



## For clean and economical diesel engines **Bosch produces its 75 millionth common-rail system** Success story began in 1997

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- Bosch is the world's leading supplier of common-rail systems
- Diesel offers further potential for reducing emissions and fuel consumption
- Up to 2,500 bar injection pressure in the future

This year, Bosch celebrates its second diesel anniversary: following on from 75 years of diesel in passenger cars, in December the company is celebrating the production of its 75 millionth common-rail system. This technology, which was first used in cars 14 years ago, marked the start of a new image for diesel. In 1997, the share of diesel passenger cars sold in Western Europe was 22 percent, whereas today every second newly registered passenger car is a diesel. "In the past, diesel engines were seen as economical and robust. The modern common-rail diesel is just as efficient and durable, but it is also extremely dynamic, comfortable, and eco-friendly. Common-rail high-pressure injection, in conjunction with turbocharging, has revolutionised the diesel engine," says Dr. Markus Heyn, executive vice president passenger cars in the Bosch Diesel Systems division. Continuous improvements by Bosch will make diesel engines even more efficient in the future. For instance, by 2015 diesel-powered compact cars are set to consume just 3.6 litres per 100 kilometres. Compared to standard diesel-powered cars in 2009, that represents a fuel-saving of some 30 percent. And if hybrid technology is used, fuel consumption in diesel engines can be brought down by around 40 percent.

### **Rapid growth in unit sales**

The first customers for common-rail systems in 1997 were Alfa Romeo, for its 156 JTD model, and Mercedes-Benz, for the C220 CDI. Unit sales of common-rail systems grew rapidly in the following years. By 2001, three million Bosch common-rail systems were in use, by 2002 the figure had already grown to ten million, and by the start of 2009 it was 50 million. The necessary components are produced in an international manufacturing network comprising 17 locations. In 2011 alone, Bosch produced some nine million common-rail systems, which were fitted in passenger cars, commercial vehicles, in the off-highway segment, and also in large diesel engines such as those found in ships.

## **Future common-rail technology with up to 2,500-bar**

The name 'common rail' is a reference to the pressure accumulator from which fuel is injected at high pressure into the cylinders via the injectors connected to it. The possibility of multiple injections that this allows makes engines quieter and reduces fuel consumption, as well as cutting emissions of CO<sub>2</sub> and other pollutants. The first generation of common-rail systems operates at a pressure of 1,350-bar, but today's CRS2 achieves up to 2,000-bar. Fuel is precisely metered by solenoid valves that allow up to eight single injections per power cycle. CRS2 can be used around the world in all passenger car classes as well as in light commercial vehicles and the off-highway segment. Bosch also offers CRS3 with piezo injectors for the most demanding applications. This makes it possible to meter the tiniest amounts of fuel even more precisely for pre- and post-injection, which serves to further reduce NO<sub>x</sub> emissions and make the engine operate even more quietly. In this system, the injection pressure is as high as 2,200-bar. Bosch engineers are already working on common-rail systems with 2,500-bar and more. This means the diesel engine is well equipped for the future. In conjunction with NO<sub>x</sub> exhaust gas treatment such as Bosch Denoxtronic, common-rail technology makes it possible to meet the strictest emissions regulations, including Euro 6 in Europe from 2014 or Tier 2 Bin 5 in the United States. Diesel vehicles equipped with the necessary technology are already available in the European and U.S. markets.

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*Automotive Technology is the largest Bosch Group business sector. In 2010, its sales came to 28.1 billion euros, or 59 percent of total group sales. This makes the Bosch Group one of the leading automotive suppliers. The roughly 167,000 Automotive Technology associates worldwide work in seven areas of business: injection technology for internal combustion engines, powertrain peripherals, alternative drive concepts, active and passive safety systems, assistance and comfort functions, in-car information and communication, as well as services and technology for the automotive aftermarket. Bosch has been responsible for important automotive innovations, such as electronic engine management, the ESP® anti-skid system, and common-rail diesel technology. In fiscal 2011, the Bosch Automotive Technology business sector expects its sales to reach some 30 billion euros by the end of the year, with a workforce of 177,000.*

*The Bosch Group is a leading global supplier of technology and services. In the areas of automotive and industrial technology, consumer goods, and building technology, some 285,000 associates generated sales of 47.3 billion euros in fiscal 2010. For 2011, the company forecasts sales of more than 50 billion euros and a headcount of a good 300,000 by the end of the year. The Bosch Group comprises Robert Bosch GmbH and its more than 350 subsidiaries and regional companies in over 60 countries. If its sales and service partners are included, then Bosch is represented in roughly 150 countries. This worldwide development, manufacturing,*

*and sales network is the foundation for further growth. Bosch spent 3.8 billion euros for research and development in 2010, and applied for over 3,800 patents worldwide. With all its products and services, Bosch enhances the quality of life by providing solutions which are both innovative and beneficial.*

*Additional information can be accessed at [www.bosch.co.uk](http://www.bosch.co.uk) and [www.bosch-press.com](http://www.bosch-press.com)*