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Portal milling machines have large dimensions and are therefore expensive to buy. But they are available cheaper on the second-hand machine market. (© Surplex).

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Big, bigger, portal milling machines

54 m long, 14 m wide and 12 m high – these are the workspace dimensions of the largest portal milling machine in the world. But how are such giant milling machines used? What advantages do portal milling machines offer? And how can the high investment costs be reduced?

To be able to process large workpieces, you need large machines. With a clearance height of 12 m and a width of 14 m as well as a travelling distance of 54 m, the Profimill 3 from Waldrich Siegen is currently the largest machine tool in the world. It is a portal milling machine in gantry design with a modular machining concept.

The portal to the major project

Large machine tools often have a modular design and are usually portal-type. Only in this way is it possible to produce giant components. In portal milling machines, the milling head is guided on a bridge above the working area. It is stretched over the work table and consists of a cross beam attached to two supports. These form a kind of portal and give the machine its name.

The most common version of portal milling machines is the one with gantry drive. By the way, gantry means portal. In a machine with gantry drive, the work table is connected to the foundation. The cutter is moved across the working area by an electromechanical drive on the two supports along the axis. In the design with a travelling table, the workpiece is moved into position within the machine, while the milling cutter itself remains static.

In order to process the sides of the workpiece in one step, there are additional milling tools on the stands in addition to the milling head on the crossbeam. Furthermore, there are portal milling machines with double portal design, which halves the machining time.

Effective work with portal milling machines

Due to their enormous size, portal milling machines can also machine large surfaces efficiently. Since the milling machine moves around the material to be machined, particularly heavy workpieces can also be machined. But despite their size, portal milling machines can also be used for small details. Because of their rigid design, they have a positioning accuracy in the hundredth of a millimetre range. Portal milling machines have great dimensional accuracy, surface quality and cutting performance.

Rigid construction, flexible application possibilities

Thanks to their size and accuracy, portal milling machines are popular in many different businesses – for example, in the aerospace and shipping industries, the energy sector or in machine and tool manufacturing. Portal milling machines are used where a perfectly milled surface and high dimensional accuracy are required on a large scale. As the customer's demands increase, production costs must nevertheless remain low and the delivery speed short.

Portal milling machines can be used to produce a high number of high-quality workpieces with a low amount of work. They can be used precisely and in a variety of ways and can also cope with increasingly complex machining tasks. Increased productivity can be achieved through reduced downtimes and reclamping times.

Optimise production with a used portal milling machine

The disadvantage of a portal milling machine is the high investment costs due to the enormous size of the machine. Here it can be worthwhile to purchase a second-hand machine. These are much cheaper than new machines and, with good maintenance, will provide many years of service.

Surplex.com, the expert in used machines, currently has a double-portal milling machine in gantry design from the manufacturer SCHIESS on offer. It has a modular design with two gantries. The SCHIESS 50 FZG 14-450 can be moved 18 m in the x-axis over the panel field. A rotary table (diameter: 4.5 m) is integrated on one side of the working area. The design with two gantries enables particularly flexible and effective production. Thus, either several small workpieces can be milled simultaneously on the panel array or large workpieces can be machined simultaneously on both sides. The latter, in particular, can be efficiently rotated vertically on the integrated rotary table. Six milling heads in the horizontal plane and six milling heads in the vertical plane accelerate the machining time of workpieces up to 80 t. Tool change is automatic by means of a tool magazine, which minimises downtimes. The system is located at a machine and plant manufacturer for the production and processing of plastics in Munich.

Especially in the case of high investment sums or complicated transports of large machines, the buyer must rely on the experience and support of the machinery dealer. Surplex is one of Europe's leading industrial auction houses and trades worldwide with used machinery and equipment. For more than 20 years, Surplex has been offering buyers an all-round service – fromhandling, to dismantling and customs.

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About Surplex

Surplex is one of Europe's leading industrial auction houses and trades worldwide with used machinery and equipment. The 16-language auction platform Surplex.com records approximately 50 million-page views annually. More than 55,000 industrial goods are sold each year at more than 800 online auctions. The company is based in Düsseldorf (Germany) and has offices in 15 European countries. Over 220 employees from 20 different nations generate an annual turnover of more than EUR 100 million.

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