



## INDUSTRIAL MACHINERY AND EQUIPMENT

### FANUC for MAG

**Task** For its new double-spindle machining centre, leading machine tool manufacturer MAG was looking for a control capable of making the machine more attractive internationally to larger target groups. Another important consideration for MAG was that the control manufacturer was able to cover all the areas, specifically from high-end CNC, through PLC, right down to HMI interfaces

**Solution** The prototype of MAG's new double spindle machining centre is equipped with a FANUC 31i-MODEL B5 CNC. In addition, a total of 18 servomotors for main and auxiliary drives are deployed in this new MAG machine

**Result** Equipped with the FANUC control, the same MAG equipment can be used around the world, particularly in China and India where numbers of installed machine tools are the highest and growing. For MAG, there are also – compared to the direct competition among control manufacturers – significant advantages regarding the economic efficiency of FANUC components that can be passed on to the end customer

## MAG leverages FANUC's 31i-MODEL B5 CNC to make most of Asian Markets

MAG is seeking to enter the market of component manufacturing with a world premiere. The new double spindle machining centre works with a FANUC control, including servo drive technology.



With the new SPECHT 500 DUO+, MAG above all is seeking to offer manufacturers in the components market an economical solution. In the past, MAG was more heavily focused on the automotive market. It is not surprising that among OEMs and suppliers, the company is considered a "supplier of system machines". Now an expansion is coming, and it is coming with powerful momentum.

At AMB, the SPECHT 500 DUO+ high-performance machining centre is celebrating not only its overall premiere but also the fact that it comes with a FANUC control. The prototype of this new double spindle machining centre is equipped with a FANUC 31i-MODEL B5 CNC. In addition, a total of 18 servo motors for main and auxiliary drives are deployed in this new MAG machine.

The use of the FANUC control is intended to make the machine more attractive internationally for larger target groups

Success in the volume business with China has prompted MAG and FANUC to now set their sights on the European market. After all, the Asian business comprises slightly more than 50% of total sales for MAG. And the customers based in Asia have specified FANUC as the preferred control supplier in their plants.

**Dr. Manfred Berger, Executive Vice President Global Sales at MAG IAS, Eislingen: "In some production years, even half of all CNC machines produced at MAG were equipped with FANUC."**

As a general rule – and both sides are in agreement – OEMs and their suppliers are striving for more or less unified standards. Bernhard Lusch, Head of Sales CNC Controls at FANUC Germany: "We must offer the option of being able to produce with the same equipment in all locations." In any case, MAG is pleased about having a worldwide available source of renowned high-performance controls. Compared to the direct competition among control manufacturers, MAG sees significant advantages in the economic efficiency of FANUC components that can be passed on to the final customer. The Asian market with China and India will continue to grow; today, China already has the largest installed production capacity in

machine tools compared to the rest of the world, and a similar trajectory is forecast for India in the decade to come. Dr. Berger: "Based on this aspect, the cooperation with FANUC assumes even greater importance for MAG."

The company wants to harness its good reputation in the system machine business for the deployment of those machines in the components market. Only a few modifications and supplements are required to do so. For instance, the new SPECHT double-spindle machine is equipped with a pallet changer that does not exist in that form among high-volume automotive applications. In the past, the company did not want to create competition for its group affiliate with its own series of machine tools – the market trend has now made that a moot point. And: "We are strong in 5-axis machines", according to the bold motto. Initial customers are on the way – from the automotive supplier industry.

### Sophisticated and comprehensive

As a systems supplier in the field of CNC and servo drive technology, FANUC can provide lots of value to the "Smart Production System" first unveiled at EMO. This is what MAG calls for: "The important consideration is that the control manufacturer be able to cover all the areas. Specifically from the high-end CNC, through PLC, right down to HMI interfaces. The idea is to implement standardised interface and service concepts, the most basic machine to the machining centre. In doing so, the control must offer both the operator and maintenance personnel greater functionality than in the past, for instance diagnostics functions, programming interfaces, basic tool loading, self diagnostics or measuring technology on the machine. MAG thus sees machine tools on a path similar to modern vehicles: Assistance systems are expected to take over or assist in routine tasks. In this, the operator control panel will become the most important communication interface between the operator and maintenance personnel. Dr. Berger: "In addition to sensor technology and performance

on the device side, the control manufacturer will play an increasingly role for assistance systems.

**At MAG, the use of the FANUC CNC promises not only peak technology but also added availability. This means that the reliability of assemblies is much higher than on competitive products. Service logs indicate practically no failures.**

An additional advantage of FANUC's technology becomes apparent if one opens up the switch cabinet. "It looks well-organized because the components, such as the inverter, are very compact."

The size of the machined components is limited by the spindle clearance. The Specht 500 Duo has a spindle clearance of 720 mm, the next larger double spindle machine then has a spindle clearance of 810 mm. Operators can create a bit of leeway through the type of set-up", says Jürgen Mayer from the technical product marketing department. Planning engineers and programmers are extremely ingenious in this respect, and they are seldom intimidated by standard dimensions, as seen in the example of an axle carrier that is "simply" mounted at a tilted angle.

These are but a few of the areas in which users can seek competent advice from MAG specialists. Referring to "the full range", Berger briefly touched on scope of services before, during and after the sale. In this manner, one can already begin analysing the machining processes on a virtual machine, determining cycle times and running collision scenarios. "And we have the experience in offering various concepts for automation or for linkage." You're

lucky if you have the right partner for automation. MAG has very precise expectations: "Today and in the future, our customers require the flexibility from a machine and systems supplier that he can offer all the major brands of controls. For MAG, this means that all machine models can be equipped with FANUC components and must be available at all times. In the higher-end machine segment, we find a limited group of suppliers offering similar quality. Our customers buy the most economical solution from the group of suppliers from whom they have solicited bids. To the extent that FANUC is approved in the requirements specification, there will be no alternative".

Like its predecessors, the new double spindle machine from MAG is fast and productive. The outstanding basic parameters: a chip-to-chip time of under 2.5 seconds and a tool change time of less than one second are top results compared to comparable machines. FANUC servo drives, in combination with the CNC and MAG's proprietary software, are responsible for ensuring fast chip-to-chip times.

In order for the machine to be not only fast but also precise, it provides compensation in all linear axes. For the X-, Y- and Z- axis, a Heidenhain measuring system determines the spindle compared to the slides. Two fast FANUC servo motors per axis stabilise any possible position variances. This ensures an optimal spindle position at all times.

On the new SPECHT 500 DUO+, MAG also naturally relies on a combination of chain magazine and disc magazine. With this patented tool magazine, tool changes can be implemented in less than one second – a record time. The corresponding proprietary software utilizes the CNC control and reduces the wait times to a minimum. The loading of the magazine containing 112 tools is completed at a height convenient to the user and parallel to the machining process.

Using energy economically

Although the SPECHT 500 DUO+ is specifically designed for the component market: The demand for energy efficient operations comes from the automotive field. Bernhard Lusch: "This machine will offer more favourable energy consumption compared to comparable machines." However: Consumption values have to also



be documented. That is why the option package for the MAG machine with a FANUC control will also include an energy monitor, i.e. an interface that indicates the energy consumption of the machine. And already prior to the premiere of the SPECHT 500 DUO+, the development timetable for the near future is being discussed. It is foreseeable that honing processes will also be run on machining centres. The FANUC control is definitely well equipped for this.