

Electric truck ready for dynamic wireless charging on public roads in Sweden

Stockholm 200220

ElectReon has successfully managed to charge a fully electric 40-ton truck and trailer wirelessly at a test facility in Sweden. The next step is to charge the truck through dynamic wireless power transfer on a public road at Gotland, Sweden.

The Smartroad Gotland project is the world's first wireless electric road system (ERS) for trucks and buses on public roads. ERS supports electric power transfer to vehicles while in motion and has great potential to decarbonize the transport sector and to increase energy efficiency with a reduced need of batteries. Smartroad Gotland is supported and funded by the Swedish Road Administration and is led by ElectReon AB, a Swedish subsidiary of the Israeli company ElectReon Wireless. The goal of the project is to prove that ElectReon's technology is ready for commercialization and to provide decision makers with knowledge necessary for large-scale ERS deployment.

Performed tests

ElectReon's wireless power transfer solution has previously been implemented and tested at the company's test facility in Beit Yanai, Israel. The company has now built a test facility near Stockholm at the facility of NCC, one of the largest construction companies in the Nordic region and one of ElectReon's partners in the demo project Smartroad Gotland.

The purpose of the new test facility was to integrate and test the full ElectReon system with management unit, coils, and receivers before operations starts on the public road of Gotland. Five receivers were installed on the trailer of an electric truck, Sweden's first fully electric 40-ton truck. The test took place in winter conditions, with temperatures around zero C.

The results showed that the system successfully charged the electric truck statically through wireless power transfer. The system was activated and supervised remotely enabling management of all relevant charging and metering parameters. The receivers transmitted about 20 kW each with an efficiency of about 90 percent.

ElectReon recently received a review on electromagnetic compatibility (EMC) tests that was performed in a lab environment in Tel Aviv. The review was done by five Swedish agencies and showed that the system is ready to be operated on public roads. To verify these results in a real environment, RISE Research Institute of Sweden performed a EMC and EMF test on the test site. The preliminary results verified the previous satisfactory results from the lab.

Great interest in the technology

The successful integration on the test track has received great attention. ElectReon hosted an Indian delegation at the test facility, which included the Indian Minister of Road Transport and Highways, as well as the Indian Ambassador. ElectReon has also presented the system

to Swedish authorities and other stakeholders at the test site. In addition, tests were well received on the Tel Aviv stock exchange with Electreon evaluation exceeding a billion NIS.

Next step

With the integration tests now conducted, the truck is ready for dynamic charging on public roads in the beginning of March. This will mark the world's first truck operations on a public wireless electric road system. The truck will run on the first stretch of electric road that was prepared in November 2019. During 2020 further infrastructure will be deployed to a total of 1.6 km electric road on a 4 km road stretch.

Upcoming projects

ElectReon's vision

Quotes:

NCC

"We have together with Electreon created a unique test facility for integration and EMC/ EMF tests at our premises. It has been a great experience, and we are amazed by the great results proven by the technology." - Stefan Hörnfeldt, Business developer NCC

Electreon

"It is a major milestone for us to have the first heavy truck available for Smartroad Gotland. With tests conducted both for EMC, EMF and general vehicle inspection and controls, we have proven that there is no major hurdle on the vehicle side for the introduction of the new technology. We hereby also can confirm that the modular system works for all types of vehicles, which really is a unique feature." – Håkan Sundelin, project manager of Smartroad Gotland and the Regional director of the Nordic countries, ElectReon AB

Trafikverket (Swedish Transport Administration)

"We are happy to see the positive test results and are really looking forward to the next step, the dynamic wireless charging on the public road at Gotland. This is an important step towards reaching fossil free transportation in Sweden." - Jan Petterson, Program manager electric roads

Partners of the Smartroad Gotland project

Caverion, Dan transport, Eitech, Electreon AB, Flygbussarna, GEAB, Gotland GPe Circuit AB, Gotlands Bilfrakt, Hutchinson, Matters Group, Eksjö Maskin & Truck, Region Gotland, NCC, OSAB, RISE, Science Park Gotland, Swedavia, Trafikverket, World Ecological Forum.

How the technology works

The system consists of three key elements; the *coil* transferring energy to a *receiver* on the vehicle and a *management unit* controlling the process. The management unit is connected to the electric grid and transfers energy to copper coils buried 8 cm below the roadway, when a valid vehicle is exactly above. The energy is wirelessly transferred from the coil to a receiver mounted underneath the vehicle. The system makes sure only valid vehicles

receive energy and keeps track of how much each customer should pay. A passenger car needs one receiver and a 40-ton truck would use five, but utilizing the same infrastructure.

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More press images: <https://drive.google.com/open?id=1q4e7MShkZ6HUH1mHA-RmJy18KfNFixIU>

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