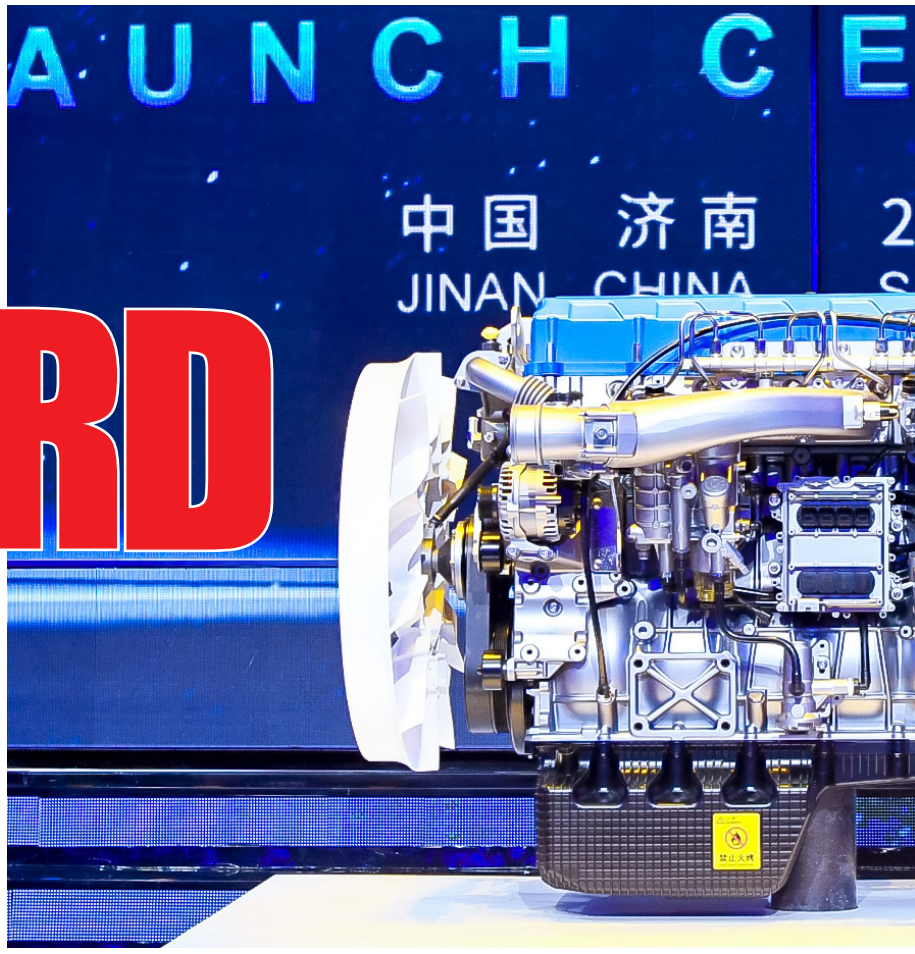
WEICHAI AND BOSCH

IT'S A RECORD ENGINE



50% thermal efficiency? Yes, according to what Weichai and Robert Bosch recently announced. Already in the recent past **Volkmar Denner**, CEO of Bosch, said: «*Renewable and synthetic fuels can contribute greatly to limiting global warming. Their use has a much faster ecological impact than replacing vehicles and infrastructure, as existing filling stations can remain in operation. Synthetic and renewable fuels should soon be part of the CO2 fleet regulation for passenger cars and trucks*». And what do you think about the next sentences? «*There's a future for diesel. Today, we want to put a stop, once and for all, to the debate about the demise of diesel technology. The new diesel engines are the propulsion engine of the future, not the problem, but an important part of its solution*». These sentences don't come from a hallucination and don't date back to the early 1970s. Volkmar Denner himself made this endorsement. And now, finally, the Weichai Group rised the bar of the brake thermal efficiency, during a ceremony held ceremony in Jinan, Shandong, China, on September 16, 2020. At the ceremony, world authoritative testing organization TÜV SÜD, and China's national internal combustion engine testing organization China Automotive Technology and Research Center Co., Ltd. both awarded Weichai certificates for brake thermal efficiency of 50.26%. We will now summarise the premises that led the Chinese company, founded in 2002, to achieve this goal, arm in arm with Bosch. Since 2015, Weichai has established a special technical research team to use a large number of simulations and bench tests for thousands of so-

Weichai has raised the bar of ICE brake thermal efficiency over 50%. At the ceremony, CEO Tan Xuguang announced that in the future Weichai will move towards the goal of 55% brake thermal efficiency for diesel engines

BAUDOUIN AND THE VIRTUOUS SYNERGIES

At MEE 2018 Baudouin woke up to its hundredth anniversary and a top spot on the PG scene. Weichai's bold entry into the company's share capital dates back to January 2009, marking what the corporate website's French version calls the rebirth. In 2014, the Series 12M26.3 showed up at Hamburg's SMM in Baudouin's natural environment – commercial applications – and in Cannes' leisure boating event. The 12-cylinder V engine, 31.8L, features a high-pressure pump and a wastegate for each bank, 1800 bar common rail, ECU and hydraulic components by Bosch. 2020 marks the presentation of their PowerKit Gas, available across a range of eight electronically controlled, CHP ready engines with power outputs spanning from 63 to 1750 kVA at 50 Hz and from 63 to1400 kVA at 60 Hz. Plus, the same year saw the birth of three diesel engines: model 4M06 intended for telecom applications, 2.4 L displacement, 4 cylinders, and 18-35 kVA Esp at 50 Hz; the 8M21, delivering 450-660 kVA at 50 Hz, to be followed by a switchable 50/60 Hz model available over the course of the year. Lastly, the 20M33, getting to market in 2021 in a range from 2000 to 2500 kVA across PRP, DCP and ESP ratings.

Volkmar **Denner**, Robert Bosch CEO: «*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 developments continue.*»

lutions attempts and improvements. Every arduous cumulative progress of 0.1% finally led to a historic breakthrough. Weichai created five proprietary technologies: advanced fields synergy combustion technology, harmonius design technology, exhaust energy distribution technology, subzone lubrication technology and WISE control technology.

All these help solve a series of world-class problems and achieve high efficiency combustion with low heat transfer, high PFP with high reliability, low friction loss, low emission pollutants, intelligent control, etc., so that the brake thermal efficiency of the base diesel engine exceeds 50 percent.

Among these technologies, the advanced fields synergy combustion one optimizes the design of the air passage, fuel injection, combustion chamber profile and other systems to make the relationship between the velocity field and concentration field in the combustion chamber more harmonious, and the combustion speed increases by 30 percent.

The harmonius design technology, in view of the difficult problem that the diesel engine body's ability to withstand the high PFP greatly limits combustion improvement, selectively weakens some parts in order to finally strengthen the overall structure, and increases the system's PFP withstand capacity by about 60 percent.

Exhaust energy distribution technology, in response to the increased difficulty of pollutant emission control caused by improved combustion, pioneered reconstruction of the exhaust system design. It adapts to the demand for exhaust gas recirculation, while ensuring the efficiency of turbines, meeting the requirements of regulations and standards and achieving a 1 percent increase in brake thermal efficiency at the same time.

Subzone lubrication technology is developed based on the different characteristics of the friction pairs of the system, and uses different friction reduction technologies in different areas to reduce the overall friction by 20 percent.

WISE control technology, using the advantages of Weichai's self-developed ECU, creatively develops a series of more precise control predictive models, so that every part of the diesel engine can be more efficient.