CNC and drive technology from Siemens

CNC-controlled solid wood machining from Maka Systems, Nersingen: for quickly and efficiently building a staircase. By combining 5 and 3-axis units, the Maka PE90 gantry machine also machines while tools are being changed. Safety Integrated allows this machine tool to be equipped during the main machining time.

The CAD-CAM chain supplies CNC programs for the individual workpieces – including the positions of the vacuum workpiece holders. And the laser projection function integrated in the CNC shows how the unmachined parts should be positioned.

The result: a highly efficient, essentially continuous production of staircases, doors and windows – practically without any non-productive idle times. Production time can be slashed by approximately 40 percent as a result of the combined operation when the machining steps are well planned in advance.

Technical data at a glance

• Double gantry system
• 5-axis milling unit
• Milling spindle up to 24,000 rpm, 16 kW
• Operating range: 3000 mm x 1500 mm x 420 mm
• Travel velocities up to 60 m/min
• Tool chain magazine with 51 locations
• Optional robot-based feed system

Highlights

• Alternating 5 and 3-axis operation: machining while changing tools
• Only one tool set: common magazine for 5 and 3-axis heads
• 8 movable traversing elements each with 3 vacuum supports that are positioned by motors
• Laser projection system to support equipping
• Automatic part cutoff after inclined cuts
• Operation as complete machine or two-station operation (alternating feed)
• SINUMERIK “Advance Surface” function for the best surface quality
• Crtl-Energy energy-saving functions
Open-loop control and drive technology for MAKA solid wood machining

Maka uses high-quality standard solutions for its machines:

- **SINUMERIK 840D sl** type 1b high-end multi-processor control for Safety Integrated – even for a high number of axes, seamlessly integrated with the SINUMERIK Operate HMI system
- “Advanced Surface” motion control for the best surface quality, even for hard woods that are difficult to machine
- 3D tool radius offset for simpler 5-axis machining and programming
- Optimized drives comprising SINAMICS converters and SIMOTICS motors with high-performance drive interface (DRIVE-CLiQ)
- PROFINET communication to the SIMATIC-ET200 field level and to operator control and monitoring units

Customized engineering

Machines such as the PE90 are the starting point for Maka when it comes to creating flexible production solutions to address investors requirements – customized engineering is one of the strengths of this machine builder. Here, Klaus Kern, executive management stated: “Together with Siemens as automation partner, we can further develop our mechatronic concepts faster and with lower project risks. As a consequence, efficient production solutions that precisely fit customers’ requirements are created that strengthen the competitiveness of woodworking facilities.”