

Vertical turning for maximum efficiency



THE VT 250 is an extraordinarily stable machine that was designed for heavy-duty machining

[Siegerland Bremsen]

Siegerland Bremsen was founded in 1958. Initially, its services solely involved manufacturing non-standardized drum brakes according to customer drawings. In 1986, the company was purchased by the Kring family and the production facilities were modernized - all the investments went on CNC machines. The company also placed a strong focus on internalization and now has branches in Spain, China (since 1999) and India. The product range includes industrial brakes for harbors, conveyor belts, steelworks, wind turbines, crane systems, and, as a recent addition, wheelsets for industrial cranes.



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[Requirements profile]

- Component for hydraulic systems
- High quantities - up to 5000 pieces per month
- Prefinished parts - no outsourcing for finishing necessary
- High conversion flexibility
- Small footprint



When it comes to machine tools, Andreas Jung, plant manager at Siegerland Bremsen, is not so easy to fool. After all, in his ‘first working life’ – which lasted a proud 33 years – he was employed in several different roles at the machine tool manufacturer Waldrich Siegen. And with that kind of experience, he certainly knows his machine tools. And when someone like Andreas Jung has nothing but positive things to say about a machine, then that really means something. In this regard, we are talking about the Emco VT 250. Two vertical lathes from Hallein are currently being used at Siegerland Bremsen where they have (in the truest sense) turned the production of hydraulic components upside down – although they have done this sequentially.

According to the company’s website, “The brake system is the final link in a chain of safety-related components in a drive. The continual developments in brake technology achieved by a team of highly qualified engineers, technicians and designers will guarantee a suitable solution in spite of increasingly complex drives.” The brakes in the Texu series are just one result of these ongoing efforts. These are double-acting disc brakes with which, analogously to drum brakes, the braking force is symmetrically transmitted to the brake disc from two sides, compensating the radial forces on the brake shaft. What makes this brake special is that two opposing brake calipers can be simultaneously actuated by two parallel-mounted spring tubes in conjunction with a concentrically mounted electro hydraulic thruster. Despite constantly expanding its product range over the years, one thing has never changed at Siegerland Bremsen: the great value placed on having the highest possible level of vertical integration, firstly to ensure high quality and secondly to independently influence the machining time and thus the delivery times. According to Andreas Jung, there is an intentional rejection of standard management and production philosophies in this regard: “Unlike many other companies, we keep a very large parts stock. This enables us to both optimally design our part production processes and maintain an extremely high readiness to deliver. With our structures, that makes a great deal of sense.” Nearly all parts for all products are therefore produced in the production plant in Haiger-Rodenbach and then moved to the nearby assembly plant.

One of the workpieces with the highest production figures is a component for hydraulic systems, of which up to 5,000 pieces per month are produced. The constantly increasing quantity made it necessary to completely re-think the previously used methods and resources. Andreas Jung: “As you’d expect, we looked at all options, from complete machining through a complex machine with a main and a counter spindle including a robotics-based parts feed to two simple lathes. Initially, we favored a solution with two simple horizontal lathes but then one employee suggested the use of vertical turning. I’d actually considered this technology before at one point but the cost of those kinds of machines would simply have been too high for the machining work in question.”

The main reason for this was that as a supplier, you predominantly have the ‘usual suspects’ within your sights and it was only when we came upon Emco’s name (and price list) during our research that our investigations into vertical lathes took on concrete form. It quickly became evident that when considering the parts geometry, the dimensions and the relatively high quantities, vertical turning was a far lower cost technology than a conventional solution with horizontal lathes.

In the light of this, it was relatively easy to convince the management of how much sense this venture made and we invested in an Emco VT 250 relatively quickly. And it only took just over five weeks before Andreas Jung had to confess to the management that he had misjudged things when purchasing the machine. “I told my manager that I’d made a mistake when purchasing the VT 250. I shouldn’t have just ordered one machine; I should have ordered two straight away.” Not long after the VT 250 was first commissioned, it became clear that it instantly exceeded all of our expectations and that vertical turning certainly deserved all the early praise it had received.

“We intentionally opted out of any further automation. I’m sure that a turning station would have further reduced the workload for the operator but we wouldn’t actually have got a single extra part from the machine and someone would still have had to stand at the machine to conduct quality checks



Twice the capacity thanks to half the machining time, and all with just one employee rather than the previous two

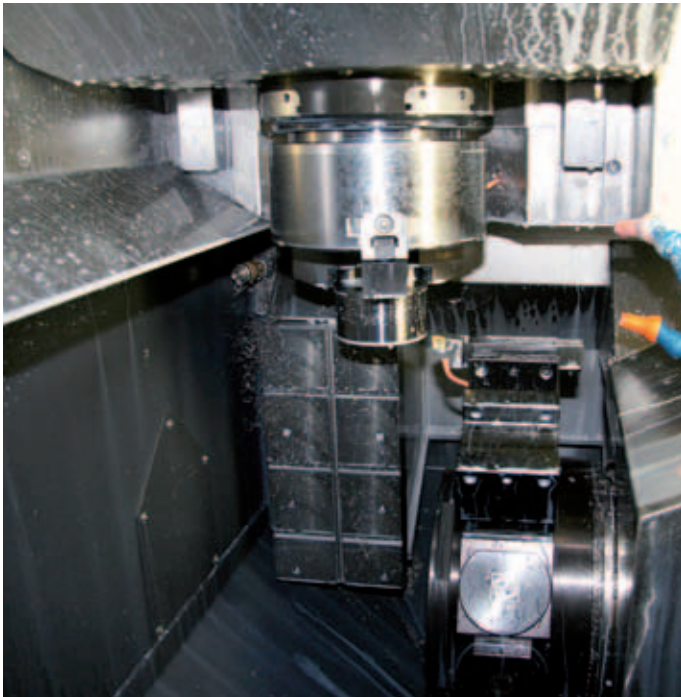
It became clear that the automated parts feed makes the machine so much easier to operate that it isn't necessary for two employees to be involved, as with the horizontal solution. Instead, providing all the subsequent operations are also conducted on a vertical lathe, one machine worker suffices." The management also agreed with this observation and the second VT 250 was ordered just a few weeks after the first. This was installed at an angle of 180° to the first machine so that the two feed belts run in parallel next to each other.

Andreas Jung, plant manager at Siegerland Bremsen



Quick loading through the spindle's direct pick-up of the raw material

and simple packing activities." Furthermore: "By opting out of an automated solution, if lower parts quantities are required at any time, we can simply machine a different parts range on the second vertical machine without any need for conversion." Enough potential parts have now been identified in Rodenbach. "Once you've installed the vertical turning technology, you discover more and more potential uses for it."



Following the installation of the second VT 250, Andreas Jung made his first assessment: "We've halved the machining time and therefore doubled the capacity. It's only logical that this is also affecting the actual piece costs. Also, the quantities have clearly increased since we ordered the first Emco machine, meaning that the reduction in machining times has a very favorable effect." Furthermore: "We're still using two machines but these have a far smaller footprint than the old solution and we only need one employee rather than the previous two."

But these are not the only advantages: "Previously, we were simply unable to create the desired finishes in-house and had to outsource the parts for finishing. Now, we can use a tool-based solution in conjunction with the Emco vertical lathes to achieve even better results than our former supplier.

The parts come away from the machine pre-finished and go directly into the assembly process."



Herbert Bremer, product manager at Emco Magdeburg AG, is responsible for vertical lathing at Emco and commented on the benefits of this process: "Vertical lathes are all-purpose production machines that have an impressively small footprint and can be quickly converted. Also, there's no need to replace or configure any grippers for automatic workpiece handling as the workpieces to be machined can simply

be placed in self-centering carrier frames, i.e. that require no conversion, or, as is the case at Sibre, in pallets. You also mustn't forget about the optimum chip drop."

He also commented on the specific plus points of the VT 250: "It's not as though Emco invented vertical turning but what we have managed to do is offer our customers this machining technology at a very low price without compromising on quality or precision. Furthermore, the VT 250 is an extraordinarily stable machine that was designed for heavy-duty machining." The VT 250 is also equipped with the latest Siemens 828D Solution Line, has a coolant system with a 14-bar pump and offers plenty of tool storage space thanks to two independent systems (12-position turret and multi functional plate for special tools). The machine leaves almost no wishes unfulfilled.

Finally, let us return to a further comment by Andreas Jung: "Previously, I only associated Emco with training machines. Here at Siegerland, I had my first experiences of Emco production machines in the form of an EmcoTurn 365 – and was extremely surprised at the machine's repeat accuracy and precision. In the two VT 250s, we've found the ideal production equipment for our requirements and our parts range and we'll always add Emco products to our shortlist when it comes to future investments."

[Technical data]

EMCO VERTICAL VT 250

Work area	
Maximum chuck diameter	250 mm (9.8")
Maximum turning diameter	200 mm (7.9")
Maximum part length	150 mm (5.9")
Travel	
Travel X/Z axis	530 / 310 mm (20.9" / 12.2")
Travel Y axis	+/- 90 mm (+/- 3.5")
Rapid motion speed X / Y / Z	60 / 15 / 30 m/min (23.6/5.9/11.8")
Main spindle	
Speed range	0-4000 rpm

Main spindle	
Drive power	25 kW (33.5 hp)
Torque	280 Nm
Tool turret	
Number of tool holders	12
Tool shaft according VDI (DIN 69880)	VDI40
Driven tools	12
Speed range	0-4000 rpm
Drive power	8.5 kW (11.4 hp)
Torque	40 Nm

Versions EMCO VERTICAL VT 250

EMCO VERTICAL VT 250 – Basic machine without driven tools with belt drive on the main spindle

EMCO VERTICAL VT 250 M – Machine with driven tools and hollow spindle drive

EMCO VERTICAL VT 250 MY – Machine with driven tools, Y axis and hollow spindle drive



V-belt pulley
(Steel)



Wheel hub
(Steel)



Belt pulley
(Steel)

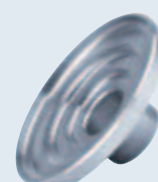


Plate flange
(Steel)