

**NEWS RELEASE**

* **Wickert: Interest in Composite Presses** **for Producing Ballistic Plates** **is on the rise**
* **Special presses used to produce** **armor for civilian and military vehicles, ships and aircraft**

*Landau, July 21, 2022*. Since 2021, Wickert Maschinenbau has recorded a considerable increase in interest in composite presses for producing ballistic panels. They are used for armoring to protect civilian and military vehicles, ships, and aircraft from gunfire.

In particular, there is a demand for complete systems comprising a composite press, automated loading and unloading, along with efficient temperature control. Most recently at the end of 2021, Wickert commissioned a complete system for a supplier to the Australian Ministry of Defense.

It delivered a WKP 52000 composite press that had been modified to meet the requirements of ballistic plate production. Weighing 150 t, the press features a lower-piston frame design with a fully hydraulic closing system and boasts a press force of 52,000 kN and 1,600 x 2,500 mm heating plates.

**Ballistic plates made from up to 60 layers of fiber composite**

Producing ballistic panels involves processing blanks of up to 60 layers of fibers impregnated with a special plastic. These are made of high-performance materials such as aramide and high-performance polyethylene. Combined with glass, ceramic, and metal fibers made of aluminum oxide, silicon carbide, boron carbide, aluminum, and armor steel, they are then heated in composite presses and pressed into fiber-reinforced composite panels.

**Homogeneous tempering**

Composite presses used to produce ballistic panels must adhere to specific requirements. To begin with, the blanks and semi-finished products are heated and cooled very uniformly in the press, while the temperature deviation over the whole panel remains at a mere ±3 ºC.

In a first step, the tempering system heats them to 40 ºC and then, in a second step, to 160 ºC. This melts the plastic; the press gives the blank the desired shape. Then it cools down again in the mold to 40 ºC and, once removed, to room temperature.

**Uniform pressure**

Moreover, press cylinders made of high-strength steel – six on the WKP 52000 – ensure a high force density and homogeneous pressure across the entire surface. A fine pressure setting of just 960 kN was provided as an optional feature for the project in Australia. Typically, the minimum press force is ten percent of the maximum output; on the WKP 52000, this would otherwise have been 5,200 kN.

**High plane parallelism**

Finally, the presses stand out thanks to their extremely precise closing motion. The system's high plane parallelism with a maximum tolerance of 0.025 mm/m contributes to this.

To ensure quality and monitor production, sensors also capture all the system's process data. The information is stored for accurate documentation of the production process.

**Composite presses are produced at the company's headquarters in Landau, Germany**

All of Wickert's hydraulic composite presses are developed and manufactured to meet customized requirements at the company's headquarters in Landau, Germany. In addition, processing temperatures of up to 500 °C are possible, as well as freely selectable pressing forces of up to 100,000 kN. The dimensions of the presses and their precision heating plates can be freely selected. The requirements of the Industry 4.0 age require automation and networking just as much as the integration of additional production processes, such as RIM and RTM injection.

**About Wickert Maschinenbau GmbH**

Wickert Maschinenbau GmbH is a medium-sized, family-owned company based in Landau in Germany. The company is active in the development and manufacture of hydraulic presses and fully automated press systems. All machines and systems have a modular structure and feature pressing forces of between 20 and 100,000 kN, with a customer-specific layout in each case. The provided systems are used to process elastomers, composites, plastics and powder materials. They are used not only for the production of pharmaceutical sealing plugs, but also to manufacture safety parts in automotive brake systems and bi-polar plates for fuel cells. Other applications for Wickert presses include e-mobility, laboratories, and research facilities.

Hans-Joachim Wickert and Stefan Herzinger are the partners and managing directors of the family business that was founded in 1901 and exclusively manufactures in Landau in der Pfalz, from where it supplies its customers in Europe, the Americas and Asia. In 2021,190 employees generated revenue of around € 45 million.

**Images:**



Image 1:

The composite press delivered to Australia is a smaller model of the WPK 60000 illustrated here with automatic loading and unloading (image: Wickert Maschinenbau GmbH).

Ein Bild, das Himmel, draußen, Militärfahrzeug enthält.

Automatisch generierte Beschreibung

Image 2:

The LEOPARD 2 A4 from Krauss-Maffei Wegmann is protected with composite armoring (image: KMW, use permitted)

Ein Bild, das LKW, draußen, Transport enthält.

Automatisch generierte Beschreibung

Image 3:

Producing ballistic panels involves processing blanks of up to 60 layers of fibers impregnated with a special plastic. These are made of high-performance materials such as aramide and high-performance polyethylene. Combined with glass, ceramic, and metal fibers made of aluminum oxide, silicon carbide, boron carbide, aluminum, and armor steel, they are then heated in composite presses and pressed into fiber-reinforced composite panels (Image: IStockphoto).

Ein Bild, das Auto, draußen enthält.

Automatisch generierte Beschreibung

Image 4:

Ballistic panels are used for armoring to protect civilian and military vehicles, ships, and aircraft from gunfire (Image: IStockphoto).

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