



Energy-efficient. Decentralized. H₂-ready. With fuel cell systems by Bosch

Visionary, smart, and climate-friendly – power supplies will have to be all that to respond to climate change and meet rising demand for electricity. The Bosch decentralized fuel cell system is one such solution. The solid oxide fuel cell, or SOFC for short, pairs a potent source of highly efficient electrical power with a significant reduction in carbon emissions. Set off into a greener future with this innovative technology.

Shaping the energy transition with SOFC

Climate-friendly: Getting real with green energy

Even when operating with natural gas, less CO₂ is produced – with close to zero nitrogen oxides or particulates in the exhaust gas. When operating with pure green hydrogen, CO₂ emissions drop to zero.

Efficient: The front-runner in the efficiency stakes

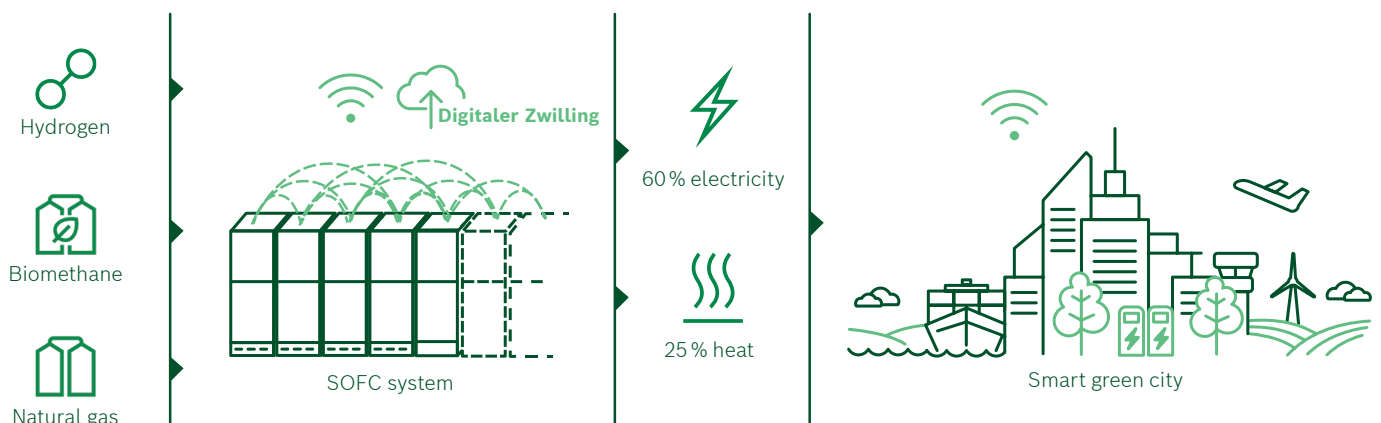
This system generates electricity at efficiencies higher than 60 percent – and even beyond 85 percent when the generated heat is put to productive use.

Decentralized: An independent, local source of energy

The SOFC system readily installs at any location with a gas supply and internet connectivity. Due to the on-site power generation, this local system is not subject to any transmission losses in the grid.

Connected and scalable: Sized to fit your needs

In the future, it will be possible to connect any number of individual devices to create power plants that scale all the way up to the megawatt range. And with the benefit of a digital twin, these systems can be optimized on the fly.

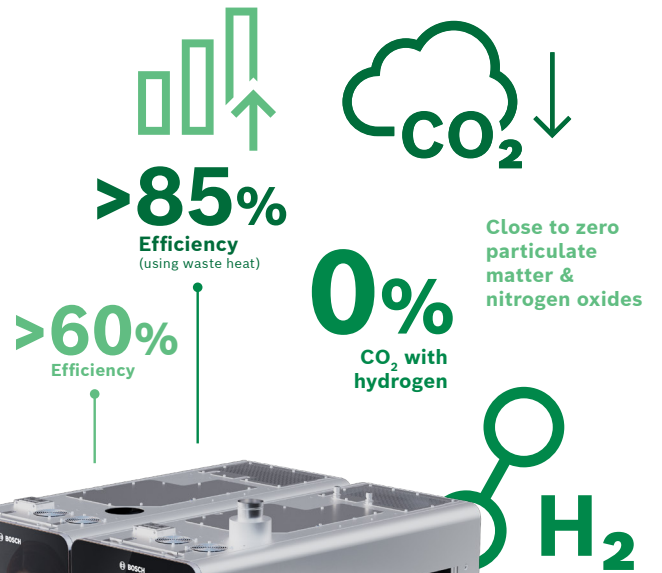


A closer look at SOFC technology

A decentralized fuel cell unit is comprised of several hundred stacked fuel cells. This stack is the heart of the SOFC unit where the key electrochemical process takes place. Cells are connected in series. A steady stream of hydrogen and atmospheric oxygen flows into each cell, where the energy released by a chemical reaction is converted into electrical power. This reaction produces water, electricity, and heat. Natural gas as a fuel is not the only option; this system can also run on biogas and, in the future, with hydrogen.

A single unit generates 10 kW. Connecting five units in a system, they can meet the electricity needs of an average supermarket or more than 100 four-person households in an urban quarter.

The Bosch SOFC is scalable: connecting several units creates small, decentralized power plants. This system will support optimized configuration, sector coupling, maintenance, and servicing. More reliable and less susceptible to grid outages, this power source benefits critical infrastructure by enhancing energy security. Predictive maintenance will also reduce upkeep costs.



One innovation – many applications

The multiple award-winning SOFC system is flexibly and location-independently deployable as well as scalable in various segments. Its power output adjusts to meet demand. All this makes it an excellent choice for diverse applications.

TECHNICAL DATA*

Bosch solid oxide fuel cell

Electrical power	kWel	10
Thermal power	kWth	>3
Electrical efficiency	%	>60
Overall efficiency	%	>85

* Beginning of Life



Buildings & urban districts

In the future, the SOFC system will supply residential and office buildings within a district with decentralized, future-proof, and sustainable electricity and heat on site.



Industry

The fuel cell system reduces a site's carbon footprint in the long term and provides a reliable, economical and highly efficient electricity and heat supply.



Data centers

The SOFC system is a decentralized and grid-independent energy source. Thanks to its modular design, it can be scaled flexibly and can satisfy the power and air conditioning demands of a growing contingent of data centers.



Wide range of applications

The fuel cell system can supply various further uses cases. For example, as part of a decentralized energy grid, in conjunction with other energy generating systems, it provides electricity and heat.

Join us in shaping the future of energy supply!



Robert Bosch GmbH

Postfach 30 02 20 | 70442 Stuttgart | Germany
www.bosch-sofc.com



BOSCH
Invented for life

The Bosch SOFC system is currently in the pilot phase. All technical specifications given in this informational document are development objectives.