

■ MCE Maschinen- und Apparatebau GmbH, Austria

Model Turbines from One Mold

Energy production specialist MCE uses a simultaneous five-axis mill-turn center with Sinumerik 840D sl for producing model running wheels in one setting and thereby reducing throughput time.

MCE Maschinen- und Apparatebau GmbH in Linz, Austria, produces various components for large gas, steam, and water turbines, as well as for wind power stations and other segments of energy production. But before the company receives any orders for these products, realistic models must prove their efficiency, underlines MCE CEO Gottfried Langthaler: "It is therefore very important for us to be able to manufacture the turbine models in high quality and, at the same time, productively with a short throughput time."

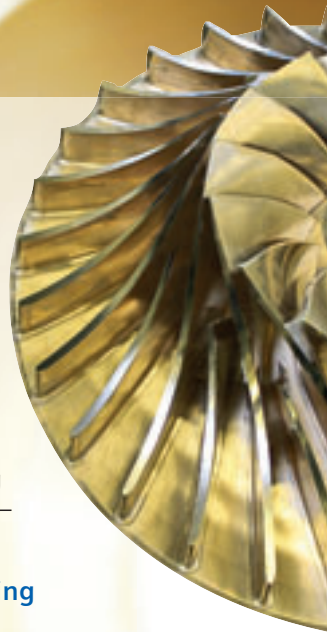
In mid-2010, the running wheels were still being milled individually on a five-axis machining center and then bolted or welded together. The average throughput time was six weeks. Thanks to a few technical tricks and the Sinumerik-controlled GS 1000/5-FTD from Alzmetall, which has been used in model production since the end of 2010, the machining expert Langthaler was able to reduce throughput time by up to one-third — to about four weeks, depending on the product. As a qualified master of mechanical engineering and design, he already knew before purchasing the Alzmetall machine that it would be ideal for his model production if a Francis turbine could be produced from solid brass: "I was merely skeptical that a machining center could do that. After all, we have to achieve a high roughing cut and smooth with maximum precision and surface quality." Initial tests with the

GS 1000/5-FTD revealed that the technical conditions were right. Langthaler adds: "Alzmetall also flexibly adapted the machining center to our needs so that we can meet all the requirements regarding accuracy and surface quality — in one setting if necessary."

User-friendly CNC for milling and turning jobs

Because this machine must also perform turning tasks, in addition to milling tasks, at MCE, this requirement is also in the specification and is met by the GS 1000/5-FTD. Buz Bozner, head of the Technology Center at Alzmetall, explains the technical basis: "We integrated torque motors in all round axes. We therefore achieve speeds of 300 rpm in the c-axis." The mill-turn center offers an enormous machining space that not even standard lathes achieve. Parts with a diameter of up to 1,000 mm can therefore be machined. A highlight of the GS 1000/5-FTD is that it can be turned to any round axis position and level.

The energy professionals in model construction have been relying on Sinumerik controllers since the mid-1990s because, according to the mechanical



MCE Maschinen- und Apparatebau GmbH CEO Gottfried Langthaler (right) and Buz Bozner, head of the Alzmetall Technology Center, agree:

»The efficiency of the Sinumerik 840D sl makes an important contribution to enabling simultaneous milling and turning in every position with the GS 1000/5-FTD.«



Fotos: MCE



engineering boss Langthaler, these were always convincing, especially in complex five-axis machining: "The handling of Sinumerik 840D is also clear and simple on the ShopMill and ShopTurn graphical user interfaces." The operator can work particularly easily and clearly when a GS 1000/5-FTD with the new Sinumerik Operate user interface is used. Operation and programming always have the same structure, regardless of whether milling or turning processes are to be programmed and set-up. The operator is also supported by graphical displays and animations. Many intelligent functions are available, which are helpful, among other things, for tool and workpiece measurement. The operation and programming of 3+2 axis machining is also supported by the integrated Cycle800 functions. Animated Elements simplify the explanation of functions such as selection of the direction and free running, as well as swiveling.

Another highlight of the new GS 1000/5-FTD is the Sinumerik MDynamics technology package, which

is especially important for complex five-axis machining. Maximum surface quality and exact contour accuracy can be achieved even more rapidly. The key is in the new Advanced Surface intelligent path control, which contains an optimized look-ahead function and an optimized online CNC data compressor, among other things. The integrated intelligent jolt limiter relieves stress on the machine mechanics because it enables gentle acceleration and deceleration despite extreme dynamic response.

Customers reap the benefits

As a specialist in single-part and small-series production for small to large workpieces, MCE is equipped to meet even extraordinary demands on-time and with top quality. By equipping its machines with state-of-the-art Siemens technology, the company is able to achieve high throughput times in model production and pass these advantages on to its customers. ■

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