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Press Release

Forged Technologies

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Data driving Berco into the future

- Field data collection, archiving and analysis, supporting OEMs and Aftermarket dealers, and developing increasingly high-performance system solutions
- Laboratory analysis and advanced simulation techniques to optimally combine real and virtual environments
- Advanced engineering to develop complete solutions for every operating environment

At Bauma 2022 (A5.449), Berco, a leading global manufacturer and supplier of undercarriage parts for the world's leading manufacturers of tracked construction equipment, is presenting its new data-driven approach. For Berco, data is playing a strategic role in supporting customers and developing system solutions with a view to continuous improvement.

Field monitoring of product performance provides a wealth of data

At Bauma, Berco will present the patented 'Smart Undercarriage' system developed by the company together with a spin-off from the University of Rome. This first-to-market Original Equipment (OE) solution allows the temperature of compact track loader (CTL) machine rollers to be constantly monitored using a built-in sensor, a radio frequency identification (RFID) and an antenna that transmits data to a control unit. The roller temperature can then be viewed on the machine's display or on any other device such as a smartphone or tablet, thus enabling constant monitoring of the component.

Easily implemented on every roller and installed on every type of CTL on the market, the 'Smart Undercarriage' allows the Original Equipment Manufacturer (OEM) to check whether the component is operating in the optimal temperature range and to intervene in time if necessary. This results in the avoidance of field failures and the improvement of vehicle uptime.

Berco, moreover, has already allocated funding to develop an added kit for 'Smart Undercarriage' for Aftermarket customers which will allow for the direct and consistent receiving of collected temperature data. This will enable the company to learn more and more about the operating environments of individual machines and to implement its dedicated technology proposition accordingly.

Also present at Bauma 2022 will be the recently launched versions of the mobile and web applications of 'Bopis Life', a cloud-based platform where all inspections conducted on machines by Berco's field engineers and dealers are recorded. Using hand tools or ultrasonic devices, the material thickness of each undercarriage element is measured,



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thus, monitoring its state of wear. The dealer can then better plan inventory management and operational efficiency, resulting in a significant reduction in TCO (Total Cost of Ownership).

"Field data collection, archiving and subsequent analysis," says **Francesco Grenzi, Berco R&D Executive Director**, "play on the one hand an increasingly strategic role for our company in supporting our customers, as it allows them to benefit in terms of machine uptime. On the other hand, the constantly expanded data archive represents a powerful tool in Berco's hands for the development of increasingly high-performance system solutions, confirming its leadership role in undercarriage products."

The 'Bopis Life' platform is used worldwide. To date, more than 20 licenses have been activated at Berco dealers and more than 300 inspections have been carried out over the past three years, resulting in a significant amount of data collection and analysis.

Berco's continuing benchmarking activities

The amount of data currently being collected by Berco through 'Bopis Life' and 'Smart Undercarriage' (this is set to increase even further in the future) is proving to be crucial for benchmarking activities. These are conducted by its R&D division on its own products, as well as on those of competitors and suppliers.

For benchmarking tests, Berco is utilising its state-of-the-art equipment in the modern R&D department of the Copparo plant. This technology makes it possible to store all the data collected, which can then be used for later analysis. Among other things, analysis is constantly being performed on, individual key components, dimensional checks, metallurgical analyses and functional tests. All benchmarking activities carried out by Berco draw on the value analysis and value engineering (VAVE) method, which is preparatory to the development of Aftermarket lines. 'VA' defines the functions of a product and the proportion between its value and cost. The evaluation of design and implementation, moreover, is carried out through 'VE' with the aim of eliminating the elements that do not contribute to the function of the product.

Advanced engineering processes for product development

Berco has the enviable ability to combine the real and virtual environments, using highly advanced virtual simulation techniques (Finite-Element-Method FEM) on all new components, with testing carried out on an exclusive test bench equipped within the laboratory. Developed by Berco engineers, the unique test bench ensures solid component design from the early stages of development. The duty cycles of the test bench, moreover, have been clearly defined through field engineering experience.

"The test bench uses very advanced, in-house-developed software with algorithms that can replicate exactly what happens in the field," comments Grenzi. "This ensures that each product is fine-tuned as early as the sampling stage. We can thus offer our



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customers real – not just theoretical – design from the very beginning of development, accelerating time to market in parallel."

Complete undercarriage solutions

The data gathered through numerous field inspections as well as from comprehensive laboratory and test bench investigations allow Berco to have an unparalleled mastery of individual applications. This enables the company to propose highly engineered solutions configured according to the needs of the individual application, whether for OE or the Aftermarket. In the latter, Berco's comprehensive offer consists of three different lines: Original, Service Line and Platinum. The Original Line provides dealers with components identical to the corresponding Original Equipment parts, in terms of geometry and production processes.

The Service Line, moreover, was created for machines operating in the construction world and offers the perfect balance between value and performance. Finally, the Platinum Line has been developed to operate in extreme conditions of high impact and high abrasiveness, demonstrating exceptional performance in terms of service life, exceeding Original Equipment by values as high as 35 percent.

About Berco:

Berco is a global leading manufacturer and supplier of undercarriages for heavy machinery. With over 100 years of experience, the Italian born company creates tailor-made undercarriage solutions for all types of machinery that range in weight from 1 to 330 tons. Being a market leader in components for Compact Track Loaders (CTL) and a main player in the mining sector, the industries the company supplies include construction, forestry and agriculture. One in every five chain-driven construction vehicles relies on Berco systems. The company's commitment to innovation is demonstrated by its continual investment in R&D as well as by its supplying of best-performing, long-life solutions to leading OE manufacturers.

For the Aftermarket, the company provides drive sprockets, idlers, rollers, track chains, track shoes and undercarriage systems. Its ranges are available in three product lines: Platinum, Original and Service. Berco's main factory is located in Copparo, Italy, and the company has four other facilities in Italy, the US and Brazil, with an overall workforce of around 1,800 employees. Berco has been part of the thyssenkrupp group since 1999, and in 2017 joined the Forged Technologies Business Unit – the world's largest steel forging company.

About thyssenkrupp Forged Technologies

thyssenkrupp Forged Technologies is a diversified supplier of components and system solutions for a wide range of different industries and markets. The forging group has a unique global footprint by operating more than 50 forging presses and over 150 machining and assembly lines in 15 locations worldwide, including in Germany, Italy, Bulgaria, the USA, Mexico, Brazil, India and China. With sales of well over 1 billion euro, the company specializes in the production of components and systems for the automotive, truck and construction machinery industries.

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