



INNOVATION IS WHAT DRIVES US

Trucks for carbon-neutral transport.



ENGINEIUS[®]
FAUN GROUP



FAUN Umwelttechnik – Osterholz-Scharmbeck (near Bremen)



1.600 Refuse collection vehicles p.a.



FAUN Viatec – Grimma (near Leipzig)



300 Road sweepers p.a.

➤ FAUN is a leading manufacturer of refuse collection vehicles and road sweepers

Alternative drivetrain development



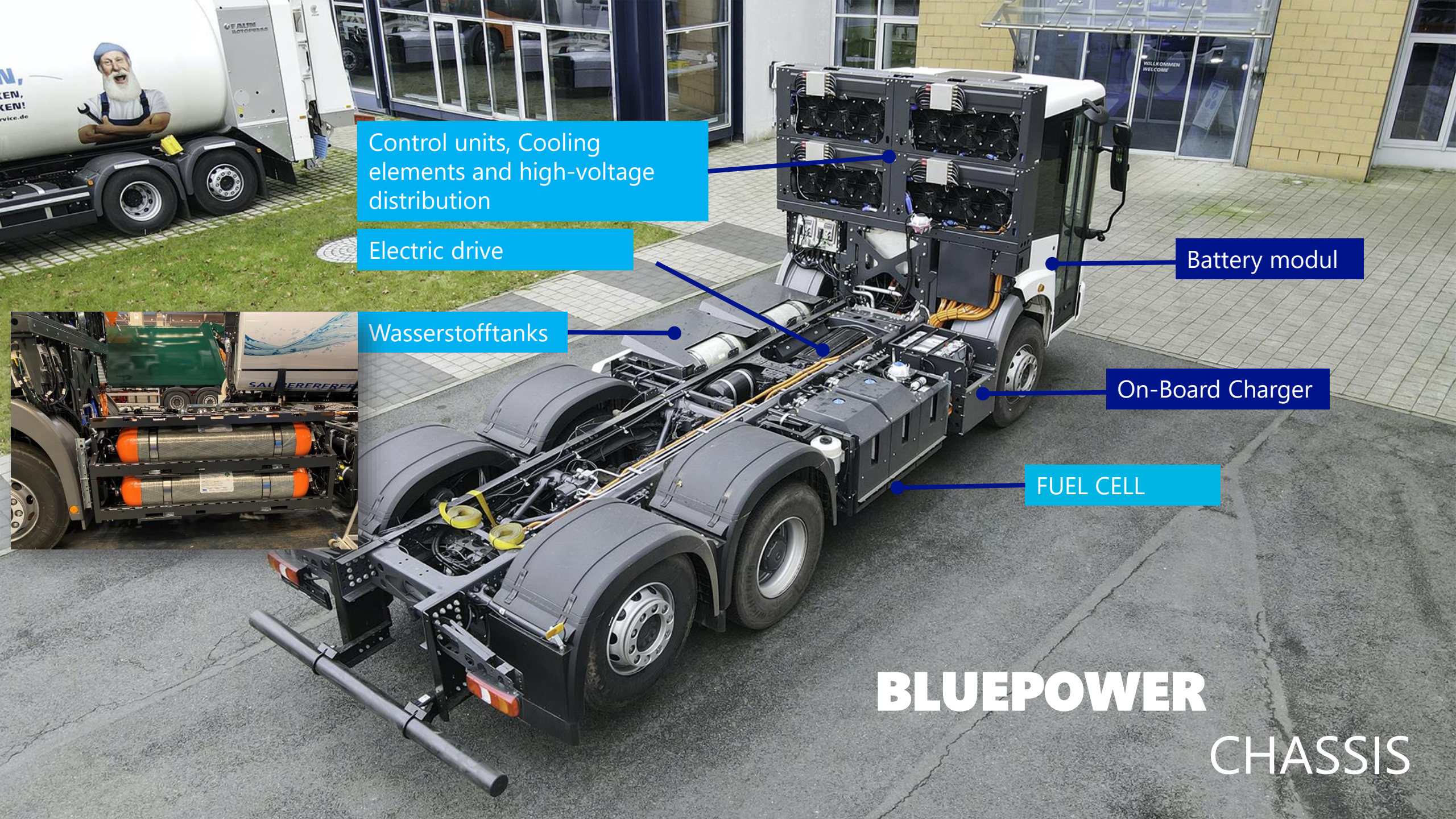
DUALPOWER / FUELCELL / BLUEPOWER

- | | |
|-----------|---|
| Jan 2006 | First idea alternative drives = DUALPOWER |
| Jan 2009 | First tests of DUALPOWER |
| July 2009 | Validation of DUALPOWER (20 vehicles in field tests) |
| Oct 2009 | FUELCELL - First refuse collection vehicle with hydrogen |
| Nov 2010 | Handover of first DUALPOWER vehicles to customers |
| June 2011 | FUELCELL-Prototype in Berlin on the road |
| May 2018 | Concept presentation BLUEPOWER at IFAT 2018
„first fuel-cell electric garbage truck worldwide“ |
| May 2022 | Start of series production |



BLUEPOWER

CHASSIS



Control units, Cooling
elements and high-voltage
distribution

Electric drive

Battery modul

On-Board Charger

FUEL CELL

Wasserstofftanks

BLUEPOWER

CHASSIS



BLUEPOWER

1st validation in AUGUST 2020 IN BREMEN

On the road

- More than 150 BLUEPOWER on the road



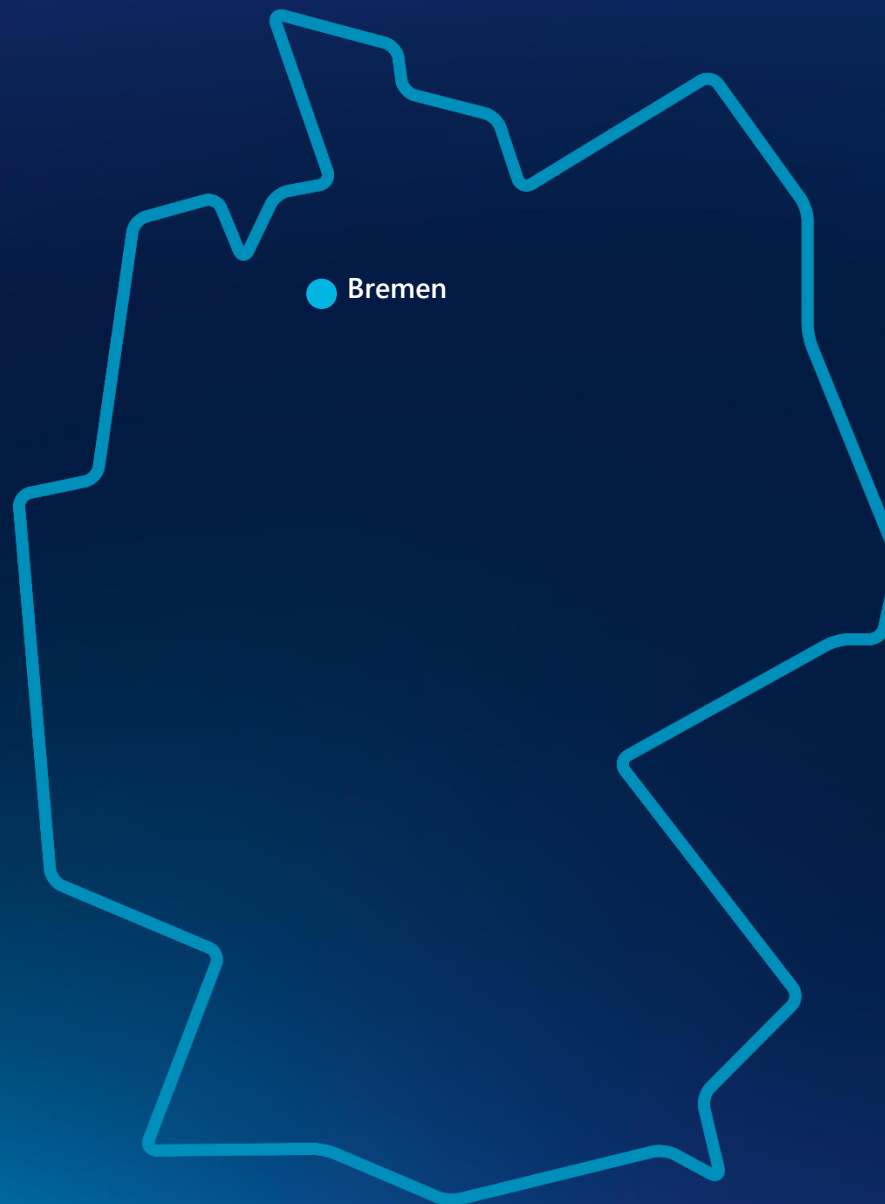
Learn from the best

➤ Service made by FAUN



ENGINEIUS GmbH

- Founded in Bremen 01/2022
- 100 employees



ENGINIUS GmbH

- Founded in Bremen 01/2022
- 100 employees

ENGINIUS TEC GmbH

- Founded 04/2023 as NewCo resulting the asset deal with the Clean Logistics Group
- 60 employees from formerly 3 companies (E-Cap Mobility, XPANSE Powertrain and Clean Logistics SE) are now employed at ENGINIUS TEC



Clean waste collection

Refuse collection vehicles

BLUEPOWER 27 t / 380 HP



And more to **come.**

Customized applications, beverage transport,
platform with crane



Refrigerated- and dry cargo boxes



Hook-lift / roll-off tipper



...in 2024

Next steps CITYPOWER

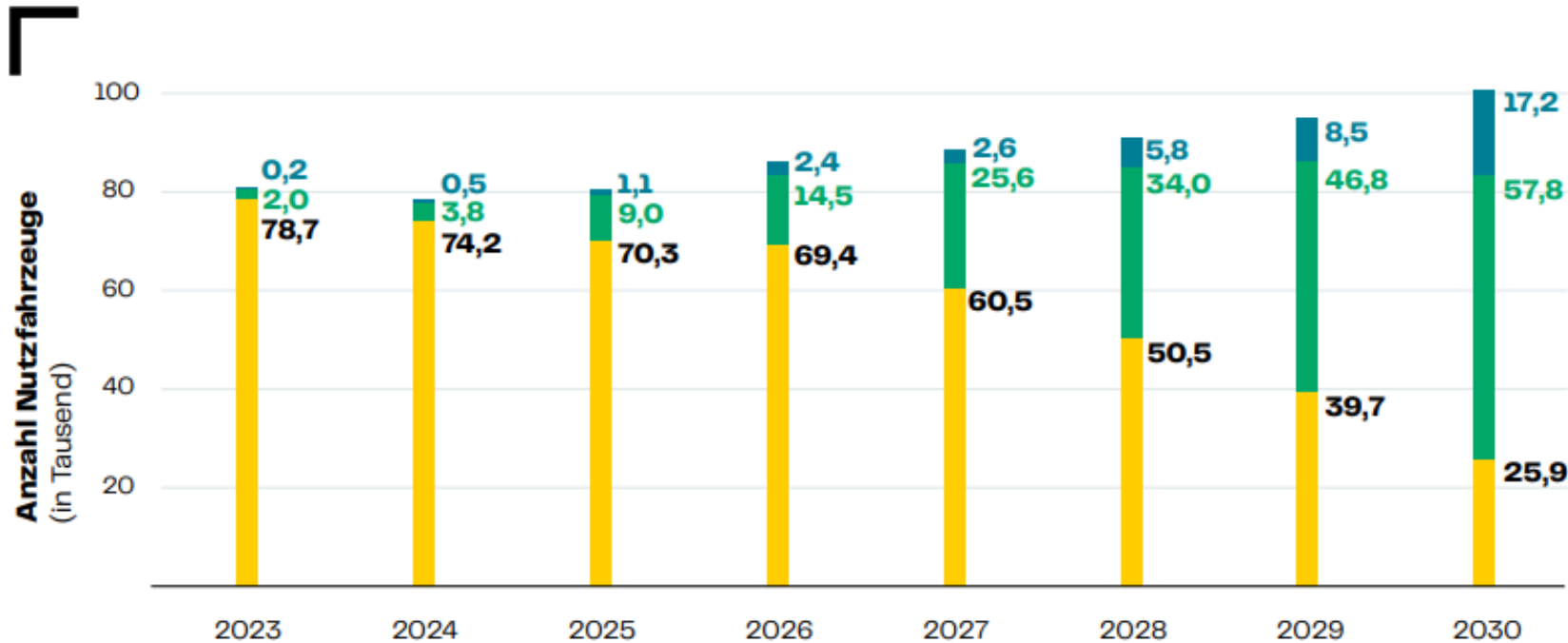
Q3/2025



Hydrogen or Battery?

Prognostizierte Absatzzahlen schwerer Nutzfahrzeuge (N3/> 12 t)

In Deutschland laut Herstellerangaben



Hinweise zur Unsicherheit durch unvollständige Marktabdeckung:

- Angaben liegen nicht für alle Antriebsarten, Hersteller und Jahre vor.
- Für die zweite Hälfte des Jahrzehnts liegt die Rückmeldungsquote bezogen auf die aktuellen Marktanteile bei 95 %.
- Für die fossilen Antriebe lag die Rückmeldungsquote bis 2025 zwischen 70 % und 90 %.

Zur besseren Lesbarkeit sind die niedrigen Absatzzahlen zu PHEV, H₂-Verbrennungsmotor und Erdgas (CNG/LNG) nicht aufgeführt.

■ H₂-Brennstoffzelle
■ Batterie
■ Diesel

We need both



+ 0 emissions

+ energy efficiency

+ long lifetime of batteries, 2nd life as stationary

energy storage

+ begin of series production - “technology readiness level”

+ lower CAPEX vs. FCEV



+ 0 emissions

+ short refueling time (almost comparable to Diesel)

+ high energy density -> 1 Kg H₂ = 33kWh vs. 0,5 kWh per Kg battery

(“import and storage of green energy”)

+ higher payload

+ higher range

+ no investment in infrastructure needed, when HRS
available

+ lower dependency on scarce raw materials

Customer example

- Operating conditions in Bochum 2023
- Driving profile mixed with motorway parts, approx. 70 km per day
- Consumption of hydrogen and diesel under identical operating conditions

3.4 kg of hydrogen per day \triangleq 4.8 kg per 100 km

61 liters per day \triangleq 87 liters per 100 km

Example USB (Bochum):

Fuel costs per day H2 approx. €47 → Diesel approx. €110
including 70 kWh “shore power” (70 x €0.20 = €14) = approx. €61

Reference price H2 = 13.85 €/kg

Diesel purchase price = €1.80/l

Savings BLUEPOWER vs. Diesel: €49 / day => **€12,250 / year!**



Thank you!



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