Press release from 20 March 2025

Decentralised flexibility from electric vehicles: intelligent charging in the standard load profile is successful

- Pilot project by TransnetBW, Audi and IE2S shows that efficient and economical integration of decentralised flexibility into the energy markets is possible
- Flexibilisation potential can be exploited through intelligent charging in the standard load profile
- Smart meters or dynamic electricity tariffs are not necessary

An intelligent metering system (smart meter) has so far been considered a prerequisite for the grid-friendly charging of electric vehicles. The pilot project by TransnetBW, Audi and IE2S proves that it is possible to utilise renewable energies economically even without smart meters.

Without a smart metering system, grid-friendly and intelligent charging of electric vehicles is currently almost impossible. Transmission system operator TransnetBW, car manufacturer Audi and consultancy firm Intelligent Energy System Services (IE2S) have therefore developed an innovative solution: intelligent charging in the standard load profile (iSLP). This makes it possible to utilise surplus electricity from renewable energies efficiently and offer electric vehicle owners a revenue opportunity - without the need for smart meters or dynamic electricity tariffs.

Dr Rainer Pflaum, Member of the Management Board of TransnetBW, explains: „With our smart charging approach, TransnetBW, Audi and IE2S have impressively demonstrated that it is possible to efficiently and economically integrate decentralised flexibility into the energy markets. If the results of our pilot project are extrapolated to the year 2035, smart charging of electric vehicles could save around 2 billion euros and avoid around 1 million tonnes of CO2 per year in Germany."

The concept was first simulated with more than 800 digital vehicles in a test environment and then successfully trialled with 20 real Audi electric vehicles. Smart charging cut electricity costs for charging by 62% and reduced CO_2 emissions by 36%.

Alexander Kupfer, Project Manager Surplus Charging at Audi, emphasises: „Charging should be as easy and convenient as possible for our customers. Thanks to intelligent charging, they benefit not only from CO2-optimised charging but also from particularly favourable prices. The simulation with our partners TransnetBW and IE2S is therefore a valuable opportunity for us to verify the technical feasibility."

In addition to economic advantages, the regulatory implementation was also examined in the project. An alternative balancing concept was tested in which deviations between actual electricity consumption and the standard load profile are balanced via the local grid operator's differential balancing group.

Dieter Kunstmann, Senior Manager at IE2S, summarises: „Our joint solution proves that controlled charging is not only technically feasible, but also quickly scalable. By directly controlling the electric vehicle, the system can be seamlessly integrated into the user's everyday life - without any dynamic price tariffs, additional systems or intelligent metering equipment. This is a decisive step towards simpler, more efficient and more sustainable electromobility."

The pilot project provides valuable insights for further regulatory development. In the future, grid-supportive charging and the provision of control reserve by electric vehicles could play a decisive role in the energy transition.

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About IE2S:

IE2S supports clients as a specialised consulting firm tackling strategic and technical challenges in the energy and mobility transition. As an independent joint venture of TransnetBW and MHP, IE2S combines expertise from the automotive and manufacturing industries with deep knowledge of digitalisation and energy markets.

With over 70 experts and more than 300 successfully completed projects, IE2S drives the physical and digital energy infrastructure forward, delivering sustainable value by addressing ecological, economic, and social dimensions. Together, we work towards a better future for current and future generations.