

Exjobb förslag till MMSX Välj: 15:

Elektrisk laddning av fordon (electric-charging of vehicles)

Bakgrund:

The need for sustainable transport has increased the societal interest in development of electrical vehicles as an approach to decrease the environmental impact of transport. According to statistics the transport sector stands for approx. 1/3 of CO₂ emissions in the world. In addition to CO₂ emissions, transport activities adversely affect the airquality regionally as well as locally (SMHI, 2020). However, development of electrical vehicles requires establishment of infrastructure for charging.

In order to meet the societal interest in sustainable transport, the infrastructure of terminal cities like Borås - Viared needs to be developed. In order to meet electrical capacity requirements in logistic cities, new innovative infrastructure solutions for charging will be required. Such solutions should not only facilitate charging of long haul vehicles, but also consider local production of electricity for charging of local transport vehicles (Klimatpolitiska rådet, 2019).

Frågeställning:

The main purpose of the two student projects is to evaluate economic sustainability in establishment of infrastructure for charging of vehicles related to logistic city Viared. To meet the main purpose, the theses should explore:

Thesis 1 Physical infrastructure and capacity for charging of vehicles

- Physical establishment of charging stations for vehicles (related to the existing transport infrastructure and local market or charging at Viared)
- The establishment of solar-panels on available terminal-roofs for local production of electricity (which can be used in charging of vessels).
- How to store locally produced electricity produced by solar panels on terminal-roofs.
- The amount of electricity needed from electrical producing companies, which is combined local produced electricity to meet charging requirements of vehicles.
- The electric capacity needed for charging of different types of vehicles.

Thesis 2 Cost-benefit, ROI of investment in infrastructure for charging of vehicles

- The amount of electricity needed and costs for buying electricity needed from electrical producing companies, which is combined local produced electricity to meet charging requirements of vehicles.
- Costs and revenues (e.g. ROI) linked to establishment of infrastructure for charging at Viared which use solarpanels.
- The electric capacity needed for charging of different types of vehicles.

Metod:

Literature review, Statistical analysis, observations, interviews

PLEASE OBSERVE: Good analytical skills, mathematical skills, and skills in MSC Excel is required (and will tyhus be checked).

Handledare:

Henrik

Ringsberg

henrik.ringsberg@chalmers.se