

THE HIGH POTENTIAL OF ELECTRIC TRUCKS IN FREIGHT TRANSPORT

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Due to the gradual tightening of Euro standards for internal combustion engine vehicles (especially in EU countries), electric-powered trucks have gained significant popularity for international transport, as they do not produce any exhaust gases that harm both the environment and human health. However, when considering electric freight transport, it is also important to ask the question: will there be any economic benefit for the company using the latest electric transport? Both the advantages and disadvantages of electric trucks will be examined in more detail below.

Nowadays, the concept of creating electric vehicles is well-known and very popular among major automakers. This happens for a number of reasons:

1. Environmental friendliness (zero emissions and reduced noise levels): Electric trucks do not emit harmful substances into the atmosphere, which is particularly important for improving the environmental situation in cities and reducing the carbon footprint. Reducing noise by utilizing electric motors enables quieter conditions, favoring comfort for drivers and nearby individuals compared to diesel engines.

2. Government support: In a number of countries, programs are being implemented to support environmentally friendly transport, which include subsidies and tax incentives. These initiatives aim to encourage businesses to transition to electric vehicles by reducing the financial burden associated with purchasing and operating them.

3. Energy efficiency (high efficiency and regenerative braking): Electric motors can convert up to 90% of energy into mechanical motion, while the efficiency of diesel engines is approximately 30-40% (at best, 55%). Regenerative braking is the process of recovering energy during braking in electric vehicles for further use [1]. This technology not only

enhances the overall energy efficiency of electric trucks but also extends their range by recharging the battery during deceleration.

However, there are also disadvantages, some of which may even outweigh the advantages of using electric transport:

1. **Restricted range:** In comparison to diesel trucks electric trucks have a smaller range. While diesel trucks can travel 1000 km or more without refueling, electric trucks can only go 300 to 500 km on a single charge. Long-distance travel may be difficult due to this restriction as frequent charging stops could cause delays and longer downtime. Furthermore, there is still a lack of charging infrastructure along major routes which can make planning and logistics more difficult for electric truck drivers;

2. **Battery and electricity production:** The production of batteries involves the use of chemicals and heavy metals (lithium, copper, nickel, mercury, etc.), which pollute the environment just as much as oil refineries.

The emissions during the production of a standard 35 kWh battery emit about 5 tons of greenhouse gases into the atmosphere. When talking about the environmental advantages of electric vehicles substantial carbon footprint is frequently disregarded. According to some experts there may be a rebound effect from the use of electric cars meaning that as their use grows so too may the demand for energy. That is, the effect would be the opposite, and our atmosphere could become dirtier [2].

Consequently, it can be said that the development of electric trucks has very uncertain prospects because their drawbacks outweigh their notable benefits. Electric trucks have advantages like lower emissions and lower operating costs but they also have drawbacks like a short range and the environmental effect of battery production.

As technology advances and more sustainable practices are adopted, there is potential for electric trucks to overcome these hurdles and become a more viable option in the transportation sector.

References

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