

PRESS RELEASE

TenneT, The Mobility House and Nissan work together on stabilising the power grid

13 March 2018. The increase of renewable energies and e-mobility is creating a challenge for security of supply: the key is to coordinate power generation and power consumption and, at the same time, ensure the stability of the power grid. The transmission system operator TenneT, the energy service provider The Mobility House and the automotive manufacturer Nissan have started a joint project to investigate the ways in which electric cars can contribute towards solving this problem. In addition, the project will develop and evaluate suggestions for regulatory guidelines for vehicle-to-grid.

In the project, TenneT, The Mobility House and Nissan are making use of the potential of the batteries in electric vehicles for storing locally produced electricity and to feed it back into the grid to stabilise the grid. "This pilot project complements our block chain projects because it taps new channels for flexibly controlling renewable energy production that is strongly dependent on the weather. We use e-vehicle batteries, which can store electricity as well as to feed it back into the grid, for redispatch, in other words, to dispel transmission bottlenecks in the grid. That takes the strain off the electricity grid and helps us to limit expensive curtailment of wind turbines. This allows the project to supplement the grid expansion and become an important building block for the energy transition," says Lex Hartman, Member of the Board, TenneT TSO GmbH. Nowadays, due to the increasing decentralized infeed of renewable energy sources, transmission bottlenecks are becoming increasingly common in the power grid. To prevent such bottlenecks, TenneT interferes in the production of conventional power stations and renewables (redispatch, grid reserve, wind power curtailment) and thus ensures that electricity transport remains within the limits and capabilities of the grid. In 2017, the costs for this were around a billion euros (TenneT control area). They are ultimately borne by electricity consumers through grid charges. The initial results from the project are expected to be available in the first quarter of 2019.

During the project phase, Nissan electric vehicles are being used as mobile energy storage systems in the TenneT control area in Northern and Southern Germany to directly reduce local overloads in the power supply or power demand. After a successful implementation of the project, Nissan e-vehicles could be used for this purpose right across Germany. The load and energy management software developed by The Mobility House enables automated control of the vehicle charging and discharging process. The key prerequisite for this is the capability for bidirectional charging; i.e. the e-vehicle has the ability not only to draw energy from the grid but also to feed energy back into the grid as required. The result is that e-vehicles can directly provide grid-stabilising energy supplies. "The battery storage cells in e-vehicles provide a significant opportunity for optimizing the grid. They create a decentralised storage option for excess renewable energies. An intelligent load control system supports the grid stabilisation and provides significant cost savings for end users," explains Thomas Raffener, CEO and founder of The Mobility House.

The automotive manufacturer Nissan has been working together with The Mobility House on the intelligent integration of e-vehicles in the power grid for several years. Francisco Carranza, Managing Director Nissan Energy, Nissan Europe said: "Nissan electric vehicles can be plugged into the grid and support the transmission and distribution to make the grid more sustainable and more stable. At Nissan, we have been looking at ways to use electric

vehicles beyond traditional mobility, turning them into clean mobile energy hubs. Today, our electric vehicles are not just transforming the way we drive, but also the way we live.”

The project combines the experience and expertise of the three partners. At the end of this project, further commercial products and services will be available to the owners of e-vehicles.

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About “The Mobility House”

The Mobility House wants to support the energy transition and enable an emissions-free future. With our innovative charging and energy storage solutions, we are helping electrical mobility to make a breakthrough. Our technologies allow us to use e-vehicles as a consolidated swarm storage system as well as connecting stationary storage devices consisting of vehicle batteries to the electricity grid.

The Mobility House was set up in 2009 and supports all major automotive manufacturers in more than 20 countries worldwide from its locations in Munich, Zurich and San Francisco.

About TenneT

TenneT is a leading European electricity transmission system operator with its main activities in the Netherlands and Germany. With almost 23,000 kilometres of high-voltage connections we ensure a secure supply of electricity to 41 million end-users. We employ approximately 4,000 people, have a turnover of EUR 3.9 billion and an asset value totalling EUR 20.4 billion. TenneT is one of Europe’s major investors in national and cross-border grid connections on land and at sea, bringing together the Northwest European energy markets and enabling the energy transition. We make every effort to meet the needs of society by being responsible, engaged and connected. **Taking power further**

About Nissan in Europe

Nissan has one of the most comprehensive European presences of any overseas manufacturer, employing more than 17,000 staff across locally-based design, research & development, manufacturing, logistics and sales & marketing operations. Last year Nissan plants in the UK, Spain and Russia produced more than 640,000 vehicles including award-winning crossovers, commercial vehicles and the Nissan LEAF, the world’s most popular electric vehicle. Nissan’s Intelligent Mobility vision is designed to guide Nissan’s product and technology pipeline and this 360 degree approach to the future of mobility will anchor critical company decisions around how cars are powered, how cars are driven, and how cars integrate into society. Nissan is positioned to become the most desirable Asian brand in Europe.