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**Maximize energy
efficiency in
joining processes**

Invest in the future with electromechanical NC joining systems from Kistler

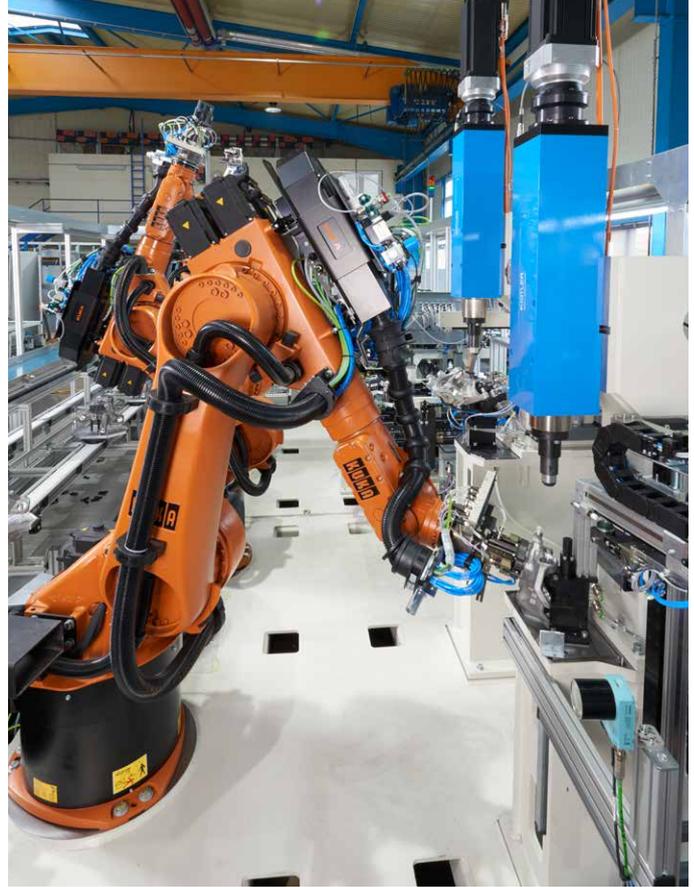
Boost flexibility and cut costs in industrial production

Staufermatic numbers all the world's best-known automobile manufacturers among its customers. This mechanical engineering company was recently commissioned by a renowned car manufacturer in Swabia (Germany) to develop a new assembly plant for wheel carriers that makes use of Kistler's versatile joining and monitoring technology.

In Germany and throughout the world, Staufermatic GmbH has made a name for itself as a highly professional manufacturer of special-purpose machinery and plant. Every machine developed by this mechanical engineering company at its base in Göppingen is a unique product, manufactured to meet each customer's specific requirements. The 40-strong workforce at Staufermatic has developed a new production plant for wheel carriers on behalf of a renowned Swabian automobile manufacturer. From the outset, the planning for this plant focused on two related issues: safety and 100% quality control in production. In terms of safety, wheel carriers are especially important components for car manufacturers because every defective part poses a potentially major risk for all the road users involved.

But according to Managing Director Holger Zilian, this was only one of the challenges: 'Our remit was to design a plant that would meet the highest standards of safety engineering – but also one that would give the end customer maximum flexibility in terms of production.' One of the specified requirements was therefore to gear production to high quantities. With the plant's predecessor model, the car manufacturer actually fell victim to its own success: heavy demand suddenly caused a bottleneck in production which, in turn, led to the purchase of a second plant. The aim was to exclude such a scenario from the start with the newly launched model, by ensuring that the plant is designed for large quantities.

Because space in the factory is limited, the customer also wanted production to be handled by one single assembly plant. Zilian recalls: "We were confronted with the challenge of designing a compact production plant for wheel carriers that could produce with greater safety and speed – but at the same time, it had to occupy less space. We were awarded the contract on the basis of the concept that we eventually submitted to the customer.



Electromechanical NC joining systems from Kistler play a key part in cutting energy costs, boosting plant capacity utilization and making production more cost-effective across the board.

And from day one, it was clear that we were going to include Kistler technology in this project."

Flexible Kistler technology – ideal for special-purpose machinery manufacturers

Staufermatic needed about 12 months to build the new wheel carrier production plant. According to Zilian, the primary focus was on ensuring precision: "The process of press-fitting the rubber bearings into the wheel carriers involves fixed dimensions, so maximum precision is required. This cannot be achieved with conventional hydraulic systems. With a process of that sort, there is a risk that the rubber could be dented. That's why we've already opted for NC joining systems from Kistler in similar projects."

The newly completed plant features three Type NCFN NC joining modules from Kistler. The three modules are used at three out of a total of four stations, where their task is to press the rubber bearings into the wheel carriers. For this purpose, they perform various manufacturing steps. At the first station, thrust rod bearings are press-fitted with a Kistler joining module.

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Holger Zilian, Managing Director STAUFERMATIC Maschinenbau GmbH

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Thanks to their uniform operating philosophy, products in the maXYmos family are userfriendly and intuitive to operate.

The second station handles automated press-fitting of the spring link bearings. Finally, after the wheel bearings are bolted together at the third station, the wheel flange is press-fitted – again using a Kistler NCFN spindle. At each stage of the process, robots pass the component from one station to the next.

Kistler's technology meets all requirements

The press-fitting process is monitored by Kistler's maXYmos NC technology. According to Zilian, this system clearly represents the standard for integrated process monitoring: "maXYmos guarantees integrated process monitoring, and therefore 100% quality of the manufactured parts. That's because force-displacement monitoring is used to measure and evaluate every part that passes through the process. And as mechanical engineers, using maXYmos also gives us many benefits in the planning phase for complex plants such as this one. The maXYmos process monitoring system allows free programming, so it's simple to integrate additional assembly units. Kistler's technology helped us in no small measure to meet the requirements for quality, quantities, space and cost – and to do so elegantly." "What's more, this flexibility benefits the end customer too, because it provides the essential basis for increasing cycle times. On the new plant, components are manufactured in a mere 16 seconds – at least four seconds faster than a comparable conventional plant could achieve.

Lower costs for end customers

Zilian believes that the technology integrated into the new plant offers a host of additional benefits for the end customer: "With maXYmos NC, the entire production process is faster and more



maXYmos NC actuates the NC joining module via the servo amplifiers for linear and rotary movements, with the help of the integrated sequence control (sequencer mode).

flexible. If our customer wants to integrate a new component at a later stage, the sequence can easily be reprogrammed via Sequencer Mode. That means it's always possible to react rapidly to increases in demand." "Thanks to the superb precision, flexibility and high speed of the assembly processes, the customer can cut production costs significantly – right from the start. Electromechanical systems offer even more added value in other respects: space is saved on the production line, less energy is needed, and neither noise nor contamination are caused.

Kistler technology benefits the assembly process as a whole and in addition, the traceability of the wheel carriers is optimized by the use of maXYmos. Perfect documentation is ensured because each batch is identified by a data matrix code. maXYmos NC sends the quality data to the customer's master computer via the QDA interface. "This is an extremely important feature, especially in the automotive sector," Zilian notes. "That's because our customers' requirements are constantly increasing: the whole issue of data transfer for optimized production monitoring is becoming more important as time goes on – and that applies to data security as well."

This is why Zilian is proud of the new plant and of the work done by the team: "Because this plant offers new flexibility, our customer can save time as well as money on production – two critical success factors in the market of the future!"



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