



Efficient and affordable Zero Emission logistics through Next generation Electric TRUCKs

E-Volution: urban space solutions for passengers and freight

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NextETRUCK

Efficient and affordable Zero Emission logistics through Next generation Electric TRUCKs

Impact

Provide a sustainable solution to bring zero-emission trucks to the freight sector, playing a pioneering role in the decarbonisation of vehicle fleets.

Facts and figures

- Coordinator: TNO
- 17 Partners (+2 UK Partners)
- Budget: € 14.7M
- Start: 1 July 2022
- End: 31 Dec 2025
- <https://nextetruck.eu/> .

Objective

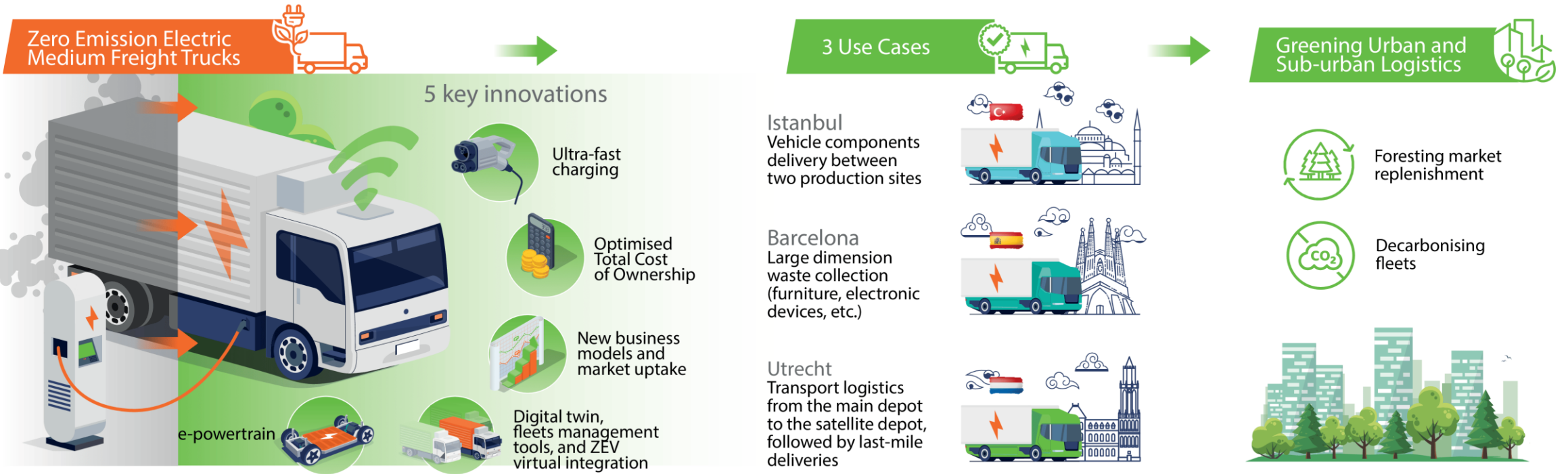
- **Explore optimization challenges** for tomorrow's logistics seeking reliability, integration, affordability and flexibility.
- **Provide an end-to-end solution**, from components, vehicles and fleets to infrastructure.
- **Collaboratively innovate in** e-powertrain components, architectures, smart charging infrastructure and management, improved thermal design of the cabin, IoT and digital tools.

Pilot sites

- Istanbul - Delivery Truck Demonstration
- Barcelona - Refuse Truck with modular vehicle architecture demonstration
- Utrecht (NL) - Goods distribution Urban electric truck demonstration



Efficient and affordable Zero Emission logistics through the NEXTgeneration of Electric TRUCKs



HOLISTIC

Multi-level design ZEV, infrastructure and fleet



INNOVATIVE

Digital twin, smart charging, e-powertrain, ZEV architecture, HVAC concepts



SYNERGETIC

ZEV architecture tool, multi-level control strategy, connected e-truck via IoT



AFFORDABLE

Reduced TCO, eco-strategies, less material use, self-learning algorithms for cost-efficiency



COMPETITIVE

User friendly, improved system's reliability, predictive maintenance, seamless tools for ZEV integration, ROC business models

NextETRUCK

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Consortium: 19 partners

- **Vehicle manufacturers**
 - FORD OTOSAN, IRIZAR, TEVVA
- **Universities, Research Technology Organisations, and Consultancies**
 - **TNO**, VUB, Tecnalia, Cidetec, CERTH, AIT, CENEX UK & NL
- **Component Manufacturers**
 - AVL, Panion, Jema
- **ITS and connected IoT services**
 - AVL, Datik (Irizar group)
- **Associations**
 - POLIS, ERTICO



NextETRUCK innovations, management & monitoring process (1)

Derived from Project Innovation (1.2.2) & Project Execution (1.2.3)

IN-X	Innovation elements	Technology Bricks (TB-XY)
IN-1	Electric powertrain innovations for medium duty freight transport	TB-11 Advanced Power electronics interfaces based on WBG devices TB-12 Reliability assessment tools for the power electronics interfaces TB-13 Thermal management system by using smart active control of the cooling system
IN-2	Digital twin design, fleet management tools and virtual integration of ZEV	TB-21 Digital twin of vehicle components and -systems for impact assessment TB-22 Open-access, web-based user-friendly fleet decarbonisation strategy tool with a map feature TB-23 Improved vehicle simulation techniques (Exp plan) TB-24 Estimation of battery state of charge (SoC) based on BMS data
IN-3	Tools for optimized vehicle design and TCO reduction	TB-31 Innovative thermal management system of the vehicle cabin TB-32 Energy efficient cabin HVAC system TB-33 Total cost of ownership (TCO) calculation tool
IN-4	Flexible ultra-fast charging concepts	TB-41 Charge management and optimisation solution TB-42 Power electronics interfaces based on WBG technologies TB-43 Interoperability solutions updated to evolutions in actual standards
IN-5	New business models for end-user increased acceptance and increased market uptake	TB-51 Business model innovation, holistic approaches to business models for innovative use cases

NextETRUCK innovations, management & monitoring process (2)

Project definition phase: Set-up the IM process

- Define responsible for each Innovation and Technology Bricks (TB)
- Check definition in DoA, with State of the Art (SoA) and TRLs Start / End
- Identify new Innovations and / or Technology Bricks
- Create related KPIs table
- Create related IPRs table

Project development phase: Monitor implementation of Innovations & TB

- on a regular basis ask each responsible to assess progress against plan
- Report to the Steering Board any relevant deviation

Project finalisation phase:

- Report on the result of the Innovation and TB implementation



Innovation management => tool to monitor Innovation implementation

Sustainability contributions of ERTICO projects:



Goal: Zero emission vehicle concepts tailored for regional medium freight haulage (N2 & N3) with at least **10% energy efficiency increase** compared to existing highest-end benchmark EVs of the same size category and operating for similar mission profiles.

How?:

the 10 % reduction will be done thanks to optimised battery thermal model, reduced thermal load on heating and cooling systems, waste heat recovery from HV/e-powertrain components.

Baseline:

16 t e-truck; 0,95 kWh/km energy consumption

Target:

0,86 kWh/km energy consumption
(can go down to 0,75)

What impact NextETRUCK can create?

- The total energy amount of a NextETRUCK MCV per year will be approximately 45000 kWh, (based on 0.75 kWh/km).
- 43.7 tonnes CO₂ compared to an ICE truck.
- The timeframe considers the project's duration (2022-2025) and the expected market penetration and adoption (2025-2028)



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