Success Story

Quick, flexible, economic

Meiller relies on Tandem Weld by CLOOS

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HAIGER/SLANY – The industrial vehicle specialist Meiller has trusted in the CLOOS technology for decades. At the Czech site of Slaný Meiller operates a total of six robot systems with eight welding robots and more than 300 welding power sources by CLOOS. The new CLOOS robot systems welds side walls for tipper bodies using Tandem Weld. This high-performance welding process achieves extremely high speeds when welding the thin, lightweight components and simultaneously increases production quality.

The family company Meiller, with headquarters in Munich, was founded in 1850 and can look back over a long tradition. Meiller has made its name as a worldwide market leader in the production and sale of tipper bodies and tipper trailers and high-quality lift doors. Through close cooperation with HGV manufacturers, chasses and bodies are optimally matched.

Photo 1: Meiller is one of the world's leading manufacturers of tipper bodies.

Lightweight construction in focus

Lightweight construction is becoming increasingly significant in the production of commercial vehicles. In the past, lightweight design played a special role in the automotive industry, however weight-reducing measures are now also in great demand in the industrial vehicle industry. Payload optimised lorries can transport more freight, save fuel and place less of a burden on the transport network – lightweight construction thus leads to enormous efficiency increases here also. "At Meiller, we increasingly use lightweight components," explains Andrej Stary, programmer and designer at Meiller in Slaný. The side panels of the tipper bodies are manufactured from 2.5-mm fine-grained steel. Previously, this component consisted of three individual elements; today the side panels are bent out of one piece, so that only one seam needs to be welded on each side. "Due to the reduced number of welds, the component is much lighter than before, which brings huge benefits for our tippers," says Stary. "The new robot system perfectly meets the high requirements of these demanding components."

7-axis robot increases workpiece accessibility

At the heart of the CLOOS system are two 7-axis QIROX QRC-350-E welding robots, whose long reach speeds up the welding of complex workpieces.

The workpiece positioner with movable counter bearing has two vertically arranged faceplates. The workpiece fixture is mounted between the two faceplates enabling the large side panels to be optimally positioned and welded. A special feature is that the parts are inserted bent to prevent component distortion from the outset. The counter bearing can be flexibly moved on the base frame, which allows the distance between the two faceplates to be adjusted to match the different sizes of the side panels. "We don't produce in high volumes, as we offer our customers a wide variety of products," says Stary. "Therefore, the system has to weld a wide range of components with different dimensions."

Photo 2: The new CLOOS robot systems welds side walls for tipper bodies using Tandem Weld.

Automated torch changing system ensures flexibility

Each robot is fitted with two welding torches. Whilst the bent single wire torch is used for welding small, segmented and difficult-to-reach welds, the straight tandem torch can perform long straight welds at high speed. The torch change is performed automatically via a command from the respective program, enabling the system to be used flexibly for different component types.

Tandem Weld provides maximum speed with maximum quality

In the Tandem Weld process, two electrically independent arcs burn in a common molten pool. The process is based on two electrically separated processes which match each other perfectly. The front wire ensures a safe penetration, the back wire quickly fills big joints with filler material. The parameters for the two processes can be set differently, allowing a variety of combinations for special seam requirements.

The high deposition rate of Tandem Weld enables extremely high welding speeds. the tandem torch reaches speeds of up to 4.6 metres per minute during welding the side panels. In addition, the process is characterised by low heat input and a good gap-bridging capability. This reduces component distortion, compensates for material tolerances and reduces expensive rework. Tandem Weld is thus ideally suited to the comparatively sensitive fine-grained

steel components produced by Meiller.
Photo 3: Tandem Weld achieves high welding speeds while increasing production quality.

Sensor technology ensures optimum weld quality
In addition, the robots are equipped with two CLOOS sensors to compensate for tolerances. During welding, the arc sensor measures whether the torch position actually corresponds to the programmed path. In the case of deviations, for example by heat distortion, the robot recognises the actual contour. The online laser sensor measures the

processing line online during welding. Both the position of the welding torch and various process parameters are continuously adjusted to produce an optimum welding result.

Offline-programming saves time
The robot system is programmed offline with the RoboPlan software by CLOOS. While the system is in production, a new program can be simultaneously produced in RoboPlan. The welding, search and travel paths and tools can be determined using 3D models, and the welding parameters and other functions required for running the program can then be defined. The program is developed in this way before being transferred to the robot controller for optimisation in the workplace. This process is less time-consuming than producing a whole new programme in the system.

Photo 4: The torch is equipped with a laser sensor that measures the processing line online during welding.

Expanding the cooperation further
In the future, Meiller wants to invest in innovative automation solutions in order to ensure its long-term competitiveness. For its welding technology, Meiller continues to rely on the welding specialists from Haiger in Germany. "As a long-standing partner, CLOOS understands our expectations and requirements in great depth," says Stary. "We want to further expand our trust-based cooperation."

Video on CLOOS TV

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