



- geobra Brandstätter GmbH & Co. KG, Germany

Unlimited Creativity

ShopMill operating software: The simplest offline
and shopfloor-oriented NC programming procedure

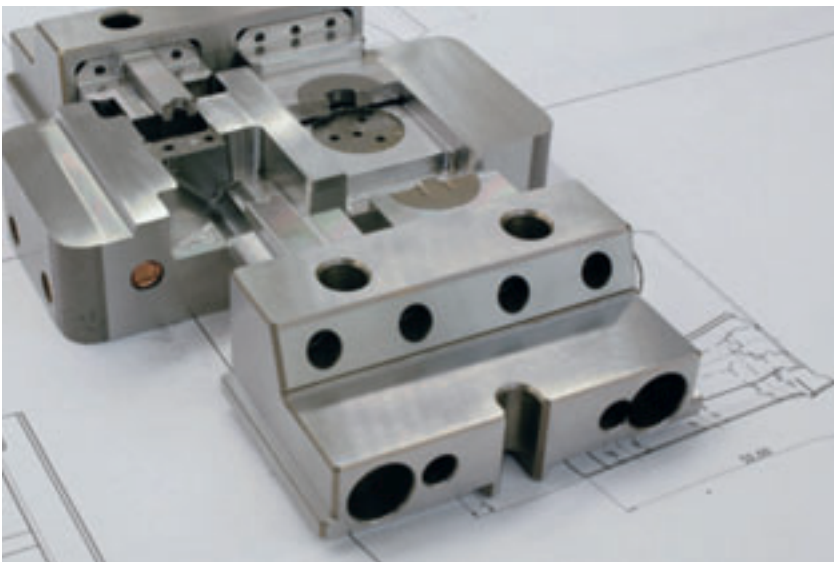


All pictures: W. Geyer

If it is still the norm in many tool- and moldmaking businesses to carry out programming either offline or directly on the machine, then the Playmobil example shows that a combination of both provides a lot of scope for creating and implementing ideas. Based in Nuremberg, Germany, geobra Brandstätter GmbH & Co. KG first introduced the toy system in 1974. Today, it comprises thousands of parts and around 600 new individual parts are added every year. Creativity is key here from development right through to production. So, it is also quite common practice that the specialists themselves “turn a creative hand” to the machine. It is all made possible by using Sinumerik CNC controls and ShopMill, the corresponding shopfloor-oriented numerical control programming software.

Lightening the Load for Offline Programmers

Parts are sketched, modeled, constructed, prototyped and finally produced in an injection mold. The construction of molded parts and the complete tools takes place in the same way as the construction of the item itself: by using Pro/Engineer. The NC programs (as far as offline programming is affected) are implemented using Work NC (Sescoi) and Esprit (DP Technology). On the workshop floor, i.e. with the machine tools, there is a lot of confidence in the DMG (Deckel Maho Gildemeister) machining centers, which are sometimes fitted with Sinumerik 840D and Sinumerik 810D controls. The shopfloor-oriented programming software “ShopMill” is installed on the Sinumerik 810D. This enables the technicians to program simple contours onto the machine themselves. This lightens the load for offline programmers and allows machining specialists to introduce their own expertise. ▶▶



Upper left: Using the shopfloor-oriented user interface of ShopMill, a technician can easily program contours directly on the machine

Upper right and lower left: geobra Brandstatter produces the molded parts and tools for the many different Playmobil parts ShopMill and Sinumerik

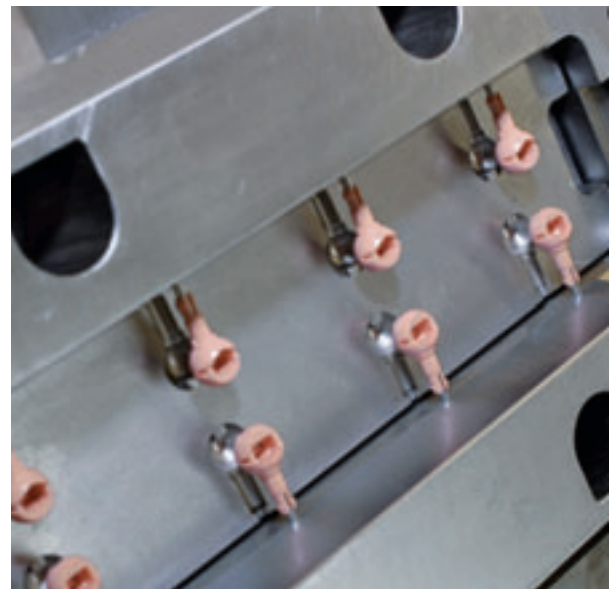
» A Must for the Development Department

Sinumerik controls are also being used in the development department (prototype workshop). In principle, the individual parts are actually completed using virtual methods (Design System, CAD/CAM). In between these stages, however, actual models and prototypes are produced in hard foam or plastic. For this, the developers have a separate machining center, comprising three- and five-axis centers from DMG. Sinumerik 810D is used on the three-axis center (DMU 35) and programs are also created here using ShopMill. "We introduced this combination about seven years ago and, in hindsight, this was a very good decision," says Michael Friedrich of the development department. His reasoning: "ShopMill is simple to grasp and integrates into daily work without any problems." Geobra is introducing two versions of ShopMill – directly into the control and in PC format. The latter enables NC programs to be

created on the desktop and thereby reduces machine downtime.

Simple Milling and Drilling

ShopMill, the shopfloor-oriented user interface for milling machines, allows technicians to access the CNC technology easily and can be operated without a high degree of programming and without in-depth CNC knowledge. The standard way that technicians look at the work sequence (setup, programming and milling) is reproduced and is optimally supported through the user-friendly representation of the tasks and graphical help images. Michael Friedrich also confirms that this works: "The software is very intuitive and it guides you through everything. In theory, you can't actually go wrong, since ShopMill only offers the options that are specifically useful for each command." According to the technicians, correct programs are produced in a very short time in prac-



Above: Injection molds for the production of toy heads

Left: ... that are customized with different "hairstyles" to give them a unique appearance

ShopMill – Highlights

- ▶ Graphically interactive (without DIN/ISO knowledge) or text programming input with practical cycles
- ▶ Setup and measuring functions suitable for practice, clear tool management and 3D simulation
- ▶ PC software that supports production planning without machine scheduling

tice. Input can happen without documentation through the use of help screens. Despite all its simplicity, there are a large number of standard cycles available for processing and measuring tasks. For moldmaking there is an efficient text editor specifically for large NC programs and simple programming of moldmaking functions with a high-speed setting cycle. The simulation possibilities of the programs with genuine tool data facilitate high process security. Intuitive user guidance reduces machine setup time. All of this has led to Siemens controls and ShopMill "being very well established in our work today," says Friedrich.

"Solution Line" – the Next Generation of Controls

Sinumerik 840D sl offers modularity, openness, flexibility, and high efficiency for all current machining procedures and logically structured operation.

The control comprises the compact and modular Sinamics S120 drives and is enhanced by the Simatic S7-300 automation system. The heart of the control (NCU) unites CNC, HMI and PLC, as well as control and communication tasks. This is new and allows flexibility on the peripherals. In this way, for example, several different control panels can be selected, right up to the Thin Client control panel, in which the whole operating software is kept in the NCU and, therefore, has a very simple and almost interference-proof structure. On top of that, there are also control panels with a separate PC (PCU 50.3). The NCU is available with various levels of performance (NCU 710 through 730). ■

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