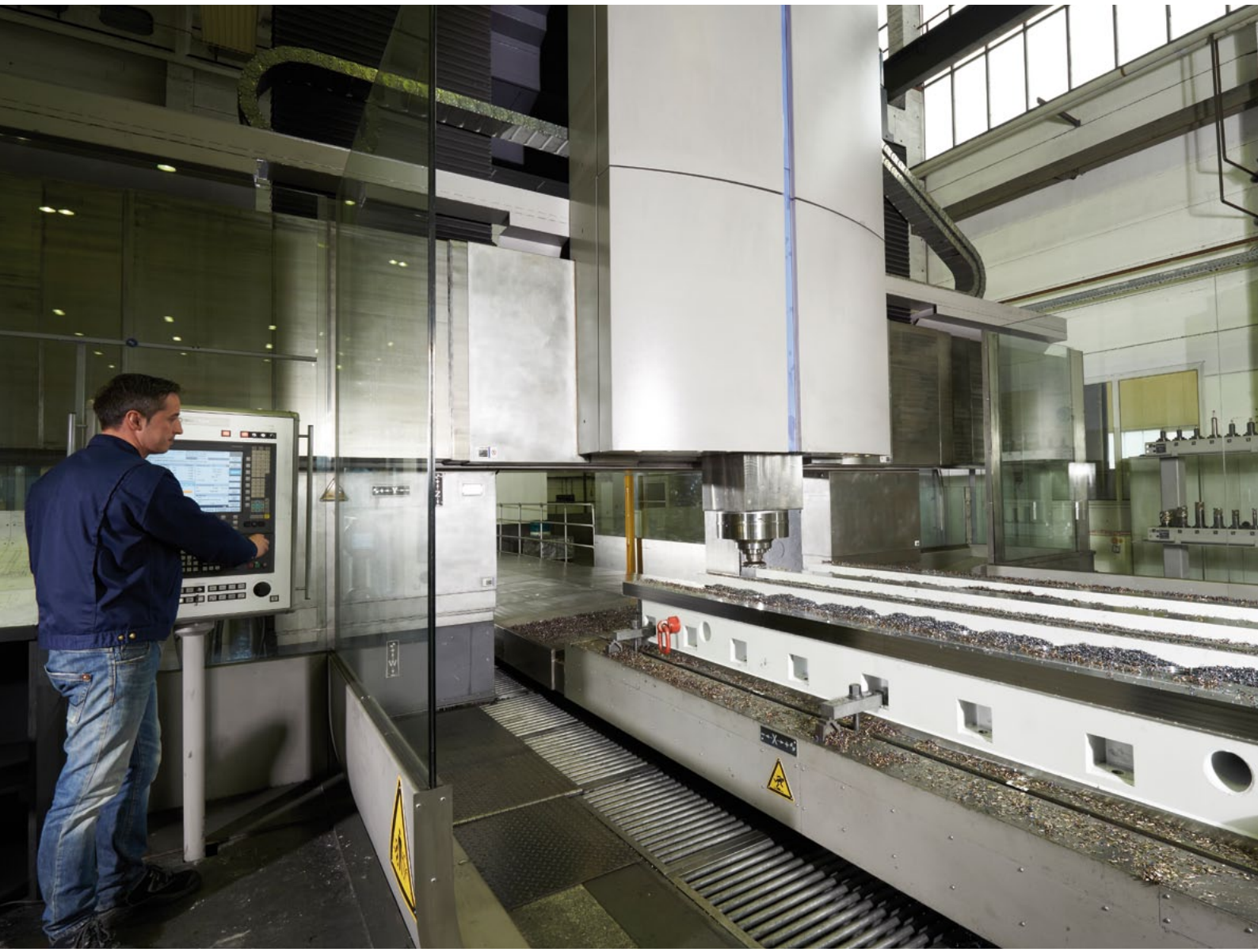
WALDRICHSIEGEN

APPLICATIONREPORT

PROFIMILL

Efficient precision machining of large machine components



Portal milling machine ProfiMill at Herkules Meuselwitz

WaldrichSiegen delivered an innovative portal milling machine to the machine tool manufacturer Maschinenfabrik Herkules Meuselwitz in Germany. Herkules Meuselwitz machines machine beds, columns and guideways precisely and efficiently with the ProfiMill.

ProfiMill at Herkules Meuselwitz

Maschinenfabrik Herkules Meuselwitz in Thuringia, Germany, is a worldwide leading manufacturer of heavy duty machine tools in the field of grinding and turning. The Herkules lathes and roll grinders are capable of machining rolls and other rotationally symmetrical workpieces like turbine rotors weighing up to 300 t with a turning diameter of 3,000 mm maintaining micron accuracies. Leading roll manufacturers, mills, large-scale forges, manufacturers of large machines, amongst other companies worldwide rely with confidence on the machine tools produced in Meuselwitz.

In-house manufacturing guarantees high quality

“The high accuracies our machines achieve can only be realized, if the individual components are produced with the utmost precision, too“, as Michael Bergmann, President of Herkules Meuselwitz, explains. To ensure this, a high in-house production depth is the companies‘ strategy. All main machine components are produced within the group of companies. “Thus, we can guarantee the high quality of all components and can react flexibly“, Michael Bergmann says.
In order to continue being one step ahead of the competitors regarding quality and delivery dependability, the decision was made to invest in a new, modern portal milling machine in 2008. With this new process, machine beds, saddles and guideways are machined more precisely and efficiently. In addition to the high quality, the main decision criteria were a high operational availability of the machine as well as a flexible adaption to the space available and the work flow within the fabrication. Since only one supplier fulfilled all of these criteria to Herkules’ full satisfaction, the decision was made for a portal milling machine of the ProfiMill-series of the technological leader from Germany, WaldrichSiegen. By now, WaldrichSiegen has a tradition of almost 175 years in the field of machine tools. Besides portal milling machines, they produce vertical turning machines, horizontal turning machines, grinders and texturing machines that work with the highest precision and efficiency.

“With the ProfiMill, WaldrichSiegen offered us a machine that fulfilled all our requirements“, as President Michael Bergmann remembers. “After a thorough analysis and consultation that convinced us completely on technical terms, WaldrichSiegen developed a master plan to embed the machine perfectly in the space available within our production and in the working processes. This concept was individual and tailored specific to us.” WaldrichSiegen is one of the first producers worldwide to consequently establish the masterhead concept for milling units obtaining the highest performances on large portal milling machines. In this concept, only the drive tube is supported in the ram; the bearings and milling spindles are perfectly adapted to the requirements and positioned within the milling attachment. Thus, the high stiffness of the interface as well as an optimal overall efficiency and highest operational

Machining a machine bed

availability are guaranteed. Furthermore, the fully hydrostatic design of all axes of the ProfiMill assures an almost unlimited durability, zero backlash as well as an unsurpassed dynamical stiffness allows for the highest permissible part loads on the table.

Optimal adaptation to space

After a constructive project phase and the installation by the WaldrichSiegen specialists, the ProfiMill was taken into operation in Meuselwitz in 2010. With a clearance width of 3,500 mm between the columns and a clearance height of 2,500 mm, the ProfiMill was perfectly adapted to the space available. With traveling distances of 12,000 mm in the X-axis, 6,000 mm in the Y-axis, 1,500 mm in the Z-axis and 1,000 – 2,500 mm in the W-axis, the machine is spaciously designed. Thus, it allows the manufacturing of long machine beds. The two integrated working tables of 5,000 x 3,000 mm each can be coupled together and thus offer a manufacturing length of 11,000 mm.

"The maintainability as well as the user friendliness of the machine are also convincing", Benjamin Klein, Head of Production at Herkules Meuselwitz, reports. "All essential components are easy to access: all maintenance activities can be realized uncomplicated and quickly without constraining the production process considerably". The machine operator as well as the technological experts of Herkules Meuselwitz can program the machines quickly and simply. With its minimalistic and modern design and the illuminated blue stripe, the ProfiMill is the visual center of the production hall.

Besides the processing of machine beds, -bases and -carriages from cast iron and steel, the milling of hardened guideways is an additional task of the ProfiMill. The ProfiMill performs this with such high precision that the guideways do not even have to be ground after milling. "By omitting this step, we save time and the production of the work pieces is even more efficient", Benjamin Klein says.

Therefore, the old guideway grinder was no longer needed and dismantled. Soon a new machine tool will be put into operation at Herkules Meuselwitz in place of it – an additional, smaller portal milling machine by WaldrichSiegen. "The large ProfiMill is used to its complete capacity. With the smaller ProfiMill we will machine smaller working pieces as of the end of 2014. WaldrichSiegen is going to develop a tailor-made machine concept for us – as they did with the first portal milling machine", Michael Bergmann knows.

Michael Bergmann, President & COO at Herkules Meuselwitz

Aside from the large portal milling machine installed at Herkules Meuselwitz, the ProfiMill series of WaldrichSiegen is comprised of two additional smaller sized machines: A medium sized machine with 70/80 kW driving power and a passage width of 2,500 to 5,000 mm and one smaller sized with a passage width of 2,000 to 4,000 mm and a milling performance of 50/65 kW. Like the large ProfiMill, they are characterized by their robust design and boxed ways that are hydrostatically guided on all axes. Thus, they can be used for rough machining as well as for finishing.

Benjamin Klein, Head of Production at Herkules Meuselwitz

Technical data

X-travel	12,000 mm
Y-travel	6,000 mm
Z-travel	1,500 mm
W-travel	1,000 - 2,500 mm
Profile/width of the RAM	600 x 600 mm
Milling performance at the work piece	80 kW
Spindle speed	0 - 2,000 min^{-1}
Spindle torque	7,000 Nm

Further equipment:
4 spindle units, 2 manufacturing beds/tables 5,000 x 3,000 mm each, coupled 11,000 mm manufacturing length
control: Siemens Sinumerik 840 D sl

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