



- ▶ Turn-mill center  
**INDEX G220**
- ▶ Weber Maschinenbau  
Neubrandenburg

**INDEX G220**

## At Weber it's not only the sausage that is meaty!

For the construction of its largely customer-specific plant designs, Weber Maschinenbau requires some 14,000 different turned parts, in batch sizes of between 1 and 10. Its production operation in Neubrandenburg is automated as far as possible and highly productive, while at the same time ensuring a high degree of flexibility. Two networked INDEX G220 turn-mill centers form the core of the solution installed there.

**A report by Manfred Flohr // magazine "maschine+werkzeug"**

The ham feed to the slicer alone makes it very clear that this installation comprising around 2,000 components requires a huge amount of turned parts.

## High-performance machines for the food industry

The Weber slicers generate up to 2500 slices a minute. The larger models process multiple products in parallel, and achieve a throughput of up to 40 tons of sausage or cheese per shift in ongoing operation.

Weber Maschinenbau in Neubrandenburg produces high-performance cutting machines, known as slicers. These are used by the food industry to slice sausage meat, cheese, or ham, divide them into portions right down to the exact gram required and then package them for sale. With its sale of 300 slicers, the global market leader sold more in the last year than all the competition put together. Weber has an entire series of machine types in its portfolio, and configures such installations according to customer requirements. "We have a very large proportion of new parts," comments Robert Schwaber, Sales Director at Weber. "Anyone familiar with a new part process knows what it involves in terms of effort."

The almost exclusively stainless steel slicers contain around 2,000 different parts on average. Weber's vertical range of manufacture is very significant; even the necessary screws are manufactured in-house. In terms of turning alone, there are around 14,000 different parts in total. In addition to various product lines and customer-specific variants, an expansion to the portfolio is also contributing to this. Until two years ago, Weber primarily built slicers, but the company is now operating as a supplier of complete systems, which also incorporate packaging and labeling.

In order to keep ahead of the game, which included a growing business volume and an increasing lack of specialist skills, intelligent manufacturing solutions were required. After extensive research, the movers and shakers at Weber established that no complete solutions existed on the market for metal cutting of the parts they required and which met all their needs. Without further ado, they created

a concept; and approached INDEX with it. "We were presented with the task of manufacturing complex workpieces using a flexible system," recalls Michael Czudaj, Sales Director for Germany at INDEX, explaining how the joint project came about. "Turn-mill centers were the ideal solution as they included all the required technologies. A high degree of automation was also necessary." This was significantly more challenging than Weber might have liked. "At the start, we wanted the 'jack of all trades' approach – raw material in, finished part out," says Carsten Toboldt, metal cutting foreman.

### Lights-out machining of a wide range of parts

The relevant tool stock also had to be conceived. Frank Brunner, Head of the Metal-Cutting Department at Weber, explained how crucial this is to smooth production: "Automatic tool changing on the machine is important, if we are to achieve lights-out production of the range of parts that we have planned for the plant. To be able to do this over weekends also, the machines must contain a multitude of tools. As the wearing of stainless tool is quite significant, we also require an adequate number of sister tools."

Michael Czudaj sums up the task facing INDEX: "The challenges for us were the automatic tool change, automatic clamping equipment change, automated loading and unloading of semifinished parts, and routing of the finished parts out of the production cell – and all of this, using two networked machines."

The overall concept of the production line could then be implemented as follows: INDEX supplied two G220 turn-mill centers, with a cus-

Assembly of a slicer, for which some 2000 parts are required; including many turned parts.



The metal cutting parameters are, as before, entered on the machine controls.



tomized automation interface. Promot provided the automation, inclusive of master computer, management systems, and software development.

One special feature is the automatic clamping equipment change, which Czudaj lists as a significant challenge. It has to function in a totally reliable manner – even where no operator is present at the machine, but instead a robot is responsible for setup. To achieve this, the project team set up a threefold safety prompt after the clamping equipment change. This required significant input from INDEX and also Promot.

A few months in, the new plant is now in constant operation at Neubrandenburg – three shifts, seven days a week, 24 hours around the clock. Entirely unmanned shifts run on the weekend.

In the plant hall, the complex interaction between all components of the automated plant has become large-scale. Centrally located between the two G220s from INDEX are a Kardex Shuttle XP 250 and the Promot master computer. A gantry runs above both turn-mill centers, which loads the machines with clamping equipment and raw materials. While a machining operation is in progress, everything required for the upcoming jobs is prepared here. During an automatic clamping equipment change, the gripper removes one collet, and inserts a new one with the corresponding next diameter. This is followed by the incorporated safety prompts. Following approval, the previously measured raw material bar is fed into the main spindle, and the data is loaded from the server to the machine.

All tools are housed directly in the INDEX G220 tool magazines. The double chains pro-

vide 140 HSK-40 tool pockets. Around 60% of the tool pockets are fitted with special toolholders, each of which holds three individual tools. If the life of a tool expires, the tool simply cycles forward one position, and work can continue with the substitute tool. “We arrived at this solution in order to be able to cater to the wide variety of parts, without wasting too much space on sister tools,” explains Carsten Toboldt. “We obtained inspiration for this from INDEX.” Not only the 18-tool pockets on the turret (VDI 25 with INDEX W toothing) but also the milling spindle attached above can be equipped with up to four fixed tools (VDI 25) thanks to index-specific tool bars.

#### Ample space in the machine room

Specific characteristics of the INDEX G220 are particularly useful to this project. The motorized milling spindle with HSK 40 can reach up to 18,000 revolutions per minute, and also has four additional toolholders on the side. What is extremely important for users who, like Weber, are focused on productivity and flexibility is a working space that allows operations to be carried out using this motorized milling spindle and the turret, with virtually zero risk of collision. “It is not easy, for example, to be able to carry out central machining with the motorized milling spindle on the main spindle or counter spindle, while at the same time being able to work centrally with the turret – this is what is required of the working space with such combinations,” comments Czudaj. Frank Brunner confirms that the large working area was one of the criteria for selecting INDEX as the machine partner. Additional plus points are the large tool magazine, and the workpiece removal handling, which is available as standard.



Lots of components in small batches are typical of the production operation at Weber in Neubrandenburg.

Together we've done it!  
(from left): Andre Idziak,  
Michael Czudaj, Valentin  
Trettenbrein, Frank Riemer,  
and Carsten Toboldt.



» We have created a solution that is an example of how production in Germany can remain cost-effective.

**Robert Schwabe**  
Weber Maschinenbau

What it means when a productive finisher deals exclusively with small batches becomes apparent in the area in front of the new production line. Side by side, lines of small, blue, chipped boxes, containing finished parts originating from the machine, are lined up here. Each contains only a few parts; some even just one. The finished parts travel from the machine, directly into the boxes, via a conveyor.

Currently, Weber manufactures 1,100 different parts using the installation. For the master computer, this means it needs to handle 1,100 different programs. None of the project members denies that it took a significant amount of effort to get the system up and running as desired. The result achieved, however, speaks for itself. If you wanted to achieve the same machine operating time with a manned pro-

cess, you would need three, instead of the current two, INDEX machines, according to Frank Brunner. The use of personnel is also significantly lower: whereas nine employees would be required to operate the three machines, just three operators are needed to operate the two automated machines.

#### **Automation keeps production cost-effective**

"We are proud of what we have achieved together," declares Robert Schwabe. "We have created a solution that is an example of how production in Germany can remain cost-effective." At INDEX, we believe that, even for highly diversified components, an increasing number of companies are opting for automation solutions. "INDEX has a range of solutions, which are able to optimally fulfill individual customer requirements," says Michael Czudaj.

## info

### **About the Weber Group**

From precisely weighted slicing right up to arranging and packaging of sausage, meat, and cheese: Weber Maschinenbau is one of the leading system providers for slicing applications. The company started out in the manufacture of derinding and membrane skinning machines.

The Weber Group is headquartered in Breidenbach, Central Hesse. Weber Maschinenbau employs around 1,400 people, at 24 sites. To date, the company has remained under family ownership, and is headed up by Tobias Weber, the eldest son of the company's founder, Günther Weber.

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