Press Release

FEV analysis: TCO can be reduced by up to 33 percent through range-extender trucks, depending on the driving cycle – without expansion of the charging infrastructure

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Aachen, February 2026 – FEV, a leading global innovation partner for sustainable mobility and other industries, has published new analysis results on the economic efficiency of electrified commercial vehicles as part of an internal research program. The evaluation of extensive techno-economic data shows: Depending on the driving cycle, through trucks with range extender architecture (REEV/Hybrid BEV) the total cost of ownership (TCO) can be reduced by up to 33 percent compared to conventional diesel trucks – while also significantly reducing CO_2 emissions. Even in the most unfavorable long-haul scenario, the TCO is reduced by approximately 14 percent.

The calculations are based on a realistic European usage profile with overnight depot charging at industrial electricity prices of around 19 cents per kilowatt hour. In national or international regions with lower electricity costs, the economic advantage is correspondingly higher.

Cost-effectiveness without megawatt charging infrastructure

A key lever of the REEV architecture is the significantly reduced battery size compared to purely battery-electric long-haul trucks. While a typical BEV truck requires battery capacities of around 560 kWh, a REEV truck can manage with around 280 kWh. Even with slower AC charging at 22 kW, around 240 kWh can be recharged overnight – enough to power the vehicle almost entirely electrically for the next day, depending on the application scenario. This means that the expansion of a megawatt charging infrastructure is not necessary for economical operation.

“Our analysis clearly shows that the range extender makes electric trucks immediately economically and ecologically viable – without waiting for the widespread expansion of high-performance charging infrastructure. This is precisely what is crucial in long-distance transport,” said Dr. Norbert W. Alt, COO of the FEV Group.

Significant TCO advantage in the cost-critical commercial vehicle market

The economic advantage of the range extender architecture results from several factors. The smaller battery of a REEV truck reduces vehicle costs as well as weight and increases payload. At the same time, the high proportion of electric driving enables low energy costs, especially when charging at depots at night at industrial electricity prices.

Due to their low dependence on public high-performance charging infrastructure, REEV trucks can already be seamlessly integrated into existing depot structures. This increases operational flexibility

in long-distance transport and reduces investment risks for fleet operators.

Overall, this combination of lower investment costs, low operating costs, and high practicality in long-haul operation results in a TCO advantage of approximately 14 percent compared to conventional diesel trucks. In short-distance mode, this figure rises to as much as 33 percent – values that are considered highly relevant in terms of economic efficiency in the commercial vehicle segment. In addition to this, the analysis also shows a significant ecological effect: depending on the application profile and energy mix, the global warming potential can be reduced by up to 82 percent compared to conventional diesel trucks.

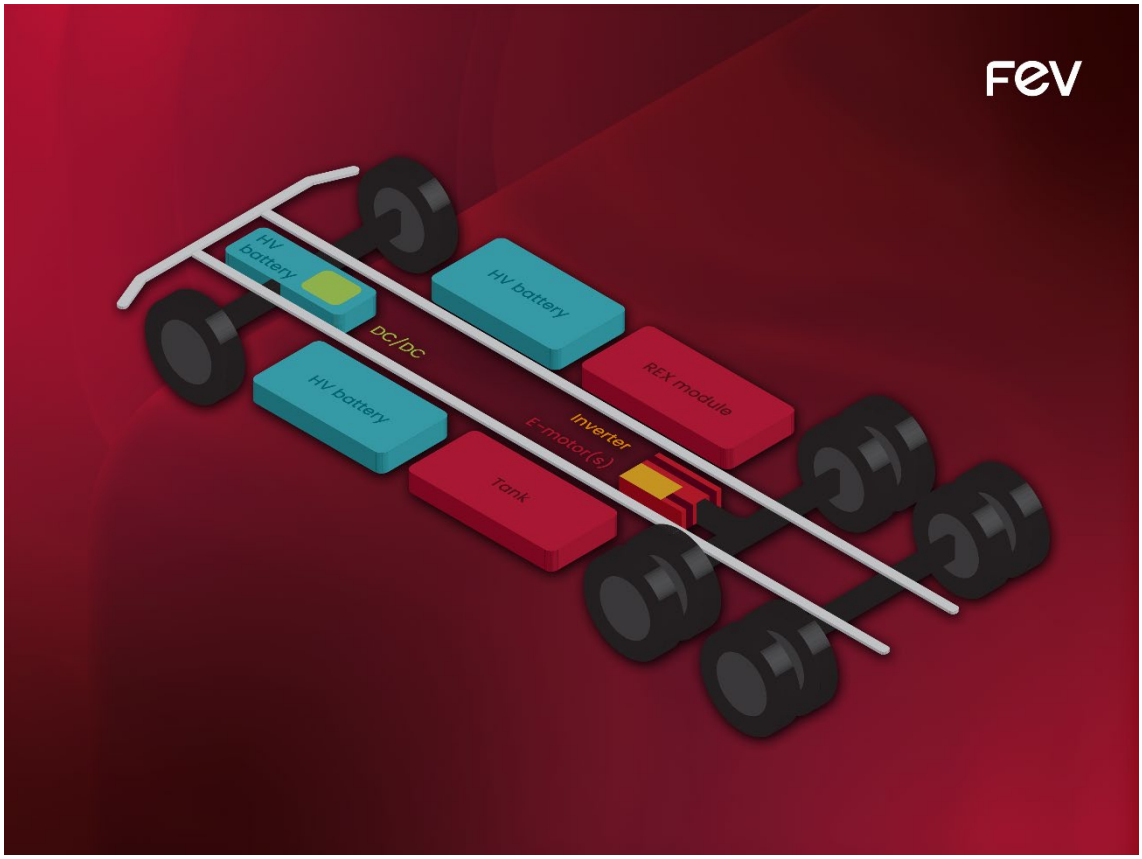
Focus on commercial vehicles – demonstrators in development

While FEV has already demonstrated the high decarbonization potential of Hybrid BEV and REEV concepts in the passenger car sector in earlier studies, the current focus is deliberately on the commercial vehicle and long-distance transport segment, where the technology's economic strengths are particularly evident. The engineering service provider is currently working on corresponding demonstrator vehicles in order to validate the analysis results in a practical manner and, together with customers and partners, translate them into marketable solutions.

“Range extender-based Hybrid BEV trucks offer an immediately available, economically highly attractive solution for electrified long-distance transport. They combine high electric driving ranges with minimal infrastructure requirements – and deliver measurable

added value precisely where cost decisions are particularly sensitive," said Alt, summarizing the advantages.

Footage



Caption: Depending on the driving cycle, through range extender trucks TCO can be reduced by up to 33 percent. Source: FEV

About FEV

FEV has always pushed the limits.
FEV is a globally leading engineering provider in the automotive industry and internationally recognized leader of innovation across different sectors and industries. Professor Franz Pischinger laid the foundations by combining his background in academia and engineering with a great vision for continual progress. The company has supplied solutions and strategy consulting to the world's largest automotive OEMs and has supported customers through the entire transportation and mobility ecosystem.

As the world continues to evolve, so does FEV.
That's why FEV is unleashing its technological and strategic expertise into other areas, applying its forward thinking to the aerospace and energy sectors.

Thanks to its software and system expertise, the company also leads the way making intelligent solutions available to everyone. FEV brings together the brightest minds from different backgrounds and specialties to find new solutions for both current and future challenges.

But FEV won't stop there.
Looking ahead, FEV continues to push the limits of innovation. With its highly qualified 6,100 employees at more than 45 locations globally, FEV imagines solutions that don't just meet today's needs but tomorrow's. Ultimately, FEV keeps evolving – to a better, cleaner future built on sustainable mobility, energy and software that drives everything. For the company's partners, its people and the world. #FeelEVolution