Press release

Stationary fuel cell: Bosch plans to start full-scale production in 2024

Alliance with Ceres Power intensified

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- Bosch and Ceres Power intensify partnership to prepare for full-scale production.
- The aim is an annual production capacity of some 200 megawatts.
- Up to 2024, Bosch plans to invest hundreds of millions of euros in the solid oxide fuel cell (SOFC).
- Christian Fischer: “We see the highly efficient solid oxide fuel cell as an essential element of a sustainable energy supply.”
- With an overall efficiency of more than 85 percent, the solid oxide fuel cell is clearly superior to any other energy converter.

Stuttgart, Germany / Horsham, United Kingdom – When it comes to stationary fuel cells, Bosch is stepping up a gear. In 2024, the supplier of technology and services intends to start full-scale production of distributed power stations based on solid oxide fuel-cell technology – hence the agreement to intensify its alliance with Ceres Power. Following a successful prototype construction phase, the two companies now want to press ahead, initially with the pre-commercialization process for stationary fuel cells. For SOFC systems, Bosch is aiming for an annual production capacity of some 200 megawatts. This is enough to supply around 400,000 people with electricity in their homes. Bosch is planning to produce the stationary fuel-cell systems at its manufacturing sites in Bamberg, Wernau, and Homburg, as well as its development sites in Stuttgart-Feuerbach and Renningen – and will invest hundreds of millions of euros by 2024. This means Bosch is positioning itself clearly as a systems supplier for stationary fuel cells with its own value creation in the cell and stack segment. One intended application of SOFC technology is in small, distributed, connectivity-enabled power stations, which can then be used in cities, factories, trade and commerce, data centers, and electric vehicle charging infrastructure. Bosch estimates that the market for decentralized power generation will reach a volume of 20 billion

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euros by 2030. A total of more than 250 Bosch associates are now working in this promising new field – 150 more than a year ago.
“We see the highly efficient solid oxide fuel cell as an essential element of a sustainable energy supply. To bring it about, we are pooling Bosch expertise from across several divisions,” says Dr. Christian Fischer, the Bosch board of management member responsible for the Energy and Building Technology business sector. “With stationary fuel-cell systems, Bosch is establishing a new business field in which development, manufacturing, sales, and service come from a single source,” Fischer continued. “Together with our partner Ceres Power, we are now taking the next important step toward full-scale production.”

Bosch intensifies alliance with Ceres Power
Since August 2018, Bosch and Ceres Power have been successfully collaborating in the field of fuel cell and fuel-cell stack development. As early as fall 2019, Bosch was able to start prototype production of its first fuel-cell systems in Germany; in January 2020, it acquired a stake of around 18 percent in the U.K. company. The alliance has now been extended to include the phases leading up to full-scale production in 2024. The agreements specify how Bosch will further use its alliance partner Ceres Power’s technology. “We are proud to have reached this milestone in collaboration with our important partner Bosch. Combining innovative Ceres technology with Bosch’s manufacturing expertise made it possible to create pioneering stationary fuel-cell systems that will help overcome the global challenges of the energy transition,” says Phil Caldwell, CEO of Ceres Power. “We’re looking forward to continuing our close collaboration with Bosch.”

SOFC systems are already hydrogen-compatible
Ceres Power is a leading player in the development of innovative solid oxide fuel cells and stacks. Bosch holds an extensive technology license from Ceres Power and has been manufacturing fuel cells and stacks in-house since 2019. Pilot plants based on solid oxide fuel cells are already being successfully tested at various Bosch locations. The SOFC systems can already be operated with eco-friendly biogas or natural gas – and are already hydrogen-compatible for the energy system of the future.

For cities and conurbations with high energy requirements, SOFC systems can ensure sustainable power supplies – with zero emissions of nitrogen oxides, particulates, and CO_2. With an overall efficiency of more than 85 percent, the solid oxide fuel cell is clearly superior to any other energy converter. As Dr. Wilfried Kölscheid, who is responsible for stationary fuel cells at Bosch, explains: “Depending on energy supply requirements, in the future any number of plants

with the same output can be interconnected. This interconnection creates virtual power plants that work together to supply power as and where it is required."

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The Bosch Group is a leading global supplier of technology and services. It employs roughly 400,000 associates worldwide (as of December 31, 2019). The company generated sales of 77.7 billion euros in 2019. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT provider, Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility. Bosch is pursuing a vision of mobility that is sustainable, safe, and exciting. 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 facilitate connected living with products and solutions that either contain artificial intelligence (AI) or have been developed or manufactured with its help. Bosch improves 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 subsidiary 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. Bosch employs some 72,600 associates in research and development at 126 locations across the globe, as well as roughly 30,000 software engineers.

The company was set up in Stuttgart in 1886 by Robert Bosch (1861–1942) as "Workshop for Precision Mechanics and Electrical Engineering." The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant upfront investments in the safeguarding of its future. Ninety-two percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.

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