



Bosch and Weichai Power increase efficiency of Weichai truck diesel engines to 50 percent

Goal achieved after just two years' development

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- ▶ Bosch and Weichai Power have increased the efficiency of truck diesel engines from their current level of roughly 46 percent to 50 percent.
- ▶ Bosch CEO Volkmar Denner: "In increasing the efficiency by four percentage points, we have jointly reached a new milestone."
- ▶ Bosch has contributed its common-rail system for commercial vehicles and its comprehensive technical expertise in fuel injection systems to the project.

Stuttgart, Germany and Weifang, China – Bosch and the Chinese engine manufacturer Weichai Power have made a huge leap forward in engine technology. The two partners have successfully increased the efficiency of Weichai diesel engine for heavy commercial vehicles up to 50 percent, thus setting a new global benchmark. Currently, thermal efficiency for truck engines averages around 46 percent. "In increasing the efficiency by four percentage points, we have jointly reached a new milestone. Even though the diesel engine is nearly 130 years old, its development continues," said Dr. Volkmar Denner, chairman of the board of management of Robert Bosch GmbH. In addition to its common-rail system with injection pressure of 2,500 bar, Bosch also contributed its full technical know-how in fuel injection systems. Particularly when it comes to commercial vehicles, and above all when heavy loads have to be transported over long distances, the diesel engine will remain the preferred choice for the foreseeable future. For this reason, Bosch and Weichai aim to steadily refine this technology with an eye to protecting the climate and environment.

Bosch's common-rail system is at the diesel engine's heart

Bosch and Weichai launched their joint development project in September 2018.

"Bosch offered great support on the breakthrough and unprecedented achievement of 50 percent efficiency in Weichai commercial-vehicle diesel engine. We're very pleased to be continuing our highly successful partnership

with Bosch,” says Tan Xuguang, chairman of the Weichai Group. Bosch provides its modular common-rail system for the six-cylinder diesel engine with 12.9 liters displacement. Because it guarantees efficient fuel supply and injection, it is a critical element in ensuring the engine complies with the China VI emissions standard. The Bosch system can be used for pressure levels from 1,800 to 2,500 bar and configured for engine sizes up to eight cylinders. High injector flow rates make it possible to optimize the combustion strategy and achieve high engine performance. Depending on the demands it is subject to, the system can last for up to 1.6 million kilometers. The common-rail system is also designed to work with an electrified powertrain.

Making trucks even cleaner, safer, and more intelligent

Bosch and Weichai, China’s largest manufacturer of engines for commercial vehicles, have enjoyed many years of partnership. Their strategic alliance began back in 2003. Over the 17 years since, both companies have pooled their strengths and expertise in multiple endeavors, one of which was supplying the Chinese market with powerful, energy-efficient, and eco-friendly diesel engines. Furthermore, Bosch and Weichai collaborate in several other areas, including the mobile fuel cell and driver assistance systems. They are united by a common objective: making commercial vehicles even cleaner, safer, and more intelligent. Bosch and Weichai’s close partnership also extends beyond vehicle technology – to Industry 4.0, for example, and in turn, the connectivity and digitalization of factories.

Bosch champions electromobility and efficient combustion engines

Bosch aims to make transportation as resource-friendly as possible, and is pursuing the vision of CO₂-neutral and virtually emissions-free mobility in several ways. In its approach to future powertrain technology, the supplier of technology and services is keeping an open mind. On the one hand, Bosch aims to become the market leader in electromobility with battery and fuel cell-powered vehicles. Electric vehicles are climate-neutral if the charging power and hydrogen are sourced from renewables. On the other hand, Bosch is developing technology for efficient combustion engines to combat global warming and protect the environment to the greatest extent possible. If they run on RSF, gasoline and diesel engines can also be climate-neutral on the road. Bosch expects around one-third of all newly registered vehicles worldwide to be purely electric by 2030. Two-thirds of them will still be powered by a combustion engine, many of them as hybrids.

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Contact persons for press inquiries:

Jörn Ebberg

Phone: +49 711 811-26223

Twitter: @joernebberg

Mobility Solutions is the largest Bosch Group business sector. In 2019, its sales came to 46.8 billion euros, or 60 percent of total group sales. 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.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 400,000 associates worldwide (as of December 31, 2019). The company generated sales of 77.7 billion euros 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 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 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. Bosch employs some 72,600 associates in research and development at 126 locations across the globe, as well as roughly 30,000 software engineers.

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