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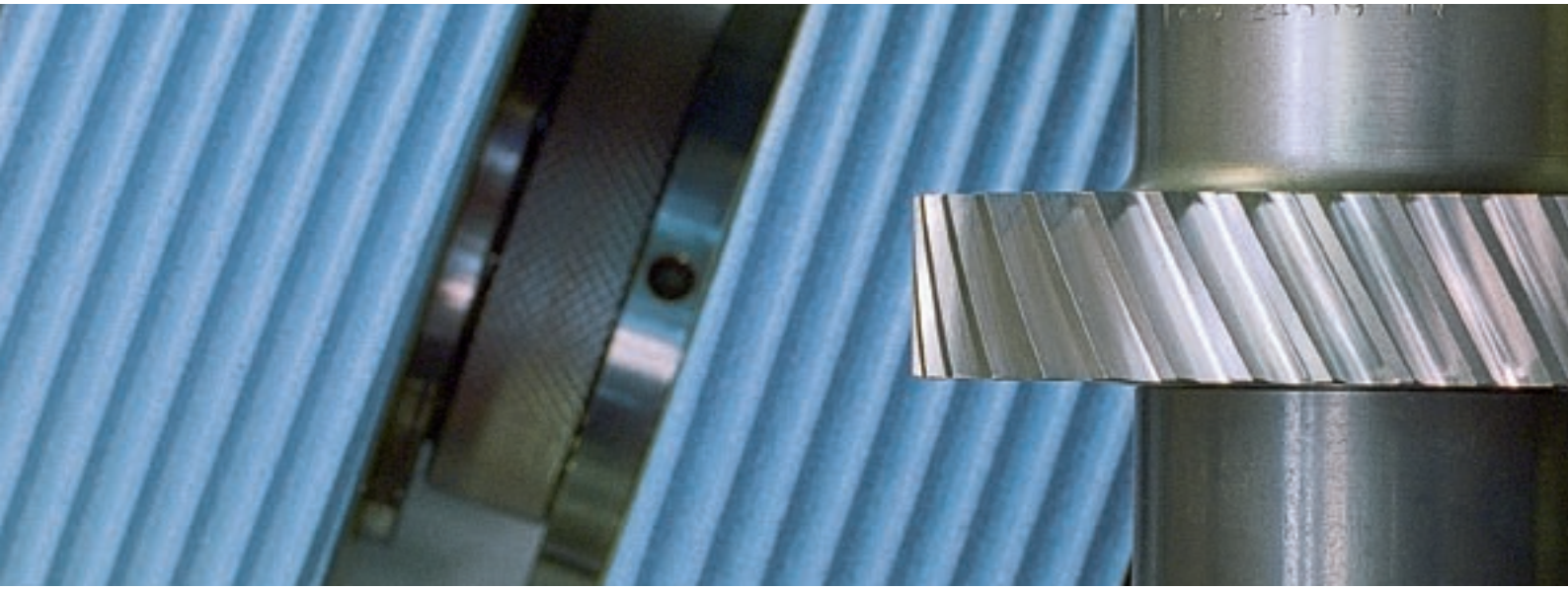

G 450

generating and profile gear grinding machine

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G 450

The Samputensili G 450 is based on established concepts of the best-selling Samputensili S 250/400 G machine, which have been further enhanced and improved. The result is an innovative, compact and extremely flexible gear grinding machine.

The Samputensili G 450 has been especially developed for very low cycle times and for top-quality and efficient mass production of gears with outside diameters up to 450 mm and shafts with lengths up to 550 mm.

Particular attention has been paid to the state-of-the-art solutions that allow a fast tool change.

The machine can equally use form and worm grinding wheels, both in ceramic and in electroplated CBN.

Simple design concepts in terms of tooling and dressing technology, fast automation and amazing user-friendliness are the strengths behind this unique machine.

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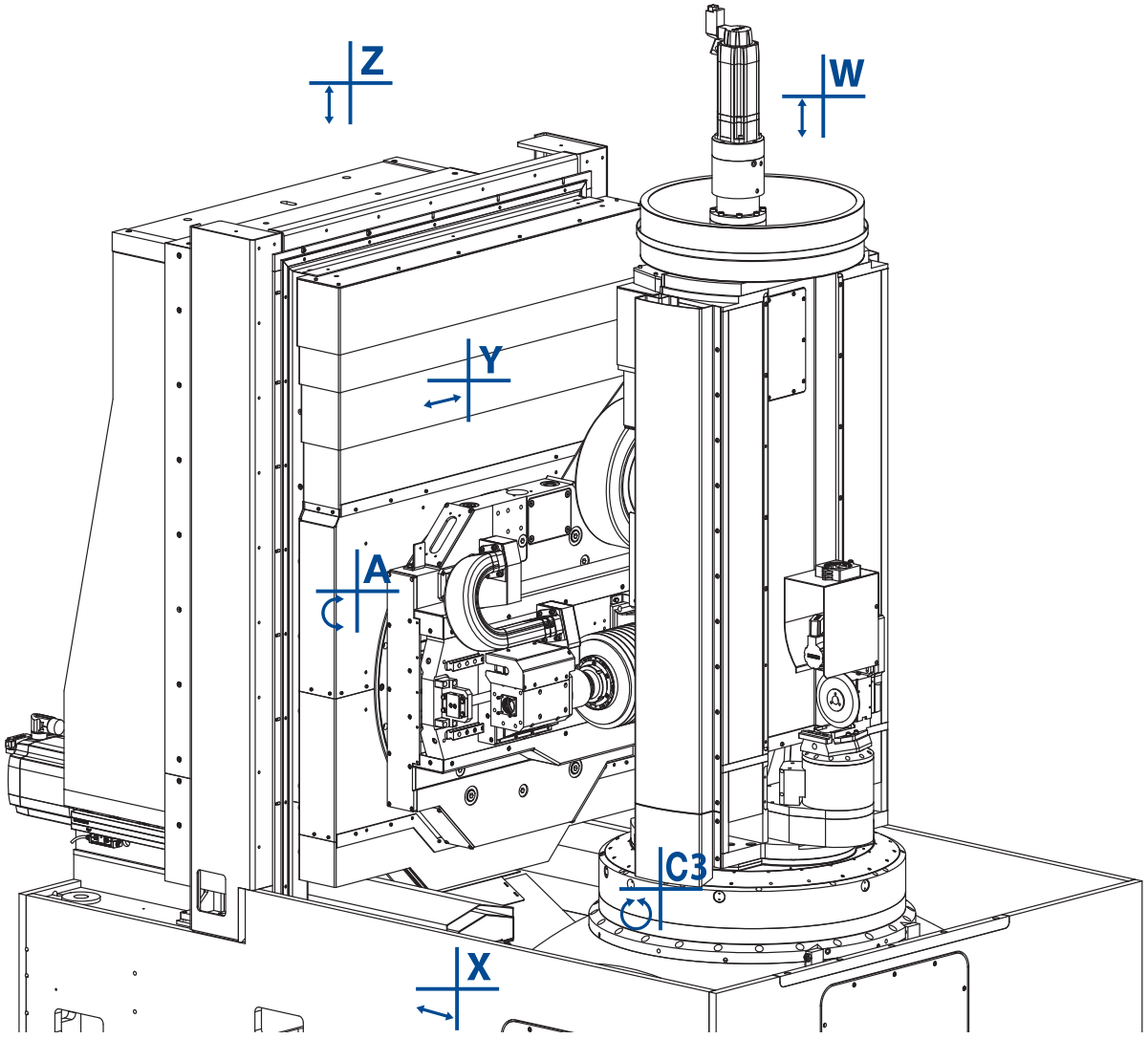
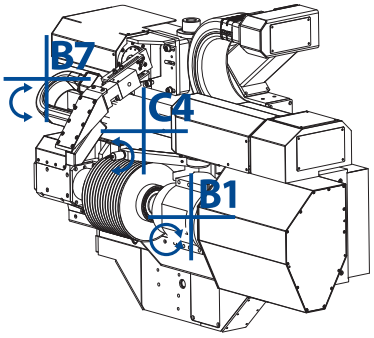
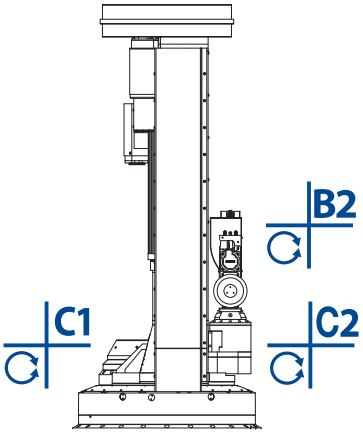


X	Radial movement tool column
Y	Tangential movement tool head
Z	Vertical movement tool head slide
A	Swivel tool head
B1	Rotation tool spindle
B2	Rotation movement dressing spindle
B7	Swivel coolant nozzle
C1	Rotation workpiece spindle
C2	Dressing spindle angular positioning (optional)
C3	Rotation worktable
C4	Rotation checking unit
W	Vertical movement tailstock positioning

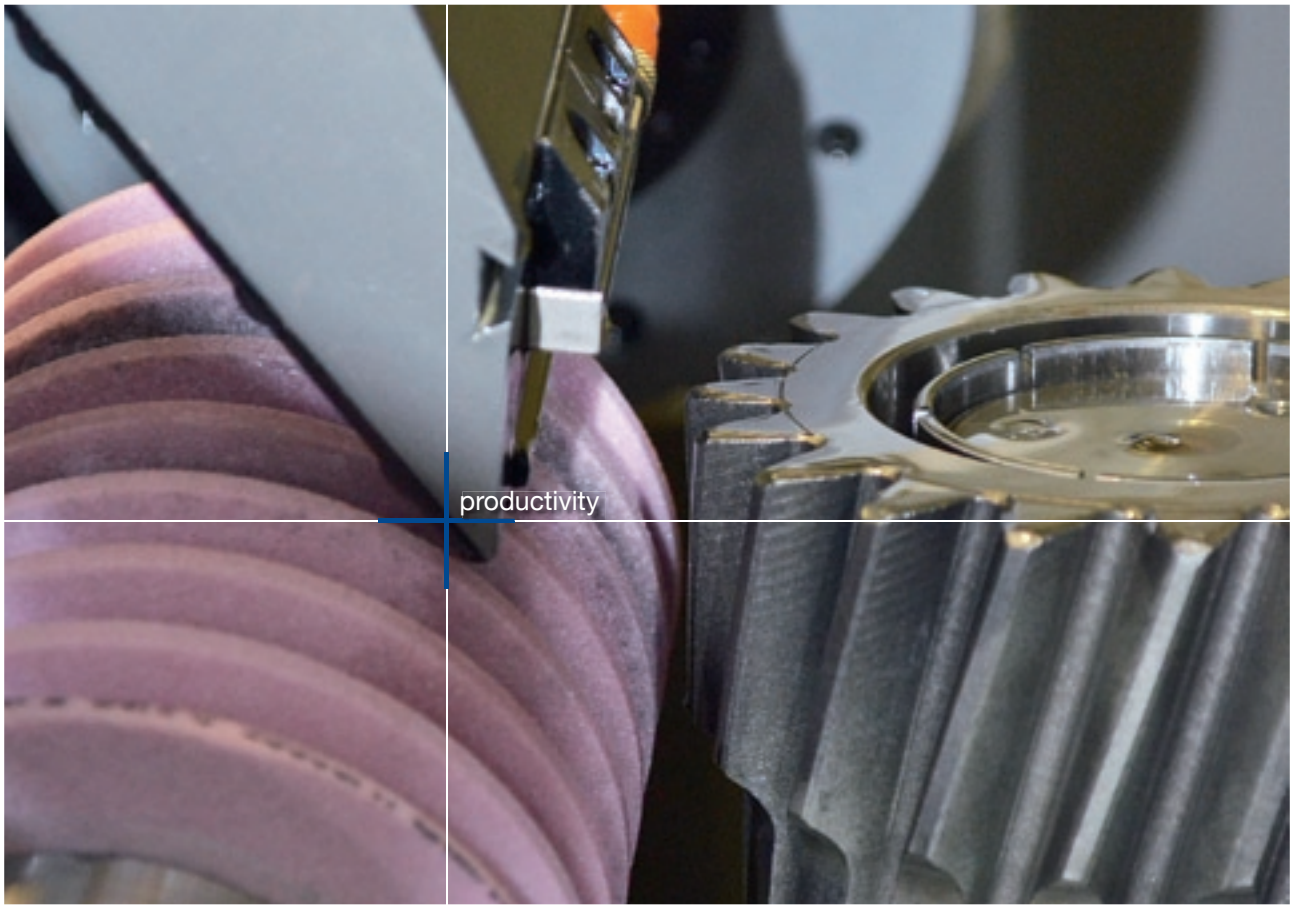




Work spindles concept for maximum productivity and flexibility

The wok spindle mounted on a rotating table simplify the loading/unloading operations as well as the tooling operations.
During the workpiece changeover, the grinding wheel keeps rotating and the oil jet is constant.
Keeping the machine at operating speed gives advantages in term of thermal and mechanical stability of the machine parts.

The dressing spindle is mounted on the rotating table as well, but diametrically opposite to the work spindle.
As option, the dressing spindle can be mounted on a further rotating table (C2 axis), controlled by CN, to facilitate the angular positioning of the dressing roll on the grinding wheel and to allow the counter-dressing process (maximum profile corrections flexibility: tip relief, crowing and root relief)



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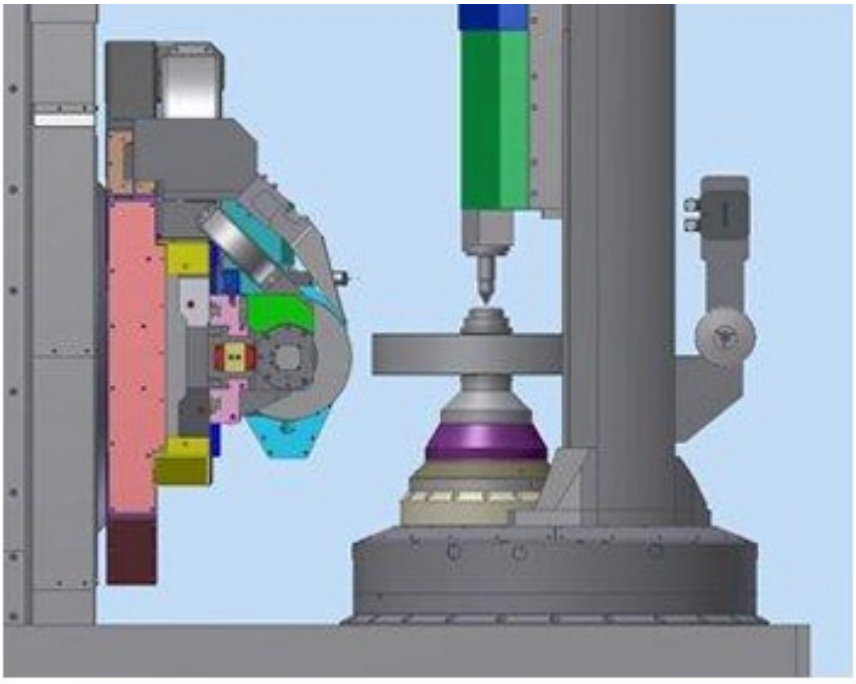

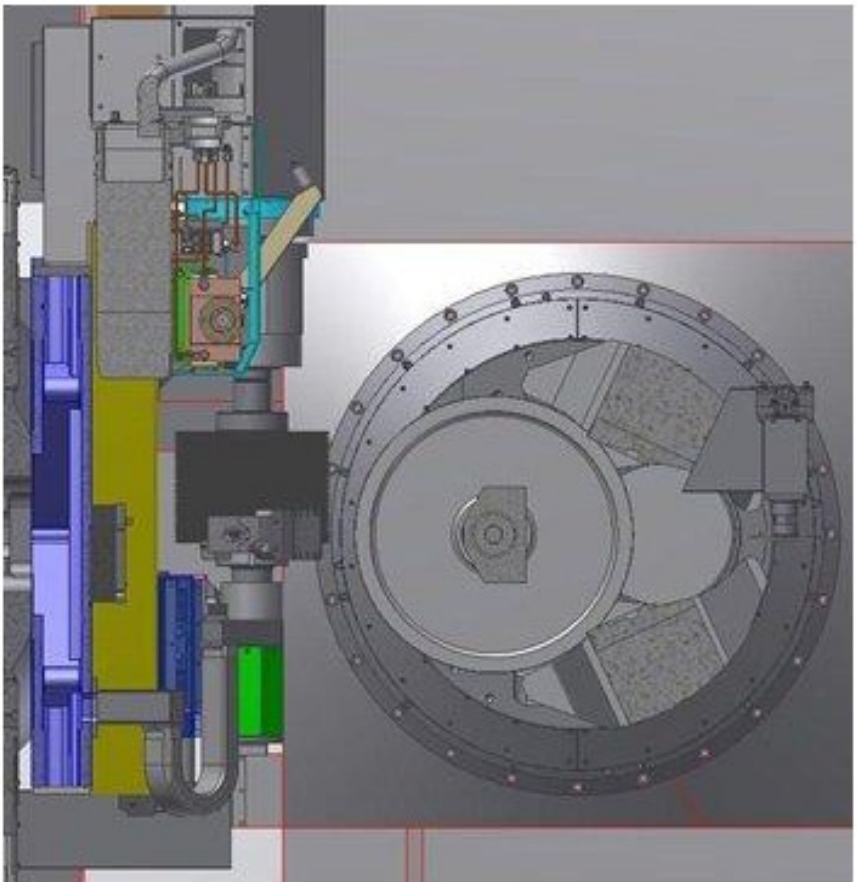

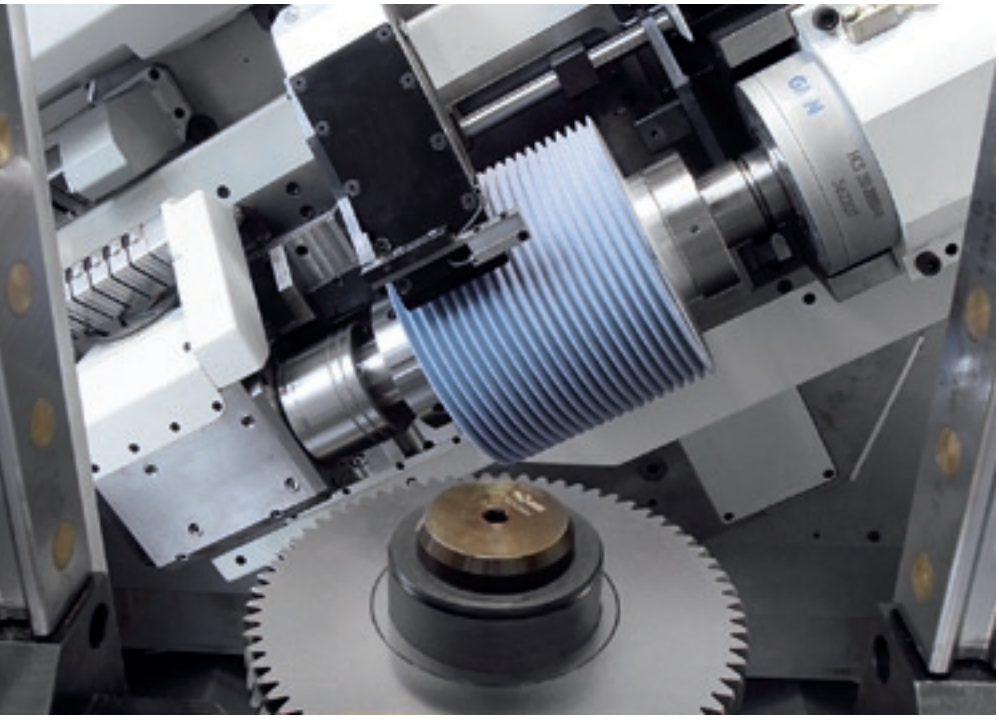

Gear grinding: maximum efficiency with safe investments

The grinding spindle with its specifically large tool capacity allows the use of long grinding worms to raise the tool life of single or combination worms of roughing and finishing tools employing electroplated CBN or ceramic bound grinding worms and wheels. So you can always rely on the most efficient technology or the most beneficial combination to complete your grinding task.

Due to the extremely high rotational and linear accelerations with their appropriate absolute speeds the machine guarantees excellent cycle times and is perfectly suited to benefit from future developments on the grinding tool sector.

Optimised direct drives for tool and work spindle with indipendent refrigerating circuits.

Large tool capacity

New enlarged workarea capacity

Electroplated CBN and dressable corundum tools

Grinding worms and wheels on one spindle

Standard tool clamping systems and workpiece fixtures

Tool usage determination by power input control

at a glance

+ Tailored solutions for each application
+ Grinding of every kind of workpieces and complex geometries
+ Power and speed reserves for future tool developments
+ Simple, stabile and flexible workholding solutions
+ Automatic balancing unit integrated in the tool holder

Universal quick change clamping systems for mass production environments allow rapid tool change so valuable grinding time is never compromised.

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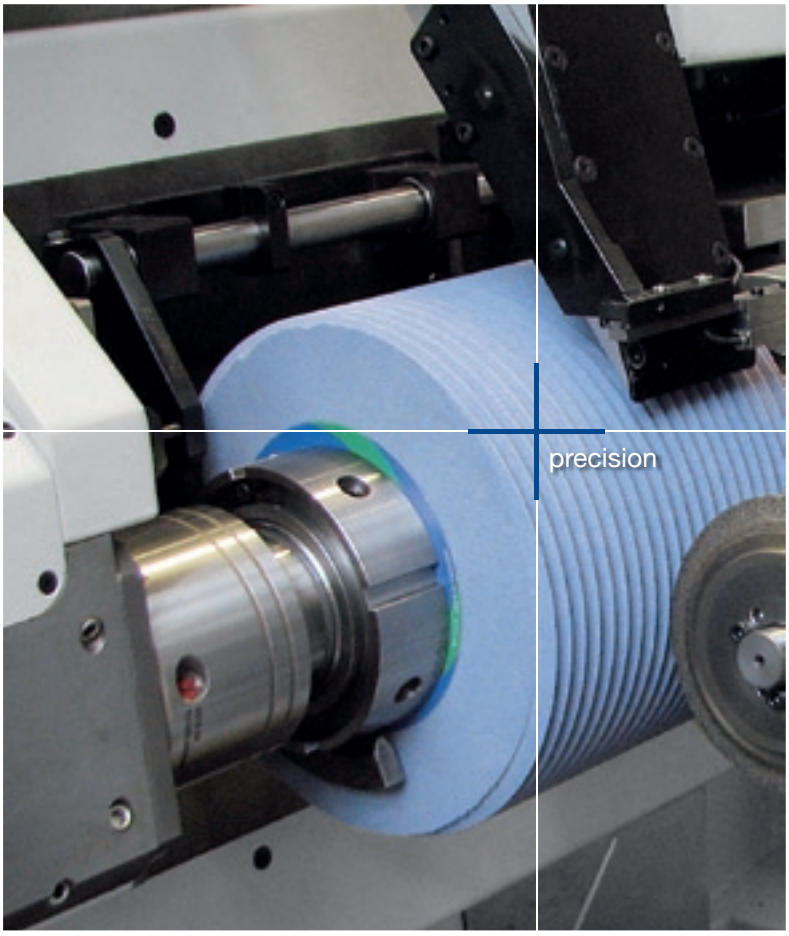
Dressing for flexible efficiency via standard profile dressing rolls

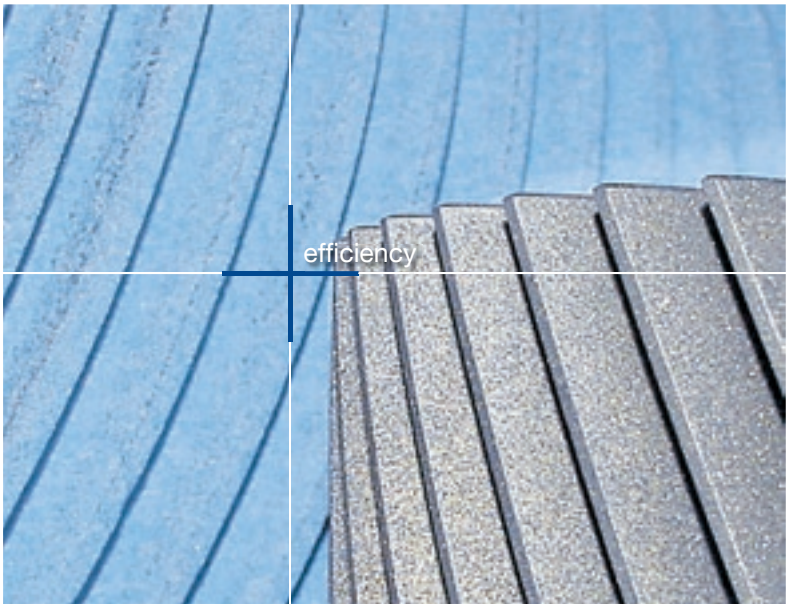
The profile dressing unit consists of a standard profile diamond dressing roll mounted on a dedicated spindle, which is located on the rotating table structure. An optional diamond OD dressing stick can be mounted on the dressing unit structure, in order to have the necessary flexibility to dress the OD of the grinding wheel.
If the tooth root diameter must be ground as well, a tip radius dressing roll is applied to create the required tip radius on the grinding tool. When required, the dressing unit is automatically brought into the working position by the rotating movement of the worktable. This guarantees an extremely precise and rigid positioning, which is of fundamental importance in order to obtain an excellent result. The dressing movements are actuated by the interpolation of the axes.
The possibility to use generic profile dressing rolls on the machine allows you to save money and guarantees a fast supply of dressing tools. You may employ both single and double flank dressing rolls, as well as multi-rib type.



Option: Fast and simple profile dressing via dressing gear

Non-productive dressing times can be reduced considerably by dressing via a diamond-plated dressing gear. With its total length in contact and its ten times larger diamond-plated surface, the dressing gear dresses a lot faster and with less wear, thus much more productively than a single dressing roll. Moreover, dressing tool changes are reduced as well.

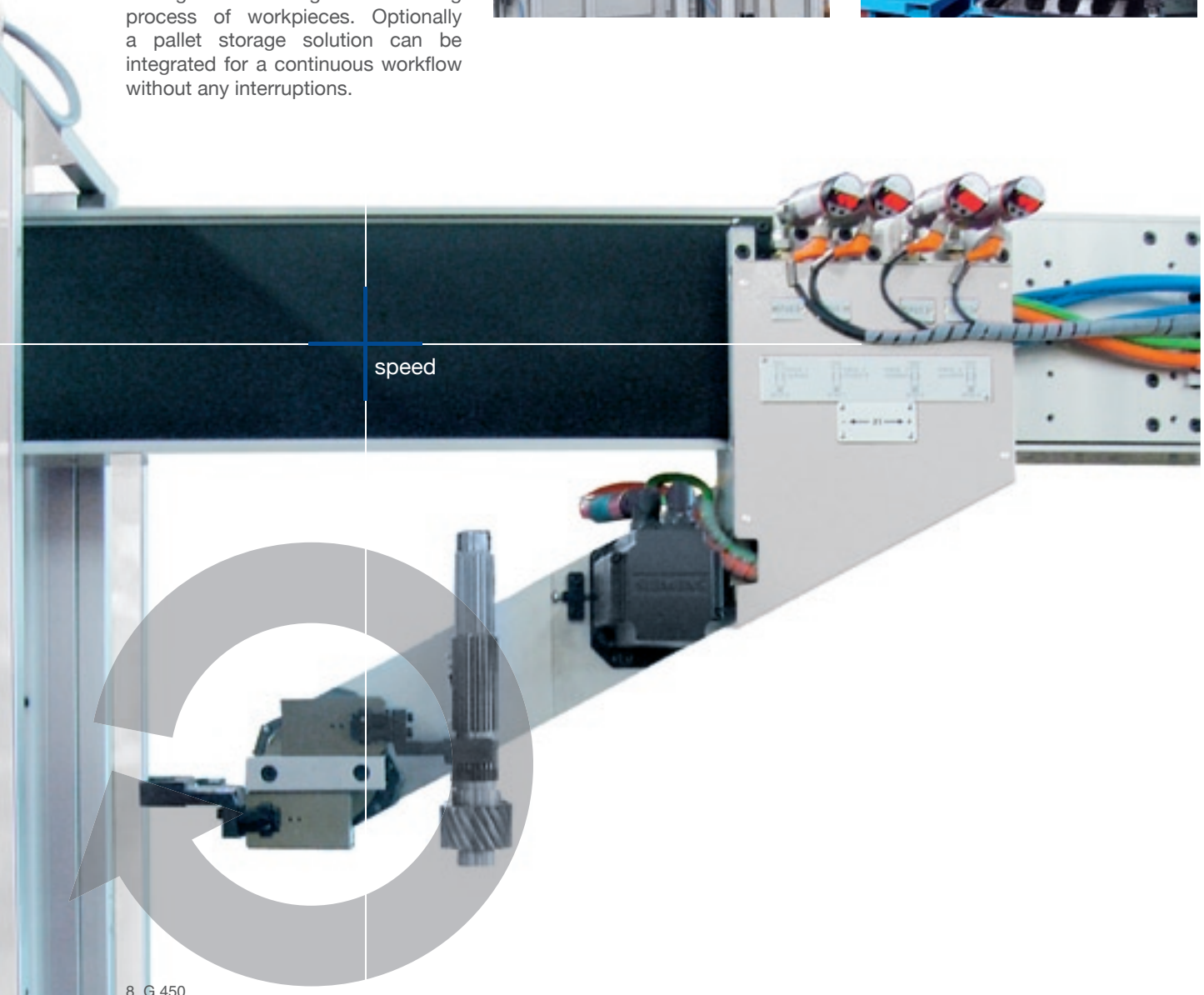
For the dressing cycle, the dressing master is transferred like a workpiece from an external station into the workarea. Consequently it always stays clean and is not affected by swarf or heat.

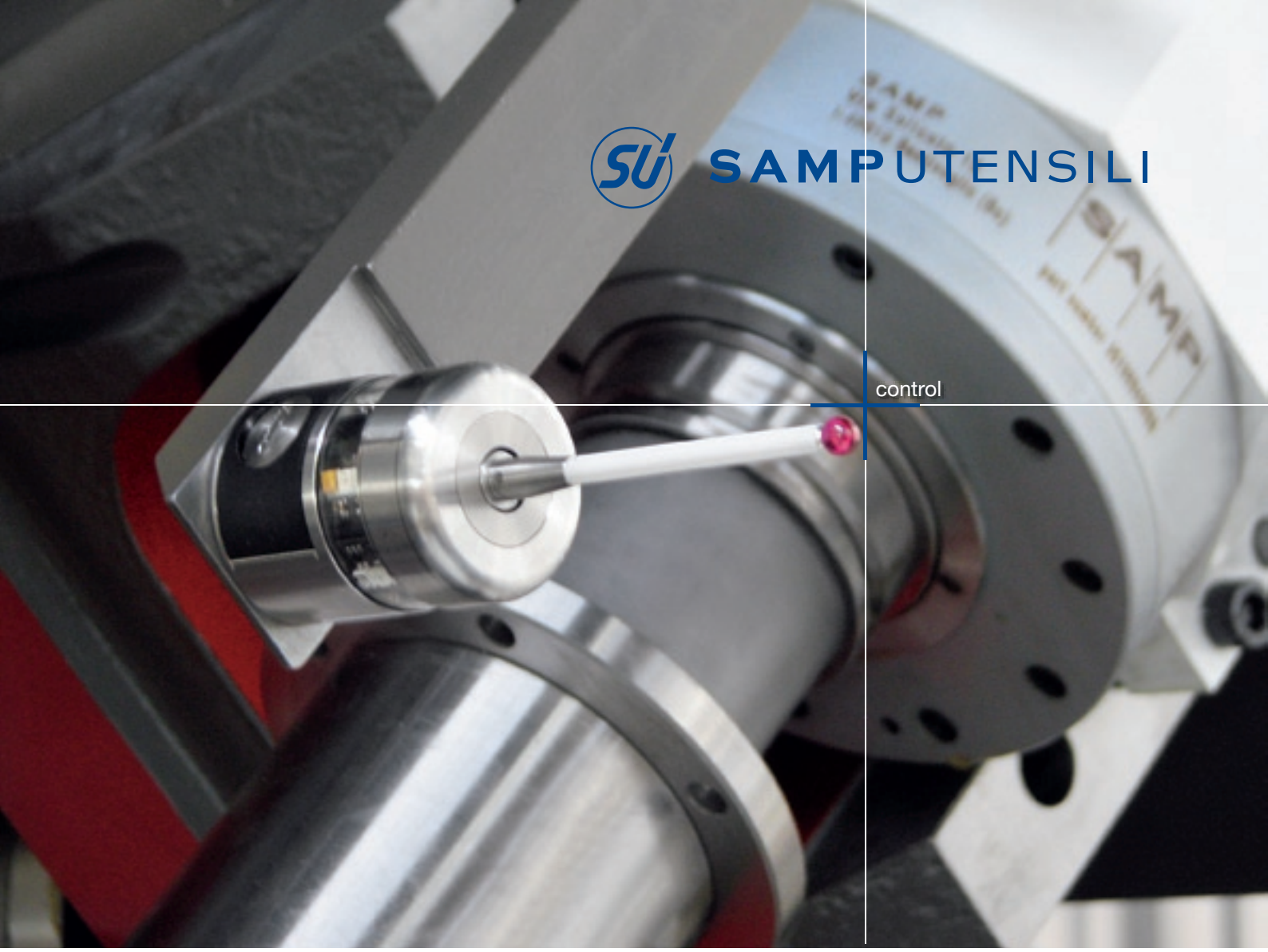


Automation options: maximum productivity with minimum auxiliary times

Depending on your application, the G 450 machine can be easily equipped with various automation solutions to produce parts in small and large quantities, with shorter lead times, preserving high quality at lower costs.

The G 450 can be linked for example to a robotic arm, which is normally installed next to the machine and manages the loading and unloading process of workpieces. Optionally a pallet storage solution can be integrated for a continuous workflow without any interruptions.





Integrated checking

Next to the classical geometry check of profile errors, helix angle and indexing, the checking unit also performs the analysis of the grinding stock to be removed. Additionally the checking unit can be employed to automatize the centering process between tool and workpiece and to control the concentricity with reference to the workpiece diameter.

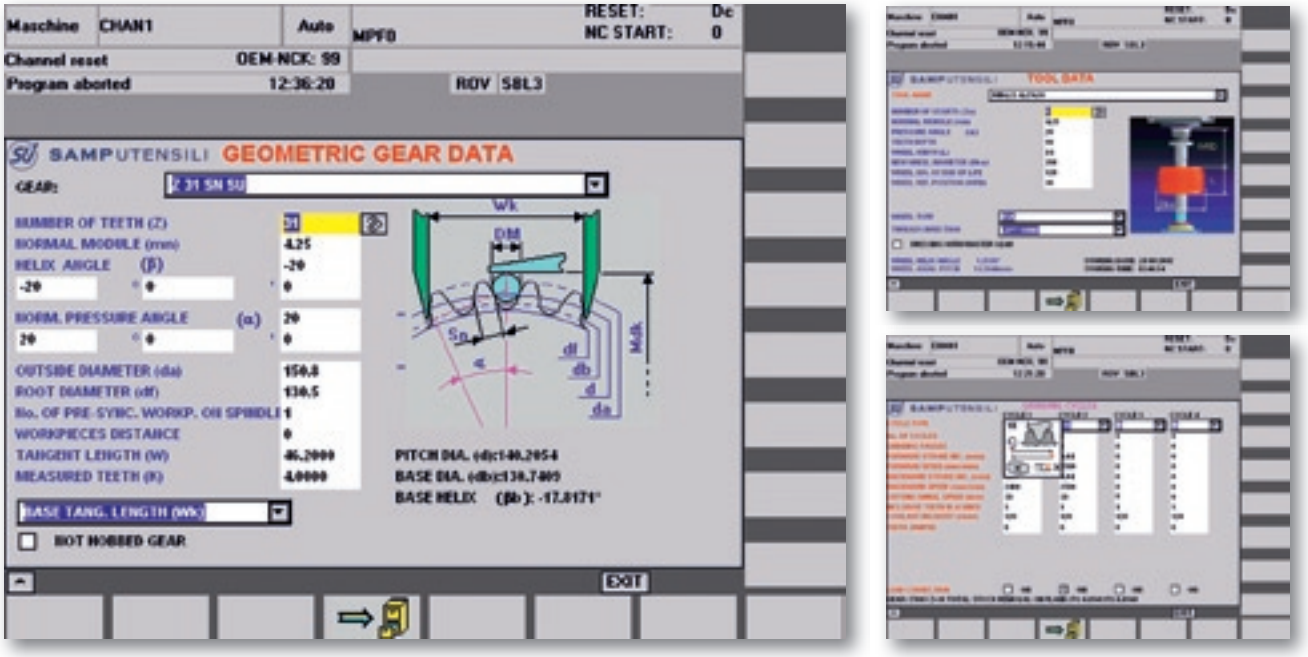
Samputensili correction software allows the immediate correction of profile slope errors by redressing the grinding wheel.

Inspection results may be printed directly by connecting a printer to the HMI.

A hydraulically actuated swivel arm brings the checking unit into position and retracts from the workarea during the grinding process.

At a glance

+ Completly integrated process with centralised control
+ Auto-correction function
+ Direct inspection sheet print-out
+ Checking unit retracted from workarea during grinding



Latest Siemens drive technology and Samputensili menu guidance guarantee you maximum process security

Direct networking, USB interface included

Modular software packages including profile correction modules

Samputensili menu-guided operator interface

True Windows© environment

Operator's panel conveniently located at the centre of the machine for an easy access.

at a glance

+ Faster data transfer to machine
+ Easy and intuitive operation
+ Fast data validation and error correction
+ Safe operation
+ Fast and efficient online updating and trouble-shooting

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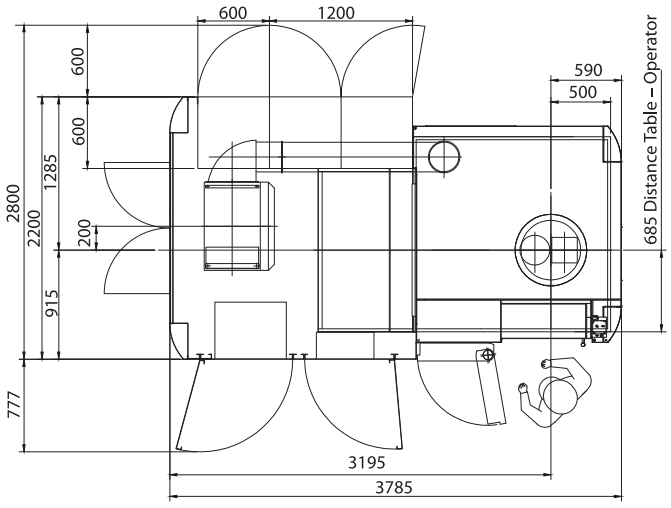
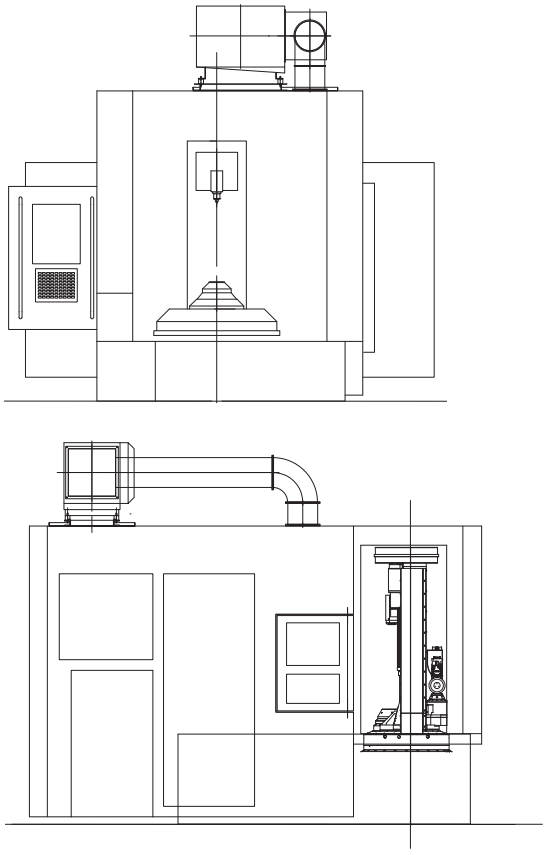
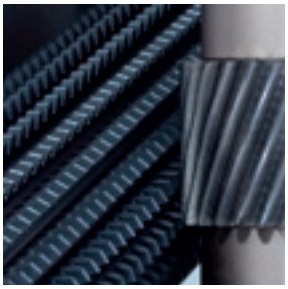
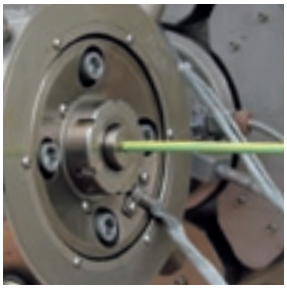
Technical data

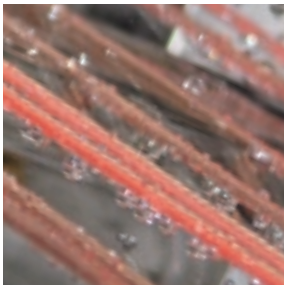
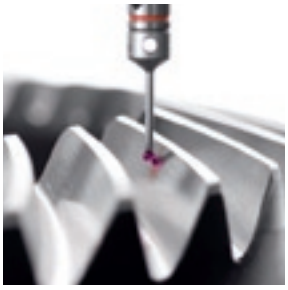
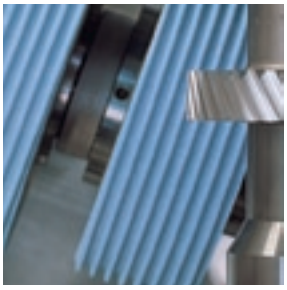
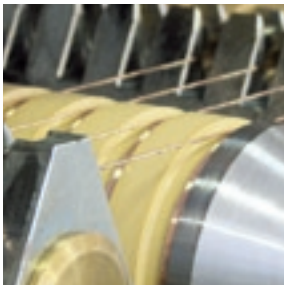
Workpiece diameter, max.	mm	450
Module	m_n	0.5 - 7.0
Workpiece length, max.	mm	550
Face width, max.	mm	380
Helix angle	degree	+45° / -45°
Grinding wheel dia.	mm	250 / 170 or 120 / 90
Grinding wheel width	mm	180
Grinding speed, max.	m/s	80
Dressing tool dia.	mm	120
Machine overall dimensions L x W x H	mm	3,800 x 2,200 x 2,700
Controls		Siemens 840 D Solution Line

Technical data subject to change.





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