

Cutting edge automatic tool changing maximises spindle on time

TIBO Tiefbohrtechnik GmbH is a truly global operation with sales, manufacturing and service across several continents. It specialises in the design, manufacture, installation, application and after sales support of modular deep hole drilling machines.

Founded in 1994 and with its headquarters in the town of Pfullingen in Baden-Württemberg to the south of Stuttgart, today it is one of the leading suppliers of single-spindle and multi-spindle gun-drilling and BTA deep hole drilling machines for a broad range of applications.

Embedded into a medium-sized group consisting of 14 companies and more than 1,000 employees, its customers benefit from quick turnaround in all aspects of their deep hole drilling requirements, with many applications tailored to customers individual requirements.

As a German machine tool builder, TIBO manufactures exclusively in its own plant in Pfullingen. Its predominantly local supply chain means it can proudly claim that its machines are made in Germany.

Whether it's gun drilling or the BTA method, whether it's single- or multi-spindle system, the precision, speed, quality and durability of TIBO deep hole drilling machines will impress you, as well as their unique design consisting of modular sub-assemblies that are well proven in harsh and demanding applications.



The TIBO modular system allows almost limitless configuration possibilities, from the universal standard machine through to highly-specific special machines. This enables the company to offer every customer an optimum machine design to suit their own individual drilling task.

Since sub-assemblies are normally available from stock, its lead times are considerably shorter than "industry standards" and those of its competitors: The average time from placement of an order to delivery is just four to six months or you will find a suitable machine from the ones that the company has in stock.

One of its customers in the Hydraulic cylinder sector approached TIBO for a new machine for a new range of components. The range consisted of parts with three different diameters to be machined. The application was: counter boring, skiving and roller burnishing for each diameter and the customer wanted to increase efficiency, with an emphasis on maximising spindle on time.

Another critical requirement was to improve the work environment for the employees along with reduced manual handling, maximised workflow and minimum setup.

To meet the above challenges, TIBO decided to fully automate the complete process, not only part loading and unloading, which was already done many times before, but also the automated tool exchange. The modular B250-3000 was therefore selected as the base machine.

Tibo designed the workpiece loading and unloading based on its modular systems. Due to the wide variety and range of components produced by the customer, it adapted its standard modular components and designed new "application specific" modules to meet the customers' needs.

Exchanging the tools, however, was a more complex challenge. To automate tooling changeover and, in close cooperation with the customer, TIBO designed and installed a gantry system that attaches to the oil pressure head, vibration



damper, drill tube, counter boring head, skiving head and roller burnishing head and exchanged the complete tooling string as an assembly.

The gantry system takes the tools off the machine and places them in a storage rack. For this application there is room for three tools, but that can be easily adapted to hold more tools.

TIBO designed an automated clamping system for the drill tube, the oil pressure head and the vibration damper. The system ensures safe, repeatable lifting and exact positioning of all tools.

The final challenge was to ensure that all elements of the system were controlled from the machines control system. This was achieved by utilising the latest Siemens PLC technology, remote I/O and Profi-bus to connect and process communication between the part loader, tool loading and machine tool. The machine control and operator interface was based on the user friendly, TIBO touch screen control which is easy to use and has been specifically developed to monitor all boring parameters, allow adaptive control on "the fly" and ensure ease-of-use for the operator, while providing quality and process data for the manufacturing team.



After installation by TIBO at the customer's plant, it was highly satisfied with the results that even exceeded the expected output on units.

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Experience Tibo deep hole drilling machines.

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Modularity.
Performance.
Precision.

Innovative deep hole drilling technology, intelligently engineered from modular system components – that's what Tibo Tiefbohrtechnik is all about. Get to know our high-performance BTA and gun-drilling machines and as well our cross table machines and discover the amazing possibilities for your specific deep hole drilling applications.

Visit us at our headquarters and production site in Pfullingen, Germany or experience our website at www.tibo.com