG can be a convenient option for short distances
- Composite material is ideal for marine environment due to corrosion resistance and low cost for periodic inspection
- Supplier to Alstom for the world's first hydrogen-powered regional train *Coradia iLint*
  - Long distances without refueling or charging
  - Low noise
- Fuel cell technology ideal for commuter trains
- Lightweight design enables easy roof mounting



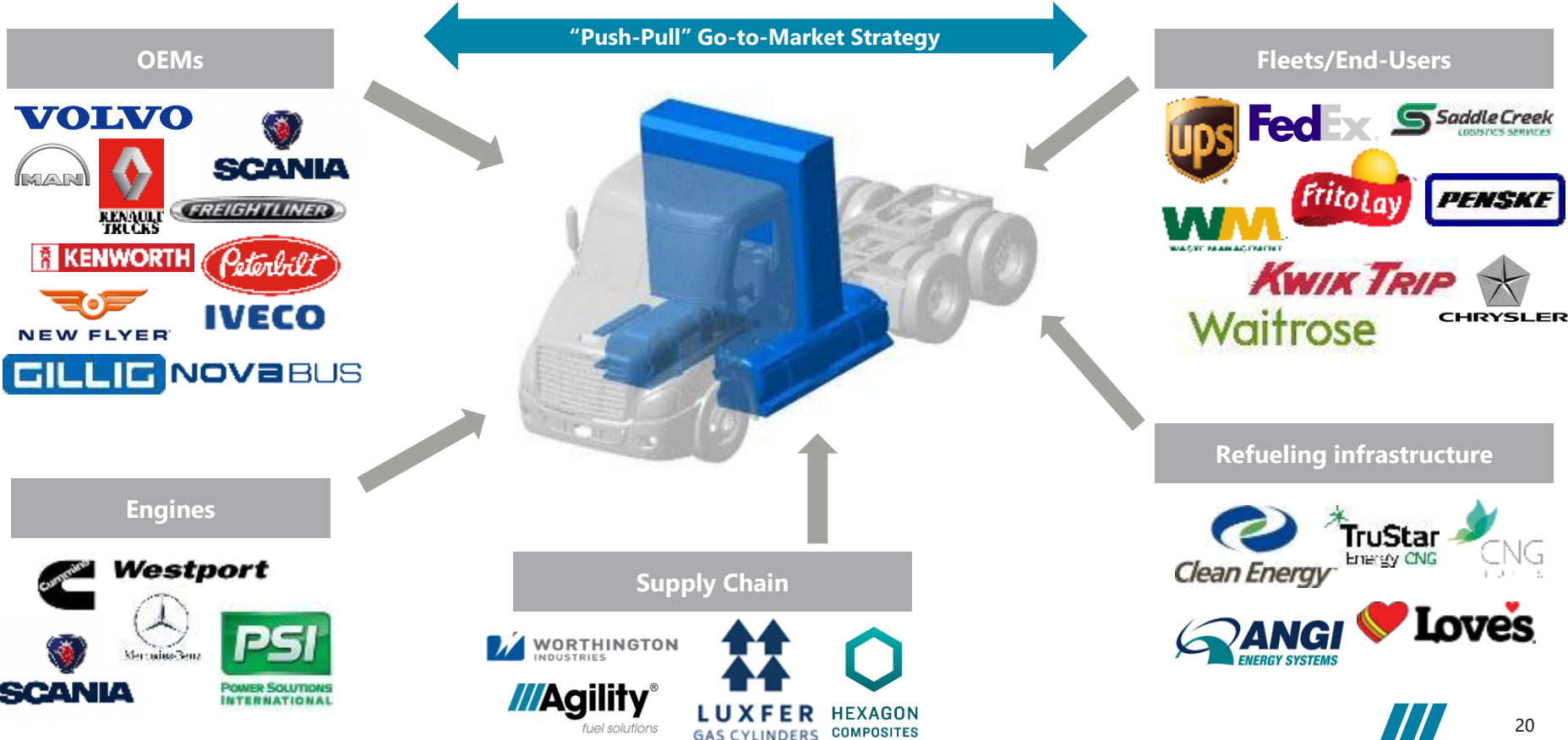


# Electric Vehicles

- Design, develop, integrate electric battery systems and packs
- Picture shows a 440 kWh system
- Working with leading global automotive companies on future ready projects
- Entry level cars need ~130hp or 100kW
- Premium cars need ~225hp or 170kW
- Commercial vehicles need ~350+hp or 265kW+
- Strategic alliance for E - powertrain



# Strong Relationships Throughout Complex Value Chain



# Value Proposition

## Agility Vision

**Accelerate global adoption of clean fuels by creating world-class, innovative transportation solutions for CNG, LNG, Propane, Hydrogen, Electric & Hybrid vehicles**

## Applications

- Long distance CNG buses of over 800 kms
- Long distance CNG trucks of over 1500 kms
- Long distance CNG cars of over 500 kms PLUS save boot space
- Future ready with Hydrogen, Electric solutions

## Who we are

- We are fuel agnostic – CNG, LNG, Hydrogen, Electric, Hybrids
- We are technology agnostic – T1, T3, T4
- We are supplier agnostic – Luxfer, Worthington, Steel
- We design, develop, manufacture, assemble complete fuel systems

**Hexagon Group is Driving Energy Transformation**

# Thank You



HEXAGON

