

MASTERING THE 2025/2030 COMMERCIAL VEHICLE CO₂ EMISSION TARGETS

Authors: Alexander Nase, Thomas Lüdiger and Daniel Becker

EU SETS 30% CO₂ REDUCTION TARGET FOR TRUCKS BY 2030 – TARGET ACHIEVEMENT IS IMPERATIVE

In 2019, the first ever European fleet CO₂ emission standards for heavy-duty commercial vehicles have been set in force. They stipulate a reduction of new vehicle CO₂ emissions by 15% in 2025 and by 30% in 2030 compared to 2019. Currently, trucks above 16 tons gross vehicle weight are included. These account for 80% of all commercial vehicles sold in Europe. OEM specific reduction targets will be set on a fleet-wide basis. Until today, technology strategies of commercial vehicle OEMs aim to offer a competitive product portfolio by satisfying customer needs at optimum costs. The CO₂ emission legislation adds another piece to the puzzle: A target violation would jeopardize the entire profit margin. The potential penalty fees for a model year 2019 truck sold in 2025 are up to 32,000 Euro per truck and up to 100,000 Euro per truck in 2030. Therefore CO₂ emission compliance is imperative and has to become an integral element of future technology and sales strategies. FEV Consulting has a successful track record in defining technology strategies for commercial vehicle OEMs as well as suppliers to gain a competitive edge.

A DEEP UNDERSTANDING OF THE CO₂ EMISSION REGULATION AND ITS FLEXIBILITIES IS CRUCIAL

To assess the effectiveness of a certain technology roll-out, three key parameters have to be evaluated, which are all taken into account by the FEV fleet CO₂ model:

1. CO₂ emission reduction on a single truck level
2. Contribution of the truck to the fleet CO₂ emissions
3. Additional zero and low emission credits

The CO₂ emissions of a single truck are calculated with a tool developed by the European Commission called VECTO (Vehicle Energy Consumption Calculation Tool). Depending on the vehicle configuration, different driving cycles are simulated. This heavily impacts the effectiveness and thus the trade-off between powertrain and vehicle improvement measures. Besides this, VECTO defines the CO₂ reduction potential of some technologies

(e.g. auxiliaries) directly. To date, not all technologies (e.g. 48 V, waste heat recovery, hybridization) are included in VECTO. FEV has developed a toolset to calculate the impact of those technologies. Besides other factors, the contribution of a single vehicle to the fleet average CO₂ emissions is based on its assumed real-world freight activity. As a result a long-haul vehicle has twice the impact of an urban delivery vehicle. Lastly, the CO₂ regulation allows double counting of some zero-emission vehicles (ZEV). Whether or not a ZEV is counted twice depends on the vehicle characteristics, market share and introduction timing.

COST EFFICIENCY AND CUSTOMER ACCEPTANCE ARE KEY FOR SUCCESSFUL TECHNOLOGY STRATEGIES

To meet the CO₂ targets OEMs have a variety of technology options at their disposal including diesel powertrain and vehicle improvements as well as alternative powertrains. The key strategic questions are:

- Which technologies should be rolled-out to reduce CO₂ emissions of diesel trucks?
- What is the right strategy for electrification and alternative fuels?

The broad variety of commercial vehicle use-cases and the CO₂ regulation characteristics pose the challenge of choosing the right technology for each application. Truck OEMs need to consider the following key factors for technology selection:

- Technology maturity / supply base
- Cost vs. CO₂ reduction potential
- Required investments and product life cycle
- Customer acceptance and willingness to pay
- Total cost of ownership

Suppliers can actively impact these factors by offering innovative products at the right time.

THE 2030 QUESTION: LONG-HAUL EV, FUEL CELL, H₂ COMBUSTION ENGINE TRUCK OR ALL OF THE ABOVE?

2025 targets can be achieved by improving the vehicle (aerodynamics, tires) and diesel powertrains in conjunction with the introduction of "short-range"

electric trucks. By 2030, a higher market penetration of zero-emission vehicles is required. Therefore, OEMs need to introduce long-range BEV trucks, fuel cells or hydrogen combustion engines or a combination of the above. The attractiveness of zero-emission vehicles majorly depends on the TCO for fleet owners. These, in turn, depend on future boundary conditions such as government incentives, H₂ prices, or battery costs. FEV has analyzed use-case specific tipping points for various technologies to support strategic decision making. Considering the lead-time for robust technology development and roll-out, these strategic decisions must be made soon. The question isn't whether new technologies are required. The question is which technologies to focus on to gain a competitive edge.

FUTURE TARGETS ARE SET; STRATEGIES NEED TO BE IMPLEMENTED – NOW!

IF YOU ARE INTERESTED IN THE FULL STORY PLEASE CONTACT:



Dipl.-Wirt.-Ing.
Alexander Nase
Managing Director

Phone +49 241 5689-9744
Mobile +49 160 94110987
alexander.nase@fev.com



Dipl.-Wirt.-Ing.
Thomas Lüdiger
Manager

Phone +49 241 5689-6054
Mobile +49 152 01524306
luediger@fev.com