

Introduction of electric public transport

Autumn 2018



Electric bus charging in Turku. © City of Turku

- Electric buses
- Clean and comfortable public transport services
- Happier customers at a lower cost

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 690699.

Location: Turku, Finland

Organisations involved:

[City of Turku](#)

[Turku University of Applied Sciences](#)

[Western Systems Ltd](#)

[Regional Council of Southwest Finland](#)

What is the solution?

The City of Turku has set the ambitious goal of becoming CO₂ neutral by 2029. Among the measures to reach that goal is the decision to switch to electricity as the primary source of energy in public transportation. This measure introduces a pilot project that is the first step in that process. Before piloting with fully electric vehicles/buses, experiences in using alternative fuels have been gained with hybrid buses.

How does it work?

City of Turku with its subsidiaries Turun Kaupunkiliikenne Oy (the public transport operator) and Turku Energia (power supplier) cooperate in the pilot stage of adopting electric vehicles (EVs) to the local and regional traffic. The planning started as a CIVITAS ECCENTRIC early measure, following the decision of the executive board in June 2015; procurement begun in September 2015. The procurement consisted of six electric buses, quick charge stations for each end of the line and an overnight charging station for the depot. Trials started in October 2016 after the delivery of the first vehicles. A total of 94 drivers were trained in using the new buses.

The pilot also includes an EV research project in cooperation with Turku University of Applied Sciences. The goal of the project is to identify and propose solutions for technical and operative bottlenecks of expanding electric bus operations. The research covers a wide variety of topics:

- Specifications and procurement of electric buses and the charging infrastructure.
- Innovative business and contract models for (service) procurement.
- Adapting bus line planning and optimising models for EV operation.
- Finding solutions for accurate measurement of energy consumption.
- Using data from onboard and charging systems to plan future choice of buses.
- Effect of driver training to cost of operation.
- Reliability and total cost of ownership (TCO) of EVs versus diesel vehicles.

Expected results

The main goal of this measure is to provide reliable data to enable planning and future political decisions concerning the extension of electric bus operations. Based on the pre-studies carried out, the pilot is likely to indicate electric buses as a cost-efficient and reliable alternative to diesel buses, and a solution to reach CO₂ neutrality. Other emissions and environmental noise should be significantly reduced as well.

The pilot is expected to generate, increase and maintain awareness of, demand for and satisfaction in electric powered bus services, and sustainable mobility in general. Another significant goal is improving drivers' working conditions by reduced levels of noise and vibration in the EVs. Ultimately, as a combined result, the measure is expected to lead to a decision to extend services operated by electric buses.



THE CIVITAS INITIATIVE
IS CO-FINANCED BY THE
EUROPEAN UNION

Business model

Timeplan:

Research and planning phase: Nine months - from September 2016 to October 2017

Procurement and implementation: 15 months - from November 2016 to January 2018

Demonstration and Monitoring: 15 months - from February 2017 to the end of April 2019

Conclusions and Recommendations: 16 months

Contact details

Roope Virta

Project Coordinator

City of Turku

Email: roope.virta@turku.fi

Website: <https://civitas.eu/eccentric/turku>

Living lab area in Turku: <https://civitas.eu/eccentric/turku>