



Cloos Schweißtechnik ensures short cycle times

Four robots for more trailers

ALTENBERGE / HAIGER – Schmitz Cargobull, the market leader for articulated trailers has taken the next step to significantly reduce operational cycle times with investment in two new welding lines.

The commercial vehicle sector is under constant pressure to reduce cost. Only manufacturers offering cost effective, quality products can maintain market leadership. Evidence of optimisation of products and investment in new production technology can be seen at the Schmitz Cargobull, Altenberge facility, where it is apparent not only the 3 axis trailers with the blue elephant logo enjoy an excellent worldwide reputation.



Final assembly at Schmitz Cargobull: every week 500 of these articulated trailers leave the Altenberae Works

In conjunction with Carl Cloos Schweisstechnik GmbH, Schmitz Cargobull have recently constructed two complex robotic welding lines for the manufacture of 13.60 metre long side bars.

The flexible manufacturing structure allows for a standard range of articulated flatbeds to be despatched within hours of order receipt. The manufacturing structure also allows for a combination of manual and robotic welding for bespoke 1 off products.



In less than 10 minutes these two Cloos ROMAT® Robots weld the 13.60 m long side bars for a flatbed trailer. The welding wire drums move with the robot.

Curtain side trailers can be supplied inclusive of customer corporate logos.

Robot with extended reach

The two new robot lines are equipped with two recently developed Cloos ROMAT® 350 robots, which weld in parallel the two side bars for a chassis. The ROMAT® robot which is mechanically very stable has an articulated construction and 6 axes of movement. The 350 version has an extended 3rd axis with 2,215 mm reach for optimum accessibility even with large components. Dynamic servomotors provide a load capacity of 15 kg and the precise compact gears ensure a high repeatability of below 0.1 mm. The ROTROL® II controller controls the 6 robot axes and up to 12 additional external axes such as the manipulator.

The flexibly designed fixtures enable Schmitz Cargobull currently to produce on these robot systems several versions of assemblies in batch size 1. Customers' requirements for vehicles which can safely transport up to 26 tons live loads, are very varied. Using the Roboplan offline programming system robot downtime during the programming process can be avoided, so that the productivity of the system can be fully utilised.



The welding programmes for the different bars have been generated by Schmitz experts under instruction from CLOOS personnel.

Devices installed by Cloos in the manufacturing line provide a visual overview of the system. The operator can view a large screen on line for information on the current system status and manufacturing progress and quickly recognise possible faults.



The operating panel gives the system operator an overview of the welding process at all times. All error messages are displayed immediately.

Intelligent arc control for optimum welding results

The manually pretacked bars are fed via roller conveyors to the two welding areas, which are almost 20 m long and 7 m wide, and are accurately fixed automatically by means of reference bolts. Special freely programmable rotary positioners in "Rhoenrad" construction with hydraulic clamping fixtures bring the side bars into the optimum welding position for the robot by turning them round the longitudinal axis.

Plates are welded with 500 Amp Quinto pulsed arc welding machines using the efficient and high speed MAG TANDEM process which provides excellent gap bridging and seam quality. Optimum tracking of the weld seam is guaranteed by Cloos arc sensors and the tactile gas



These rotary slew ring devices turn the whole positioner and thereby the workpiece round the longitudinal axis and bring it into the optimum welding position.

shroud sensors ensure precise seam starts.

Two pulsed arc power sources type GLC 603 QUINTO with 500 Amp constant current loading are available for optimum weld parameters. On these machines the relevant welding programmes can be called up at the push of a button. Schmitz were convinced by the TANDEM process because it provides the conditions for high weld speeds. Two wires arranged closely behind each other are supplied simultaneously in the Cloos welding torch and melted in two arcs. For this to operate perfectly, they are synchronised electronically in the QUINTO pulsed arc power sources and the welding parameters set separately for each arc.

The intelligent arc control on the Cloos welding power sources ensures optimum production results. For example the drop deposition at the end of the process always creates a pointed wire end for reliable re-ignition of the arc, guaranteeing clean results for all materials used. Component tolerances or distortions are recognised and compensated for via a tactile gas shroud sensor and an arc sensor so that the torch is always in the optimum position to the weld seam. Automatic torch cleaning helps to maintain good weld seam quality.



The digital wire regulation operates with a setting accuracy of 0.05 mm/min. In combination with the Cloos Duo Drive wire drive it is possible to adjust the wire end to millimetre accuracy. A sensor recognises any slip between wire electrode and wire feed roller so that deviations can immediately be corrected. The wire drum is installed so that it travels with the robot along the 14 m floor track which ensures trouble free wire feed



The automatic TANDEM torch cleaning ensures constantly good welding results

personnel summarised their experiences with the Haiger manufacturer – the single source supplier.

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Training for programmers, operators and service personnel

Prior to the commissioning of the robot lines, the operators and maintenance personnel were trained on the new systems. As the systems are designed with ease of maintenance in mind, thanks to the training provided Schmitz can carry out service work themselves during operation. The robot maintenance itself is in the hands of the Cloos experts.

It took scarcely three quarters of a year from the planning stage to commissioning of these two modern production systems. “Everything ran very smoothly” was the view of Schmitz Cargobull personnel who were more than satisfied. It is no wonder that Schmitz Cargobull have been customers of Cloos for about four decades. “We value the expertise of Cloos in the areas of welding equipment, and robot and manipulation technology” is how SCB