

ZETEAM

Sustainable Bus Tour 2021 Webinar #1 – Operators' session

The electric depot.
Charging and managing large e-bus fleets

Webinar - 6th May 2021 3pm CEST



Transdev Group commits to developing a more sustainable public transport



One of the 43 articulated e-buses running in the city of Eindhoven (The Netherlands)

Sharing experience through a yearly event

Living·Lab
zero emission

- An event which brings together Transit Authorities, experts and operators to talk about projects, ambitions, share learnings and best practices.
- The 5th edition held remotely in December 2020 was an opportunity for 12 clients to join us as speakers.
- Almost 500 participants from 20 different countries attended these sessions.

Supporting the transition within the Group

MOVING
Green



- A new environmental strategy to support our clients in addressing the green transition and meeting the Paris Agreement objectives.
- A dedicated team of experts whose mission is to grow and share the Zero Emission knowledge for the benefit of our operations through an international community.

Today's webinar speaker



Tanguy Bouton
Transdev Corporate
Fleet Director

ZE Team
Program Manager



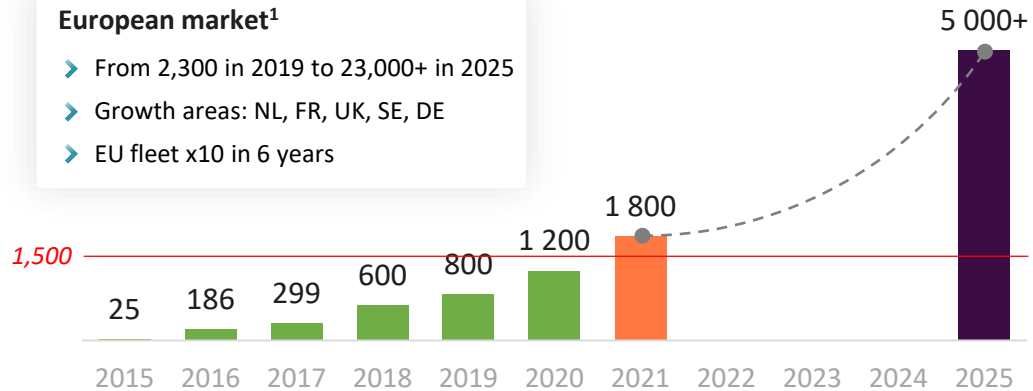
i To know more about the ZE Team...

Electromobility at Transdev, from scattered pilots to full fleet transformation

ZE bus fleet current and prospective evolution

European market¹

- From 2,300 in 2019 to 23,000+ in 2025
- Growth areas: NL, FR, UK, SE, DE
- EU fleet x10 in 6 years



- About to exceed our commitment to operate 1,500 e-buses by 2024
- Acceleration is ongoing with higher demand for complete transformation
- The pace could increase even more given stimulus packages and new regulations
- To be noted: very country-specific due to different energy mix orientations

¹ Source: Accuracy analysis, March 2019

² Operation to start in November 2021

³ 172 units as of today. The delivery of 39 articulated e-buses was postponed until June/July 2021 due to COVID-19










⁴ 43 units as of today. More VDL e-buses will be in service in January 2022

100+ e-bus operations worldwide



Points to be considered

Focus #1 – Selection of charging technology

Location		Distance travelled (km/year)	Charging technology
	 AML	100 000	
	 Valence	50 000	
	 Gothenburg	72 000	

➤ Charging technology is determined by the operational needs.

Focus #2 – Low-carbon electricity to charge ZE buses

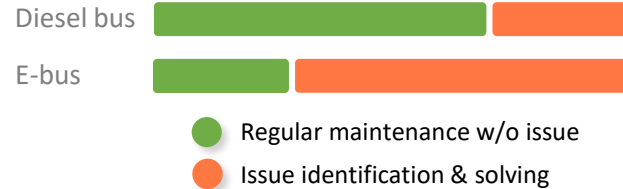
Location		Electricity supply technology
	 Quebec	100% hydropower
	 Brisbane	100% solar PV (rooftop)
	 Valence	Green certificate (100% renewable)

➤ From an environmental perspective, low carbon electricity should be favoured to make “zero emission at tailpipe” relevant.

Key learnings from our large e-bus operations

1

- More diagnosis-focused maintenance.
- Different staff profiles required



2

- Constant hardware evolution and new norms



Pantograph positioning



3

- Leverage data from bus and charging infrastructure
- High potential of optimization



As a conclusion...

- The transformation of Transdev bus & coach fleet is an ongoing process
- Our alternative fuel fleet including Zero Emission is growing
- Battery-electric buses account for the majority of today's needs...
- ...but hydrogen-powered vehicles seem to be promising solutions in the near future



Bart Kraayvanger
Transdev Nederland
ZE Program Manager

ZE Team
Expertise Manager



Webinar #2
October 2021
Hydrogen bus