



Electric vehicle charging maseru

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As part of the field test, electric car pioneer Nissan has equipped 13 homeowners from all over Germany, who already have a photovoltaic system, with a 100% electric Nissan LEAF and a suitable charging station. The aim is to make the best possible use of the household's supply of self-generated solar power, relieve the public power grid and at the same time reduce the operating costs of the electric vehicle.

Making use of the Nissan LEAF's unique bidirectional charging capability, often referred to as vehicle-to-grid technology (V2G for short), participants can use the vehicles to store solar energy generated on the roof of their house in the battery and, if necessary, transfer it to the household or feed it into the public grid.

Nissan launched the 'i-rEzEPT' project together with Bosch.IO and the Fraunhofer Institutes IAO and IFAM. The venture is also supported by the Federal Ministry of Transport and Digital Infrastructure as part of the electromobility funding guideline with a total of €2.39 million.

'Electric cars should be charged when electricity from wind or solar energy is available', says Stefan Sonntag, Program Manager E-Mobility at NOW GmbH, a subsidiary of the Federal Ministry of Transport. 'i-rEzEPT is testing just that and enables using the energy not only for green driving, but also for powering your own home.'

The interaction between the Nissan LEAF and the domestic power grid is managed by a local energy manager from the project partner Bosch.IO and is based on the Bosch IoT Gateway Software. It ensures, for example, that the range of the vehicle is only slightly affected, as a maximum of 10 to 30 per cent of the battery capacity is used to power the household. If necessary, a full charge of the vehicle can also be prioritised – for example, before starting a longer journey.

The data obtained on electricity usage is evaluated anonymously by the Fraunhofer Institutes IFAM in Bremen and IAO in Stuttgart. In this context, Fraunhofer IAO uses a data platform which was developed specifically for this purpose and determines forecasts for the availability of the vehicles. 'The data is necessary to obtain a scientifically supported statement about the business model of bidirectional charging and to identify potential user groups', says Stefan Lösch from Fraunhofer IFAM.

'Especially due to the fact that more and more people are working from home offers great potential for using renewable energy efficiently and reducing emissions in transport', adds Vincent Ricoux from Nissan Center Europe. 'We therefore expect interest in this technology to continue to grow in the future.'

The project name 'i-rEzEPT' stands for 'intelligent regenerative electric vehicles for

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self-power maximisation and primary control market participation". It aims to further promote the spread and acceptance of electric vehicles and also highlight the role that electric cars can play in stabilising public and private power grids.

Until the realisation of an affordable V2G system for users, the legal basis in particular is still outstanding. In order for the systems to be economically worthwhile for the user, higher subsidies for charging infrastructure and the charging energy management system are also necessary in order to be competitive with stationary battery storage systems.

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Web: <https://sumthingtasty.co.za/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

