

Precision steelwork for roll frame presses

Fine-grained steel perfected

Specialising in products that must be highly dependable, Wiedenmann-Seile GmbH has continued to set new standards for more than 200 years. The family-owned and run company from Marktsteft has successively expanded from its eponymous original business area of fastening materials – ropes, chains, lashing belts, slings and lifting gear. This means that its portfolio now includes seven further business areas, covering fall protection (PPE), crane and hoist technology, as well as special steel construction. One focus of the company's own steel manufactory is on customer-specific hydraulic presses with a pressing force of up to 1,000 tonnes (10,600 kN). When manufacturing the large, heavy, flame-cut parts required from high-strength, S690 quality steel, the steel manufactory places its trust in Jebens GmbH from Korntal-Münchingen.

In 1969, the father of the present owner and managing director took over the rope works that was founded in 1812 in Fürth. Since 1965, the main factory has been located in Marktsteft and today there are also branches in Nuremberg, Brehna, Remscheid, Leuna and Issum. Over the last three decades, the second-generation head of the family business, Bernhard Etzelmüller, has developed the company into the Wiedenmann Group thanks to a keen sense for changed market conditions and successful niches. It has around 150 employees in six locations, including one hundred at the headquarters. Demanding, customer-specific, custom-made products and comprehensive service are the secret of the dynamic, mid-sized company's success. The establishment of their own steel manufactory with 20 employees at present – including seven in the in-house development and construction department – in 2010 was the logical consequence of the continuously growing demand for individual steel construction. Its focus lies on the development, design, dimensioning, welding and final assembly of

special structures: there is particular demand for customer-specific load-carrying equipment, such as traversing hoists with a carrying capacity of up to 400 tonnes, grippers, handling systems or made-to-measure hydraulic workshop presses from a batch size of one upwards. Through close collaboration with Enerpac, a global market leader in tool hydraulics, hydraulic presses have, nevertheless, taken up an increasing amount of space in the order book of the steel manufacturer: 50 presses since 2013 speak for themselves. Wiedenmann press customers also include major manufacturers of construction and agricultural machinery, as well as gearbox manufacturers or well-known research institutes, as Volker Kohlhepp, the head of sales at the steel manufactory and a member of the board of directors, explains. Of critical importance for the tailor-made design of each press is, in his experience, the know-how built up over decades in design, construction and manufacture – paired with a strong focus on the application. Thus Wiedenmann builders' the special focus for each press, in addition to the component type and the planned machining programme, is also on ergonomics, product safety and ease of servicing. "Component feeding, ease of operation and easily accessible maintenance assemblies on our presses contribute considerably to efficiency of production and customer satisfaction", is how Kohlhepp explains this principle. In its own words, Wiedenmann enjoys a unique position with its in-house development of roll frame presses, on which the press frame, which is mounted on rollers, moves over the press material on a rigid table, like a gantry.

A press table with a key feature

An example of this is a four metre high, 2.8 metre wide roll frame press with 3,193 kN (300 tonnes) of pressing force, a table length of 3.8 metres and 13 tonnes tare weight. It is used for pressing and levelling components at a leading manufacturer of gear trains for wind energy, industry and transport. The massive welded and completely electrified roll frame construction for this workshop press is movable along a distance of 1,750 millimetres. This also allows one press mounting per crane for heavy components, such as ball or

roller bearings. Its electronically adjustable upper yoke can be set to the desired height in five stages of 400 millimetres via a spindle drive and operating panel. The hydraulic cylinder mounted centrally in the upper yoke locks automatically in the new position. Hydraulically adjusted locking pins form the load-bearing connection between the upper yoke and the pillars. The hydraulic pump and controller are mounted on the press frame and move with it. As the press is strengthened in the interaction with the table that can be moved forward automatically, it forms a closed pressure system, so that no force is transmitted into the floor. As a special feature, instead of the usual reinforcement ribs, Wiedenmann integrated insert openings for press tools in a range of sizes into the tabletop. They can be exchanged, depending on the type of component being processed and thereby make a much wider range of processing operations possible for the operator. The vast experience and highly efficient production at Wiedenmann reflects the tempo of the order processing: It only took six weeks from the first contact regarding the basic specification of the press, dimensioning, the creation of a very comprehensive specification and order placement through to the presentation of the baseline design, including the detailed description. Wiedenmann only needed four months from order placement to delivery – almost a record for the complete part from dimensioning, detail construction, finishing, assembly and the test phase through to painting. In addition to hydraulic components from Enerpac, Wiedenmann only purchased parts for the controller, machine elements, sheet metals and flame-cut parts.

120 millimetre thick fine-grained steel

With the press table, eleven different press-table inserts and the base components for the mobile upper yoke, Jebens created the core elements of the base construction for this high-end press. As the assembly of all further components was based on that, the delivery deadlines were, as always, tightly set at two weeks. On this occasion, too, the availability of high-strength steels in its own warehouse was an advantage for Jebens – with the quality assured thanks to its being a member of Europe's leading heavy plate

manufacturer Dillinger. The high pressure load of 3,193 kN required S690 QL quality fine-grained steel for the press table and inserts. For this reason, Jebens' specialists' expertise in demanding, made-to-measure precision steelwork gathered over the years has also proven itself in the processing of large, heavy components of this quality. To suit the material, substantially higher yield strength and tensile strength, as well as the tight tolerances set by Wiedenmann, required adaptations during cutting and alignment. So the fine-grained steel was pre-heated to 150 degrees Celsius by the flame cutter and parameters such as oxygen pressure and the cutting speed were set accordingly. The profiling was performed with several burners operating in parallel. A particular challenge was the subsequent straightening of the 120-millimetre-thick sheets of high-strength steel with the flame. In this case, the proven expertise of the master aligner at Jebens was needed to precisely control the alignment process with the flame based on the precise observation of the surface colour and regular temperature measurement. This is also a prerequisite for ensuring that there is no loss of the qualities of the material. Know-how and quality that Volker Kohlhepp appreciates: "Jebens is good! They can do it!"

Top in material availability and competency

Since 2014, Kohlhepp has worked with experts from Korntal-Münchingen – not only for presses, but also for other special constructions in steel manufacturing. Other flame-cutting operations were not always able to meet the short delivery times required, so he went looking for alternatives. The extensive stock of high-strength steel in thicknesses from 30 to 300 millimetres and the good access to rollings from Dillinger spoke in favour of Jebens straight away. "Many of our suppliers can deliver at most S355J2+N quality from their warehouse. For our increasing ultra-high strength steel constructions we required a reliable supplier for S690QL and S960QL quality materials", states Kohlhepp. Jebens' company size and throughput were also important selection criteria for him in terms of price and reliability of supply. "Our customers demand high performance from us,

which our suppliers also have to guarantee reliably”, is how Volker Kohlhepp explains his expectations. For the last four years, Jebens has met these high demands to his complete satisfaction. “The collaboration is very good – both for requests by telephone regarding the offer calculations and in distribution.” As a former strategic purchaser, he values suppliers who are happy to take on increasing requirements and successfully master new challenges: “Jebens is agile. You can rely on them and that is why we are happy to work with this company on our demanding special constructions.”

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Jebens GmbH

As a leading specialist for heavy flame-cut components, mechanical processing and welded structures with weights of up to 160 tonnes per item, Jebens GmbH regularly sets standards in its locations in Korntal-Münchingen and Nördlingen. With seven-stage manufacture of products from eight to 1,400 mm, widths up to 5,000 mm and lengths up to 20,000 mm Jebens stands for precision steelwork. As a subsidiary of the most important heavy plate manufacturer worldwide, Dillinger, Jebens has access to technologically pioneering steel know-how at all times. Leading technology, the most modern machines and systems, as well as the largest annealing furnace in Southern Germany, make Jebens the experts for demanding jobs.

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Picture 1: View into the production hall of Wiedenmann-Seile GmbH.



Picture 2: With the press table, eleven different press-table inserts and the base components for the mobile upper yoke, Jebens created the core elements of the base construction for this high-end press.



Picture 3+4: For this four metre high and 2.8 metre wide roll frame press with 3,193 kN (300 tonnes) of pressing force, a table length of 3.8 metres and 13 tonnes tare weight, Jebens welded press table and base components of the upper yoke.



Picture 5: The massive welded and completely electrified roll frame construction is movable along a distance of 1,750 millimetres.

Picture 1-5: © Wiedenmann-Seile GmbH

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Picture 6: The electronically adjustable upper yoke can be set in five stages of 400 millimetres via a spindle drive and operating panel.



Picture 7: Jebens used S690 QL quality fine-grained steel to ensure the required high pressure load of 3,193 kN.



Picture 8: The hydraulic cylinder mounted centrally in the upper yoke locks automatically in the new position.

Picture 6-9: © Wiedenmann-Seile GmbH
Picture 10: © Jebens GmbH

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Picture 9: Jebens manufactured eleven different press-table inserts for the high-end press.



Picture 10: The availability of high-strength steels in their own stock - in thicknesses from 30 to 300 millimetres – spoke in favour of Jebens.



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Picture 11: The fine-grained steel was pre-heated to 150 degrees Celsius and parameters such as oxygen pressure and the cutting speed were set accordingly.



Picture 12: The profiling was performed with several burners operating in parallel.



Picture 13+14: For the straightening of the 120-millimetre-thick sheets of the high-strength steel with the flame, the proven expertise of the master aligner at Jebens was needed.



Picture 11-14: © Jebens GmbH

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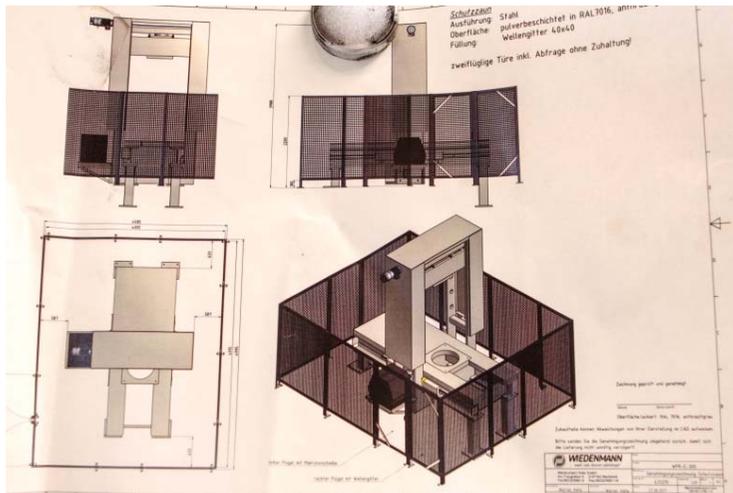
Picture 15-17: The many years of experience of the flame cutting specialists in the challenging precision steel work spoke in favour of Jebens.



Picture 15-17: © Jebens GmbH
Picture 18-19: © Wiedenmann-Seile GmbH

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Picture 18: Wiedenmann only needed six weeks from the first contact to the presentation of the baseline design, including the detailed description.



Picture 19: Volker Kohlhepp, head of sales at the steel manufactory and a member of the board of directors.



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