



Zero-emission buses for public transport

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A friendly city without noise and exhaust fumes

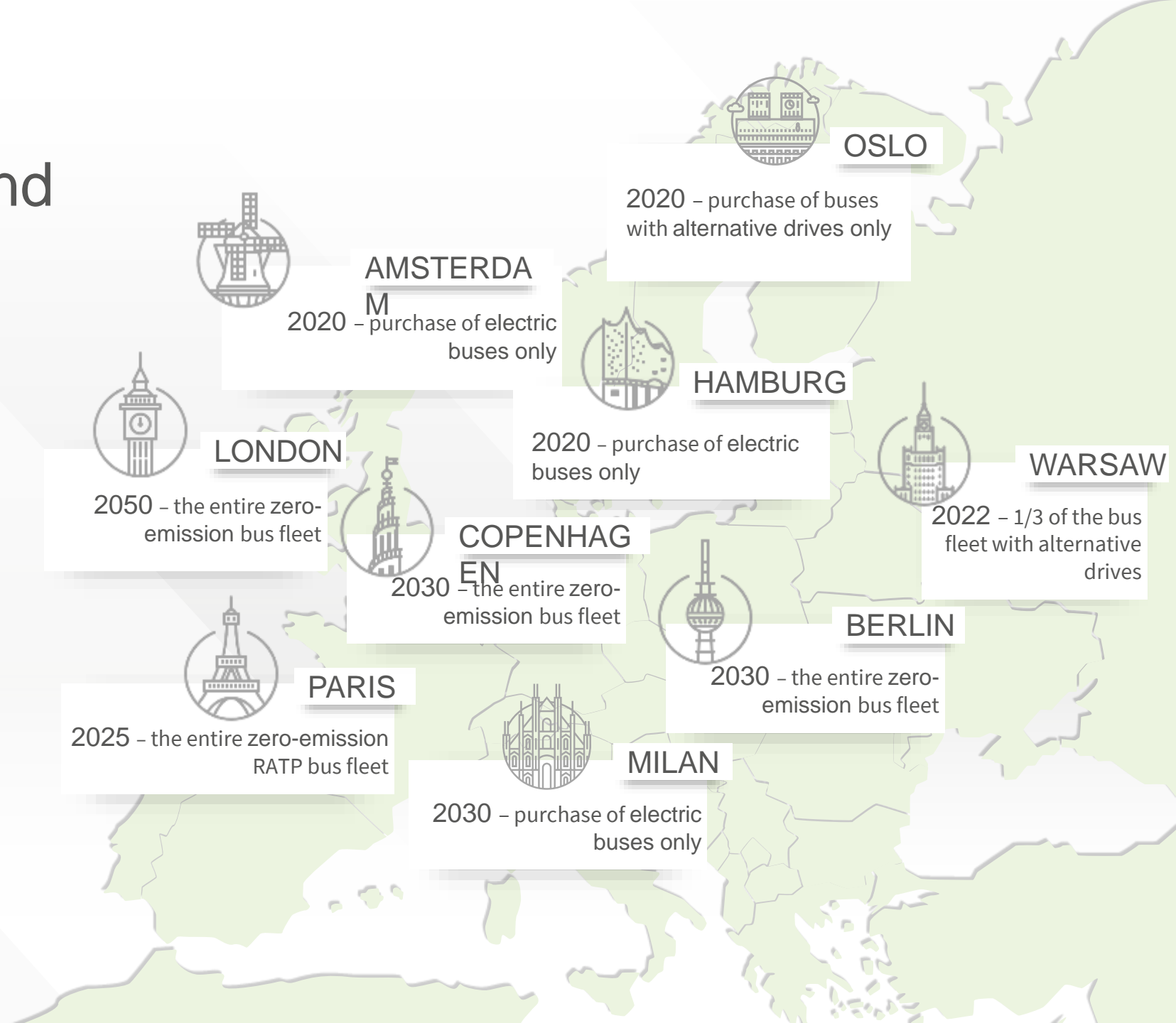


We believe that zero-emission buses in public transport will improve the quality of life in cities

That is why we invest in the development of technology in our vehicles

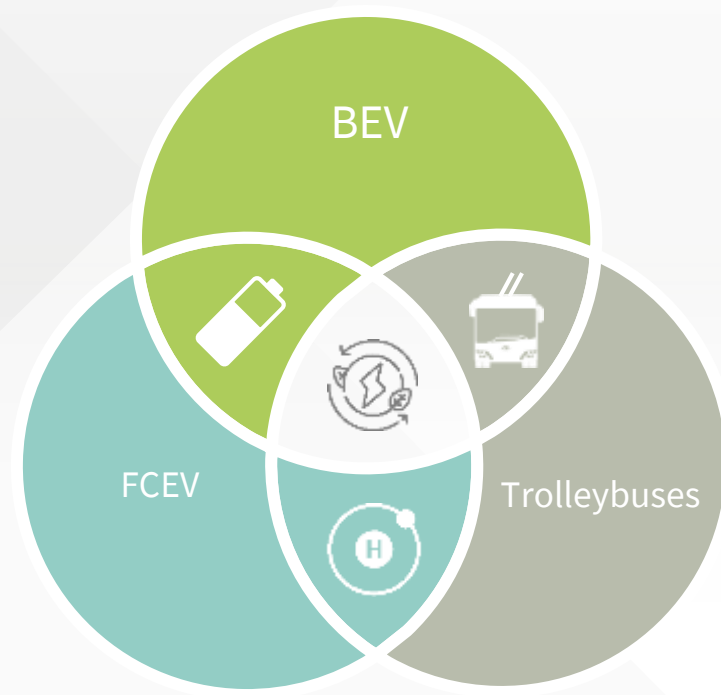
Electric drives – an irreversible trend

• We share this vision with many European and world metropolises



Our goal: zero-emission products only

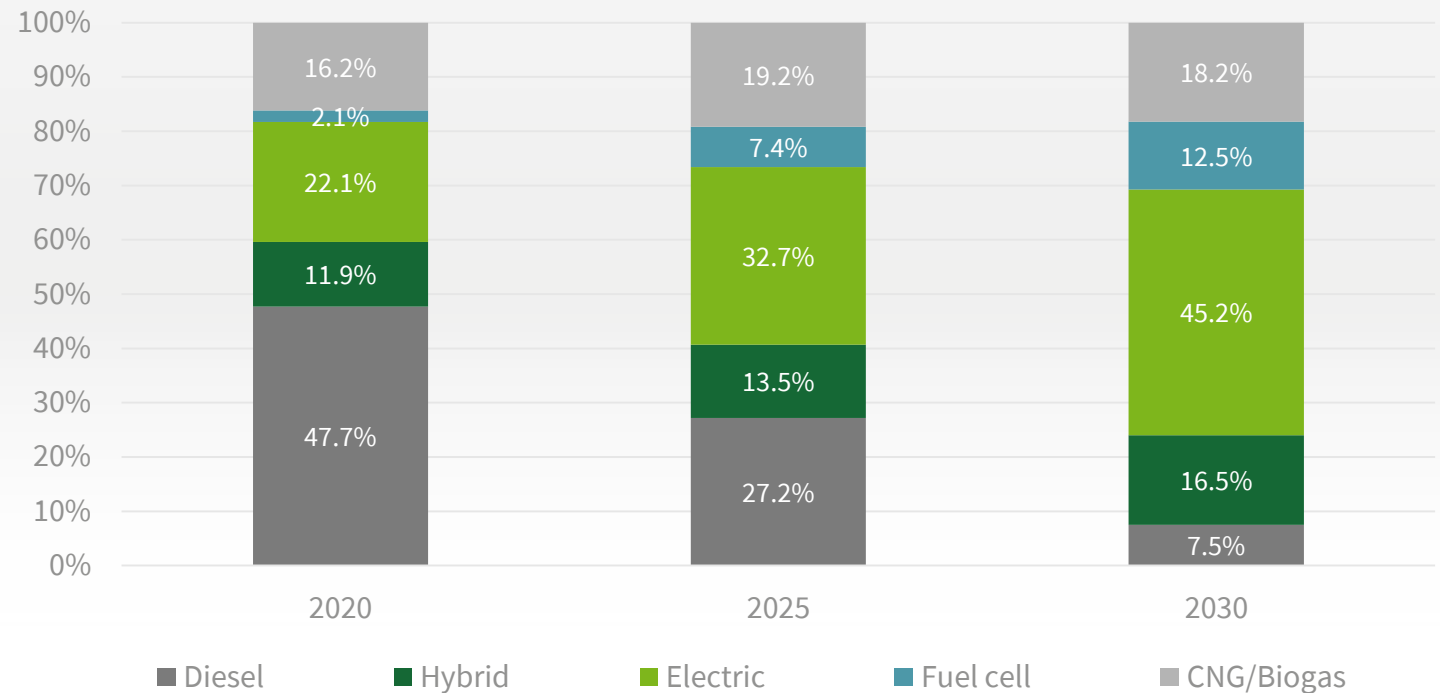
- We believe that different ways can lead to electromobility



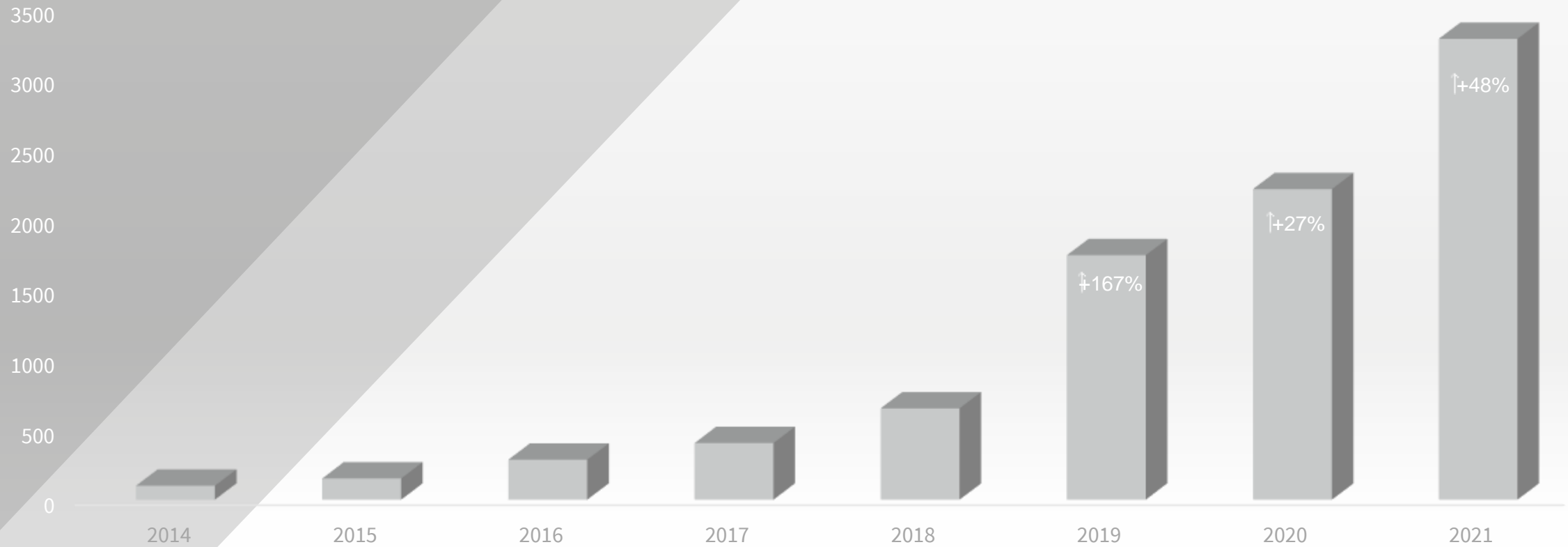


Electric drives – dynamically growing trend

Newly registered buses with
an alternative drive
in Europe in 2020-2030



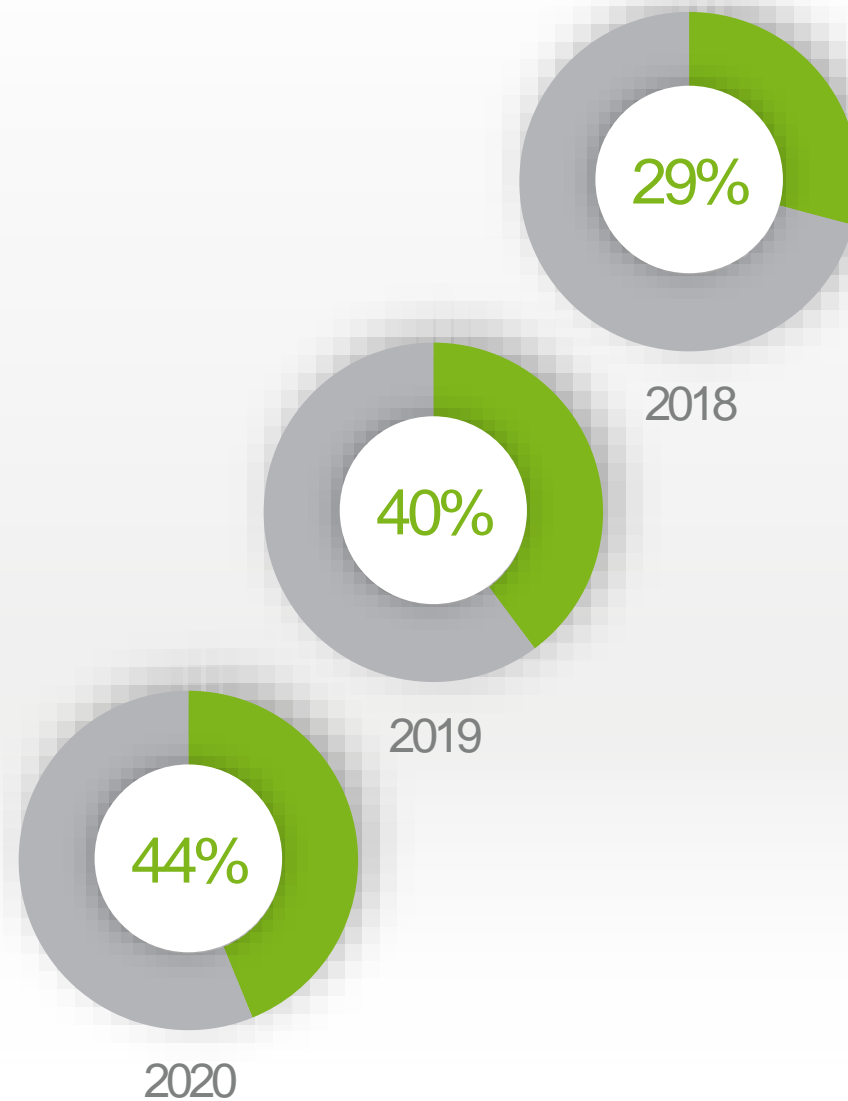
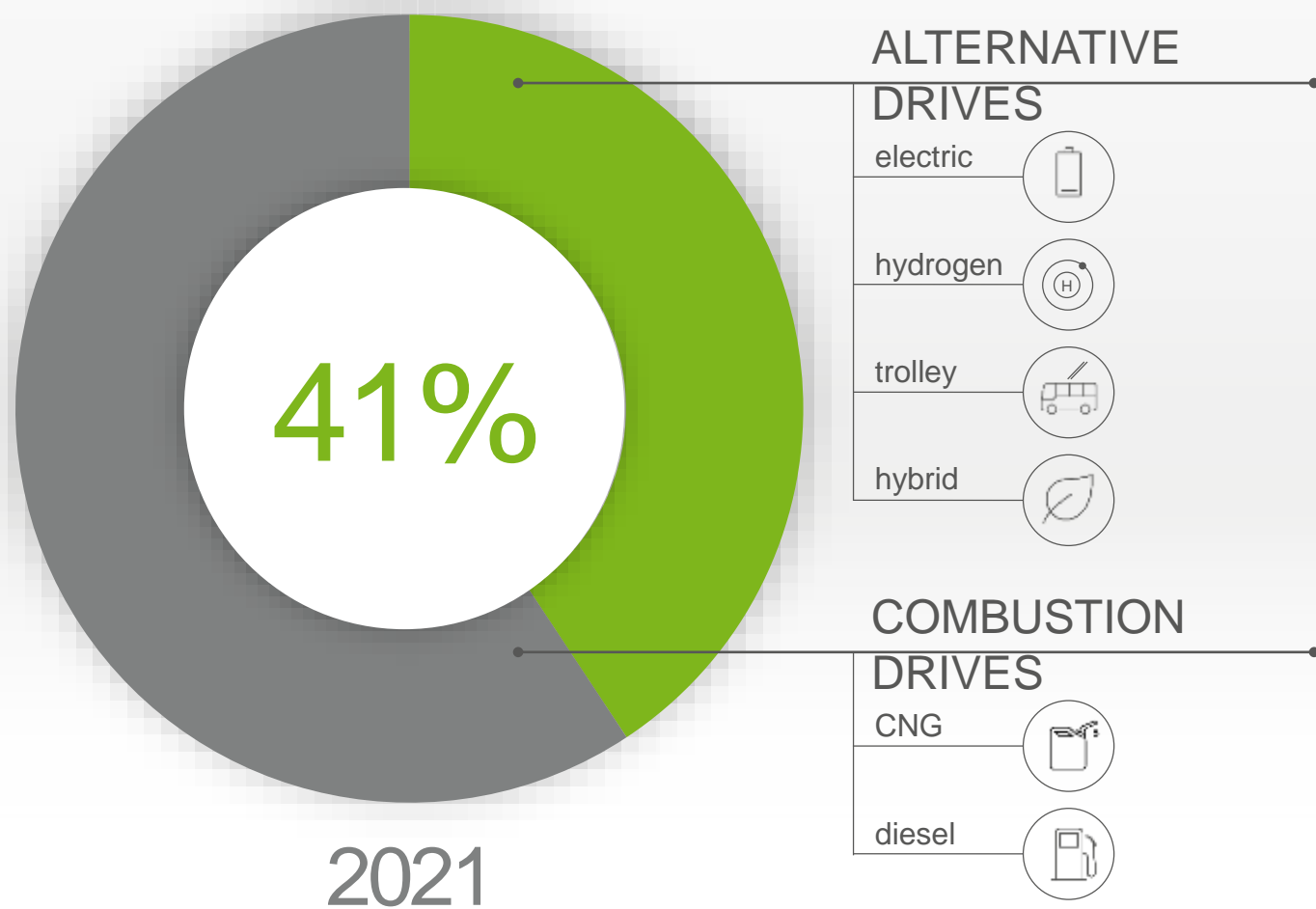
Electric bus market in Europe



Registrations, EU + UK + Norway + Switzerland

Source: CME Solutions, Chatrou

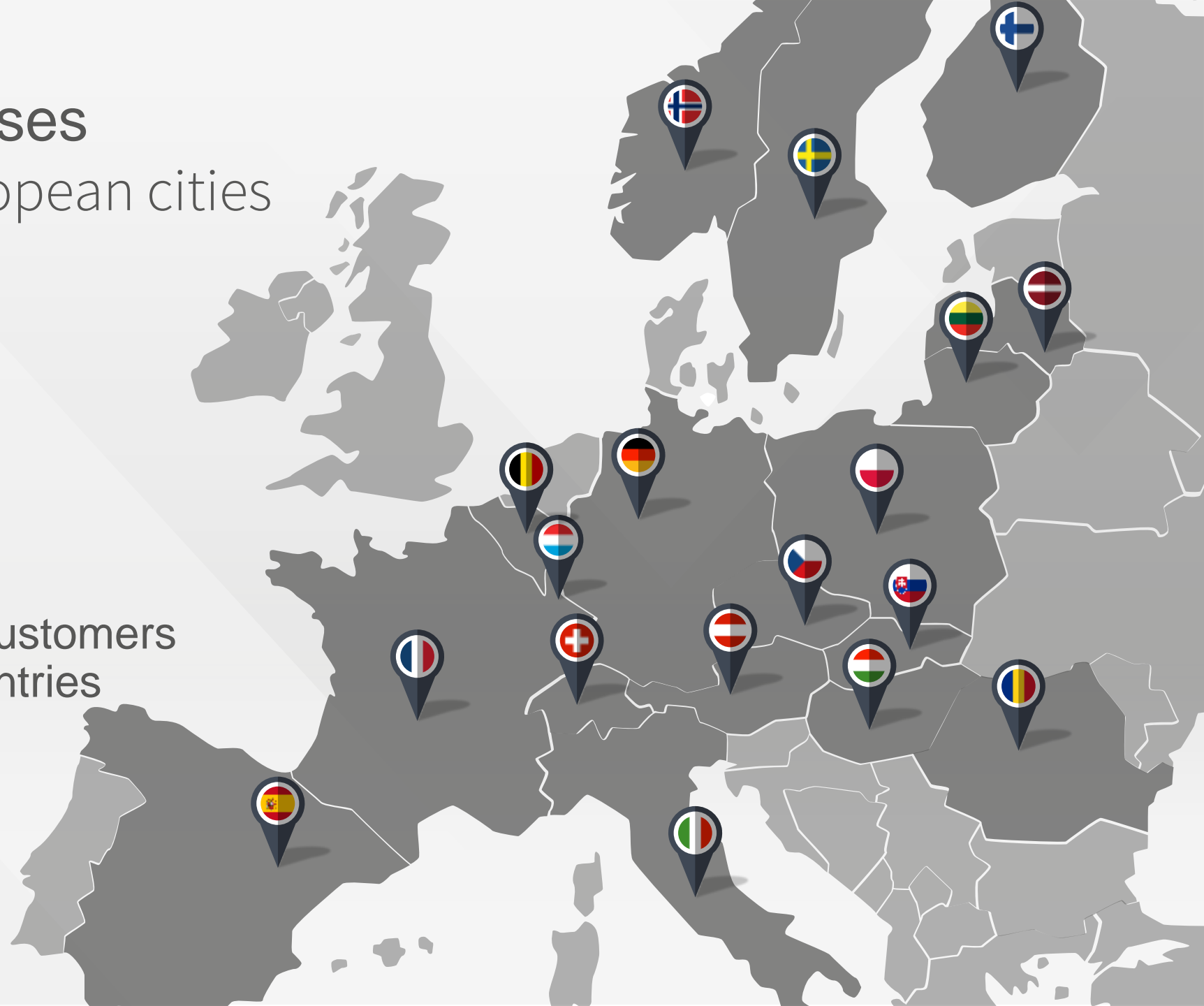
Share of alternative drives in Solaris buses between 2018-2021



Solaris electric buses

on the roads of European cities

- We have delivered over 1200 e-buses
- Solaris battery buses have been chosen by customers in 98 cities from 19 countries



Solaris electric buses on the roads of European cities

- Our battery buses have hundreds of millions electric kilometers on the odometer
- And they passed them in different climatic conditions



2 types of battery

SOLARIS HIGH POWER



High power density

The perfect solution
for quick charging

Charging power: up to 540 kW
depending on the available infrastructure

SOLARIS HIGH ENERGY



High energy density

The solution provides
a large range on one charge

Battery nominal energy: over 600 kWh

2 ways of battery charging

PANTOGRAPH



up to 800 A



even in 8 min



automatic



adapted to depots that will be operated autonomously in the future



adapted to both quick and overnight charging



PLUG-IN



up to 400 A



from 1 to few hours



manual



standardized solution



high flexibility



Integration of chargers with the city's infrastructure



CRACOW, Poland

Charger on a traction pole



WARSAW, Poland

A mast integrated with the charger



BARCELONA, Spain

Full integration with the control system



POZNAN, Poland

Pantograph mast with a charger



TAMPERE, Finland

Pantograph mast with a charger



HANNOVER, Germany

Multimodal DC/DC charging station

Turnkey solutions

– charging infrastructure supply

BRUSSELS, Belgium

25 x Urbino 18 electric

Charging infrastructure:

- ☀ 2 x pantograph chargers (420 kW)
– current drawn from the subway network
- 2 x pantograph chargers (420 kW)
- ☾ 24 pantograph chargers (20 kW)

RZESZOW, Poland

10 x Urbino 12 electric

Charging infrastructure :

- ☀ 2 x pantograph chargers (300 kW)
- ☾ 10 plug-in chargers (35 kW)



Solaris electric buses

Battery type



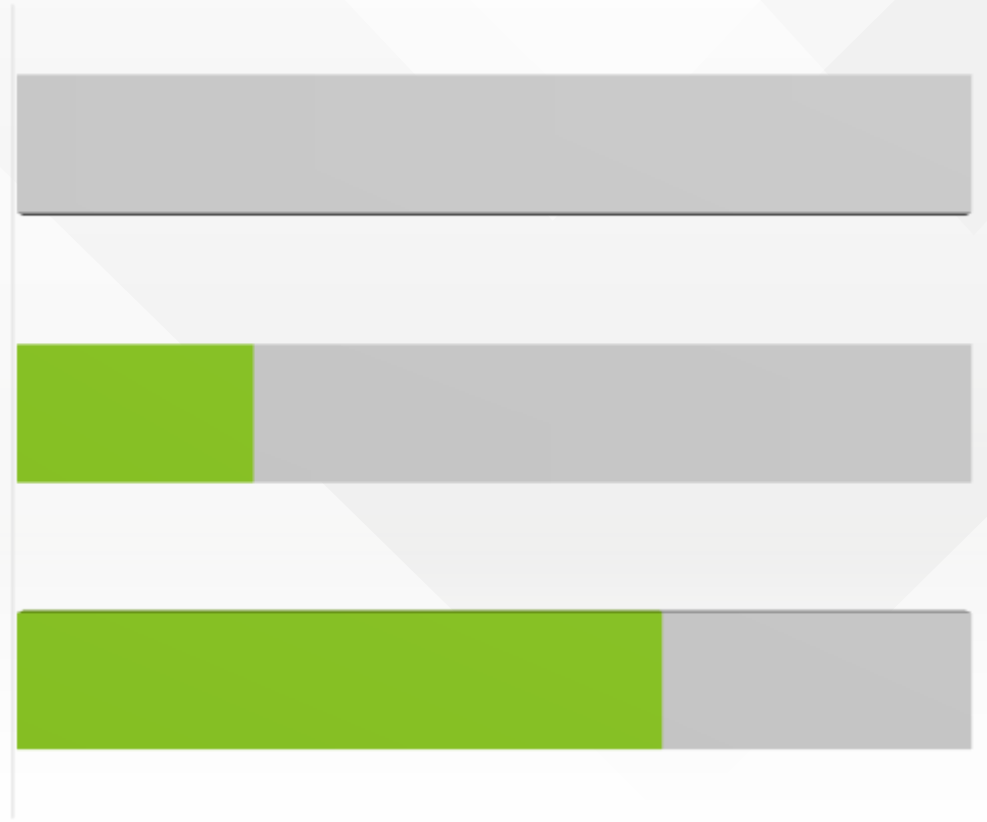
Urbino 8,9

Urbino 12

Urbino 18

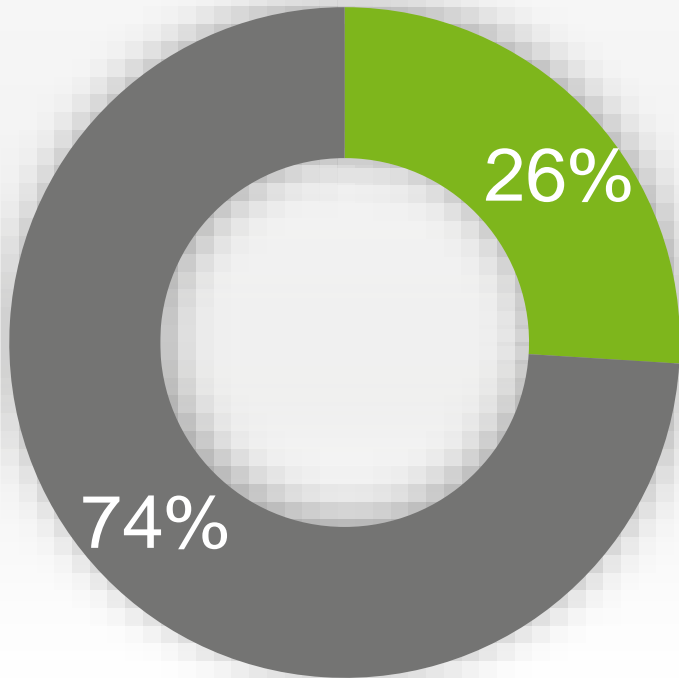
■ High Power

■ High Energy



Charging solutions

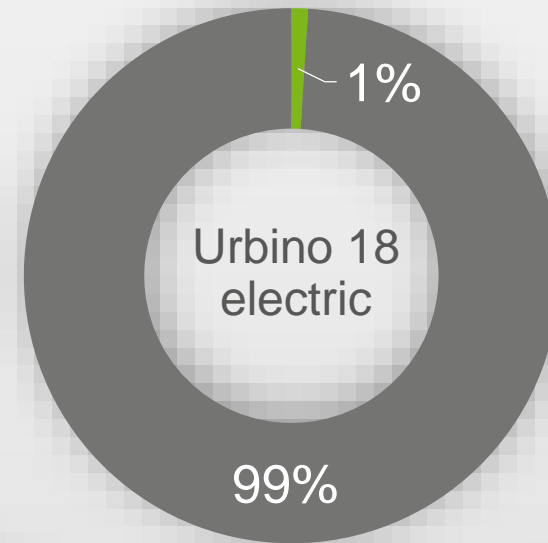
ELECTRIC BUSES IN EUROPE



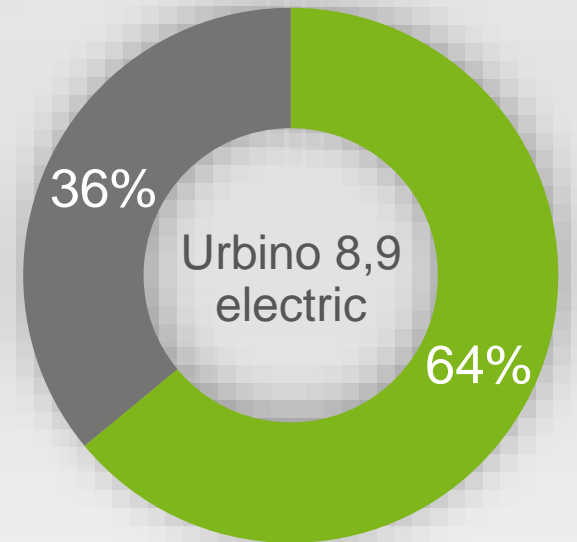
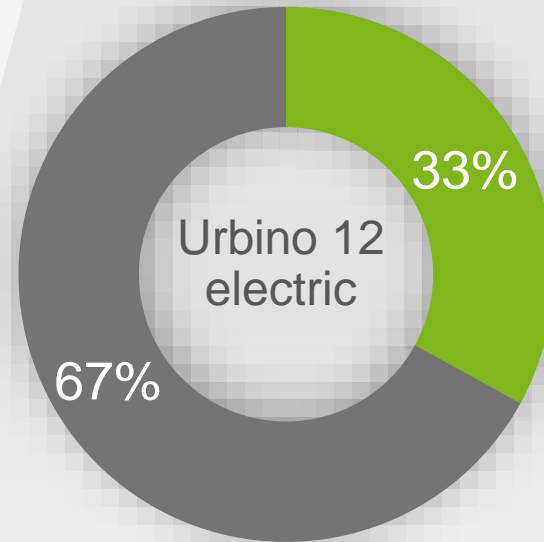
PANTOGRAPH



PLUG-IN

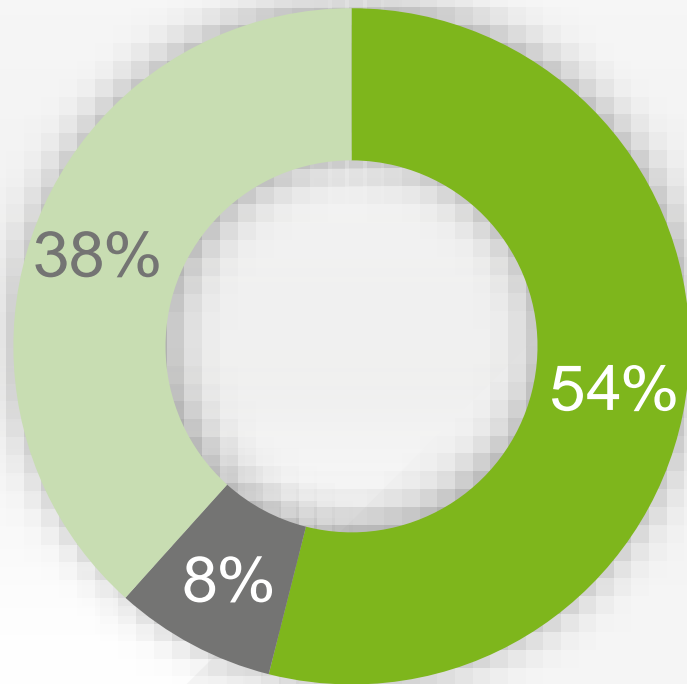


SOLARIS BUSES

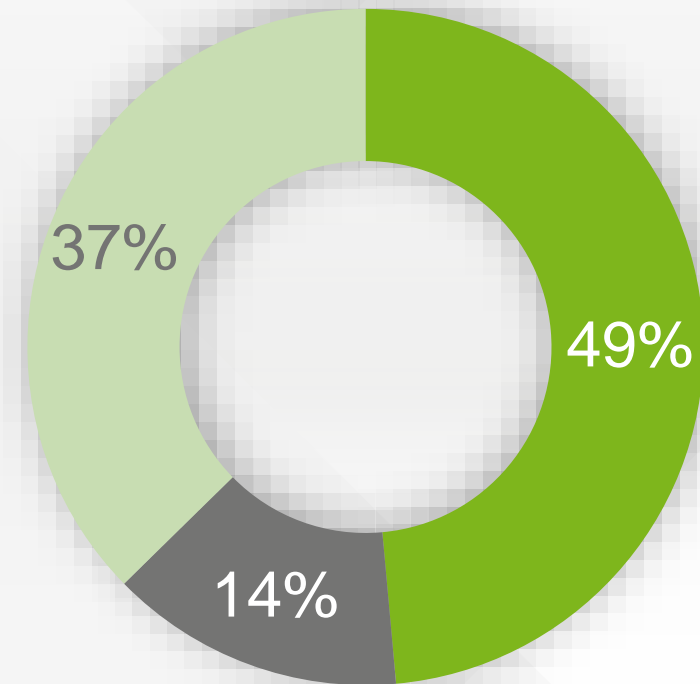


Charging solutions used in Europe

CHARGING MODES
IN EU COUNTRIES, NORWAY &
SWITZERLAND



CHARGING MODES
IN EU COUNTRIES, NORWAY,
SWITZERLAND,
UK & IRELAND



 PANTOGRAPH  PLUG-IN  OPPORTUNITY

When to use hydrogen?

Hydrogen-powered vehicles are best suited for the following applications and requirements:



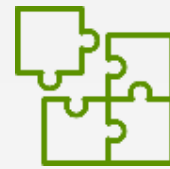
Long-range requirement



Heavier loads



Routes requiring fast refueling




A great need for flexibility

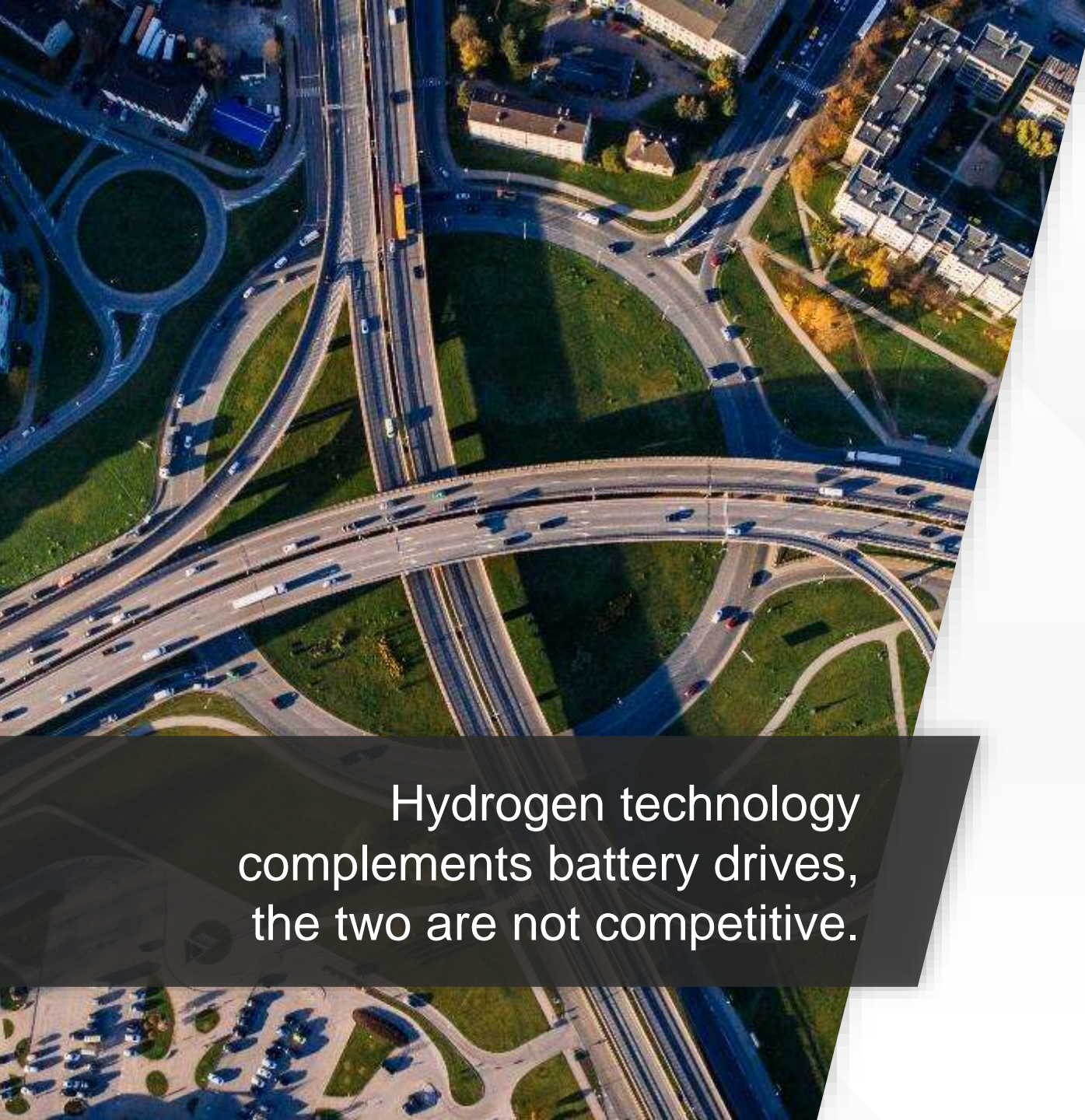


Why to use hydrogen?

- All the advantages of an electric drive
 - completely emission-free driving
 - extremely quiet
 - it does not generate vibrations
- Wide range
 - 350 km on routes with different conditions
- Fast fuelling
 - about 10-15 minutes
- Hydrogen fuel cell guarantees reduction of carbon emissions, the only by-product of the chemical reaction taking place in the hydrogen cell is water



All the advantages of electric drive with increased range and fast refuelling.



E-mobility is the future

The synergy of the development of all electro-mobility branches is indispensable to ensure efficient decarbonisation of transport.

Hydrogen technology complements battery drives, the two are not competitive.





Any
questions?

Mateusz Figaszewski



More Information

For info or further questions on this webinar please contact the JASPERS Networking Platform team:

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