ÖBO – battery storage

Participants: ÖBO, FerroAmp, Nilar
Category: Information and communications technology integration
Time plan: 2016 – 2018
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Location: Örebro
Possible to visit: Yes

Background

Around 2004, the public housing company ÖBO saw an opportunity to assume a more active role in the energy landscape of Örebro and adopted an ambitious strategy to reach this goal. One of the main features of this strategy is to see the entire building population of ÖBO's as a whole and treat it as one system, instead of making particular solutions for each building. As a part of this ambition, ÖBO started the project CODES in 2016, where energy storage in batteries were tested as a part of the ÖBO energy strategy.

Implementation of the project

In the project, batteries were installed at seven locations throughout Örebro in different buildings owned by ÖBO. The total capacity of these batteries was around 120 kW with 135 kWh of energy storage, which after the project has been increased to eleven installations which can deliver power at roughly 200 kW. In addition to the batteries themselves, a control system was installed, that serves a number of purposes. To start with, it made the batteries work as one single energy storage, even if the batteries were installed at different locations throughout the city. In addition to this, the system is set up in a way that it can collect relevant data about the health of the energy system. ÖBO has labelled this feature "Estate EKG".

The battery storage in addition to the control system allows ÖBO to do a number of things. They can move locally produced electricity in time, to use it when the demand is larger. This includes shaving of the peaks of power demand from the external grid, which can be beneficial for the balance of the entire power grid. ÖBO also is able to provide the national grid operator with services such as frequency stabilization.

Benefits

Benefits of the battery storage includes a better usage of energy in the ÖBO residential buildings and better control of how healthy the energy system is, as well as the ability to shave load peaks and provide services to the national grid. Together, these features allow for better energy efficiency and makes the power grid more stable.

Scalability

The system has worked well at 120 kW and will be extended to allow for 200 kW of energy storage. There is no reason to believe that the system itself is not scalable well beyond that.

Interoperability

When the system is installed in its entirety, it is interoperable with the grid without any further modifications. It is also possible to integrate with solar power generation and vehicle to grid.

Investment horizon

The investment has proved more valuable than initially thought, as it proved to be even more versatile and could provide more services than the ones envisioned. As the system also allows for selling services such as frequency stabilization, the payback time has been shorter than expected.

International potential

With an increase in urbanization and electrification, the power demand in densely populated areas will continue to increase throughout the world. The philosophy and technology in this project, is likely to serve as a model both in Sweden and internationally.