

Press release

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A key technology makes history: 50 years of the lambda sensor

A pioneer in effective exhaust-gas treatment has been launched in 1976, Bosch is still one of the leading manufacturers today

- Key technology celebrates its 50th anniversary in 2026
- Bosch manufactured around 1.7 billion units worldwide to date
- Precise measurement technology used far beyond the passenger car sector

Karlsruhe/Plochingen – Developed by Bosch in 1976 and first installed in production vehicles, the lambda sensor marked a technical revolution in the automotive industry. At that same year, Volvo built it in their serial manufactured vehicles and by today, it has become an indispensable component in gasoline and diesel vehicles. In 2026, Bosch celebrates the 50th anniversary of a key technology that significantly contributes to reducing pollutant emissions and fuel consumption. Bosch has produced around 1.7 billion units worldwide.

Pioneering work that became a global standard

50 years ago, Bosch readied the lambda sensor for series production to enable effective exhaust-gas treatment in the 3-way catalytic converter. The sensor precisely measures the residual oxygen content in the exhaust gas and provides the engine control unit with the crucial information needed to regulate the optimal air-fuel mixture ($\lambda = 1$). This is the only way for the catalytic converter to achieve its full effect and reliably convert pollutants.

Initially developed for use in gasoline engines, the next technological step followed with the development of the wide-band lambda sensor. This also enabled its use in diesel engines and engine concepts such as gasoline direct injection, significantly expanding its range of applications. What began as pioneering work

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is now a key technology in exhaust-gas treatment, with production sites in Germany, Southeast Europe, North America, China, and India.

From series production to the replacement parts market

Based on its decades of expertise, Bosch is one of the leading manufacturers of lambda sensors for original equipment – making it a key player in the replacement parts market. The lambda sensor portfolio covers around 70 percent of the vehicle fleet in the European market with approximately 1,000 part numbers. Every lambda sensor for the workshop market undergoes strict quality and release processes and complies with the standards of series production.

Bosch's expertise in exhaust-gas sensors extends far beyond the lambda sensor: Bosch offers its workshop partners a wide range of particulate, NOx, and exhaust-gas temperature sensors. These components are important for complying with modern emissions standards. Customers benefit from receiving all relevant exhaust-gas sensors from a single source. This comprehensive solution simplifies procurement, supports good compatibility, and ensures high quality.

Versatile technology far beyond the vehicle

Today, its precise measurement technology is also used in trucks, motorcycles, modern heating systems, and even in Bosch's "PerfectBake" ovens, where it ensures optimal baking results.

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Basic information:

The Mobility Aftermarket division (MA) provides the aftermarket and repair shops worldwide with modern diagnostic and repair shop equipment and a wide range of spare parts – from new and exchange parts to repair solutions – for passenger cars and commercial vehicles. Its product portfolio includes products made as Bosch original equipment, products developed in-house and specifically manufactured for the aftermarket, as well as services. About 16,000 associates, as well as a global logistics network, ensure that spare parts reach customers quickly and on time. MA supplies testing and repair-shop technology, diagnostic software, service training, and information services. In addition, the division is responsible for the “Bosch Service” repair-shop franchise, one of the world’s largest independent chains of repair-shops, with some 13,000 workshops, and more than 700 “AutoCrew” partners in over 100 countries. In addition, with Bosch Classic, MA supports owners of classic cars with a wide range of spare parts and services.

Additional information can be accessed at www.boschaftermarket.com

The Bosch Group is a leading global supplier of technology and services. It employs roughly 413,000 associates worldwide (as of December 31, 2025). The company generated sales of 91 billion euros in 2025. Its operations are divided into four business sectors: Mobility, Industrial Technology, Consumer Goods, and Energy and Building Technology. With its business activities, the company aims to use technology to help shape universal trends such as automation, digitalization, electrification, and artificial intelligence. In this context, Bosch’s broad diversification across regions and industries strengthens its innovativeness and robustness. Bosch uses its proven expertise in hardware, software, and services to offer customers cross-domain solutions from a single source. It also applies its expertise in connectivity and artificial intelligence in order to develop and manufacture intelligent, user-friendly, and sustainable products. With technology that is “Invented for life,” Bosch wants to help improve quality of life and conserve natural resources. The Bosch Group comprises Robert Bosch GmbH and its roughly 500 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. Bosch’s innovative strength is key to the company’s further development. Bosch employs some 82,000 associates in research and development.

Additional information is available online at www.bosch.hu, iot.boschblog.hu, www.bosch.com, www.iot.bosch.com, www.bosch-press.com.