



Press release
07 November 2019

Right of way for green electricity by intelligent charging.

BMW i and grid operator TenneT pilot new type of charging strategy for electric vehicles using the BMW i3 – Digital integration will turn electric mobility into a mainstay of the energy revolution – Customers can reap the benefits of reduced costs.

Munich. The BMW Group is working in close collaboration with power grid operator TenneT to devise groundbreaking solutions that will turn electric mobility into one of the mainstays of the energy revolution. An intelligent charge control system developed for BMW Charging can help to adapt electric vehicle charging in a way that keeps the power grid stable and makes optimum use of energy from renewable sources. Following successful deployment in the USA, the technology's practicability has now also been demonstrated in Germany as part of a subsequent pilot project. Providing the platform for this new solution is the connectivity technology already included as standard in the all-electric BMW i3.

The BMW Group is aiming to offer its customers ways of charging their electrified vehicles as easily and cheaply as possible while minimising the associated emissions. The digital integration of electric vehicles into the power grid will make it possible to adjust vehicle charging with customers' mobility requirements, grid stability and the availability of renewable energy all factored in. Intelligent charge control can therefore play a role in preventing power grid congestion and give priority to green electricity at the same time. As and when the customer's mobility schedule allows, charging of suitably equipped electric vehicles can be briefly decreased – in the event of an electricity supply shortfall, for example – in order to reduce the load on the grid. Charging of the high-voltage battery will resume as soon as the supply bottleneck has been alleviated, ideally at a time when sufficient reserves of wind or solar energy have accumulated.

Intelligent charge control responds to signals from the grid operator.

The system of charge control developed for BMW Charging acts as a link between car and power grid. It registers the grid requirements signalled by the operator, making it possible to control the charging of plugged-in electric vehicles for optimum results – whether the vehicle is hooked up to the electricity grid at a public charging station, via a BMW Wallbox or using a domestic power socket.

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The signals are processed by the digital charge control technology and the vehicle's connected electronics.

In the latest pilot project, the team succeeded in recording and processing signals from grid operator and project partner TenneT that indicated an imminent grid overload. This allowed charging to be temporarily decreased in selected BMW i3 cars in response. Electricity from renewable sources could then be integrated into the grid to optimum effect and there was no need to use backup power plants running on fossil fuels. The results from the pilot project represent further progress towards digital integration of electric vehicles into the power grid and pave the way for implementing this solution on a larger scale.

Electric mobility: turning a problem for the energy revolution into a solution.

As the number of electric vehicles on our roads continues to grow, so does the amount of electric power needed to fuel individual mobility. Considered in terms of total requirements, however, electric mobility is a relatively small factor. Independent studies predict that in Germany, for example, a fleet of two million electric vehicles would only increase electricity demand by around one per cent.

At the same time, intelligent charge control means electric mobility can help grid operators handle new challenges arising from the increasing input of renewable energy. These centre on precisely balancing supply and demand – i.e. power generation and consumption – both geographically and in terms of quantity. Wind electricity generated in the north of Germany, for instance, must be able to reach consumers in the south. This is made more difficult when the grid is already working at maximum capacity. Without intelligent charging, this can lead to congestion that has to be cleared rapidly. So, if a particular region is at risk of an electricity shortage, the usual response is to increase output from coal- or gas-fired power plants that can be brought on line at short notice.

Intelligent charging can help to keep the price of electricity stable.

Known as “redispatching”, these interventions in the power generation network generate costs in the region of €500 millions a year in Germany alone – and these must be met by the power grid operators. Intelligently controlled charging



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holds potential to cut these costs, as briefly decreasing vehicle charging eliminates the grid congestion, allowing wind power to flow smoothly and dispensing with the need to use fossil energy in power plants.

As integrating electric vehicles into the power grid and implementing intelligent charge control reduces redispatching costs, it can also help to limit expansion of the cross-regional network of power lines – and thereby restrict electricity price rises.

Contributions made to stabilisation of the power grid also provide the basis for energy-linked business models, as owners of electrified vehicles can actually earn money through intelligently controlled charging. This represents a milestone on the road to realising the BMW Group's vision of offering electric vehicle drivers electricity for charging their cars that is both free and generated with zero emissions.

An all-encompassing electric mobility offering.

The BMW Group has been running a precursor to the pilot project in Germany for several years already. The ongoing BMW i Charge Forward initiative in California has seen intelligent charging control – according to the needs of both customers and the power grid – undergoing practical trials under everyday conditions with a fleet of over 300 electric vehicles. The local grid operator has backed the scheme with financial rewards. And as the drivers of the electric vehicles participating in the scheme ultimately pocket the bonuses, this is a win-win situation for all involved.

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The BMW Group

With its four brands BMW, MINI, Rolls-Royce and BMW Motorrad, the BMW Group is the world's leading premium manufacturer of automobiles and motorcycles and also provides premium financial and mobility services. The BMW Group production network comprises 31 production and assembly facilities in 15 countries; the company has a global sales network in more than 140 countries.

In 2018, the BMW Group sold over 2,490,000 passenger vehicles and more than 165,000 motorcycles worldwide. The profit before tax in the financial year 2018 was € 9.815 billion on revenues amounting to € 97.480 billion. As of 31 December 2018, the BMW Group had a workforce of 134,682 employees.

The success of the BMW Group has always been based on long-term thinking and responsible action. The company has therefore established ecological and social sustainability throughout the value chain, comprehensive product responsibility and a clear commitment to conserving resources as an integral part of its strategy.

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