

Göteborg Parkering – Strategy for EV charging

Participants: Göteborg Parkering, Göteborg Energi and other public stakeholders in Gothenburg

Category: Electric vehicle charging infrastructure

Time plan: Started in 2016

Contact person: Albert Shehu and Johan Olofsson, Göteborg Parkering

Location: Gothenburg

Possible to visit: Yes

Background

Around 2015-2016, it became apparent to Göteborg Parkering that there was a need for a strategy on how to meet a rising demand for vehicle charging in the city. One challenge that was apparent from the start, was that planning regarding electric vehicle integration often start from the premise that electric cars should be treated exactly as petrol or diesel cars. That is, energy is stored into the car quickly, used up in about a matter of days and then the procedure is repeated. Göteborg Parkering instead chose to look at the system from another point of view, and to build it around the actual circumstances that apply for electric cars and their use. For example, most cars are used for relatively short trips and according to a predictable pattern. Furthermore, they are parked a substantial part of the time, and the need for a swift energy transfer to the car is not necessary in these cases.

Another choice made by Göteborg Parkering, was to use as much of the already existing infrastructure as possible. Energy is in itself not a problem over time, but there might be issues regarding power and capacity during peak loads and if cars should be charged quickly. Instead of changing the dimensioning of the grid to accommodate these particular cases, Göteborg Parkering decided to first investigate what could be done with the grid that already exists, and then take measures to increase the dimensioning where needed.

Implementation of the project

Göteborg Parkering started a procurement process in 2016, where they specified demands on the charging points to be bought. They should not be too costly, they should have functionality to balance load and an intelligent control system. Another important aspect was that the charging points should be able to charge the cars at power outputs as low as 0,5 kW. The reasoning behind these specifications was that the charging points should be possible to be built within the existing infrastructure. For example, this allows for four charging points at an existing 16A fuse. Then four cars can charge at 0,9 kW simultaneously, with a higher power output per car if there are one, two or three cars. With these chargers, Göteborg Parkering promises “five kilometers charge every hour” without the need for excess dimensioning of cables and extra investments in infrastructure.

In addition to this core of slower chargers, there are a few faster chargers throughout the city. These are a bit more costly for the user, and are intended to be used when a customer for example is going to make a longer journey or for some other reason needs to recharge the battery quickly. Göteborg Parkering also has an app and the digital infrastructure that is needed to utilize the charging infrastructure in an optimized manner.

Benefits

The main benefit of Göteborg Parkering’s way to think from a system perspective and from the traits of electric cars, is that they have been able to provide charging to the public without costly modifications to the infrastructure. By using the motto “5 km charge per hour” and communicating this to the public, they have also set a standard that allows for the existing grid to be utilized in an effective manner.

Scalability

Göteborg Parkering sees no upper limit to the scalability of the system. With a solid foundation and a clear-cut idea on how to provide charging, they are prepared to expand the system at the pace that is necessary when electric cars become more and more common.

Interoperability

One of the main ideas in the strategy has been to make charging as interoperable as possible with the existing infrastructure.

Investment horizon

While the system in itself has been costly, the strategy to utilize the existing power grid and build the entire charging system with afterthought, has made it considerably more affordable than could have been the case. The high degree of scalability will also make future investments more efficient.

International potential

The main feature of how Gothenburg work with electric vehicle charging, is the long-term strategic thinking and backcasting approach of how cars are used and what needs that must be satisfied for electric cars also to be used like this. This could serve as an inspiration for other cities around the world.