Success Story

Tradition connects

Nussbaum modernises welding production with CLOOS

CLOOS

Weld your way.

HAIGER/KEHL – Already since the 1980ies, Otto Nussbaum GmbH & Co. KG has been using welding robots of Carl Cloos Schweisstechnik GmbH. On the occasion of the 75th company anniversary the manufacturer of lifting platforms, situated in Kehl, Baden-Württemberg, modernised his production comprehensively. With new powerful QIROX welding robots, the welding production is now prepared for the future.

Otto Nussbaum GmbH & Co. KG belongs to the biggest manufacturers of lifting platforms for car workshops and service companies. According to the motto "We lift cars", the company with its 350 employees produces at its site in Kehl more than 17,000 lifting platforms per year for customers all over the world. Worldwide, more than 200,000 lifting platforms in total are in operation.

Welding production is the core

"Our customers expect the safest lifting platform with the highest-possible benefit which arises by innovative solutions in car loading, the highest speed and the lowest space requirements in the workshop," explains the Nussbaum Managing Director Volker Felder the high quality requirement of the company. "The welds are a decisive factor for the safety of our products." The welding department belongs to the most important production areas in the company. Therefore, the availability and the reliability of welding systems are of the utmost significance for the whole production process. "The welding department is the core of our production sites," explains Felder who is in charge of the Nussbaum departments Production, Logistics and Material flow. "From the welding department, the production order is allocated to the customer, from here the single parts become components and finally a Nussbaum lifting platform."

Already since the end of the 1980ies, Nussbaum has started to use robots for automated welding in the production. The seven existing welding robots were totally replaced by new robot system in 2018. "Our oldest CLOOS robot of the ROMAT series has been reliably working every day since 1985," says Felder.

Photo 1: Some of the ROMAT welding robots at Nussbaum have successfully been in operation since the middle of the 1980ies.

Complete revision of the production

Three years ago, the Nussbaum management decided to comprehensively modernise the different production areas in the company. The target of the revision was to increase the productivity and efficiency of the production processes to improve the competitiveness.

By investing in new robot systems, Nussbaum wants to increase the productivity due to the higher welding speeds on the one hand. On the other hand, tacking shall be integrated into the robot process, the welding process shall be shortened in total, the arc time shall be increased and the set-up time shall be reduced to a minimum by means of intelligent fixtures.

The modification and the complex new installation of the welding robot systems took place during running production. The production was normally working without downtimes. In doing so, Nussbaum has completely revised the layout of the welding department. They did not only optimise and adapt the robot systems comprehensively but also the logistic and material flow processes to increase the welding production to a maximum.

Photo 2: Due to the retrofit Nussbaum could considerably increase the productivity and quality of the welding production.

Compact robot systems by CLOOS

Nussbaum now uses three compact robot cells type QIROX QR-CC-4.1, a QIROX QR-CC-6 compact robot cell and two QIROX QR-CS-4 robot systems. In total, seven CLOOS welding robots are used in welding production. There are five stations for manual welding in addition.

The QR-CC-4.1 QIROX compact cells have a 2-station workpiece positioner with vertical change and vertical rotation. With a clamping length of up to 1,250 mm and a maximum load of 250 kg per side a wide range of components can be processed in the system. The systems are equipped with the new QRH-280 QIROX welding robot which was particularly developed for the CLOOS compact cell solutions.

The QR-CS-40 QIROX compact systems have a 2-station workpiece positioner with vertical change and vertical rotation with counter-bearing. The robots are mounted in upright position. The turning axis changes the station in vertical direction.

The compact cells and systems offer a maximum production flexibility as the modular design makes it possible to add

individual enhancements and upgrades at any time.

Faster processes and reproducible quality

Because of the two-station arrangement, the machines can be loaded mutually. So the operators on one station can remove the welded workpieces, reload the systems and tack the workpieces whilst the welding process takes place at the other station. The minimised set-up times result in an enormous saving on time for the whole process. In addition, the production process itself is shorter due to the new quicker and highly dynamic robots. Whilst it formerly took two days to manually weld the supports for the lifting platforms, the robot now needs 4 hours to weld the same components.

Photo 3: Because of the two-station arrangement, the machines can be loaded mutually – an enormous saving of time in the whole process run.

Besides, the new robot systems ensure excellent welding results because of the reproducibility of the processes. "We have the highest-possible demand regarding the safety and quality of our products because the welds are decisive for the stability of our lifting platforms," emphasis Felder. "Our final customers work in car workshops where the cars are placed on our lifting platform and lifted. The mechanic who inspects or repairs the car is then working below the car."

Less parts and optimised fixtures

In the course of the project, Nussbaum also analysed their own components, optimised the product development and simplified the fixtures. "For some components, the variety of parts could be partly reduced from 20 to 4 by realising multiple usage parts and equalising plate thickness variants." Due to the minimised variety of parts, the company benefits from a reduced space requirement, a lower commitment of capital and a lower complexity.

Besides, the simplified fixtures and the focussing on one manufacturer creates redundancies. Nussbaum can now change the fixture and the corresponding welding programs to another robot of the same design within the shortest time.

Exceeded expectations

"Our initial expectations were far exceeded by the redesign of the welding area," states Felder happily. "The investment into the new welding robot systems enabled us to produce 30,000 lifting platforms per year with highest quality."

In total, the welding times could be reduced by about 50 per cent due to the comprehensive modification, more efficient robots, integration of tacking into the welding process and the reduction of the high variety of parts. The originally planned amortisation time has thus reduced considerably and is now less than two years.

Due to the modification of the production, the employees also benefit from the friendly working environment conditions. In order to benefit fully from the innovative welding technology, the staff was intensively trained. Both internal and external trainings by CLOOS now ensure that all employees are familiar with the new equipment. as the robots carry out the physically heavy work, the general danger from arc radiation and welding fumes is much lower. Welders can concentrate more on process monitoring.

Photo 4: In total, the welding times could be reduced by about 50 per cent due to the comprehensive modification.

Furthermore, Felder praises the good co-operation with CLOOS. "As a company with a long tradition and innovative top technology, CLOOS celebrates its 100-year company anniversary this year," says Felder. "Last year, Nussbaum celebrated its 75th anniversary, a company with a long tradition and innovative top technology, too. This is the perfect basis for a trusting co-operation of two ambitious mechanical engineering companies in a complex project." On-the-spot support is provided by long-standing CLOOS representation Philippe Schweißtechnik.

Because of the positive experiences with the automated welding technology, Nussbaum plans future investments in further robot systems for the different locations. More manual welding places shall be changed to automated welding. As a next step, the company also wants to use the QIROX RoboPlan offline programming software by CLOOS at its Kehl premises because of the high variant diversity. The decoupling of programming and welding process allows considerably more efficient production processes. In addition, the systems shall be completely linked and integrated into the operating data system.

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