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Flexible bending: CLAAS embraces automation in agricultural machinery

CLAAS does not rely on automation solely for its state-of-the-art forage harvesters. In its manufacturing operations, too, an automated bending machine from TRUMPF ensures flexibility and cost-effectiveness.

Lot sizes ranging from 50 to 200, complex components, and tight tolerances – the bending process at CLAAS poses a number of challenges. At the same time, cost pressures and the demand for skilled workers are on the rise.
For CLAAS , automation is therefore the logical next step – provided it integrates effectively into the production process. "Automation should not be an end in itself," explains Marco Schwab, head of sheet metal processing at the CLAAS site in Bad Saulgau. "It has to be a good fit for our components, our lot sizes, and, above all, our employees."

Investment in automation

CLAAS , headquartered in Harsewinkel, North Rhine-Westphalia, has made a name for itself on the global stage as an innovative manufacturer of agricultural machinery. In Bad Saulgau, the company manufactures components for harvesting machinery and attachments for forage harvesters. "We have a wide variety of models in this segment," explains Schwab. For a long time, this diversity posed particular challenges for the bending process. "We machine parts with simple bends as well as highly complex components with up to 13 bends," explains Schwab. As part of a group-wide investment programme focusing on automation, CLAAS therefore made a conscious decision to adopt a phased approach to automated bending: with a TruBend 5000 bending machine featuring the ToolMaster automatic tool changer, as well as a TruBend 7050 bending machine with the associated FlexCell bending automation system from TRUMPF.

Intuitive controls allow for flexible monitoring and adjustment of automated processes. Automation that is tailored to the components, lot sizes, and, above all, the employees.

In its manufacturing operations, too, an automated bending machine from TRUMPF ensures flexibility and cost-effectiveness. Employees monitor and oversee the processes.

Every component satisfies the most stringent quality requirements. After bending, the parts are robot-welded; the tolerances are correspondingly tight, at plus or minus 0.25 degrees.

Ergonomic and productive

The TruBend 5000 with automatic tool changer replaces an older press brake to provide greater flexibility and ergonomics in day-to-day operations. "We machine long, heavy tools with clamping lengths of up to three metres," says Schwab. "If a member of staff has to set up the machine manually several times per shift, it places an enormous physical strain on them." Automatic tool change offers real advantages in this area. More importantly, the new machine removes a previous constraint, as the specialist bending tool was previously only available on the existing line – which created a bottleneck. "Now we can manufacture large components in parallel on two machines, giving us much greater planning certainty."

Maximum flexibility with FlexCell

However, the real milestone on the path to automation is the TruBend 7050 with FlexCell. TRUMPF's flexible, retrofittable bending automation system can be disconnected and reconnected in just a few simple steps. This allows the TruBend 7050 to be converted into an automated bending cell when needed – and back into a manual press brake just as quickly. "The FlexCell was the perfect starting point for us," says Schwab. "We can process larger lot sizes automatically, but switch back to manual operation at any time if necessary. This flexibility was the deciding factor for us."

In day-to-day production, the system is now predominantly automated – including unattended operation during off-peak and night shifts. At the same time, it serves as a backup, for example, for complex parts or when capacity is required at short notice.

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>
> Marco Schwab, head of sheet metal processing at the CLAAS site in Bad Saulgau

Consistent quality – even during unattended operation

Despite all the freedom that automation offers, component quality is always the number one priority at CLAAS . This is not only part of the company's philosophy, but is also due to the production process. After bending, many parts are robot-welded, so the tolerances are correspondingly tight. "We're talking about plus or minus 0.25 degrees," clarifies Schwab. "We have to maintain this tolerance from the first to the last part in a batch – even when the system is running unattended at night." The automated systems keep up. For Schwab and his team, using the FlexCell has been an overwhelmingly positive experience as the quality is consistent, processes run smoothly, and scrap can be avoided in larger lot sizes.

Bending is all the rage

As a family-owned company, CLAAS is always mindful of its responsibility toward its employees. This is especially true when new technologies bring about significant changes to processes. "Of course, our colleagues were initially wary of automated processes," Schwab admits. "But that passed very quickly." Today, they handle other tasks such as monitoring, process optimisation and quality control. "Robot programming and digital process control are very appealing to younger employees," says Schwab. "I believe that automation significantly enhances the status of the bending engineer's profession."

CLAAS has deliberately opted for a phased approach to automated bending, with machines that fit flexibly, cost-effectively and practically into the production process.

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Better productivity with fewer shifts

The investment also pays off financially. With the TruBend 5000, CLAAS was able to reduce production from three shifts to two. "The machine isn't any faster than the old one," Schwab explains. "But overall, we're more productive and that makes a big difference."

For CLAAS ,the initial foray into automation at its Bad Saulgau site is just the beginning. Additional automation projects – such as those in the laser sector – are already being evaluated. This requires a pragmatic approach. "For us, automation is clearly an opportunity," Schwab sums up. "But we have to use it wisely. Where it makes economic sense, where it improves quality, and where it supports our employees. That's exactly what we've achieved with these two bending machines."

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