# Colossal performance

## 156-tonne press table from one source

**Where it is a question of exceptional precision, high productivity and reliability, then punching and forming presses by ANDRITZ Kaiser are considered as the safe choice worldwide. The characteristic design feature of the systems with pressing forces of 630 to 25,000 kN is their outstanding stability. Thereby, longer service life, consistent punching precision and low tool wear guarantee a distinctly higher process efficiency. For building the stable basic body, ANDRITZ Kaiser relies on casting constructions up to a weight of 65 tons, bigger bodies are welded from steel. The plant manufacturer commissioned Jebens GmbH, a leading specialist for thick and heavy flame-cut parts and complex welded assemblies, with the production of the over 8 meters long pressing table of a press with 16,000 kN press force. In addition to producing welded components, Jebens also took over the complete mechanical, hydraulic and electrical pre-assembly of the pressing table – a real heavyweight at 156 tons in finished state.**

More than 70 years' experience in building high-performance punching and forming presses makes ANDRITZ Kaiser GmbH a synonym for this technology. The technological market leader mainly serves medium-sized enterprises with customised solutions from the individual press till the complete production line with conveyor system, automation, tools and parts handling. The extent to which these entities regard the quality and technology of ANDRITZ Kaiser machines, can be seen from the fact that almost no company from this customer base built up over decades uses just one system of the traditional manufacturer. The frontrunner is the Härter Group in Königsbach-Stein with more than 40 machines. In the modular design, the largely standardised main assemblies are developed, designed and built for individual requirements. That qualifies it for efficient

series production of a wide component spectrum. The main areas of application are structure parts for the automotive supply industry, production metal fittings, electric engines, electronic components as well as components for household appliances. Around 130 employees generate an average 35 Million Euro turnover, of that 60 percent domestic. Other markets are West and East Europe as well as China, Mexico and the USA, where numerous systems of ANDRITZ Kaiser are in use, because leading German manufacturers also equip their plants over there with the proven machines from Bretten. In China, therefore, the plant manufacturer has set up his own customer service. At present, more than 8000 presses of ANDRITZ Kaiser – of that more than 2,500 punching and forming presses – manufacture sophisticated quality products. In addition to the sophisticated, cutting-edge technology of the customised systems, customers also appreciate the close and dedicated support – even after business hours if there's an emergency. They obtain the systems including all declarations of conformity on a turn-key basis from a single source. If the customer desires, even the architecture and construction company was commissioned, to build a foundation necessary for the system. Since the takeover by the ANDRITZ Group in the year 2004, ANDRITZ Kaiser combines this proven flexibility and creativity of a mid-sized company with the strength of a global corporation. By regular cooperation with leading universities in the field of forming technology, the innovation-driven press builder from Bretten ensures continuous development of its systems according to the latest technical knowledge. It is thus best equipped for progressive digitalisation.

**Special stability**

Precision and performance of the systems are based on the specific design: The divided main body with tie rods and traverses between the stands ensures optimized vibration behaviour. At the same time, the bracing of the cross-pieces improves the parts quality by higher punching precision. Longer system service life and tool life further vouch for this

design. For special stability, freedom of vibrancy and lifetime, there is also the power unit with quadruple stored eccentric shaft. Depending upon the concrete task, ANDRITZ Kaiser chooses the optimum engine-gear-combination out of four drive systems: Direct drive, planetary gear, towing crank or servo engine. The specific integration of the high-precision tappet guide prevents all production impacts reliably and free of maintenance. The characteristic compact design of the presses is thanks to the integration of oil tank and hydraulic units in the machines. Thus, the pressing table takes up the oil tank for the pressure oil lubrication in the closed circuit. The assemblies for hydraulics, pneumatics and lubrication are accommodated well accessible in the installation profiles at the press stands. This sophisticated arrangement does not just reduce the maintenance expenses, but also the place that the plant requires. Be it engine components for electric toothbrushes, buckles for exercise sandals or components for high-value bicycle gearing systems: The punching and forming presses by ANDRITZ Kaiser have been fulfilling the parts tolerances of 0.01 millimeters – a diameter of a sixth part of a hair – for decades. Application rates of 600 radiator lamellas made of 0.1 mm thick aluminum sheet, 135 belt retractors, 35 housings for refrigerator compressors or 50 metal fittings made of high-strength steel are typical outputs per minute of these systems.

**Colossus in perfect grip**

With a pressing force of 16,000 kN, four connecting rods, wheel gears, four servo engines as well as an almost eight meter long table, the KSTU 4Q 16,000–60–11S–R–SE is counted among the largest welded sizes, which ANDRITZ Kaiser manufactures. It is used in voestalpine Stamptec for manufacturing structure parts for the new A-class of Mercedes-Benz. The tools required for that are up to 6 meters long and the press is designed both for the progressive as well as for transfer operation. Similar machines by ANDRITZ Kaiser are being used by Daimler AG in two of its punching plants with a record-breaking 30,000 strokes per day. Till the new punching

and forming press for voestalpine Stamptec became operational, a lot was literally much moved on behalf of ANDRITZ Kaiser: The total weight of the press is more than 450 tons, which is delivered to the customer in several parts via heavy transport, is mounted there by the plant manufacturer and put into operation. In the process, the pressing table, with 156 tons unit weight, was the largest chunk weight-wise. The top part weighed "just" 100 tons, each of the eight meter long tie rods with 220 mm diameter around 3.5 tons. "Many a competitor would have built the table at least 30 tons lighter", laughs Joachim Bolz, Managing Director of ANDRITZ Kaiser. But lack of stability in the table holds the danger that the plunger starts to "breathe" – and thus both the tool as well as the quality of the punched parts are affected. To avoid that, his company relies on highest stability even in the case of this table through component height and a variety of ridges, which were welded in the frame at Jebens. In addition to the requisite stiffness of the parts, the main challenge for the designer is these enormous components must match each other at the building site with less than one tenth of a millimeter tolerance. The requirements from the suppliers are equally high as from Jebens: In case of the pressing table, tolerances from 0.04 to 0.05 mm were to be complied with by the welding experts from Korntal-Münchingen. Jebens has already been supplying heavy plates and flame-cut parts to ANDRITZ Kaiser for several years. However, the press manufacturer has entrusted the specialists for precision work in steel with the manufacture, processing and comprehensive pre-assembly. The decisive factor in this was the considerably increased manufacturing possibilities at Jebens in the previous year thanks to the opening of the branch in Nördlingen. Two welding robots, several special welding engineers and a XXL- annealing furnace make possible the complete processing of such extreme formats. With 3,620 mm height, 4,950 mm length and 7,950 mm width, the pressing table was, however, a real challenge for Jebens. The welding components were manufactured exactly as per customer specifications with 146 tons unit weight, according to the welding technology. They got the necessary heat treatment in the 15

meters long, 5.8 meters wide and 3.8 meters high annealing furnace. The mechanical processing as well as the final coating as per customer specifications was done under the direction of Jebens at a partner company – just like the subsequent hydraulic and electric pre-assembly of main components like drawing cushions and their complete drive. The organization of the necessary special transports for delivering and collecting at the external working partner as well as of the subsequent transport to voestalpine Stamptec was also taken over by Jebens. Joachim Bolz Is full of praise for this customized management of these complex requirements and the seamless control of the processing chain. "We are very satisfied with the entire execution by Jebens", he concluded. Stefan Kaiser, also managing director at ANDRITZ Kaiser and grandson of the founder, adds: "Jebens has established itself among four, five other competitors by the mix of proximity and competence. It was not the cheapest, but, with an eye on the overall package, the most cost-effective supplier". What is also decisive for this evaluation according to him is the "very good project management of Jebens, which was characterized by open, good communication, very good supplier selection and first-class implementation". Jebens even convinced the press manufacturer across the board by its technical competence. "Jebens has a very good quality manager and a special welding engineer, who have advised us very competently in the creation of welded components", adds Joachim Bolz. As the construction of presses in this dimension was not a part of daily operations even at ANDRITZ Kaiser, continuous interchange between construction and production was indispensable. Both the managing directors are full of praise for the good, open dialogue with Jebens. The conclusion by Joachim Bolz also turned out to be positive on production, pre-assembly and processing by the specialists for complex welded designs in large format: "You have done a very good job of it!"

*10,517 characters including spaces*

**Jebens GmbH**

As a leading specialist for heavy flame-cut parts, mechanical processing and welded constructions with unit weights of up to 160 tons, Jebens GmbH continues to set standards with locations in Korntal-Münchingen and Nördlingen. With a seven-stage production of products in thickness ranges from 8 to 1,400 mm, widths till 5,000 mm and lengths till 20,000 mm, Jebens stands for precision work in steel. As a subsidiary of the most famous heavy plate manufacturer in the world, Dillinger, Jebens had access at all times to technologically pioneering know-how in steel. Leading technology, the latest machines and systems, as well as the largest annealing furnace in South Germany, make Jebens experts in challenging tasks.

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