

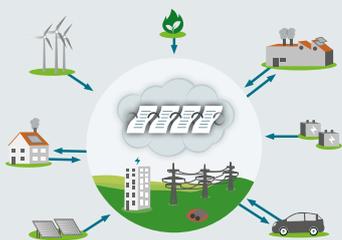
INNOVATE BUSINESS

A digital future – pilot projects to enhance system flexibility

Digital technologies are paving the way for a decentralised energy world. New developments, such as blockchain technology, make it easier to track energy around the grid. This is allowing market participants to make fast and safe energy transactions, thereby supporting the balance and boosting flexibility in the system.

Lex Hartman, Member of the Executive Board TenneT: *“With blockchain technology a virtual power plant can be created that consists of millions of prosumers.”*

The numbers of electric cars and solar panels with small, individual batteries are growing rapidly. Together these can upload or download substantial amounts of electricity, helping to balance highs and lows in the electricity supplied from wind or solar. For this system to work, the individual batteries must be linked to an ‘aggregator’, which connects households to the TSO. The aggregator makes electricity available to households through smart contracts and price incentives. It stores or releases battery charge, depending on how much is being fed in and withdrawn. One battery won’t make much of a difference to a national electricity grid, but a few million could do so. In this way, by so-called ‘crowd balancing’, individual households can help the TSO to balance the grid.



Adjusting and expanding our current business model to accommodate the more volatile flows of renewable electricity is crucial. To this end, TenneT announced two pilot programmes involving the use of battery capacity through aggregators in 2017.

In the Netherlands, TenneT has started a pilot with Vandebron, an aggregator operating a network of private electric car batteries. To help TenneT balance the grid, Vandebron has developed a smart system to make available the capacity of its customers’ car batteries, without compromising on battery availability. In this way, this pool of electric vehicles provides a secondary supply of power.

Jean-Baptiste Cornefert, Managing Director of sonnen eServices: *“Already today decentralised home batteries can help to stabilise the German electricity grid. Now we are taking an important next step with TenneT, to use these batteries for redispatch measures.”*

In Germany, we started a cooperation with sonnen eServices, which operates a network of residential smart batteries. Frequently, wind parks in the north of Germany produce huge amounts of electricity. However, consumer demand in the north is lower than in central and southern parts of the country, which leaves surplus energy that needs transportation. As the grid has insufficient capacity to carry it to these regions, alternative solutions are needed. Rather than switching off turbines in the north to avoid regional overload of the grid, and lose valuable green energy, the electricity can be redispatched to clusters of individual residential batteries. This stores the excess electricity for a period before making it available again for the grid.