Press release

CES 2024: Bosch technologies help consumers use energy sustainably

Solutions for mobility, buildings, and living

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- Tanja Rückert: “To help us meet our global energy needs in a resource-efficient way, Bosch is focusing on digitalization, electrification and hydrogen.”
- Electromobility: New Bosch technology enabling electric cars to drive themselves to charging stations receives CES® Innovation Award from the CTA.
- Heat pumps: New model designed to handle temperatures down to minus 13 degrees Fahrenheit (minus 25 degrees Celsius) in cold regions of North America.
- Mike Mansuetti: “We want our solutions to help drive forward the clean-energy economy in North America.”
- Digitalization: New Bosch services for mobility, buildings, and industry enhance convenience and efficiency.

Las Vegas, NV, USA – Whether on the road or in the home, Bosch is driving forward the electrification of its technologies and solutions for sustainable energy use, and sees hydrogen as a key to meeting the world’s energy needs in a climate-neutral way. At the CES 2024 in Las Vegas, Nevada, the company is presenting technology and applications that can not only make life easier, safer, and more convenient, but also more sustainable – all for the good of our planet. Global energy consumption has doubled in the past 50 years – and continues to grow by around 2 percent each year[1]. Fossil fuels currently account for some 80 percent of global energy consumption. In view of climate change, this is a major challenge.

“To help us meet our future global energy needs in a more resource-efficient way, we at Bosch are rethinking energy use and focusing on a two-pronged

[1] Our World in Data, “Energy Production and Consumption” by Hannah Ritchie, Pablo Rosado, Max Roser

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approach: electrification and hydrogen. For a low-emissions future, we are optimizing the use of traditional energy sources by driving forward electrification in mobility, commercial buildings, and homes. And we are tapping into new, sustainable energy sources – with hydrogen playing a central role," said Tanja Rückert, member of the board of management of Robert Bosch GmbH, at CES 2024 in Las Vegas.

More efficient electrification thanks to innovative Bosch technologies

Electrification is already well advanced, particularly in the mobility sector. Bosch is a leading supplier along the entire electromobility value chain – from chips, e-axles, and electric motors to battery technology, charging stations, and numerous services. One innovation the company is presenting at CES has been named a CES® 2024 Innovation Award honoree by the Consumer Technology Association (CTA): automated valet charging. In a parking garage equipped with an automated valet parking system (automated valet parking), electric cars featuring this new technology can drive themselves to an available parking space furnished with a charging spot. At the touch of a button on a smartphone, a robot charges the battery without any further human intervention. Once charging is complete, the vehicle maneuvers driverlessly to another parking space, leaving the spot free for the next car. "The unique combination of automated valet charging and automated valet parking makes Bosch a pioneer on the market," Rückert said, adding: "Every step toward greater convenience in electromobility increases not only its attractiveness but also its acceptance."

This is another reason why Bosch is focusing on the innovative semiconductor material silicon carbide (SiC), a key component for electrified mobility. The ramp-up of electromobility worldwide is leading to enormous demand for these special semiconductors. Using highly complex processes it developed itself, Bosch has been producing SiC chips at its wafer fab in Reutlingen, Germany, since 2021, and is currently investing more than 1.5 billion dollars in a further wafer fab in Roseville, California. This move will strengthen the company's international semiconductor manufacturing network. The aim is to start production of the first SiC chips in the U.S. by 2026, and in doing so increase the company's output tenfold in the years ahead. In electric cars, SiC chips extend driving range and make charging more efficient, as their energy losses are up to 50 percent lower. They also enable the car to travel further on a single battery charge – on average, range is up to 6 percent greater than with silicon-based chips.

Heat pumps optimize energy consumption in homes

Another Bosch highlight at CES 2024 is the IDS Ultra Heat Pump, which was developed specifically for North America. Unlike conventional models, this heat pump provides 100 percent heating capacity down to outdoor temperatures of 5 degrees Fahrenheit (minus 15 degrees Celsius), and it's operational down to as low as minus 13 degrees Fahrenheit (minus 25 degrees Celsius). This is a particularly attractive option for people in colder climates in the U.S. or Canada looking to switch from fossil fuel-based heating systems to electrified alternatives. Such a switch saves not only energy but also costs: Bosch heat pumps are three to five times more energy efficient than gas furnaces and consume only about half as much electricity as electric furnaces. Bosch has also succeeded in applying heat-pump technology to a different area: in Las Vegas, the company is presenting its most efficient water heater to date, which is a hybrid of an electric storage water heater and a heat pump that is three to four times more efficient than traditional water heaters in the market. "With solutions like this, we are paving the way to an electrified home – and helping save costs and energy," says Mike Mansuetti, president of Bosch in North America.

Various new features in Bosch home appliances such as ovens, dryers, and washing machines are also playing their part in this transition. For some time now, it has been common for users to set the start time for their appliance using a timer function. Bosch is now going one step further and equipping its latest generation of dishwashers with its "MySchedule" function for the first time. This can automatically schedule the start of the wash cycle to coincide with the periods when either the electricity price is lowest or green electricity is available. Good news for professional power tool users, too: at CES 2024, Bosch has announced further new partners for its AMPShare power tool battery platform – more than 30 global partners are now on board. Bosch AMPShare is a cross-brand battery system that allows trade and industry professionals to switch flexibly between different brands of professional tools without having to exchange the battery.

Bosch is actively promoting hydrogen as a pillar of future mobility

In addition to electrification, Bosch sees hydrogen as a key to meeting global energy demand in a resource-efficient way. As a storage medium, moreover, hydrogen can facilitate the efficient use of energy generated from renewable sources. Bosch is investing extensively in technologies along the hydrogen value chain. The focus is currently on the mobile fuel cell, which recently went into volume production in Stuttgart. This lies at the heart of the powertrain system for heavy vehicles. Bosch has already received its first orders from truck manufacturers in Europe, the U.S., and China. The company is also working on components for a hydrogen engine, which converts fuel directly into energy

without first converting it into electricity. When powered by green hydrogen, this engine is practically carbon neutral. The H_2 engine is due to debut this year. Countries and industries around the world are investing in hydrogen technologies. The U.S. government, for example, is pushing ahead with the development of H_2 infrastructure and investing 7 billion dollars in the construction of hydrogen hubs. “The H_2 hubs are an important building block for establishing a hydrogen infrastructure. We at Bosch support these measures and are exploring participation in several of these hubs. Our goal is to help drive forward the clean-energy economy in North America. This is an area where we can contribute our expertise in the production and provisioning of hydrogen,” Mansuetti says.

Software paves the way for greater convenience and energy efficiency

Across all its divisions, Bosch is focusing on the use of software and digitalization. The company now has more than 44,000 associates working in software development, and it sees itself as leading the way to software-defined mobility. In Las Vegas, Bosch is presenting new products and solutions together with its strategic partner Amazon Web Services. These include a connected, fully automatic espresso machine, which will also be possible to control from the car using voice assistance such as Alexa, and a point-of-interest assistant, which uses an interior camera in the vehicle to recognize which restaurant or café the driver is looking at based on their eye movements. The voice assistance then informs the driver in real time and completely automatically whether the restaurant is open and has a free table available.

Bosch is also presenting two new mobility services at the electronics trade fair: Usage Certificate To Go and Vehicle Health Service. The first is an addition to Bosch’s already established Battery in the Cloud services. The feature analyzes battery data, determines the battery’s condition, and helps extend its service life by up to 20 percent through optimization. The second service, aimed at fleet operators, offers features designed above all to prevent vehicle breakdowns. Both innovations aim to extend the service life of vehicles and conserve resources. Bosch is taking a similar approach in the building sector: The company offers digital services to achieve efficiency gains, such as the "Nexospace Energy Manager" for the European market. This helps customers to analyze their energy supply and usage and develop specific measures to optimize and reduce consumption. This was the case with the international supermarket chain REWE, for example, which was able to reduce consumption by up to 20 percent in more than 2,000 stores with the help of the “Nexospace Energy Manager”. Meanwhile, in manufacturing, Bosch services can help save considerable amounts of CO_2 by increasing efficiency. Decarbonize Industries, an AI-supported software-based service developed by Bosch together with a

partner, helps manufacturing companies reduce their carbon footprint and also achieve significant cost savings.

Press photos: #d83ba8f9, #791bbe41, #de5f902d, #f7120c34, #d00f7b3b, #e7214774, #f0e0d409

Bosch at CES 2024:

- **PRESS CONFERENCE: Monday, January 8, 2024,** from 9:00 to 9:45 a.m. (PST) with Dr. Tanja Rückert, member of the board of management of Robert Bosch GmbH, and Mike Mansuetti, president of Bosch in North America, in Ballroom Banyan ABCD, Mandalay Bay Hotel, Las Vegas, **South Convention Center, Level 3,** as well as **livestreamed** on the Bosch Media Service.
- **BOOTH: January 9 – 12, 2024**, in the Central Hall, booth #17207.
- **FOLLOW** the Bosch CES 2024 highlights on X: **#BoschCES.**

- **PANELS WITH BOSCH EXPERTS, Thursday, January 11, 2024:**
  "Elevate Your Space: Enhancing your Home with Smart Appliances", 15:00 p.m. (local time), Venetian Hotel, Lando 4302, session with Goncalo Costa, Vice President of Climate and Wellbeing North America.
  "Our Newest Cyber Threat is AI and AI is Our Biggest Defense", 14:00 p.m. (local time), Las Vegas Convention Center West / N258, session with Dr. Zico Kolter, Chief Scientist of AI at Bosch.
  "Future of Care: How Other Industries Shape Health", 11:00 a.m. (local time), Las Vegas Convention Center / North Wing, session with Dr. Stefan Finkbeiner, General Manager at Bosch Sensortec.

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Having established a presence in North America in 1906, today the Bosch Group employs 37,000 associates in more than 100 locations in the region (as of Dec. 31, 2022). Bosch generated consolidated sales of $15.1 billion in the U.S., Canada, and Mexico in 2022. For more information visit www.bosch.us, www.bosch.ca and www.bosch.mx.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 421,000 associates worldwide (as of December 31, 2022). The company generated sales of 88.2 billion euros in 2022. Its operations are divided into four business sectors: Mobility, 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 470 subsidiary and regional companies in over 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 136 locations across the globe, Bosch employs some 85,500 associates in research and development, of which nearly 44,000 are software engineers.

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

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