



When wind and solar power take a break Bosch and EnBW launch new battery storage system

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- ▶ Partnership between Bosch and EnBW brings flexibility to power supply
- ▶ Minister President Winfried Kretschmann starts up the battery storage system on the power plant site in Heilbronn
- ▶ 768 lithium-ion battery modules maintain power grid frequency stability

Heilbronn/Stuttgart, Germany – How can we stabilise power that is generated by renewable energy sources and therefore is subject to fluctuations caused by the weather? That is undeniably one of the key questions at the heart of the energy transition. Efficient battery systems will play an important part here going forward, as they can be used to compensate for imbalances in the amount of energy being generated and the amount of energy required by consumers. And now, within the scope of their joint venture Kraftwerksbatterie Heilbronn GmbH, Bosch and EnBW have come up with the answer. Their joint efforts have brought about the creation of an energy storage system for primary control reserve at the EnBW power plant in Heilbronn. Transmission grid operator require primary control reserve power to even out any frequency fluctuations in its electric power grid. This energy storage system is among the first of its kind to be integrated into the control technology of a major power plant in Germany. The energy storage system in Heilbronn consists of 768 lithium-ion battery modules. It has a maximum power output of around 5 MW and an installed storage capacity of 5 MWh.

Battery storage system ensures flexibility and power grid stability

"We have so much research and innovation potential at our disposal as far as the energy transition is concerned. It is down to us to use that potential and make advancements," said Minister-President Winfried Kretschmann at the official commissioning of the battery storage system. "The battery storage system is a prime example of this. It opens up new levels of flexibility that will allow us to guarantee power grid stability and in turn a power supply that we can rely on. Not to mention that it has been developed specifically for the energy market, where it needs to really prove what it can do." Kretschmann went on to say that, as a result, the energy transition in Baden-Württemberg is witnessing the birth of a

new environmental and technological momentum of its own. "This will lead us to new products, processes and business models. And, of course, new partnerships," said Kretschmann.

"Our intelligent networked solutions provide the foundations for efficient energy grids. They facilitate smart energy management, which in turn protects the environment and saves money," explained Dr. Stefan Hartung, member of the board of management of Robert Bosch GmbH, responsible for the business sector Energy and Building Technology. "Lithium-ion batteries can supply energy in no time, which makes them ideally suited for making primary control reserve available", explains Dr. Stefan Hartung. The storage system covers just less than a fifth of the regulation power at the power plant in Heilbronn and it can receive or output exact amounts within a matter of seconds. The amount of power in the space of one year equates to around the average annual consumption of 400 two-person households.

"We want to work together to help improve the reliability of the power supply and the flexibility of the energy system in Baden-Württemberg, so we can take the next step forward on the energy transition path," explained Dr Hans-Josef Zimmer, Member of the Executive Board at EnBW. Today, it is primarily still the large power plants that generate the regulation energy needed for grid stability. And by doing so those large power plants ensure that a highly reliable power supply is made available. But things cannot stay that way: "We are about to see a fundamental change to our energy system, as the focus moves away from this centralised approach," said Zimmer. And he went on to explain that this development calls for fresh solutions. Using battery systems to provide primary control reserve is the perfect example here.

Bosch and EnBW tackle the challenges brought about by the energy transition

In the wake of the continually increasing share of renewable energies in Germany, energy suppliers are facing new challenges. Whilst working on this project, EnBW has been able to apply its experience in the energy sector and took the lead on the civil works and power grid connection on-site. Bosch's contribution was its expertise in stationary storage solutions, with the technology company developing and installing the battery storage system itself. Construction, which started on the site of the power plant in Heilbronn back in the late summer of last year, has been fully completed, meaning that it is now time for the storage system's normal operation to get under way.

Kraftwerksbatterie Heilbronn GmbH now plans to use the experience gathered during this project to offer solutions for other customers.

The joint venture provides services relating to the integration of battery storage systems into renewable and conventional generation systems or industrial energy systems, including marketing batteries on the energy market.

You can find further information by heading to: www.kraftwerksbatterie.de

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The Bosch Group is a leading global supplier of technology and services. It employs roughly 400,500 associates worldwide (as of December 31, 2017). According to preliminary figures, the company generated sales of 78 billion euros in 2017. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected industry. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to create solutions for a connected life, and to improve quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiaries and regional companies in 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. At 125 locations across the globe, Bosch employs 62,500 associates in research and development.

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EnBW Energie Baden-Württemberg AG has 20,000 employees, making it one of the largest energy companies in Germany and Europe. It supplies some 5.5 million customers with electricity, gas and water as well as providing energy-related products and services. Back in 2013, EnBW went through a major company restructuring process in response to the underlying changes brought about by the energy revolution in Germany. The EnBW 2020

strategy aims to develop renewable energy sources as one of the main pillars of EnBW's business operations by 2020. Forms of storage technology will be a big part of this.
Find out more at: www.enbw.com

Kraftwerksbatterie Heilbronn GmbH is a joint venture between EnBW and Bosch and was officially registered in July 2017. The purpose of the company is the project development, planning, installation, operation and marketing of an electrical fixed energy storage system in Heilbronn, as well as the provision of advisory, engineering and maintenance services in the field of energy storage systems and solutions.
You can find further information by heading to: www.kraftwerksbatterie.de