



Success Story

Maximum quality, repeatability and process reliability

CLOOS robot welds "omnivores" at H&G

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HAIGER/BURBACH – For many decades Carl CLOOS Schweißtechnik GmbH in Haiger and H&G Entsorgungssysteme GmbH in Burbach have maintained a trustful cooperation. With their sites only around 10 kilometres apart, both of these local, traditional companies benefit from their close proximity to each other. H&G recently began operating a new CLOOS robotic system for the automated welding of screw compactors for disposal systems.

H&G screw compactors are in demand wherever there is a need to control the rising tide of waste and recyclable materials – with leading international discounters, internet commerce, logistics and disposal companies, as well as diverse companies across trade and industry. The principle is to efficiently reduce large volumes to a fraction of their original size so they can be disposed of quickly, economically and using minimal manpower. The screw compactors are universal, i.e. they process almost any material in the interchangeable containers. "Paper or cardboard, foil or plastic, wood waste or PET bottles, our screw compactors are true omnivores," says Björn Stolz, technical manager at H&G. "Thanks to their robust and compact design, they can compress large quantities of waste and recyclables in the shortest possible time, regardless of the material type and size."

The screw compactors are the mainstay of H&G Disposal Systems GmbH. Together with Stahlbehälterbau Greis and SFG Steelforming, the company belongs to the Henrich Group, which employs a total of 120 people in Burbach. H&G produces 600 screw compactor systems each year. In addition to increasing demand from large logistics centres and furniture store chains, the company has benefited greatly from the growth of discounters and internet trading companies, which continue to spread across Europe and around the world. Although H&G exports about 60 per cent of its disposal systems, the company manufactures all components at its factory in Burbach to ensure the highest quality. "Our customers' requirements are growing," explains Stolz. "In addition to reliable, high quality equipment they also expect ever shorter delivery times."



Photo 1: The robot welds the demanding radial seams of the screw compactor evenly and with consistently high quality.

Customised robot system with two stations

H&G aims to meet the growing demands of its customers through continuous investment in machinery and automated manufacturing. For this reason, the company

recently invested in a 60-square-metre robot system from CLOOS for the automated welding of machine housings and screw compactors. The new CLOOS system is specifically tailored to H&G's production needs. The centrepiece is a six-axis QIROX QRC-410 welding robot which is mounted on a rotating vertical stroke to extend its working range.

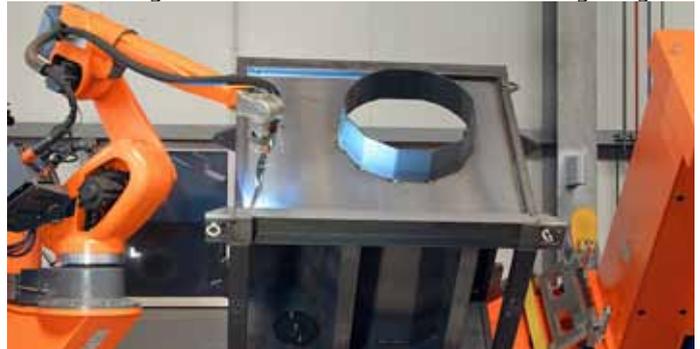


Photo 2: The 1.5-ton workpiece positioner always brings the machine housing into the perfect position for welding.

The system consists of two stations each equipped with a 1.5 ton workpiece positioner. They have a horizontal swivelling axis on which an L-shaped extension arm is fitted. The extension arm contains a vertical rotary axis with a horizontal faceplate which is used to hold the workpiece. The workpiece positioner is designed to position the complex workpieces perfectly for welding. Machine housings are welded at one station, screw compactors at the other. In order to provide a constant and reproducible working basis for the robot, H&G developed and manufactured a sophisticated clamping system.

The robot is also fitted with a tactile arc sensor, which is used both for welding and to measure the joint position on the workpiece. This saves time by directly compensating for workpiece deformation, for example due to thermal expansion.

Optimised workflow through automation

"Thanks to the new CLOOS robot system, we can expand our capacity without extending our production halls and operating a second shift," explains Stolz. The system's two-station configuration saves time, especially when handling the workpieces. The robot can weld the components at one station while the operator is loading or unloading the other station. In total, time savings of around an hour are achieved through automated welding of the screw compactors. For the machine housings, this rises to as much as two hours. Even though the machine housing is a very complex workpiece with many corners and edges, the CLOOS welding robot reaches more than 80 percent of the welds and thus surpasses its original target

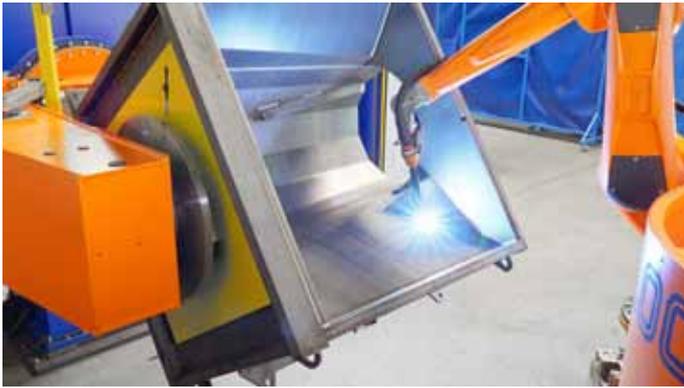


Photo 3: The CLOOS welding robot reaches more than 80 percent of the welds on the complex workpiece.

In addition, H&G was able to further increase the quality of its disposal systems by achieving exactly reproducible welding results with the CLOOS robot system. With manual welding there were sometimes large differences, however the robot now welds even the most demanding radial seams on the screw compactors evenly and with consistently high quality.

Two H&G employees received extensive training during a two-week programming course at CLOOS in Haiger, enabling them to operate the robot system perfectly and monitor its peripherals responsibly.

Geographical proximity connects two traditional companies

For many years, the Henrich Group has enjoyed close, trust-based collaboration with the welding specialists from Haiger. In addition to the new robotic system, the company also has more than 80 welding machines made by CLOOS. Support for these machines is provided by the company Lixfeld Schweisstechnik from Kreuztal, a long-time sales and service partner of CLOOS. "Our close proximity to both CLOOS and Lixfeld is a double benefit," says Stolz

The new CLOOS robot system was commissioned in June 2015, following initial trials in late 2014. The expected welding speed and maximum distance of all welds were calculated and optimised in complex simulations at the CLOOS technology centre in Haiger. "CLOOS quickly convinced us with their automation solutions as well," says Stolz. In spring 2015, the two companies jointly built the system at the plant in Burbach. Due to the firms' geographical proximity, component programming took place entirely in Burbach.

So far, one variant of the screw compactor has been welded using the CLOOS robot system. In the future, 70 per cent of the company's screw compactors will be processed by the new system, while further renovations and upgrades are planned for the entire production facility. "In the future, we will definitely use automated welding for other components, such as containers or stems," says Stolz. "We want to strengthen our site in the long term through innovation and investment."



Photo 4: Because of the two-station design, the machine can be charged alternately – an enormous saving in time for the process run.



Video on YouTube

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