The Italian company Masterwood SpA is one of the world’s most renowned manufacturers of CNC machining centers for the wood industry. Every year between 550 and 650 machining centers, equipped with 3-, 4- or 5-axis technology, leave the company’s factory in Rimini. Masterwood’s high level of engineering competence is based on more than 40 years of expertise and constant investments in research and development. The PC-based control platform from Beckhoff, including software-based CNC, is a perfect match for the modular machine design of this Italian machine manufacturer and meets all requirements of the wood industry with regard to flexibility, quality and economic efficiency.
The machining centers produced by Masterwood are equally suited for processing panels and solid wood and are used for manufacturing doors, windows, staircases and furniture. The success of the Italian machine manufacturer is based on a modular concept that enables a standard machine to be configured in order to meet individual customer requirements such that it resembles a custom machine – without the extra cost.

Innovative machine concept

“Our innovative machine concept is based on Italian-German cooperation,” said Giancarlo Muti, managing director of Masterwood. “The Italian contribution consists of our years of industry expertise and the ability to transform the requirements of the woodworking industry into innovative machine concepts. The German contribution consists of the PC-based control solution which we implemented using Beckhoff components. The modular design of machine engineering and the controls platform is a perfect match.”

Producing machines based on a modular concept, Masterwood, was formed in 1990 as the result of a merger of Muti, specialists for mortising and milling machines, with Zangheri and Boschetti, a manufacturer of drilling machines. “At the time we determined that we had to change our machine design in order to satisfy evolving market requirements,” said Giancarlo Muti. “In order to meet the cost and competitiveness demands of our customers we developed a standard machine that can be adapted to the individual requirements of our customers through integration of different devices and tools. In PC-based automation, all production processes are based on software, and this is ideal for achieving such a machine concept.”

Originally, all Masterwood machines were equipped with NC controllers, with hardware and software components produced in-house. “With increasing complexity and diversity of the machines we reached our limits, however, as did the economic viability of this approach,” said managing director Muti. “As a result we searched the automation market for a third-party control solution that matched our machine concept and found the PC- and EtherCAT-based control system from Beckhoff,” said Giancarlo Muti. “The Industrial PCs with integrated CNC control, EtherCAT as the communication system and drive technology are ideal for our machining centers. Beckhoff’s global presence is another big advantage, in view of the fact that we export more than 70 % of the machines we produce.”

CNC solution based on software

“TwinCAT CNC offers a software-based CNC solution that includes all the functions we expect from an advanced wood machining center: control of a large number of axes via several channels and different types of path movements – from simple axis coupling, standard CNC movements and spline functions to gantries and a wide range of mechanical designs that require coordinate transformations. TwinCAT enables us to meet these different requirements and wishes of our customers with a single product, by simply reconfiguring the machine during the start-up procedure,” said Giancarlo Muti.

The Masterwood machining centers Project 450 with three to four axes and Project 455 with five axes exemplify the performance, flexibility and modularity of the woodworking machines from Masterwood. Customers can make an initial choice between a gantry design and a cantilever design. The modular machine concept enables retrofitting of up to eight function modules, including a C axis for application of angle heads, a horizontal cutter motor, an additional 16-piece tool magazine for automatic tool change, a conveyor belt for chip removal, etc. The standard machine has all the electrical and pneumatic prerequisites for installing these different units which can also be retrofitted as required. An extensive choice of angle heads as well as fixed and swivelling machining heads for drilling, milling and sawing enables the machining centers to process panels or solid wood profiles, depending on the configuration. The clamping devices are positioned by a vacuum system which significantly reduces the set-up time in the production process. A continuous lateral stop enables simultaneous positioning of several workpieces, thus reducing production times and costs. “By pursuing our modular approach consistently right down to the control technology we are able to produce machines that can be fully customized within four to eight hours,” said Giancarlo Muti.

Further Information:

www.masterwood.com
www.beckhoff.it