



## Success Story

**Power sources and robots from a single source**

Linde Material Handling welds with new QINEO Next by CLOOS

**CLOOS**

Weld your way.

**ASCHAFFENBURG/HAIGER – Linde Material Handling GmbH is one of the world's largest manufacturers of forklift trucks and warehouse equipment and has been setting standards for solutions for industrial trucks, fleet management and driver assistance systems for more than 50 years. At its production site Aschaffenburg, the company trusts in the technologies by CLOOS for both manual and automated welding. Linde Material Handling does not only use different robot welding systems but also a multitude of CLOOS manual welding machines such as the new QINEO Next high-tech welding power source.**

As a global company, around 13,000 people in more than 100 countries are working for Linde Material Handling. At the Aschaffenburg premises, around 2,500 employees produce more than 40,000 forklift trucks per year. Linde's vehicle offer is unique. It comprises 77 series with up to 382 model variants and around 10,000 equipment options. On the basis of this modular system, Linde manufactures the vehicles and fleets precisely tailored to the individual requirements of every user. Productivity, safety and ergonomics are the key guiding principles for product development and production.



Photo 1: Linde Material Handling recently began using the new CLOOS QINEO Next welding power sources in the mast production.

### Excellent welding results with QINEO Next

Although the company has many CLOOS robot systems for automated welding, Linde Material Handling often prefers manual welding in the case of special variants and capacity shortages in the mast production. In this production area there are 17 fix manual welding places where welding is made with CLOOS power sources only. Since October 2018, Linde Material Handling has been using new QINEO Next welding machines by CLOOS. The heart of the infinitely adjustable MIG/MAG welding power source with external wire drive is an inverter power unit developed by CLOOS which clocks with a high frequency of up to 200 kHz. This results in optimum arc characteristics for highest welding quality - even in the case of complex welding tasks. Furthermore, the digital control allows an individual programming of the welding features. The high efficiency and a comprehensive energy management with stand-by function for inverter and fan meets the highest energy efficiency requirements.

The consistently modular construction with many optional functions allows many utilisation possibilities - from the basic welding machine for manual welding to the multi-process welding machine for automated robot welding. No matter if manual or automated welding, thin or thick materials or materials requiring an A/C process – the QINEO

Next has the perfect solution for every task. Furthermore, the QINEO Next can be equipped with all commonly used standard interfaces to digitalise and connect the welding production efficiently.

### Focus on user friendliness and process safety

"The new power sources are technically brilliant," says Stefan Müller, Master Craftsman in the welding department. "As there are nearly no spatters during welding, reworking in the following production steps reduces enormously." Thus the company can make welding processes more efficient.

The employees also benefit from using the new welding power sources: The MasterPlus operating module of the QINEO Next offers a very simple, quick and intuitive control of the QINEO power sources with job memory and job favourite function. "The operating surface of the welding machines is clearly arranged," explains Christian Salg as experienced manual welder at Linde Material Handling. "Due to the simple operating module it is easily possible for beginners to weld well with the new power source." An important fact because Linde Material Handling also experiences the skills shortage. It is more and more difficult to find well trained and experienced welders on the market.



Photo 2: The high-tech welding power sources are mainly used for welding special variants.

"Our welders have a great responsibility for the component," adds Niklas Titzmann, Head of the Lifting Gear Production. "Safety is our overriding priority both in production and products." To guarantee the process safety, Linde Material Handling utilises the user management with different user levels at the QINEO Next. So the employees are not able to change the basic settings of the power source and can only make smaller adaptations. For this reason, Linde Material Handling can meet the high quality requirements.

### Customer requests are incorporated in the development

Titzmann is glad that CLOOS took up their suggestions for the development of the welding power sources. So it

is now possible to mount an additional wire drive unit to the QINEO NexT which extends the working envelope for complex components. Dieter Stenger, mechanical maintenance engineer, is also happy about the fact that the new power sources are very maintenance-friendly: "Until now there were no problems with the QINEO NexT and spare parts can be changed quickly and without much effort." Stenger also praises the powerful, separate cooling module with a big illuminated level indicator. Besides, the operating module clearly displays the relevant data so that a quick self-diagnosis is possible in the case of problems.



Photo 3: The manual welders benefit from the user-friendly handling of the QINEO NexT.

### Automation planned with QINEO NexT

The new automated robot welding system shall also be equipped with the QINEO NexT soon. In the mast production alone, Linde Material Handling uses six robot welding systems by CLOOS. The QINEO NexT is not yet used in these systems but even in this field Linde Material Handling solely relies on CLOOS by using the QINEO Pulse welding power source. Two years ago, Linde Material Handling set a robot system into operation that was individually adapted to the special conditions at site. As the production hall has low ceilings, the system is positioned relatively widely. The two welding robots are in the middle of the system whilst a track flexibly moves the positioners between the two stations.

Due to the large number of variants, Linde Material Handling uses the RoboPlan offline programming software by CLOOS for automated welding. While the robot 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.

### Trusting co-operation

Regardless whether manual welder, robot programmer or maintenance engineer – all employees of Linde Material Handling praise the partnership-based co-operation with CLOOS. At least every three weeks a common telephone conference takes place to encourage the exchange of experience of all and to quickly solve possible problems. "For many years now, we have been using welding technology only by CLOOS to achieve as many synergies as possible, especially with regard to spare parts and maintenance," emphasises Titzmann. "Besides we facilitate the work of our

employees by focusing on one manufacturer." To ensure an optimum training for the employees, the company trusts in CLOOS welding robots and welding machines in the apprenticeship workshop and internal seminars, too. Linde Material Handling would like to use more automation to increase volumes and to make the production processes even safer. An additional new robot system for the mast production with three welding stations and six robots in total has already been planned and shall be set into operation this year. Besides, the company uses many CLOOS robot systems in the frame construction. "Although automation in welding technology will gain more and more importance, there will still be components in future which must be welded manually," resumes Titzmann. "That's why we will additionally invest in further high-tech power sources such as the QINEO NexT."



Photo 4: Linde Material Handling does not only use manual welding machines but also a multitude of robot welding systems.



Video on CLOOS TV

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