Brussels public transport operator STIB worked on two use cases during the ELIPTIC project. The first, “Optimised braking energy recovery in light rail networks”, consisted of improving the energy efficiency of the Brussels tram network, with a focus on braking energy technologies. Tram lines 7, 19 and 94 have been studied in detail through an in-depth measurement process and the development of models and simulations. The second use case, “Progressive electrification of hybrid bus network using existing tram and underground electric infrastructure” consisted of a study undertaken jointly by STIB and VUB (Vrije Universiteit Brussel) to prepare for the pending electrification of the city bus lines. The two main objectives were to understand the operational implications of electrification and to evaluate its financial impact. The results of the study, made in the framework of ELIPTIC, directly influenced three recent electric bus tenders, shaping the vehicle and infrastructure requirements.

The first use case began with measuring the amount of energy dissipated by the tram braking resistors and analysing the energy flows. When applied through an energy model, the results showed that the majority of the braking energy is already reused, with a small portion of energy dissipated via the braking resistors. The study provides a clear message that the main focus to improve the tram network energy efficiency has to be concentrated on vehicle’s auxiliary consumption.

The second use case actions began by thoroughly measuring energy consumption on three bus lines. Based on this, VUB provided an eBus operating model that was used to estimate the entire fleet consumption in order to study the impact on the electrical grid. The study concluded that the grid is sufficiently robust to recharge the entire bus fleet overnight. Other potential impacts on infrastructure and operations were also addressed, helping STIB develop a strategy for its eBus migration.
**FUTURE PLANS**

Future plans for the first use case include projects to study the HVAC performance (including different regulation of heating and cooling temperatures), CO₂ measurements, door-opening regulation and energy consumption reduction at the terminus. Future vehicles will include the possibility for a remote metering system that will allow STIB to balance automatically the energy. For the second use case, key aspects that will be considered in detail during the eBus deployment include grid stability and quality during charging, battery ageing during fast charging, safety aspects and interoperability of charging systems and electric buses.

“The various essential lessons learned during the ELIPTIC project will continue to significantly influence the Brussels bus electrification strategy for the coming decade.”

Benjamin Roelands, eBus Program Manager, STIB, Brussels

---

**CONTACT THE PROJECT COORDINATOR:**
Michael Glotz-Richter and Hendrik Koch  
City of Bremen  
eliptic@UMWELT.Bremen.de

**CONTACT THE USE CASE LEADER:**
François-Olivier Devaux  
STIB  
francois-olivier.devaux@stib.brussels

www.eliptic-project.eu

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 636012.