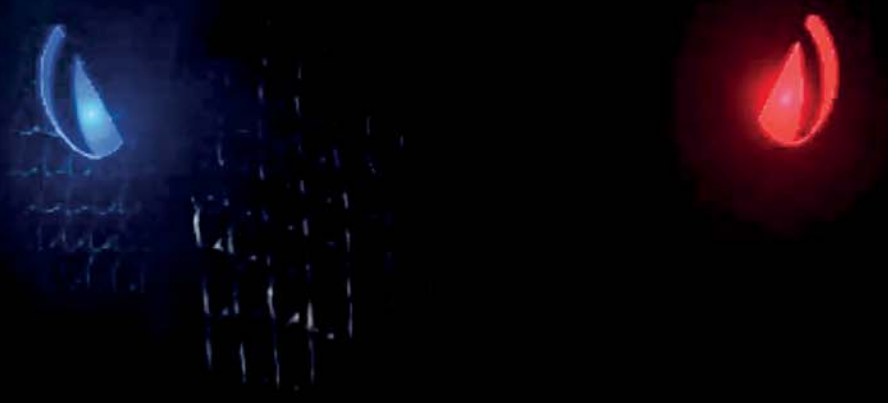


# THE ADAPTABLE VIPER 500: FLEXIBLE CYLINDRICAL GEAR GRINDING MACHINE FOR THE UNIVERSAL MARKET

Productivity and flexibility – these are basic characteristics of the new VIPER 500 that ensure the Höfler Cylindrical Gear Grinding Machine meets the full gamut of requirements of modern contract manufacturers. Fast retooling and simple, ergonomic handling are key criteria, particularly for users with frequent product changes. The extensive configuration options of the VIPER 500 W enable profile and continuous generation grinding on the same machine, resulting in a tremendously versatile workpiece spectrum.



**B**usinesses with small and medium-sized lots in particular pay close attention to flexibility and speed in the production process – and find both of these qualities in the VIPER 500 cylindrical gear grinding machine. Another advantage: Thanks to its small setup dimensions, even companies with limited shop floorspace can utilize lean production technology. "The design concept of the VIPER 500 is based on feedback from the marketplace on the one hand, and Höfler grinding technology's decades of experience on the other," explains Dr. Alexander Landvogt, Manager of the Cylindrical Gear Machine Tool Product Line.

## Focus on Flexibility

The VIPER 500 cylindrical gear grinding machine is designed for component diameters up to 500 mm and is available in three different configurations, depending on specific requirements: profile grinding, small grinding wheels for special jobs and multi-grinding wheel technology (K) as well as generation grinding (W). Grinding

"The special feature of the VIPER 500 W is its ability to accommodate both profile and generation grinding on one and the same machine."

Omar Sharif, Regional Sales Manager at KLINGELNBERG GmbH

of internal gearings is also possible with the VIPER 500. In just about 15 minutes, the machine can be retooled from external to internal gearings. "This multi-purpose machine is specifically designed to meet the requirements of extreme adaptability and versatility, both of which are crucial for small lot sizes. The VIPER 500 W in particular has a special feature that further enhances its flexibility: the possibility of performing both profile grinding and continuous generation grinding on the same machine," reports Omar Sharif, Regional Sales Manager at Klingelberg GmbH. To change grinding technology,

## Model comparison

	VIPER 500	VIPER 500 K	VIPER 500 W
Workpiece diameter	500	500	500
Module (mm) approx.	0.5–22	0.5–22	0.5–13
Grinding stroke (mm)	500	500	500
Swivel angle (°)	-45/+180	-45/+180	-45/+180
Grinding spindle (kW)	24	35	37
Grinding wheel rotation speed (rpm)	5,000	17,000	6,000
Grinding wheel diameter (mm)	400–206	300–25	350–221
Grinding wheel width (mm)	75	60	150
Table rotation (rpm)	120	120	1,000
Table load (kg)	500	500	500

(Specifications subject to change without notice.)

## Compact

### VIPER 500 – versatility in action

The VIPER 500 W delivers versatility, flexibility, and speed. Generation grinding and profile grinding can be performed on the same machine – with minimal changeover effort, making the VIPER 500 W well-suited even for small and medium-sized lots.

### Energy-efficient

Thanks to its efficient cooling system in the control cabinet and optimized energy consumption of the lifting slide, the VIPER 500 requires significantly less energy.



Fig. 1: The VIPER 500 cylindrical gear grinding machine is designed for component diameters up to 500 mm and is optimally suited for small to medium-sized lots.

one only needs to swap the grinding wheel, the grinding wheel flange, and, if necessary, the diamond dressing roll.

tion line control unit makes an additional contribution of precision and easy integration; the control unit is also equipped with the globally tested and proven GearPro graphical user interface, which stands out for its intuitive layout. Compared with older models of comparable machines, the VIPER 500 achieves productivity advantages of up to 50 percent.

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### Speeds up the production process

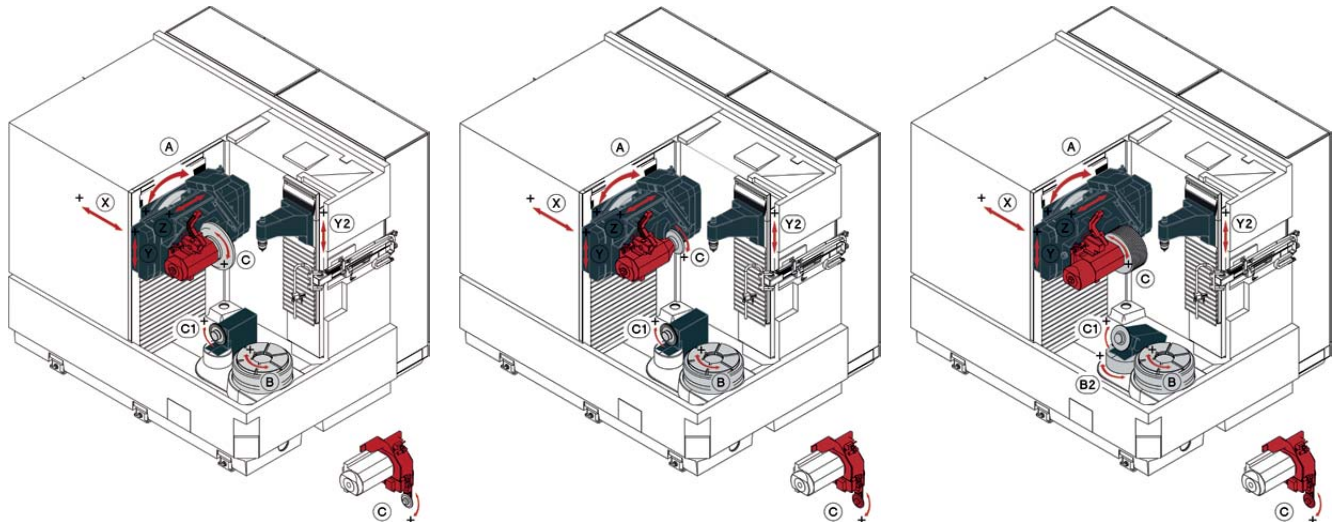
The machine supports dynamic production processes due to its easy accessibility, fast retooling capability, and ease of operation. To change the grinding wheel, for instance, the operator can move it closer with the swivel axis, rotating its position by 180 degrees – this makes retooling the VIPER 500 as fast as it is easy. In the VIPER 500 W specifically, a quick tool clamping system makes changing the tools both

Flexibility is one side – productivity the other. For all its adaptability, the design of the VIPER 500 enables high performance and efficiency at the same time. The special arrangement of the machine axes is a key factor in its hallmark precision, consistent quality and excellent reliability in the production process. The Siemens 840D solu-

## The VIPER 500 is available in three different machine configurations:

CNC axes:

- (X) Radial axis (Y) Lifting slide (Y<sub>2</sub>) Counter (B) Machine table (A) Helix angle (Z) Shift axis  
 (C) (C<sub>1</sub>) Controlled grinding wheels and dressing roll drives (B<sub>2</sub>) Dressing unit swivel



VIPER 500:  
Profile grinding

VIPER 500 K:  
Small grinding wheels and  
multi-grinding wheel technology

VIPER 500 W:  
Generation grinding

Fig. 2: An additional internal gearing arm gives all variants of the VIPER 500 the optional capability of grinding internal gears as well.

quick and easy. The familiar powerful, integrated dressing unit enables fast, cost-efficient, precise dressing of cylindrical grinding worms with all the usual modifications. The large dressing range of grinding worms (350–221 mm) also plays a part in lowering costs. A hydro-mechanical tensile-stress unit in the table is part of the standard equipment.

Efficiency is also a hallmark of machine cleaning and maintenance: The working chamber itself is designed as compactly as possible, with all installations housed outside the working chamber – making the VIPER 500 particularly quick and easy to clean.



Fig. 3: Lean production technology can be easily integrated even with limited production facilities.

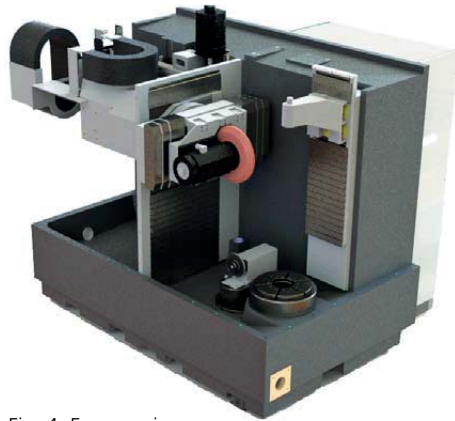


Fig. 4: Ergonomic machine design

## Energy efficiency factor

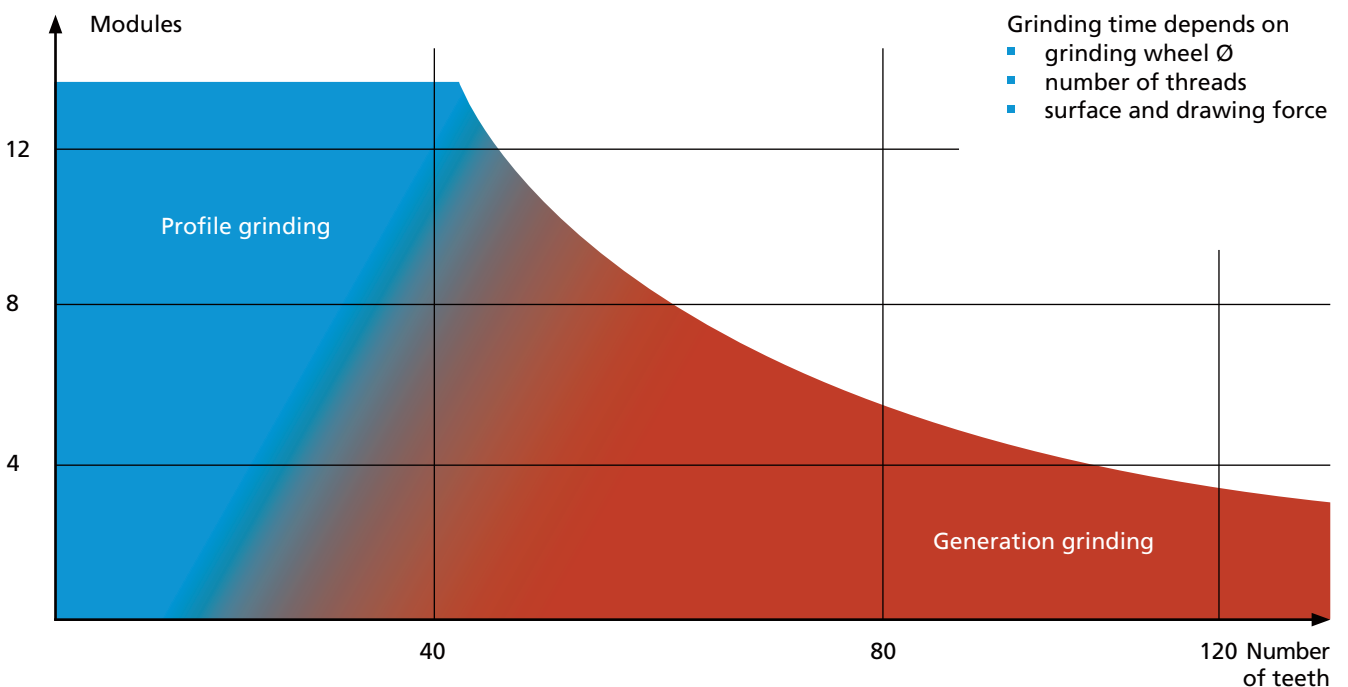
Various design and control measures contribute to energy efficiency: efficient cooling units lower energy demand and give off less heat to the surrounding air. "Within the possibilities that the grinding process offers in general, we have taken advantage of many opportunities to save energy in the process," explains Dr. Alexander Landvogt, pointing out, among other factors, the weight compensation of the axes that assist the lifting slide in its up and down movements. "The constant, forceful up-and-down motion of the slide typically requires a great deal of power. The weight compensation mechanism used in the VIPER 500 saves wear on the drive unit and significantly lowers the energy demand."

Another important factor is the location of the grinding oil drain. In the VIPER 500, the drain is located relatively high up over the floor – and this eliminates the need for a pump to supply the grinding oil. "Such an oil pump provides very little in the way

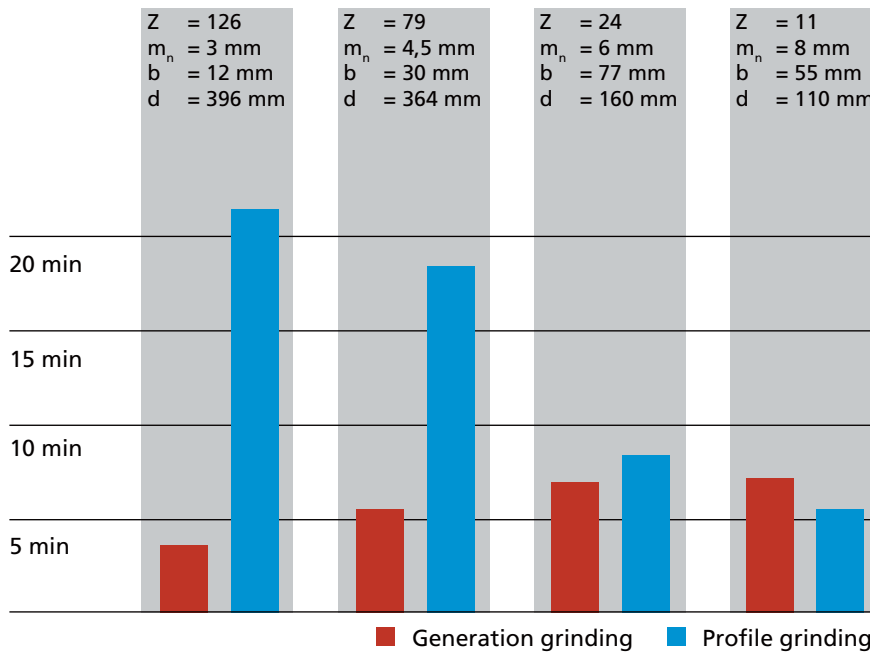
"With the VIPER 500, every opportunity was taken to save energy."

Dr. Alexander Landvogt,  
Manager of the Cylindrical Gear Machine Tool Product Line

## VIPER 500, ranges of application



## VIPER 500 grinding times



of efficiency – so why not achieve the prerequisites enabling us to do away with it completely?" says Dr. Alexander Landvogt, explaining the basic idea. "This point was particularly important for us in the design process, since no oil pump means more energy savings in the end." Not having a

pump also means that the grinding oil can be degassed more quickly. The automatic adjustment of the grinding oil nozzles on the VIPER 500 provides the advantage of ensuring optimal cooling and process stability for every grinding wheel diameter. ◆

## HIGHLIGHTS IN BRIEF

- Available in three different configurations
- Extensive configurations enable profile and continuous generation grinding on the same machine (VIPER 500 W)
- Tremendous flexibility and speed in the grinding process
- Small setup dimensions for compact space requirements
- Fast cleaning time, since all installations are accommodated outside the working chamber
- High energy efficiency



Dr.-Ing. Markus Brumm

Technology Center Machine Tools/  
Manager,  
KLINGELNBERG GmbH