

Press release

Where steel ends: Clear the stage for Liebherr's hybrid solutions in lightweight construction

- Merging the hydraulic cylinder portfolio with carbon fibre reinforced plastic (CRP) creates lightweight hybrid cylinders.
- Massive weight saving results in higher efficiency and effectiveness for the application.
- For certain applications, hybrid solutions can be implemented without a major development effort.
- Technology that also qualifies for other hydraulic components.

Lightweight construction is considered an important trend and driver not only in construction machinery, but also all the way to stationary applications. If using suitable components can save weight, a significant benefit is generated for the application and the daily use of any equipment. Hybrid cylinders by Liebherr make a valuable contribution to it, since they are classic components made of steel in a CRP wrapping. At Bauma 2022, Liebherr will exhibit a hybrid cylinder and provide insights into further competencies and development opportunities in the fibre composite sector. In addition, the online configurator for hydraulic cylinder series will be presented, in which the hybrid cylinders within the 380 bar series-production range are also available.

Nussbaumen (Switzerland), 28. September 2022 - Liebherr's components product segment initially introduced its work in the field of fibre composites at Bauma 2019. In the meantime, the Components site in Kirchdorf an der Iller (Germany) has not only gathered further expertise and expanded its production capabilities, but has also worked on transferring this technology into its established hydraulics portfolio. One major result of this are the so-called hybrid cylinders, which are part of the product range in the fibre composite area. Even today, following preliminary development and targeted design, all classic hydraulic cylinders can be wrapped with CRP. In some application areas, solutions are even possible without an extensive development effort. The hybrid cylinder variant is integrated as a standard in the 380 bar series and is available as a separate option.

Why hybrid cylinders?

Many years of experience in the development and production of hydraulic cylinders and expertise in the field of fibre composites are optimal prerequisites for a goal-oriented combination. If weight plays a

crucial role in the given application (for example, due to road approvals), hybrid cylinders are the right choice. Here, easy interchangeability of existing Liebherr hydraulic cylinders is possible. When specifically designing a hybrid component to save weight, the positive characteristics of fibre composites, such as stiffness, strength and density, become an advantage.

Achieve the full potential with the right component

The effect of using a lightweight component, such as a hybrid cylinder, varies depending on the application. Weight savings can increase operating speeds, enlarge attachments and booms and raise payloads. In addition, emissions and fuel consumption are reduced. The basis for the required improvement is the cooperation with customers. The Liebherr team accompanies them from the development of the solution-oriented product to delivery and far beyond. This is crucial with fibre composites, because the structure and individual DNA of the product are what counts in achieving the desired results.

Further steps in the scope of development

The company has already achieved noteworthy results, for example in field test trials in the mining sector. Liebherr can transfer this knowledge to other applications and further expand it. The goal is not a hybrid cylinder but a full-fledged CRP one. Although there are still a number of steps to be taken before this can be achieved, Liebherr already works on merging concepts between steel and fibre composite parts, for example, and tests the results. The implementation of CRP conversions in conjunction with steel components are applicable to other products in the portfolio. In the future, for example, piston accumulators can be wound from CRP. Here, too, complete CRP solutions are possible and are being systematically tested.

About Liebherr-Components

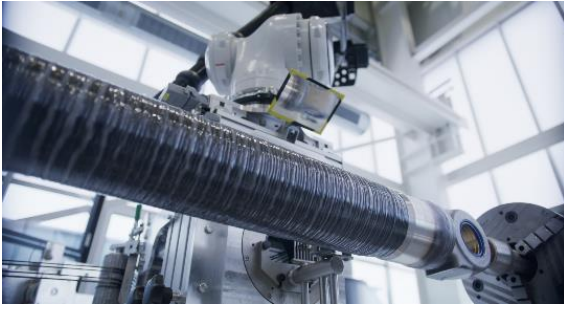
In this segment, the Liebherr Group specialises in the development, design, manufacturing of high-performance components in the field of mechanical, hydraulic and electric drive and control technology. Liebherr-Component Technologies AG, based in Bulle (Switzerland), coordinates all activities in the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

Image



liebherr-hybrid-cylinder-cfrp.jpg

Liebherr produces hybrid cylinders in-house in an efficient and economical way on the modern, robot-assisted filament winder.

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