

<https://doi.org/10.7250/CONNECT.2024.001>

ELECTRIC VEHICLE CHARGING INFRASTRUCTURE STUDY FOR APARTMENT BUILDINGS

Heiki LILL

Institute of Forestry and Engineering, Estonian University of Life Sciences, Kreutzwaldi 56/1, Estonia

Corresponding author. Email address: Heiki.lill@emu.ee

Abstract – Changes in the engine type of cars aimed at climate goals also have an impact on the habit of electricity consumption at home. Charging electric cars from the residential grid also increases the total electricity consumption of the residential building. If all apartment owners in an apartment building charge their electric car at the same time, it may create a situation where the main protection of the apartment building is activated. The purpose of this research is to identify possible options to avoid this problem, based on various real-life data. For example, adding an energy storage to the electrical system of an apartment building is seen as one solution. Also supplement of an energy management software to the electrical and battery bank system enables residents to schedule and prioritize their electric car charging times to avoid simultaneous high-demand periods. This system can also be used to optimize electricity distribution and consumption in apartment buildings under volatile electricity price conditions.

Keywords – *Energy Management; energy storage; renewable energy; smart grid*