

Introduction of battery electric buses in European cities – economic comparison of novel technological concepts

Within the EU funded project ELIPTIC - Electrification of public transport in cities (EC grant No. 636012), various technological concepts of electric buses are demonstrated and evaluated.

The aim of the studies is to explain the conditions under which the individual concepts can be represented economically (business case) and to show their overall advantages (cost benefit analysis). The respective selected technical configurations (battery, charging infrastructure) are critically examined and technical alternatives for action are provided.

The presented work focuses on the detailed comparison of two concepts of electric buses which are currently demonstrated in several European cities as part of ELIPTIC project:

1. Opportunity-charging of battery electric buses taking energy from local DC tram grid
2. Trolley-Hybrid buses (Buses being fed by overhead catenary and being able to cover parts of their routes by on-board batteries)

The investigations are based on already existing and potential future electric bus network and real operation in different cities and are performed in direct cooperation with the respective public transport operators to obtain meaningful results. A technical, economic and ecological presentation and comparison of the different approaches is the main target of the work. Detailed analyses are performed in order to calculate the total-cost of ownership, the battery is particularly considered regarding the expected lifetime in different operation scenarios.

The results of the study show various advantages and disadvantages and serve as orientation and basis for future decisions for public transport companies, transport authorities and funding bodies •

