

Trolleybus

The Best Electric Bus



A trolleybus with dynamic charging is the best way to reduce emissions from public transport and to transition to electromobility while ensuring economical sustainability. A trolleybus equipped with traction batteries is a modern means of transport that uses overhead line in a part of its route for charging while running, eliminating unproductive vehicle downtime.



Electric bus without compromises

A trolleybus is an electric bus without compromises. The right combination of overhead line and battery operation ensures that diesel buses can be replaced in a 1:1 ratio. To handle identical circulation, especially on routes with high traffic loads, the same number of trolleybuses (and drivers) can be employed as if fossil fuel buses were used. The trolleybus range is limited neither by ambient temperature, vehicle occupancy, nor surrounding terrain.



High efficiency

When running under the overhead line, trolleybuses are highly efficient. Losses in the overhead line are lower in comparison with losses during battery charging and discharging, notably when compared to fast charging. In networks with a larger number of vehicles, a standard trolleybus or a trolleybus with dynamic charging has a positive effect on reduced electricity consumption.



Truly ecological

As compared to conventional electric buses, trolleybuses use substantially smaller batteries, which is advantageous not only from the point of view of costs of their acquisition and subsequent replacement, but also from the ecological point of view. The manufacture of a 1 kWh battery produces roughly 160 kg of CO₂ emissions. The larger the battery, the greater the emissions. The exploitation necessary for the obtaining of basic battery components contributes considerably to the devastation of nature, while the real possibilities for battery recycling are limited, including the so called second life of batteries. Moreover, Europe is often dependent on unstable regimes for the supply of battery cells or



The cheapest electric bus

Trolleybus is the cheapest electric bus on the market. The purchase price of the vehicle is typically by 10–20 % lower than of an electric bus. Moreover, as mentioned already, it is possible to replace diesel/gas buses in a 1:1 ratio, so the total savings are usually even higher. Electricity consumption and life cycle costs are low as well, both for vehicles and the necessary infrastructure. If used on short interval backbone routes, the total costs of a trolleybus can be fully comparable to those of a diesel bus. Generally, the cost difference is the lowest out of all electric bus technologies.

Solution of Cegelec Prague for trolleybuses

Cegelec Prague offers a complete solution for trolleybuses. The company manufactures and supplies the electrical equipment of the new Cegelec Alva line, which uses an integrated container that includes traction section, static converter, and device box. The electrical equipment meets all requirements for the application in trolleybuses. Compared to the previous generation, significant reduction in weight and size, as well as an increase in overall efficiency, was achieved. The new equipment of the Cegelec Alva line is the perfect solution for modern trolleybus transport.

Upon request, Cegelec is able to prepare a study of a transport service of the city, city districts, or specific trolleybuses routes using the technology of dynamic battery charging. The entire trolleybus transport system can also be designed as a turnkey project.



components for their manufacture. Trolleybuses are, also thanks to their smaller batteries, an ideal environmental solution.



Landmark

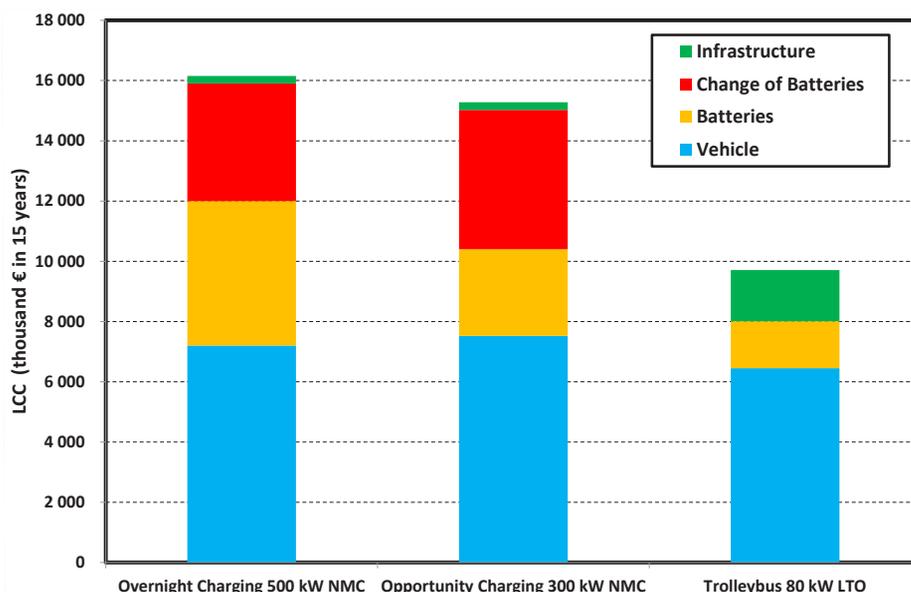
Overhead line and related infrastructure are an opportunity to raise the profile of a city in the eyes of its residents and visitors. The “tracks in the sky” serve as a landmark enhancing the importance of the location through which the trolleybus route runs. It is no ordinary bus. It is a tram without tracks, a means of transport of higher significance and quality. Trolleybuses transform common streets in avenues.



Long service life

Trolleybuses, their batteries, and their infrastructure have a long service life. The service life of the infrastructure, meaning overhead line for charging, power supply points, and substations, amounts up to 40 years. The investments made in building the infrastructure must therefore be seen

Comparison of the LCC costs of electric buses and a trolleybus with dynamic charging for a period of 15 years (in thousand €)



from a long term perspective. The vehicles themselves have typically a service life of 20 years. If the city uses a route fully electrified with overhead line, it is possible, after the end of the battery service life, to run trolleybuses for

the rest of their service life on this type of route – this further greatly reduces costs, as it is no longer needed to purchase another battery for a short transition period.

Trolleybuses with the Cegelec Prague electrical equipment

Cegelec Prague manufactured the first electrical equipment for trolleybuses in 2002 and has since delivered its equipment for approximately 700 vehicles of lengths ranging from 12 m to 24 m in cooperation with various coachbuilders.

Trolleybuses with the Cegelec electrical equipment are operated for instance in Germany, Austria, Italy, the Czech Republic, Hungary, Ukraine, and Poland.

Starting from 2022, Cegelec offers a new electrical equipment called Cegelec Alva, which will be used, among others, in the new SOR TNS 18 trolley-

buses for the city of Prague. The capital city of the Czech Republic closed its trolleybus operation in 1972, but is returning to trolleybuses again because of their clear benefits. A trolleybus is a modern solution for the future of public transport.

