Press release

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Climate-friendly neighborhood electricity
First real-life operation of a stationary fuel cell by Bosch and Stadtwerke Bamberg

- Bosch and the Bamberg public utilities are for the first time using a stationary fuel cell to produce electricity and heat in a city district.
- The stationary fuel cell at the central bus station in Bamberg supplies more than 20 four-person households with climate-friendly electricity.
- The heat generated provides an adjacent bakery with heating and hot water.
- Bosch wants to invest a three-digit million euro amount in stationary fuel cells by the end of 2024.

Bamberg and Stuttgart, Germany – Working with Stadtwerke Bamberg, the city's public utilities, on a stationary fuel cell in Bamberg's city center, Bosch is for the first time demonstrating its vision of a decentralized, climate-friendly energy supply of the future. The two partners have taken a micro power plant based on solid-oxide fuel cells (SOFC) into operation at Bamberg's central bus station (ZOB). Measuring roughly two meters high, the refrigerator-sized plant generates around 10 kilowatts of electricity, which is enough to meet the annual requirements of more than 20 four-person households in the neighborhood of the bus station. With an overall efficiency of 60 percent for power generation and more than 85 percent with additional use of heat, this stationary fuel cell is clearly superior to other energy converters of its size. The heat it produces is used by a bakery at the bus station for its heating and hot water systems. "As we move to alternative forms of energy, decentralized power supplies are becoming very important. The stationary fuel cell is ideally suited for the expansion of local power and heating networks in urban neighborhoods," says Dr. Wilfried Kölscheid, who is responsible for stationary fuel cells at Bosch. "We are pleased to have found a partner in Stadtwerke Bamberg with whom we can jointly demonstrate what our stationary fuel cell is capable of."

Robert Bosch GmbH
Postfach 10 60 50
70049 Stuttgart

E-mail Doerthe.Warnk@bosch.com
Phone +49 711 811-55508
Twitter @d_warnk

Corporate Department
Communications & Governmental Affairs
Executive Vice President: Prof. Christof Ehrhart
www.bosch-press.com

Demand-driven electricity generation in city districts

Putting the stationary fuel cell to work in an urban neighborhood is not only an important field of application for Bosch; the Bamberg public utilities also see the technology as a sustainable solution for energy supplies to existing buildings, as well as when planning new districts. “The experience we gain with this fuel cell should deliver lasting benefits when it comes to future energy supplies to existing buildings and new neighborhoods,” says Dr. Michael Fiedeldey, the managing director of Stadtwerke Bamberg. “At the same time, we want everyone to be able to experience the new technology for themselves. That’s why we didn’t hide it away in some basement, but instead installed it in the middle of the ZOB, which is a traffic hub visited by over 20,000 people a day.” As soon as the situation permits, the InnoLab at the bus station will be open regularly for interested guests, with experts from both companies on hand to answer questions. A virtual look into the lab is available at www.stadtwerke-bamberg.de/innolab.

The SOFC plant is very quiet. Stadtwerke Bamberg is currently running it on natural gas, but it is already suitable for hydrogen. When compared with the German electricity mix, an SOFC system reduces emissions of the greenhouse gas CO_2 by almost 40 percent, even when running on natural gas. If the fuel cell runs on hydrogen, it no longer causes any direct CO_2 emissions. Thanks to this, SOFC systems can ensure a sustainable supply of energy to cities and conurbations with high energy requirements, since the stationary fuel cell’s output can be set to match demand. What’s more, connecting a series of fuel cells to the existing gas infrastructure is a way to relieve the power grid, meaning additional electricity demand can be met using on-site generation. The SOFC plant in Bamberg is also connected to the Bosch IoT Cloud: 20 sensors within the fuel cell continuously provide data on power generation and the system’s operating status. This data also helps further develop the technology. In the future, it will be possible to connect various stationary fuel cells to each other via the cloud to form virtual power plants and then control them digitally using intelligent, self-learning software – conserving both the environment and resources.

Bamberg’s mayor Andreas Starke welcomes the alliance and the high visibility of the plant at the Bamberg ZOB: “We are proud that Bosch and Stadtwerke Bamberg are implementing the stationary fuel cell – a climate-friendly and at the same time economical technology. This innovative energy supply is an important building block in the facelift we are giving the Bamberg business location, and will help secure jobs for the future.”

Bosch invests a three-digit million euro amount by the end of 2024

Bosch wants to invest a three-digit million euro amount in stationary fuel cells by the end of 2024 and put SOFC systems to the test under real-life conditions. In Germany, Bosch already operates more than 20 SOFC pilot plants at its sites in Bamberg, Homburg, Renningen, Schwieberdingen, Feuerbach, and Wernau. The company has 250 associates working in this promising field at various locations – over 100 of them in Bamberg alone. The Bosch plant in Bamberg produces the all-important stacks for fuel cells. “We are proud that the Bamberg plant is integral to driving the pre-commercialization phase for solid-oxide fuel cells all the way to large-scale production, which is expected in 2024. Together with Stadtwerke Bamberg, we can test this pioneering innovation directly on-site in real-life operations and gain important insights into its operation,” says Dr. Martin Schultz, the commercial plant manager at the Bosch plant in Bamberg. The development of these novel fuel-cell systems would not have been possible without close collaboration between Bosch’s corporate research and its Powertrain Solutions and Thermotechnology divisions.

Press photos: #d748d45c, #1bb1ec5e #e547982e, #9110370d, #e1ee35c9

Contact person for press inquiries (Bosch):
Dörthe Warnk
Phone: +49 711 811-55508
Twitter: @d_warnk

Contact person for press inquiries (Stadtwerke Bamberg):
Jan Giersberg
Phone: +49 951 77-2200
E-mail: presse@stadtwerke-bamberg.de

The Bosch Group is a leading global supplier of technology and services. It employs roughly 394,500 associates worldwide (as of December 31, 2020). According to preliminary figures, the company generated sales of 71.6 billion euros in 2020. 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. At 126 locations across the globe, Bosch employs some 73,000 associates in research and development, 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-four percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The remaining shares are held by the Bosch family, by a corporation owned by the family, and by Robert Bosch GmbH. 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.

Additional information is available online at www.bosch.com, www.iot.bosch.com, www.bosch-press.com, https://twitter.com/BoschPress

Stadtwerke Bamberg is driving forward the regional move to alternative energy by expanding renewables and initiating the move to alternative mobility with alternative powertrain technologies and intermodal mobility offerings. For the 420-hectare "Lagarde" conversion area, where housing for 1,200 families as well as space for commerce, services, culture, and social facilities is to be built in the next few years, Stadtwerke Bamberg is developing a pioneering heating and mobility concept and is building an area-wide fiber optic network. The fourth-generation heating network being built here received 7.6 million euros in funding as a pioneering lighthouse project from the German Federal Ministry for Economic Affairs and Energy.