

A&I CASE STUDY REVOLUTIONISING LONG DISTANCE HEAVY TRANSPORT



Creating zero emission, flexible vehicle platforms with modular powertrains serving the long-haul freight ecosystem.



Ricardo is working on the ZEFES (Zero Emissions flexible vehicle platforms serving the long-haul Freight Eco System) programme, co-funded by the European Commission, bringing together five truck and two trailer original equipment manufacturers (OEMs), suppliers, logistics operators and research partners to work towards accelerating the integration of zero emission vehicles (ZEVs) for long distance heavy transport.

CHALLENGE

The €39million project addresses the decarbonisation of long-distance freight transport by demonstrating real-world applications with battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs) across Europe.

The ZEFES project officially started on 01 January 2023 and will last 3.5 years. It will contribute to the aims of objectives set out in the Green Deals and 2Zero partnership where Europe commits itself to be the first CO2 neutral continent by 2050.

The use of zero tailpipe emission vehicles for long-distance heavy-duty freight transport is an important pathway towards achieving these targets.

The share of BEVs and FCEVs in HD transport will increase rapidly, giving a share of roughly 25% in 2030. However, the current vehicles have challenges, regarding range, available payload, charging/refuelling possibilities, and energy/fuel costs, making them not comparable to traditional ICE vehicles.

APPROACH

Ricardo experts are providing the digital simulation platform for the programme, which allows:

- Modelling of a range of vehicle operations and technology over multiple routes
- Validation of test
- Removal of ambiguity of long-term investment decisions for the fleet operators buying new technologies
- Local governments to make informed infrastructure decisions.

RECOMMENDATIONS

By 2025, the programme aims to deliver nine different vehicles running over one million kilometres across EU corridors in 'real world' daily operations, all guided and validated by the digital platform designed by Ricardo.

Vehicles will carry over 40 tonnes across distances of up to 750km, to vigorously test electric vehicle (EV) and fuel cell electric vehicle (FCEV) trucks against real world performance and to help understand infrastructure needs.

The focus will be on improving efficiencies, mass production capabilities and demonstrating the use of the technologies in daily operations.

RESULTS

- Client gains a revolutionary digital simulation platform, allowing modelling of a range of vehicle operations and technology over the routes and validation of test.
- The creation of zero emission, flexible vehicle platforms with modular powertrains serving the long-haul freight ecosystem.
- Improved efficiencies, mass production capabilities and the use of technologies in daily operations.
- Creation of a consortium of partners and experts in the industry to deliver future mobility strategies and technologies.

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- Decarbonisation of long-distance freight transport
- Developing a digital simulation platform
- Removal of ambiguity of long-term investment decisions