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Press release

Liebherr further expands its combustion engine portfolio for a sustainable future

- Liebherr's combustion engine portfolio now includes a more powerful D9612 diesel engine
- The Liebherr components product segment has recently made a significant investment in the development of its hydrogen engine
- Liebherr presents a concept for an ammonia engine as part of an ongoing research in the field of alternative fuels for the future
- An innovative hydraulic air boosting system significantly improves the dynamic behaviour of combustion engines, thus enabling downspeeding

Baden (Switzerland), February 17, 2025 – At Bauma 2025, Liebherr unveils three innovative product developments in the field of combustion engines, including a high-performing D9612 diesel engine, a cutting-edge hydraulic air boosting system and a concept of an ammonia-powered engine. These advancements underline Liebherr's commitment to delivering versatile, highly efficient and sustainable powertrain solutions tailored to industry needs.

Staying up with the times: more power for off-road applications

With the launch of a new combustion engine, the D9612, specially developed for demanding off-road applications, Liebherr focuses on agricultural machinery.

The D9612 delivers a maximum power output of 950 kW and combines robust performance with high efficiency. It is designed to operate reliably under challenging conditions and offers notable improvements not only in fuel consumption, but also in the reduction of emissions. The engine is suited for applications in agriculture, industry and construction, addressing the diverse needs of these sectors. The brand-new D9612 is on display at the components' booth 326 in hall A4 at this year's Bauma.

Improved engine dynamics with hydraulic air boosting

Emissions caused by combustion engines pose a challenge on construction machinery and the environment. Lean mixture engine operation stands out as a promising solution to meet future regulations. This means that an engine runs with excess air, delivering lower emissions, while maintaining the same performance as a conventional diesel engine.

However, this mode of operation can affect engine dynamics. To address this, Liebherr has developed an innovative system: the hydraulic air booster. The system recovers hydraulic energy and uses it to

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power a mechanical compressor, when needed. When power is required quickly, the system is activated, and the compressor forces additional air into the engine, reducing turbo lag and offering a quicker response to the power demand. The engine can therefore operate at optimal engine efficiency, lowering its fuel consumption.

"In our machines, we transmit power using pressurised hydraulic fluid. Certain movements require the release of pressure, which results in energy loss," explains Bouzid Seba, head of predevelopment at Liebherr Machines Bulle S.A. "Our innovation does not only allow to recover and store this energy, but also to use it subsequently on demand in our hydraulic air booster. When needed, the air booster pushes large quantities of air into the motor to help it deliver power quickly. Consequently, our innovation increases engine efficiency and performance," concludes Seba.

This technology also has the potential to benefit future engines powered by alternative fuels. Hydrogen combustion engines can operate efficiently with a high level of excess air. This significantly reduces the need of exhaust after-treatment, diminishing the engine dynamic performance at the same time. The hydraulic air booster can help the engine deliver power quicker and match current diesel performance. Even ammonia engines, which show good dynamic behaviour, could also benefit from this technology. Through the reduction of the engine operating speed, efficiency increases, while fuel consumption drops.

Powering the future: Liebherr's emissions-free solution for today

The reduction of global greenhouse gases is a significant challenge of the present generation. Striving to reach net zero emissions in the future, Liebherr works on alternative and climate-friendly powertrain concepts.

Liebherr's components product segment has recently made a significant investment in the development of hydrogen engines and test facilities. Since 2020, prototype engines have been undergoing testing, showing encouraging results in terms of performance and emissions, both on test benches and in the field. Different injection and combustion technologies, such as port fuel injection (PFI) and direct injection (DI), have also been assessed in the process. Initial efforts in the development of a hydrogen engine have considered PFI as a first suitable technology. The 6-cylinder engine prototype H966 exhibited at the components' booth 326 in hall A4 of this year's Bauma is equipped with said technology.

Exploring the future with ammonia

At Bauma 2025, Liebherr is presenting its concept of an ammonia engine. Focusing on market requirements, the components product segment has undertaken research activities with ammonia as a power source for dual-fuel internal combustion engines. The achieved results clear the path for further development of the solution. Green ammonia serves as a hydrogen carrier, offering the benefits of reduced transportation and storage costs. Generators and potential off-road powertrains fuelled by green ammonia could provide low- or zero-emission solutions for supplementing on-site power supplies. This engine will offer a high efficiency density power in line with the requirements of the mining industry. The ammonia mock-up engine will be on display at Liebherr's main booth in the Atrium area.

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About Liebherr-Components

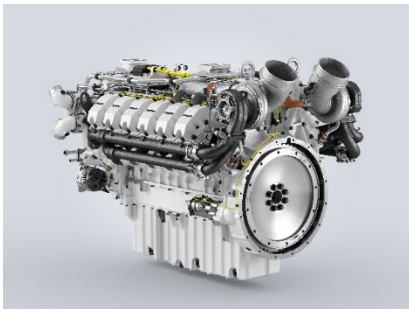
In this segment, the Liebherr Group specialises in the development, design, manufacturing of high-performance components in the field of mechanical, hydraulic and electric drive and control technology. Liebherr-Component Technologies AG, based in Bulle (Switzerland), coordinates all activities in the Components product segment.

The extensive product range includes combustion engines, injection systems, engine control units, axial piston pumps and motors, hydraulic cylinders, slewing bearings, gearboxes and winches, switchgear, electronic and power electronics components, and software. The high-quality components are used in cranes and earthmoving machinery, in the mining industry, maritime applications, wind turbines, automotive engineering or in aviation and transport technology. Synergy effects in s other product segments of the Liebherr Group are used to drive continuous technological development.

About the Liebherr Group

The Liebherr Group is a family-run technology company with a highly diversified product portfolio. The company is one of the largest construction equipment manufacturers in the world. It also provides high-quality and user-oriented products and services in a wide range of other areas. The Liebherr Group includes over 140 companies across all continents. In 2021, it employed more than 49,000 staff and achieved combined revenues of over 11.6 billion euros. Liebherr was founded in Kirchdorf an der Iller in Southern Germany in 1949. Since then, the employees have been pursuing the goal of achieving continuous technological innovation, and bringing industry-leading solutions to its customers.

Images



liebherr-combustion-engine-d9612.jpg

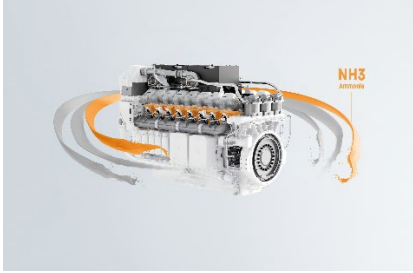
D9612: With the new, more powerful engine for off-road applications, Liebherr is on the pulse of time.



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H966: This hydrogen combustion engine is equipped with a port-fuel injection system.

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Liebherr is exploring the future with ammonia.

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Published by

Liebherr-Components AG
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