



## From the practice

**Modern robot machines guarantee efficient manufacturing**

Investments in automated welding technology pay off

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**AURICH/HAIGER – The medium-sized company Ihnen Stahl- und Metallbau GmbH with registered offices in the Lower Saxony town of Aurich carries out challenging steel construction projects right across the world. For decades now the company has placed its trust in welding technology on Carl Cloos Schweisstechnik GmbH. By investing in automated welding machines, the steel construction specialists have been able to increase the productivity and quality of their production considerably.**

Since its founding in 1967, the Ihnen company has developed from a locksmiths into a world-wide steel construction specialist with around 150 staff. In order to meet the increasing requests from customers in a variety of areas, the company is continuously investing in new machinery. At its site in Aurich, Ihnen today has a production area of about 20,000 m<sup>2</sup>, where it carries out challenging steel construction projects for automotive and aircraft construction, the food industry, the chemical and pharmaceutical industries, power stations, the renewable energies sector, waste management and many other areas.

Its multi-faceted range of services includes special one-off constructions such as, for example, constructing the layout for individual machines or complete production lines, building production halls, hydraulic steelwork and heavy weight stackers. "From planning via construction and production through to assembly, we offer our clients everything from a single source" emphasises Managing Director Willm Ihnen who, alongside his brother Thomas, runs the family company. "In that way we can react independently of suppliers and be flexible about our customers' wishes" Ihnen continues.

In addition to the individual projects, which constitute the company's core business, series production is taking on increasing importance. High numbers of components are being requested, particularly in the field of renewable energy. Our major customers include one of the best known wind power plant constructors. In the immediate vicinity, Enercon manufactures wind power machinery which is used across the world.

#### **Long years of collaboration in welding technology**

The company is continuously investing in automation and new manufacturing technologies for welding the large components spectrum. When it comes to welding technology, Ihnen Stahl- und Metallbau entrusts its work wholly and completely to Cloos. Manual welding machines from Cloos have been used for many years – broadly about 60 altogether. "As we have had very good experience with the manual welding machines in terms of reliability and service, we now do so as well with the Cloos automation" explained Willm Ihnen. "In contrast to other providers, Cloos comes from the field of welding technology and builds robots for welding technology" he added.

Overall, Ihnen operates four robot plants produced by Cloos, for welding the widest possible range of components. The series components for wind power plants are principally manufactured for the Type C30 compact system and the Z6 compact cell. The systems have been in operation either since 2008 or 2010. The Cloos cells and systems can easily be integrated into any form of production and the compact

layout saves on production space. The modular design allows individual extensions and retrofits at any time. The user-friendly operation guarantees simple, precise and intuitive handling. In addition, the electricians and mechanics for the machines are pre-installed in full, making assembly and maintenance work simple and time-saving.



Photo 1: The compact system has been used successfully since 2008.

Large components weighing up to five tons and measuring 7.5 metres in length can be welded on to the third robot machine. Recently, this machine was extended by a second robot with seven axes. The wide reach of the new robot simplifies and speeds up the welding of complex components, as it can be guided around corners or into niches quite easily

#### **Automated machines speed up manufacturing processes**

The compact system and the large robot system can be alternately charged in two-station operating. So the member of staff on one side can remove the welded components and reload the systems whilst the welding process takes place at the other station. This results in an enormous saving on time for the whole process. This is how Ihnen achieves an optimum degree of utilisation of the system and efficient use of personnel which makes production quick and attractively priced.

The offline programming of the robots saves even more time. A new program can be created simultaneously in RoboPlan even while the system is in production. Here, welding, search, travel paths and tools can be determined for 3-D models and then the functions required for the welding parameters and others for running the program can be defined. The program developed in this way is transferred via network connection to the robot controller and is then simply improved at the work station.

The productivity increases are enormous: complex welding components had to be manually welded before. In the past,

assemblies for wind power plants had to be welded manually. This meant each day a maximum of six components could be produced. With the compact C30 robot system, today 23 components per day are possible.



Photo 2: Because of the two-station design, the machine can be charged alternately – an enormous saving in time for the process run.

### New technologies ensure the ability to compete

Investment in state-of-the-art robot welding systems has enabled the company to significantly accelerate its production processes and achieve precisely reproducible welding results. “In this way we can meet our customers’ increased demand for productivity and quality” Ihnen stated happily. “Our staff too actively drive innovative technologies forward, so that we can increase our competitiveness over the long term”.



Photo 3: The Cloos compact robot cells and systems can be easily integrated into any form of production.

The staff have been extensively trained in order to be able to make full use of the automated machines. The training from Cloos has given the staff the knowledge required for programming and handling. An added benefit: as the robots carry out the physically heavy work, the general danger from arc radiation and welding smoke is much lower. The welder can concentrate far more on the process monitoring.

“In order to be able to offer our customers technology- and cost-optimal solutions, we should like to invest in new technologies in the future as well” emphasises Willm Ihnen. Because of the huge success with the automated welding machines, the planning for more robots is already under way.



Photo 4: The reach of the 7-axis robot means that it can be easily guided around corners or into niches.



Photo 5: Ihnen manufactures components for wind power plants for its neighbour company, Enercon



Video Compact system



Video Robot system

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