CINELDI
Centre for intelligent electricity distribution
- to empower the future Smart Grid

Norwegian Centre for Environment-friendly Energy Research

Type innovasjon:
Nytt produkt tilgjengelig fra NTE og ENOCO AS

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Anvendes av/ nyttig for:

Aktør/ formål	X
DSO, TSO	x
Teknologileverandør	x
Medlemsbedrift	
Markedsoperatør	
Forsker/ konsulent	x
Undervisning	

Kundene etterspør ikke bare billig strøm, men også smarte løsninger, opplyser Hatling fra NTE:
"Ved å ta i bruk smarte løsninger kan borettslag etablere mange ladepunkt uten problem med kapasiteten."

EV Power Share Charging System

This is a building-integrated electric car charging system with "Power Share" where there are a large number of cars that are charged within an area. The system has its own control unit that logs use/power and which has communication with the EOS (Energy Monitoring System) or SD system (Central Operational Control System). Customers demand not only cheap electricity, but also smart solutions, says Hatling from NTE: "By using smart solutions, housing associations can establish many charging points without any capacity problems."

Challenge
Charging electric cars in an area cause major power surges both locally and in the grid. The limitation can be the respective circuit, master fuse or capacity in a nearby transformer.

Solution
A system incorporating POWER SHARE means that power for charging can be regulated dynamically, based either on a maximum value for the respective circuit or dynamically, based on input signals that regulate the maximum value for all cars. The system has been installed at Risvollan Housing Association, and 768 charging points are planned for electric cars in parking garages and for parking spaces.

Potential
Within Risvollan Housing Association, such a large number of charging points could theoretically represent a power demand of 5 MW. With the Power Share solution, it will be possible to control the maximum load either statically by setting a fixed maximum value, or dynamically based on other consumption for the same master fuse, data from smart transformers or the requirements in the network in general based on the published ACOPF algorithm: "THE PROPOSED MULTI-PERIOD ACOPF METHODOLOGY". The EV Power Share Charging System which is on level 9, is already a product commercialised by a company in the Smart Grid Services Cluster (SGSC), based on an algorithm developed by CINELDI.

Reference in CINELDI
The solution is related to issues in the article: "Integration of PEV and PV in Norway Using Multi-Period ACOPF - Case Study" and the paper "Optimal Scheduling of Plug-in Electric Vehicles in Distribution Systems Including PV, Wind and Hydropower Generation". The concept can be integrated with a server that supplies control data according to the ACOPF algorithm.

The article is published under Work Package 5 in CINELDI: Flexible resources in the power system.