



Staying on track

Milestones from 25 years of ESP® at Bosch

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Just under half a million accidents involving personal injury avoided and 15,000 lives saved in the EU alone – this is the track record of ESP®, first launched in 1995. The story behind this achievement is one that began more than 25 years ago. The following text present the milestones in the development of the electronic stability program at Bosch:

1983: Bosch researchers float some first ideas about how to improve stability when braking hard in bends. They base their ideas on the ABS antilock braking system launched in 1978. An initial proposal is to flexibly adapt each wheel's slip to improve control over the vehicles when braking in bends.

1984: Effective July 1, a development team is set up. Its task is to use ABS as the basis for developing a brake control system offering improved vehicle control when skidding is imminent in a bend. In such a situation, the vehicle has to remain stable and steerable as far as the laws of physics will allow.

1992: A joint project unit is set up near the Bosch location in Schwieberdingen. It is made up of engineering experts from Bosch and the automaker Daimler-Benz, which is subsequently the first to install the system. An agreement is made to develop a system for production in 36 months.

1995: ESP® has its press debut in a Mercedes-Benz S-class coupé in May, and its market launch in the coupé and sedan in September (as an extra, standard feature only with the most powerful, 12-cylinder engine).

1997: A Mercedes-Benz A-class vehicle rolls over while performing an extreme swerving maneuver during testing. The model was only recently launched. Following this “elk test” for a Swedish automotive magazine, the automaker decides to make ESP® a standard feature. Other automakers soon follow suit.

1998: For the first time, the yaw-rate sensor that is at the heart of the ESP® is produced as a micromechanical sensor. Bosch has been mass-producing these sensors with microscopically small movable structures since 1995. This means ESP® can be smaller, while at the same time longer-lasting, less sensitive, more reliable, and less expensive.

2003: Bosch celebrates the delivery of its 10 millionth ESP® system. The technology has now been in the market for ten years. In the years that follow, increasing volumes pave the way for this lifesaver to become established in the compact class.

2007: On April 6, 2007, the National Highway Traffic Safety Administration (NHTSA) published a final rule establishing Federal Motor Vehicle Safety Standard No. 126, Electronic Stability Control Systems. The NHTSA rule was among the first to be issued, requiring that all light vehicles manufactured on or after September 1, 2011 be equipped with an ESC system. In 2007, NHTSA also commenced its work to support a global technical regulation (GTR) on ESC. U.S. safety officials collaborated with their counterparts in countries across the world under the aegis of the United Nations' Economic Commission for Europe (UNECE) World Forum for the Harmonization of Vehicle Regulations (WP.29) in order to successfully establish GTR No. 8 under the 1998 Global Agreement.

2016: In the Life Achievement category, the European Patents Office confers its European Inventor Award on Anton van Zanten. Born in the Netherlands, van Zanten headed up the 35-strong group of ESP® developers at Bosch.

2020: ESP® turns 25. Over the past quarter of a century, Bosch has continuously improved its anti-skid system, producing more than 250 million ESP® systems to date.

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Mobility Solutions is the largest Bosch Group business sector. It generated sales of 46.8 billion euros in 2019, and thus contributed 60 percent of total sales from operations. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector pursues a vision of mobility that is safe, sustainable, and exciting, and combines the group's expertise in the domains of personalization, automation, electrification, and connectivity. For its customers, the outcome is integrated mobility solutions. The business sector's main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket. Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.

About Bosch

Having established a regional presence in 1906 in North America, the Bosch Group employs 35,400 associates in more than 100 locations, as of December 31, 2019. In 2019 Bosch generated consolidated sales of \$14.4 billion in the U.S., Canada and Mexico. 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 403,000 associates worldwide (as of December 31, 2019). According to preliminary figures, the company generated sales of \$86.5 billion 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 company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected manufacturing. 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 deliver innovations for a connected life. 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 125 locations across the globe, Bosch employs some 72,000 associates in research and development.

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.

Additional information is available online at www.bosch.com, www.iot.bosch.com, www.bosch-press.com, [www.twitter.com/boschpress](https://twitter.com/boschpress).