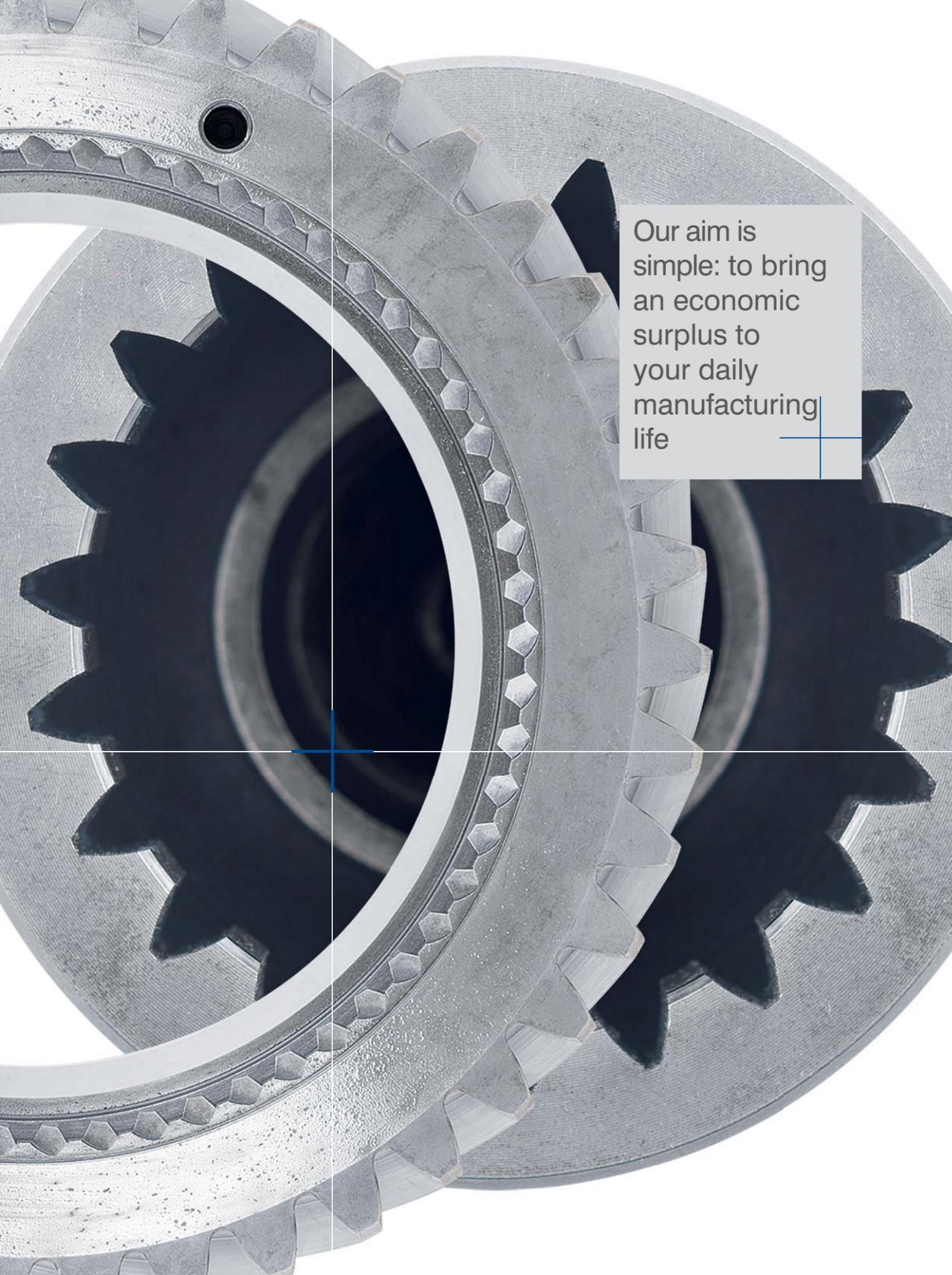




G-H series
horizontal grinding machines
for gears, rotors and screws

A large, detailed close-up of a metal gear with many teeth, showing the texture of the metal and the precision of the grinding process. A semi-transparent grey box with a blue crosshair is overlaid on the gear.

Our aim is simple: to bring an economic surplus to your daily manufacturing life

The new G-H series of grinding machines for gears, shafts, worms, rotors and screws. One universal solution adapted to your specific application – now for workpieces up to 500 mm in diameter

Based on the widely acclaimed S 375 G, the new G-H series presents numerous enhanced features and extends the traditional series to include new model versions.

Although Samputensili grinding machines are based on a modular design concept, we craft each and every machine with a wide range of options to suit your individual needs, guaranteeing you the efficient manufacturing of top quality parts.

This modular, extremely versatile and universal series is ideally suited to single pass creep feed profile grinding of external spur and helical gears, crown gears, shafts, worms, rotors and screw threads. Optionally it is also possible to grind spur or helical internal gears.

We offer you an ad hoc solution for any of the above applications so that your machine is constructed with the right options for you. All machines are then supported by special software packages, translating our know how into your manufacturing success.



Horizontal machines



G 375 H Profile grinding machine up to \varnothing 375 mm



G 500 H Profile grinding machine up to \varnothing 500 mm



GP 500 H Profile grinding machine with two electro-spindles



GR 500 H Screw and rotor grinding machine with one ceramic wheel



GRX 500 H Rotor grinding machine with two grinding wheels



GT 500 H Screw and rotor grinding machine with two grinding wheels



GW 3600 H Profile grinding machine for screw-type workpieces up to 3600 mm

The new G-H series features an array of innovations and components shared by all machine variants

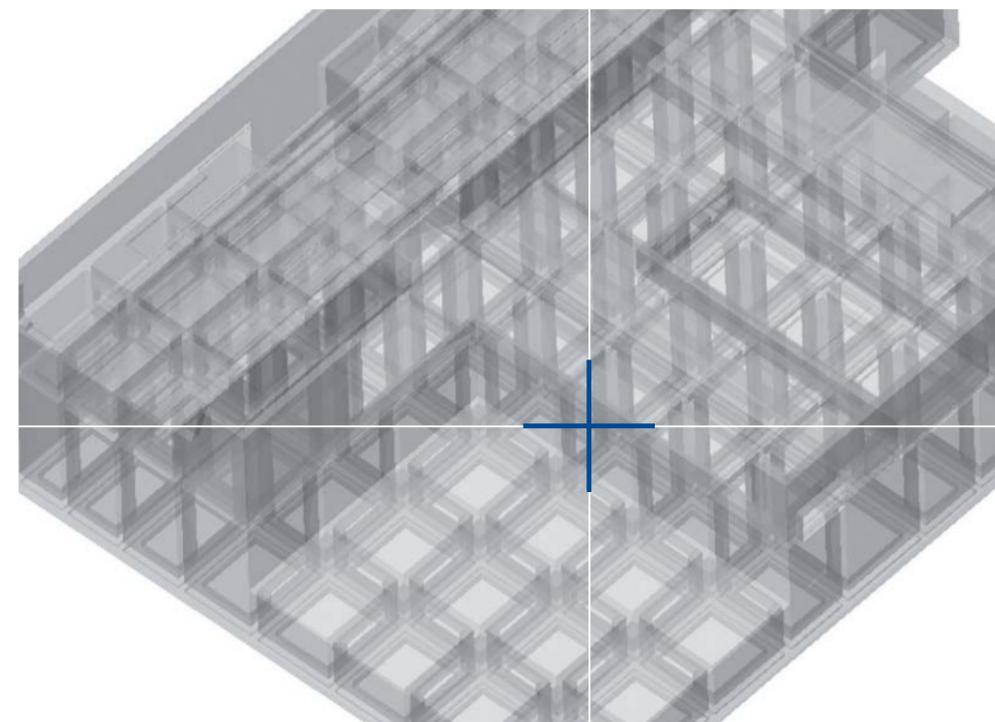
A heavily ribbed structure eliminates the risk of vibration or push and pull phenomena caused by moving machine components. To ensure maximum thermal stability, the machine bed is flooded with recirculating coolant. A new evacuation system transfers swarf from the work area to the filtration unit. Any residue is flushed by additional coolant nozzles so that even the most resistant swarf nests are easily discharged, guaranteeing a clean work area at all times.

In terms of work range, workpiece diameter, X-axis travel and Y-axis travel have all been increased. Standard grinding spindle power has practically doubled and even more spindle options are now available.

Direct and linear drives, and digital scales and encoders, supported by a sturdy base and prismatic guides, make for unbeatable quality.

New common features at a glance

- + Ribbed steel structure for optimum vibration damping
- + Recirculating coolant, additional flushing and direct swarf evacuation for optimum thermal stability
- + Direct drives and linear motors
- + Quick-change adapter for spindle drives
- + HSK adapter for fast tool changes
- + Precision-ground slides for linear movements
- + Higher work range
- + Longer X- and Z-axis travel



G 375 H



The Samputensili horizontal grinding machine G 375 H is based on a modular design concept, with a wide range of options and it is engineered to suit your individual needs, guaranteeing you efficient, top quality manufacture.

This universal machine is ideally suited to grind external spur and helical gears, crown gears, worm, rotors for air compressors and screws for hydraulic pumps with form-grinding wheel and single index profile grinding.

Optionally it is also possible to grind spur or helical internal gears.

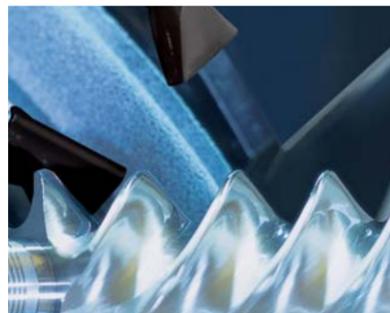
We can offer you ad hoc solutions for any of the above applications so that your machine is manufactured with the right options for you.

The G 375 H is supported by special software packages, which translate our know-how into your manufacturing success.

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

at a glance

- + High stability of the process thanks to the high stable structure
- + High reliability thanks to direct motors
- + Excellent quality of the end products thanks to the high precision of the machine
- + Versatile and Flexible production
- + Short setup time to switch from a type of production to another



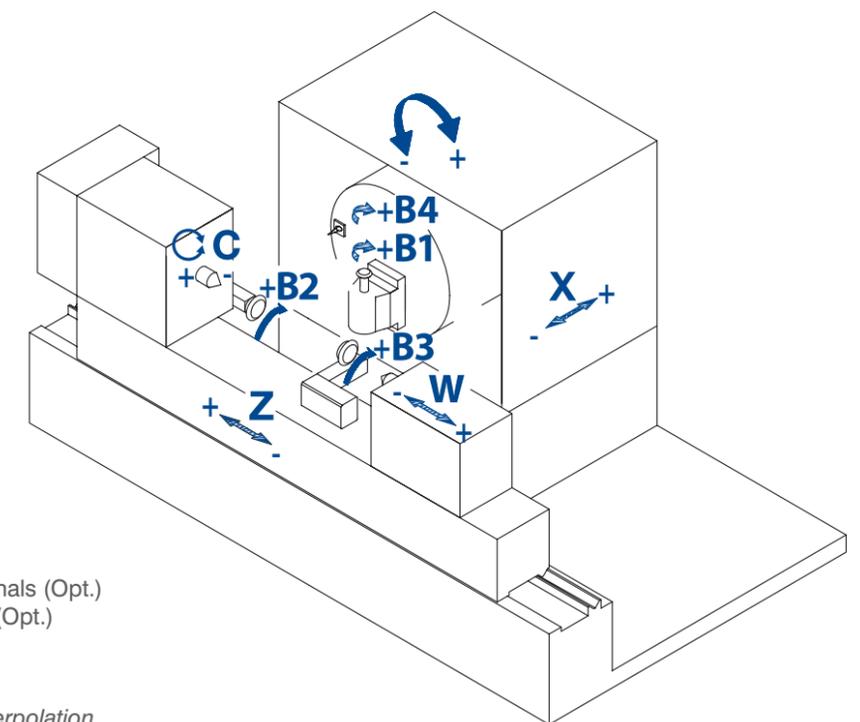
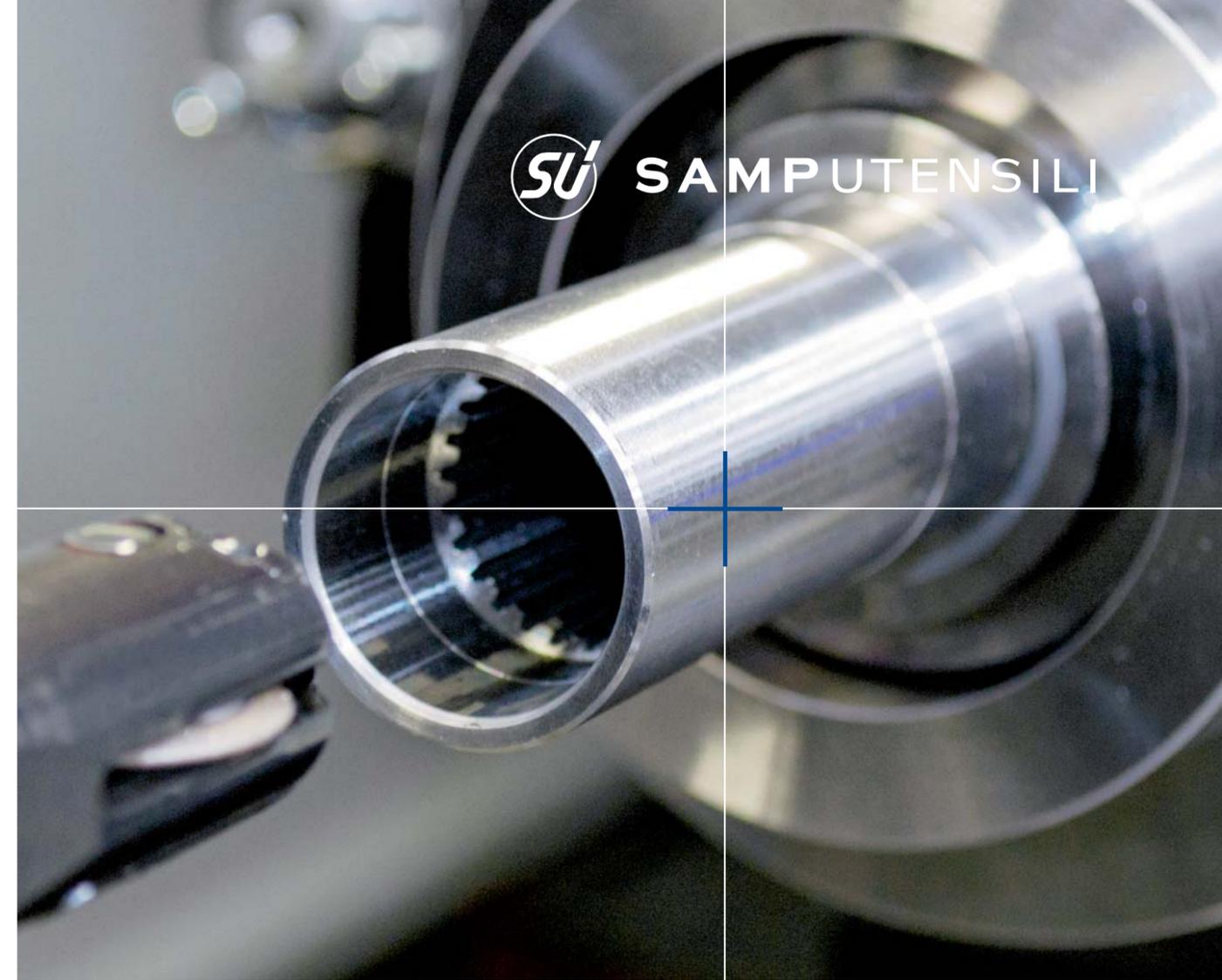
Rotor grinding with a corundum wheel



Grinding of helical internal gear



Grinding large module gears with electroplated CBN grinding wheel



- A Tool head swivel
- C Workpiece table rotation
- B1 Tool spindle rotation
- B2 Dressing spindle rotation
- B3 Dressing spindle rotation for internals (Opt.)
- B4 Tool spindle rotation for internals (Opt.)
- X Radial travel
- Z Axial travel

Dressing process by machine axis interpolation

G 500 H

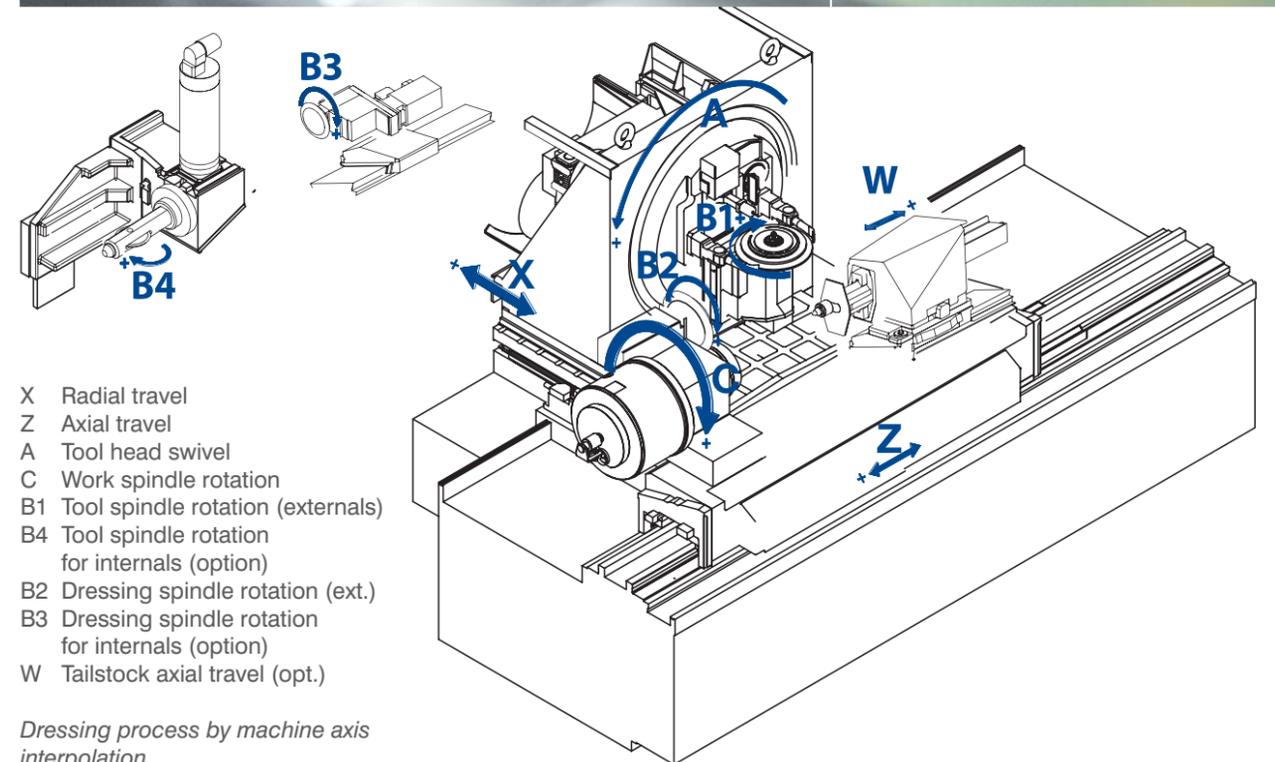
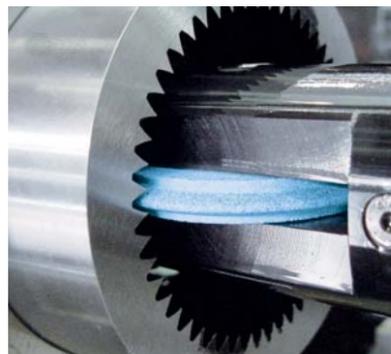


The G 500 H is the universal and extremely flexible base machine of the G series and it is ideal for single pass creep feed grinding of external spur and helical gears, crown gears and shafts, worms, rotors and screw-type workpieces up to 500 mm in diameter. Optionally it is possible to grind spur or helical internal gears.

Quick-change spindles and ceramic tool technology, combined with a flexible dressing unit and modular software packages guarantee rapid format change and unmatched process versatility.

at a glance

- + Universal solution for a wide range of gears, shafts and screw-type workpieces
- + Flexible manufacturing of small or large lots
- + Creep feed grinding
- + Integrated checking



GP 500 H



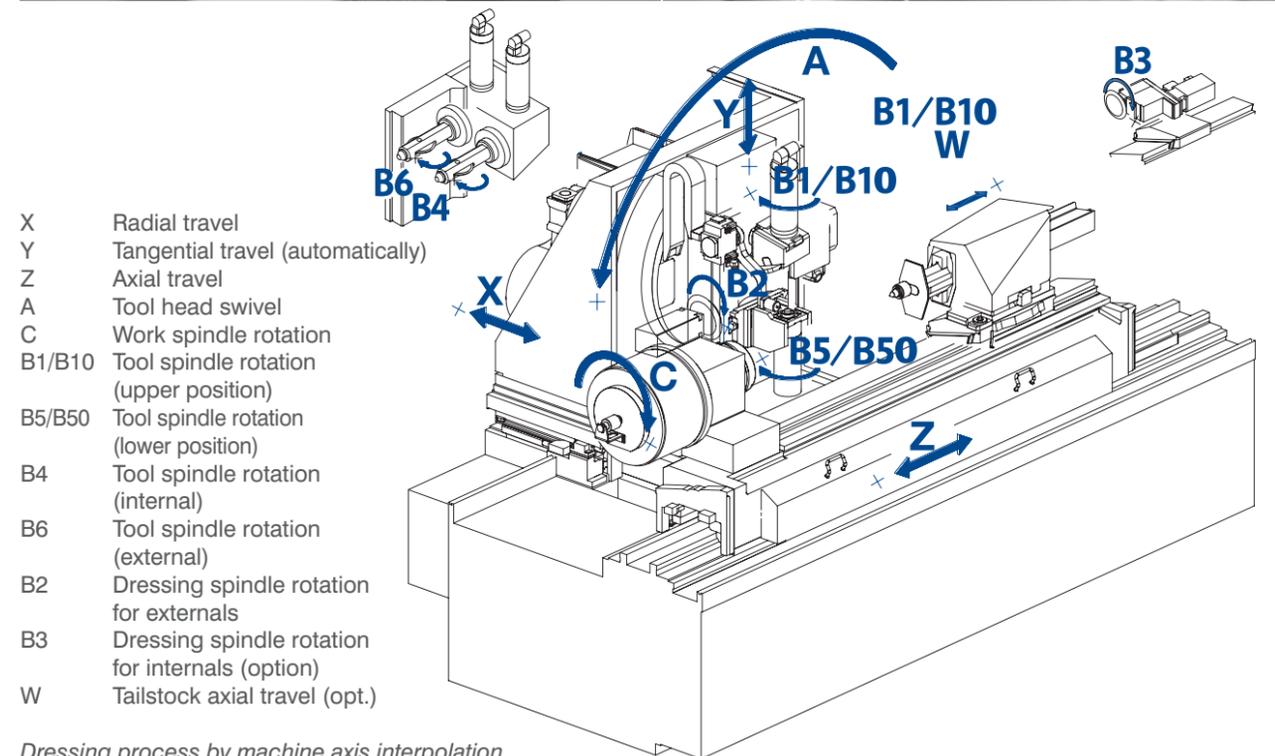
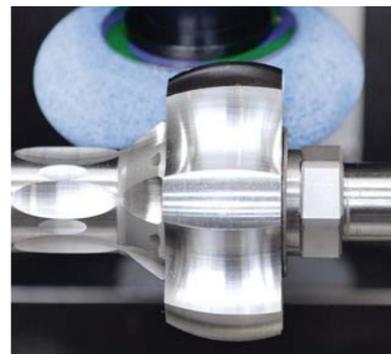
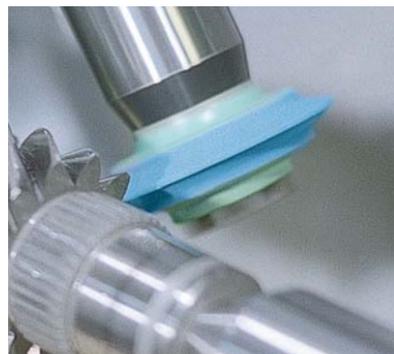
at a glance

- + Roughing and finishing in a single setup without the need for tool change
- + Profile grinding of gears, shafts with separate gearings, rotors, worms and screwtype workpieces
- + Internal grinding with the twin spindle principle
- + Fast format changes via quick-change adaptors
- + Modular Softwares

The GP 500 H mounts an additional NC axis, allowing you to work with two separate spindles instead of just one. Both spindles can accommodate one grinding wheel or even two-wheel sets.

Single gearings are roughed on the first spindle and finish ground on the second, with one grinding wheel mounted on each spindle. Two gearings on one shaft can be roughed and finished with wheel sets on each spin-

dle without the need for tool changes. Spindle variants are available with different power outputs and speeds for different grinding wheel sizes. Even internal gear manufacture no longer requires tool change thanks to this new twin drive principle.



Dressing process by machine axis interpolation

GT 500 H



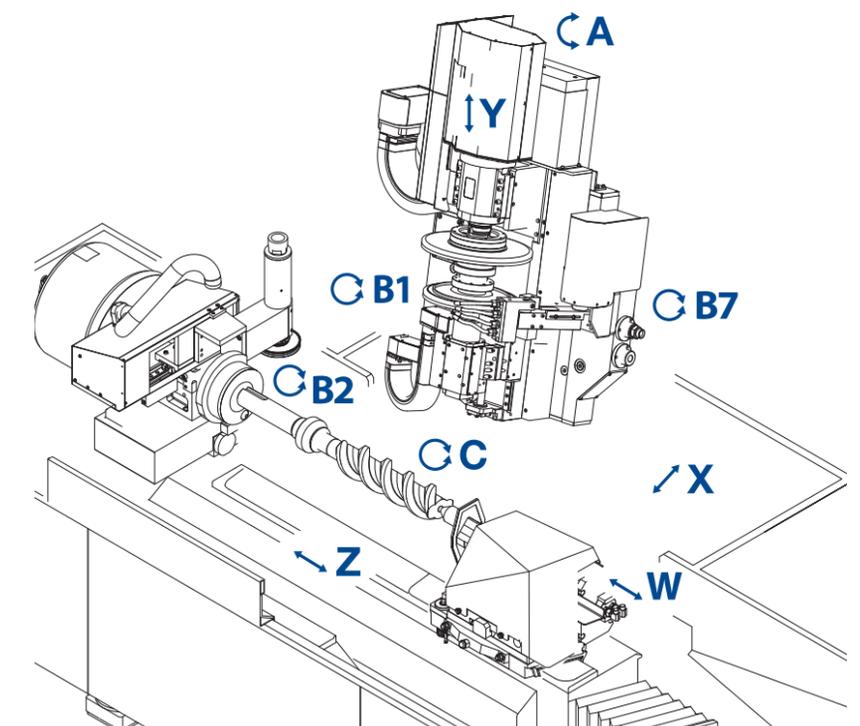
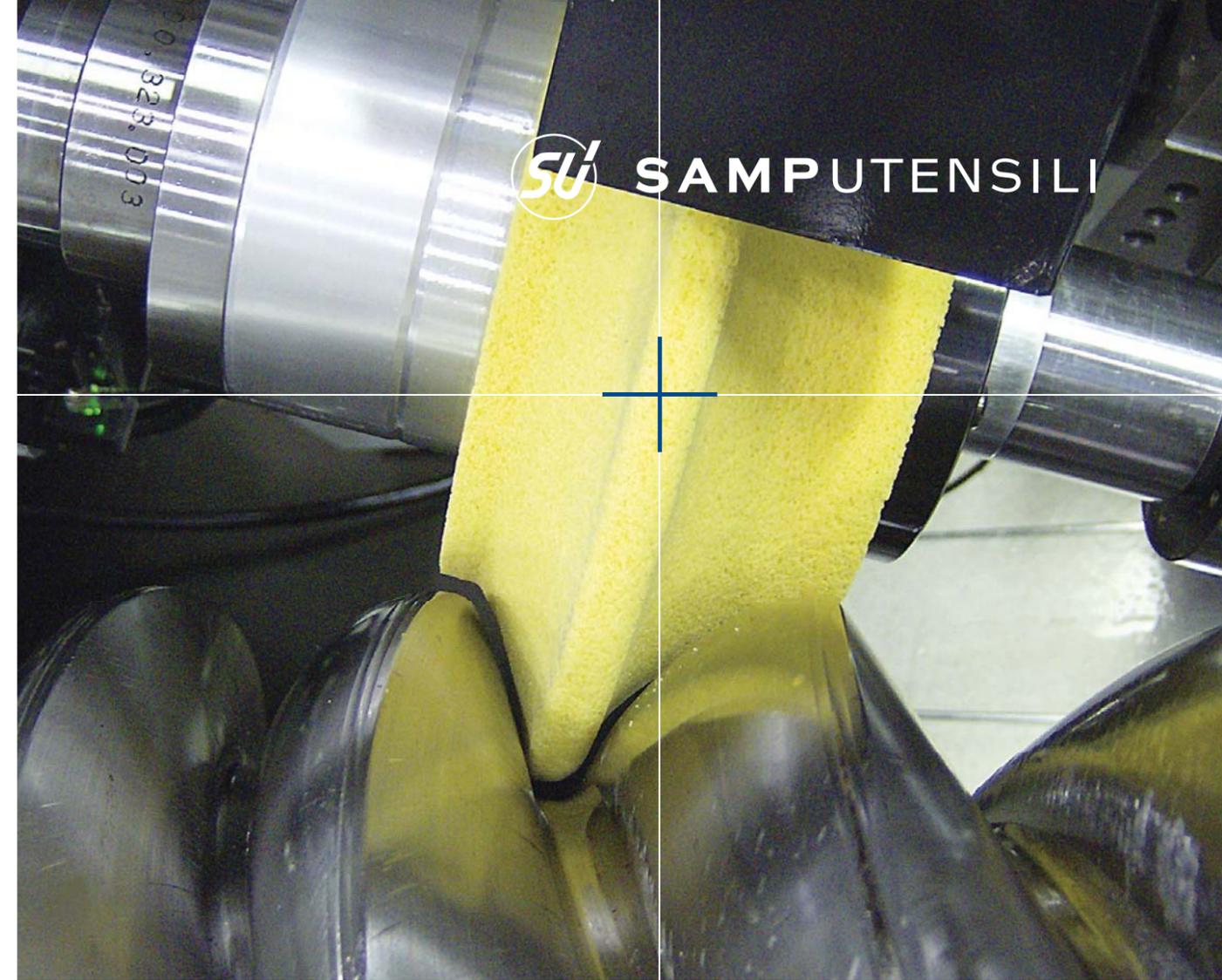
The GT 500 H gear grinding machine is ideal for both prototyping tasks and efficient grinding of medium and large batches of rotors for compressor and screws for idraulic pumps. Thanks to an additional tool shifting Y tangential axis, it can works with two different grinding wheels, one dedicated to roughing and one dedicated to finishing.

All screw profiles can be generated by a NC diamond dressing device of your choice and, thanks to this machine's superior flexibility, you can also apply the most appropriate technology for the given task and even combine different kinds of roughing and finishing processes to maximise efficiency.

Plus, with the grinding wheel electro-spindle high performances, the GT 500 H will realise the lowest possible cycle times and has vast potential to accommodate future generations of grinding tool abrasives.

at a glance

- + Highly efficient grinding with CBN or ceramic tools
- + Flexible manufacturing of small or large lots
- + Integrated checking
- + Loading and unloading automation solutions available



- A Tool head swivel
- B1 Tool spindle Rotation
- B2 Dressing Spindle Rotation
- B7 Coolant nozzle travel
- C Work spindle rotation
- W Counterstock Axial travel
- X Radial travel tool head
- Y Wheel spindle tangential travel Z

Dressing process by interpolation machine axis interpolation

GR 500 H



The GR 500 H has been specifically designed for efficient high precision grinding of a wide range of screw-type profiles including worms, ball screws, rotors, hydraulic pump screw. The high performance grinding spindle is generously motorised and the machine is designed with an appropriately sized coolant filtration system meaning you can grind workpieces from solid as well as hardened steel. With a dressing unit for ceramic bonded grinding wheels and an integrated checking unit, the GR is perfect for the prototyping and

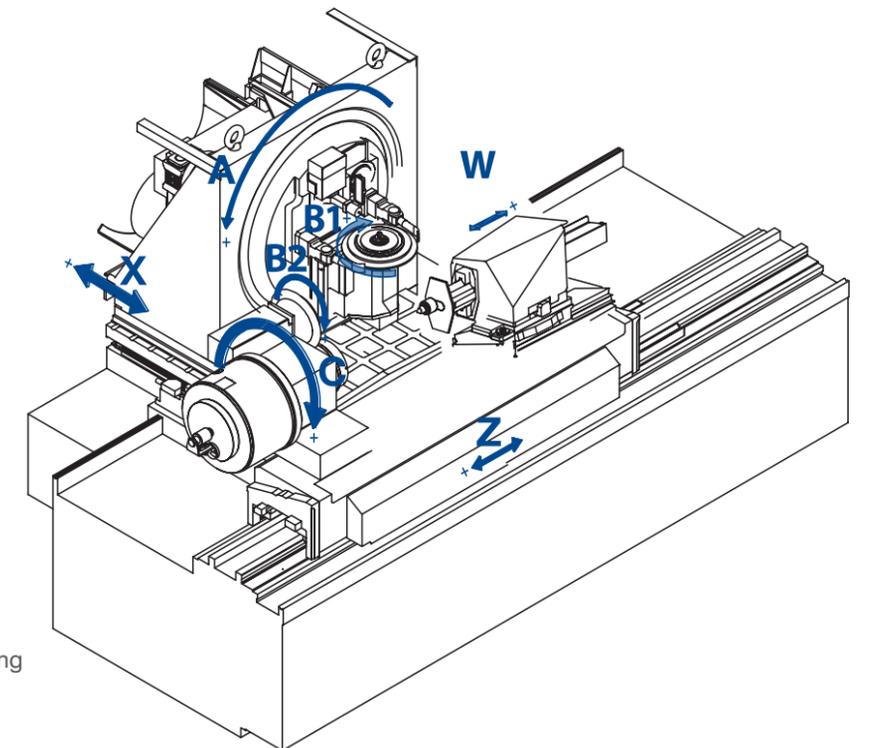
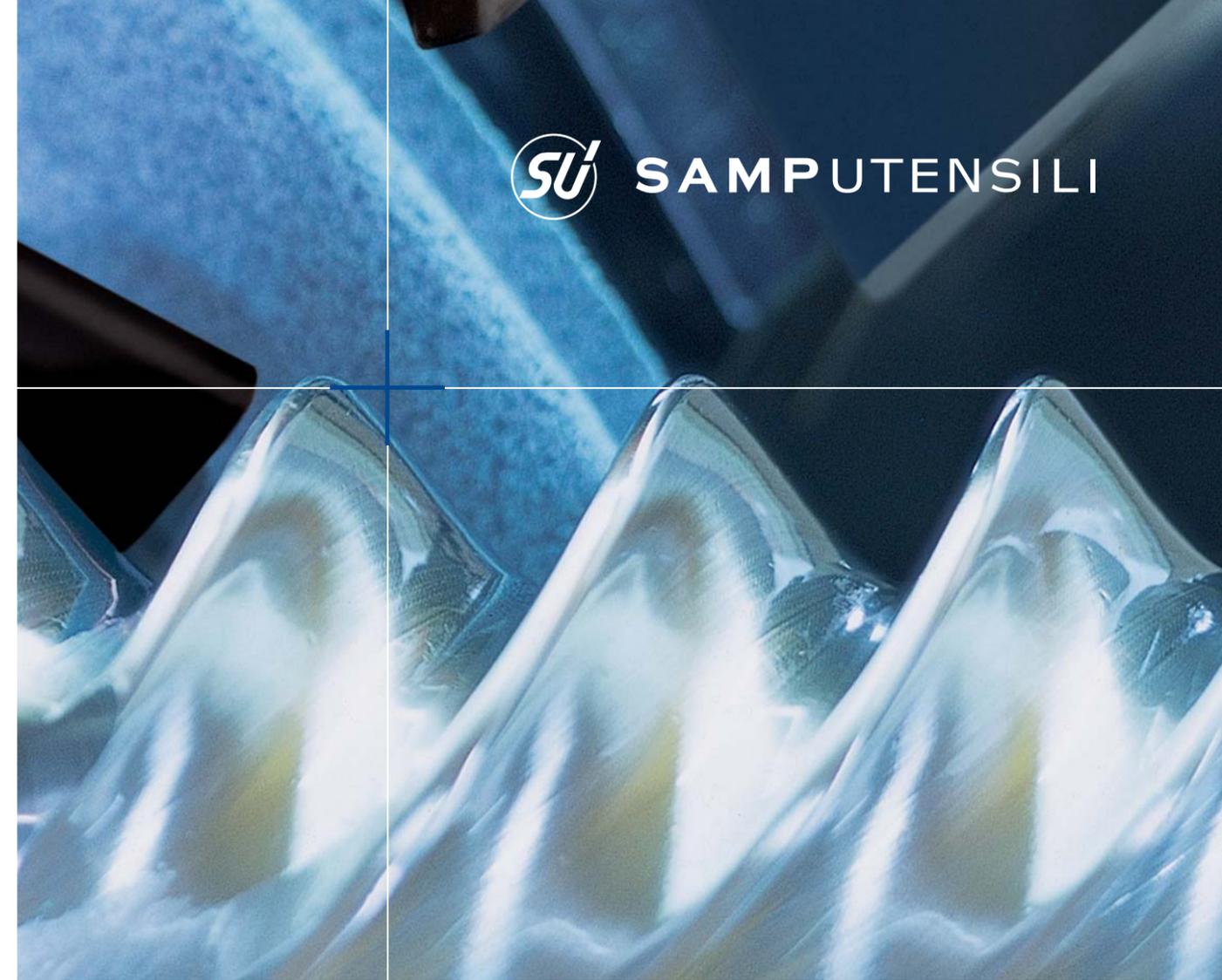
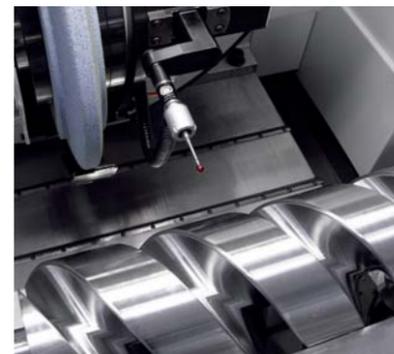
for the production of the smallest lots or mass production applications alike, making it a very flexible asset.

Connection to a portal loader and direct communication with an external measuring unit enhance the efficiency of your production process.

The GR 500 H comes with a specific software package for screw-type workpieces, developed and tested under real manufacturing conditions.

at a glance

- + Dedicated version for the manufacture of rotors and screw-type workpieces
- + Powerful main spindle for high stock removal rates
- + Specific software packages for rotor and screw production are also available
- + Specific dressing unit
- + Standard and special work-piece support solutions
- + Automation by portal loader or robotic device



- X Radial movement
- Z Axial movement
- A Helix adjustment angle
- C Workpiece rotation
- B1 External spindle rotation
- B2 Spindle rotation of external dressing

*Dressing process by interpolation
machine axis interpolation*

GRX 500 H

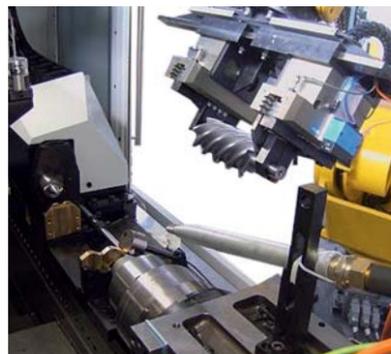


The GRX 500 H is a larger version of the GR. The machine is suitable for the manufacture of very large screws and rotors.

Especially adapted to grind with CBN, the GRX 500 H also makes working with dressable ceramic wheels or even combinations of the two easy. An integrated measuring unit also makes the correction on board.

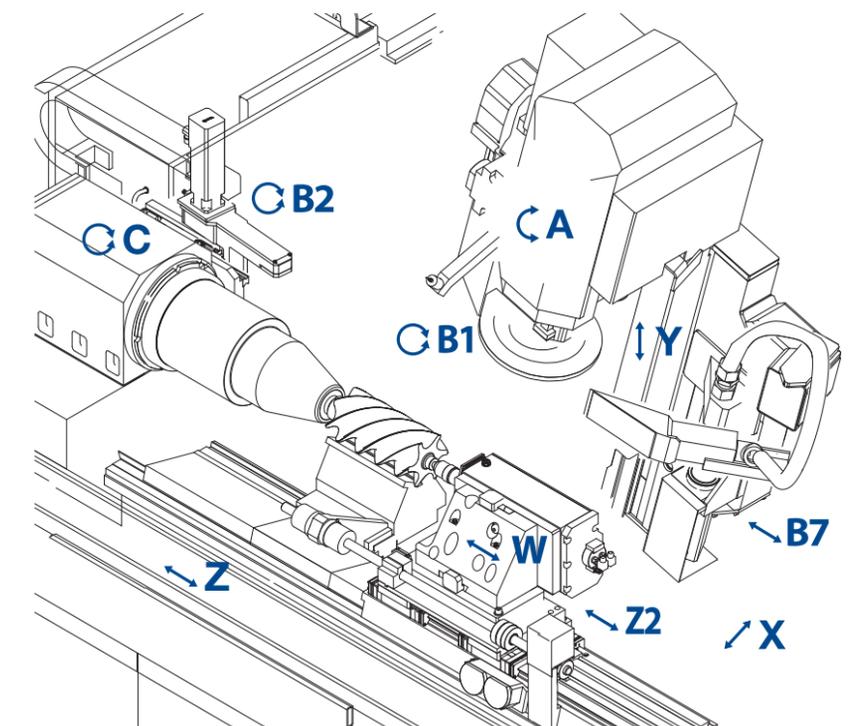
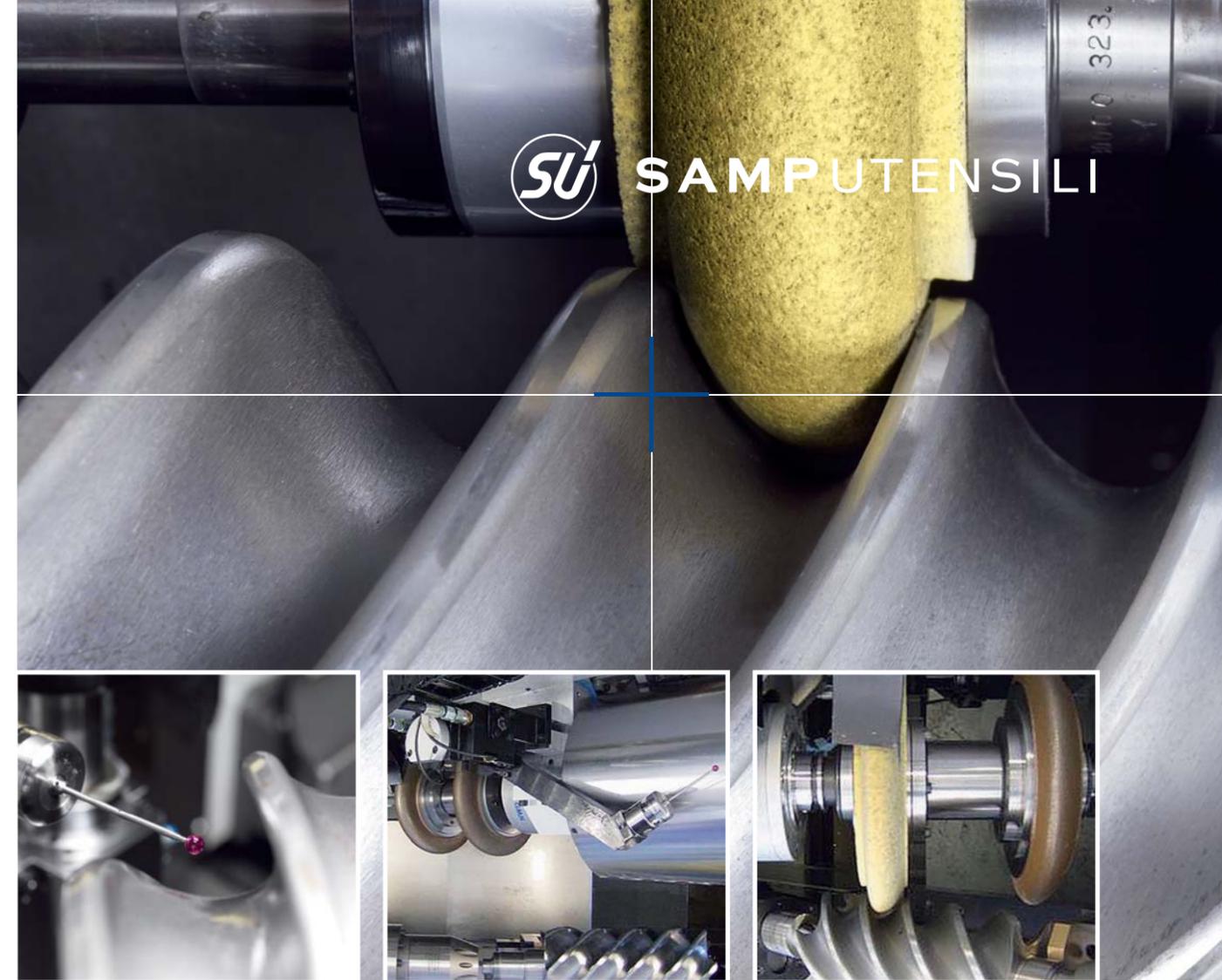
For more efficient handling, you can link the GRX 500 H to an external robot device and connect it directly with an external measuring unit.

Like the GR, the GRX 500 H comes with a rotor-specific software package, developed under real manufacturing conditions.



at a glance

- + Special machine version for the manufacture of large rotors
- + Extra powerful main spindle for high stock removal
- + Double tool setup for roughing and finishing on one spindle
- + Tried and tested rotor manufacturing software
- + Integrated measuring
- + Connection with measuring unit by means of external PC software for the closed-loop manufacturing checking



- A Tool head swivel
- B1 Tool spindle rotation
- C Work spindle rotation
- B2 Dressing spindle rotation
- B7 Coolant nozzle travel
- X Radial travel
- Y Tangential travel
- Z Axial travel
- W Tailstock axial travel (opt.)
- Z2 Tailstock slide travel (opt.)

GW 3600 H



The GW 3600 H is a special machine for the high precision grinding of long screw-type profiles, such as extruder screws for plastic injection moulding or ball screws. Equipped with a powerful grinding spindle for large grinding wheels and workpiece supports adapted to each application you will produce worry-free screws up to a length of 3600 mm. With its optional grinding dressing units for ceramic bonded grinding wheels the machine is prepared for flexible mass production requirements.

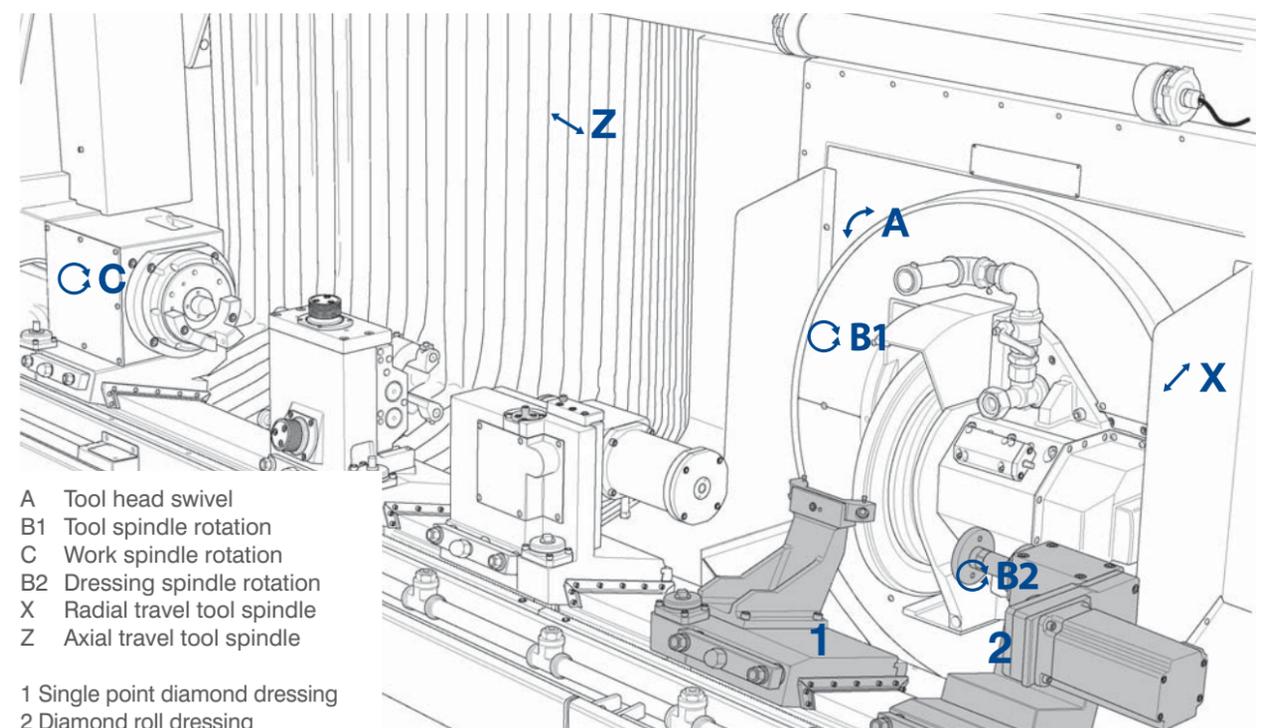
You will receive your GW 3600 H together with the appropriate software and the required grinding and dressing tools to make your screw production soar.

The machine can be also equipped with an in-machine tool magazine, the GW3600H-TC. With this option it is possible to drastically reduce the cycle time when a tool change during the same cycle is required.

Moreover, the machine can be equipped with an automatic NC hydraulic steady rest for creep feed grinding of threaded components.

at a glance

- + Special machine version for the manufacture of extra long screw-type workpieces
- + One powerful grinding spindle
- + Specific dressing unit for large grinding wheels
- + Specific screw manufacturing software packages
- + Standard and special workpiece support solutions
- + Grinding tool magazine
- + NC-controlled oil nozzles
- + Automatic hydraulic steady rest systems sliding along part length

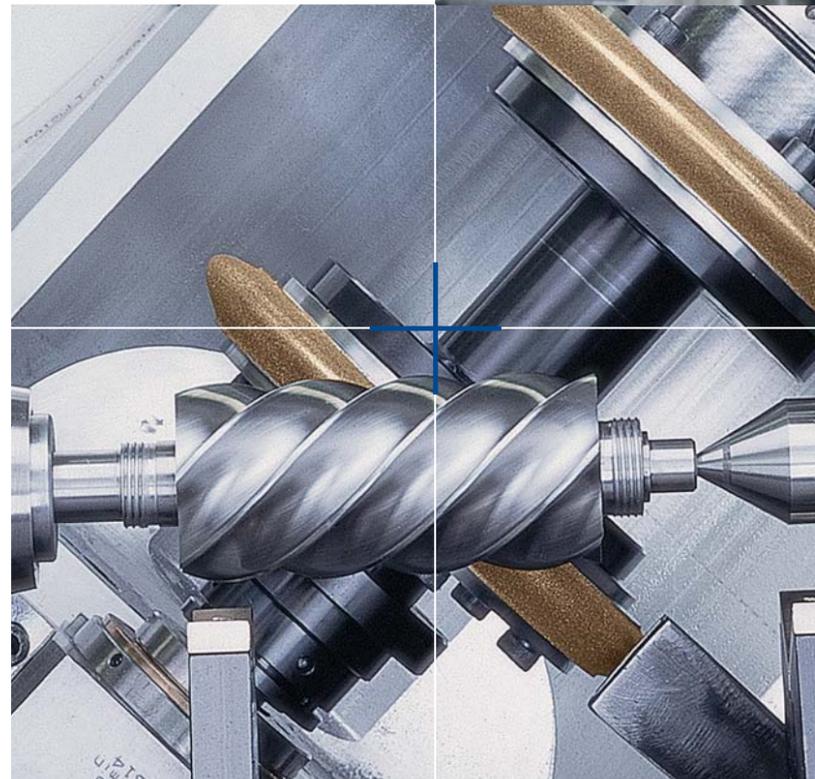
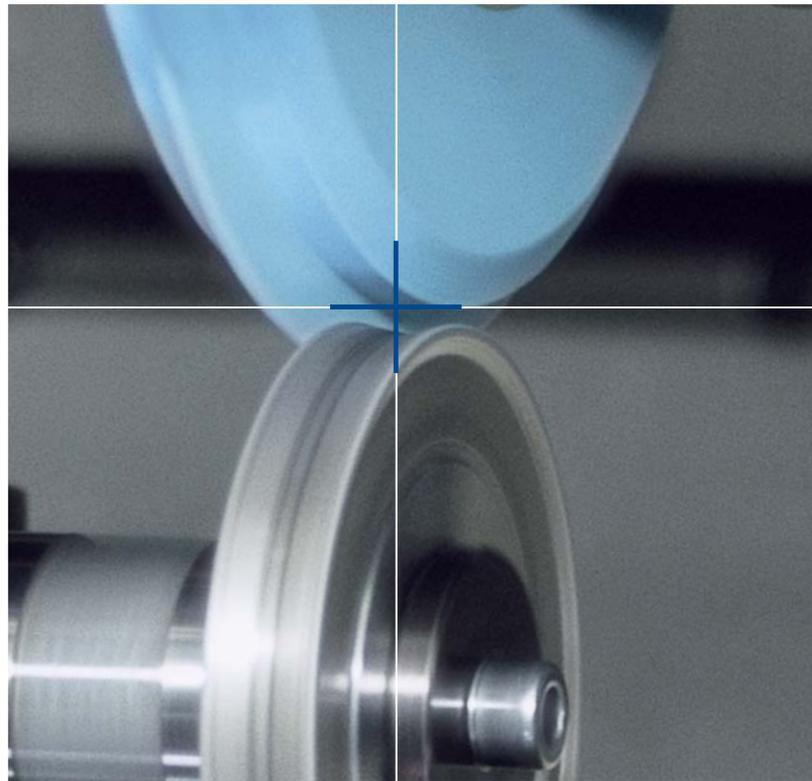


- A Tool head swivel
- B1 Tool spindle rotation
- C Work spindle rotation
- B2 Dressing spindle rotation
- X Radial travel tool spindle
- Z Axial travel tool spindle

- 1 Single point diamond dressing
- 2 Diamond roll dressing

Be flexible today and prepared for tomorrow, using electroplated CBN or dressable ceramic tools

All machines in the G-H series (with the exception of the GR and GW series) are engineered to mount both dressable ceramic or electroplated CBN grinding wheels. Depending on your lot size and in-house requirements in terms of flexibility, efficiency, tool costs and surface requirements, you are free to choose the tool technology that best suits you.

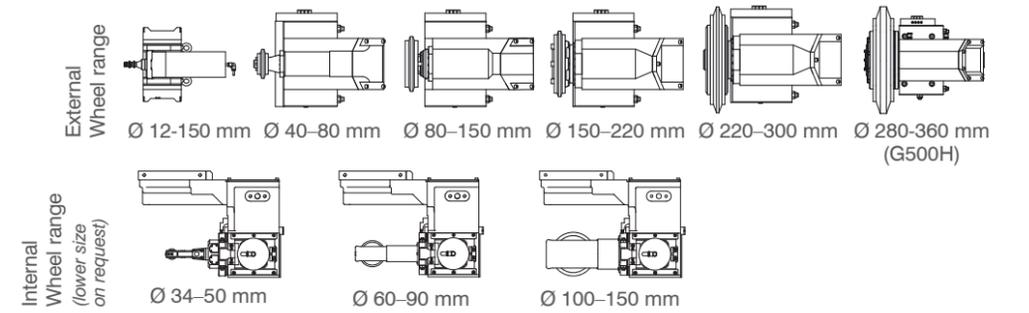


Electroplated tools designed for you

Either ceramic or electroplated CBN grinding tools are available from Samputensili including roughing and finishing tools which are backed up by our extensive application know how.

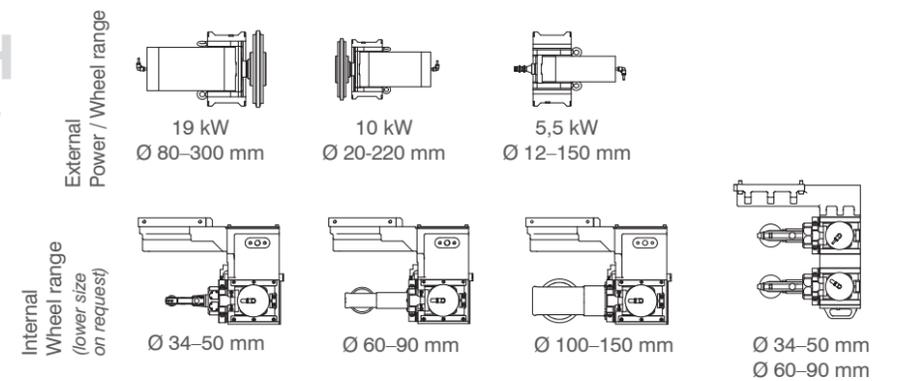
Basic spindle variants for internal and external profile grinding with dressable and electroplated wheels

G 375 H G 500 H



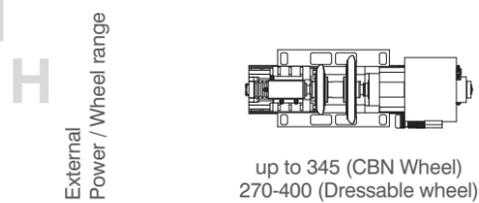
GP 500 H

Single or double spindle for profile grinding



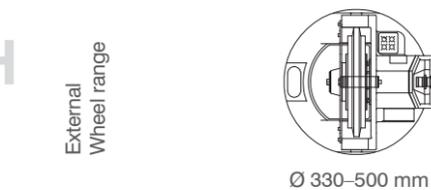
GT 500 H GRX 500 H

Electro spindle with counter-support for two or one grinding wheel



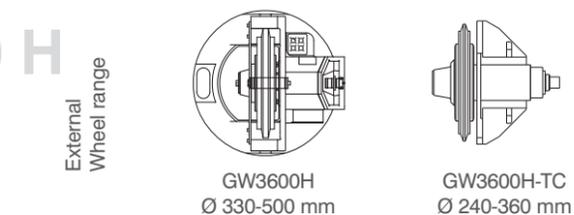
GR 500 H

Spindle for profile grinding



GW 3600 H

Spindle for profile grinding



options

Depending on your application, the machines in the G-H series are equipped with various options.

Samputensili dressing units utilise universal dressing rolls and generate profiles calculated by the machine software. An integrated "touch" sensor checks the contact between the roll and the wheel, allowing the activation of the dressing passes and controlling the good quality of the dressing.

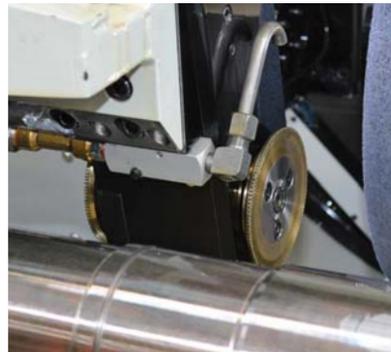
Using the right workpiece support is fundamental to prevent bending or

vibration during the grinding process. Whether you work with rotors, circulating ball spindles, pumps or extruder screws, we find the right solution to guarantee the quality you need.

The correlation between stock removal and the ability of a machine to supply a consistent flow of pure coolant is essential for trouble-free production and constant top quality. We recommend and supply you with the right filtration unit for your application

at a glance

- + Different dressing options depending on the application
- + Coolant filtration units for steel and cast iron machining
- + Workpiece support systems customised for perfect fit
- + Integrated on-machine inspection and closed loop manufacturing with automatic profile correction
- + Various high-performance grinding spindles



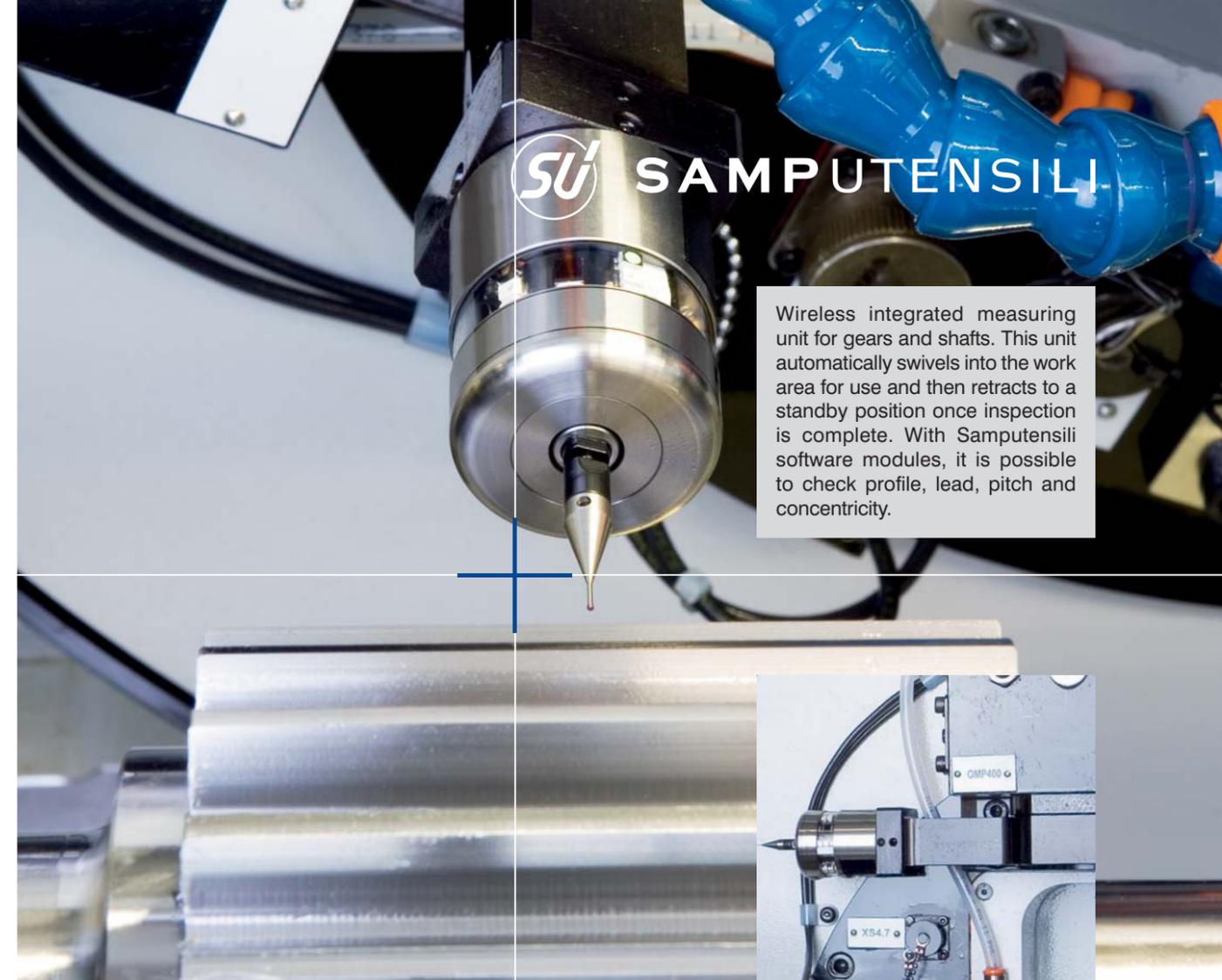
From left to right:

Coolant filtration unit for steel or cast iron machining

Double flank dressing

Dressing unit for internal profile grinding wheels

Workpiece support for long workpieces



SU SAMPUTENSILI

Wireless integrated measuring unit for gears and shafts. This unit automatically swivels into the work area for use and then retracts to a standby position once inspection is complete. With Samputensili software modules, it is possible to check profile, lead, pitch and concentricity.

The ultimate in measuring control, the Samputensili closed loop system enables you to connect your machine to an external measuring unit to check and automatically correct workpiece profiles in a closed manufacturing cycle.



Closed loop manufacturing

- + Automatic stock division
- + Dressing of grinding wheel
- + Profile grinding of rotor
- + Profile inspection on-board or via external measuring unit (closed-loop)
- + Correction of any deviating values
- + Redressing of grinding wheel
- + Finish grinding of rotor

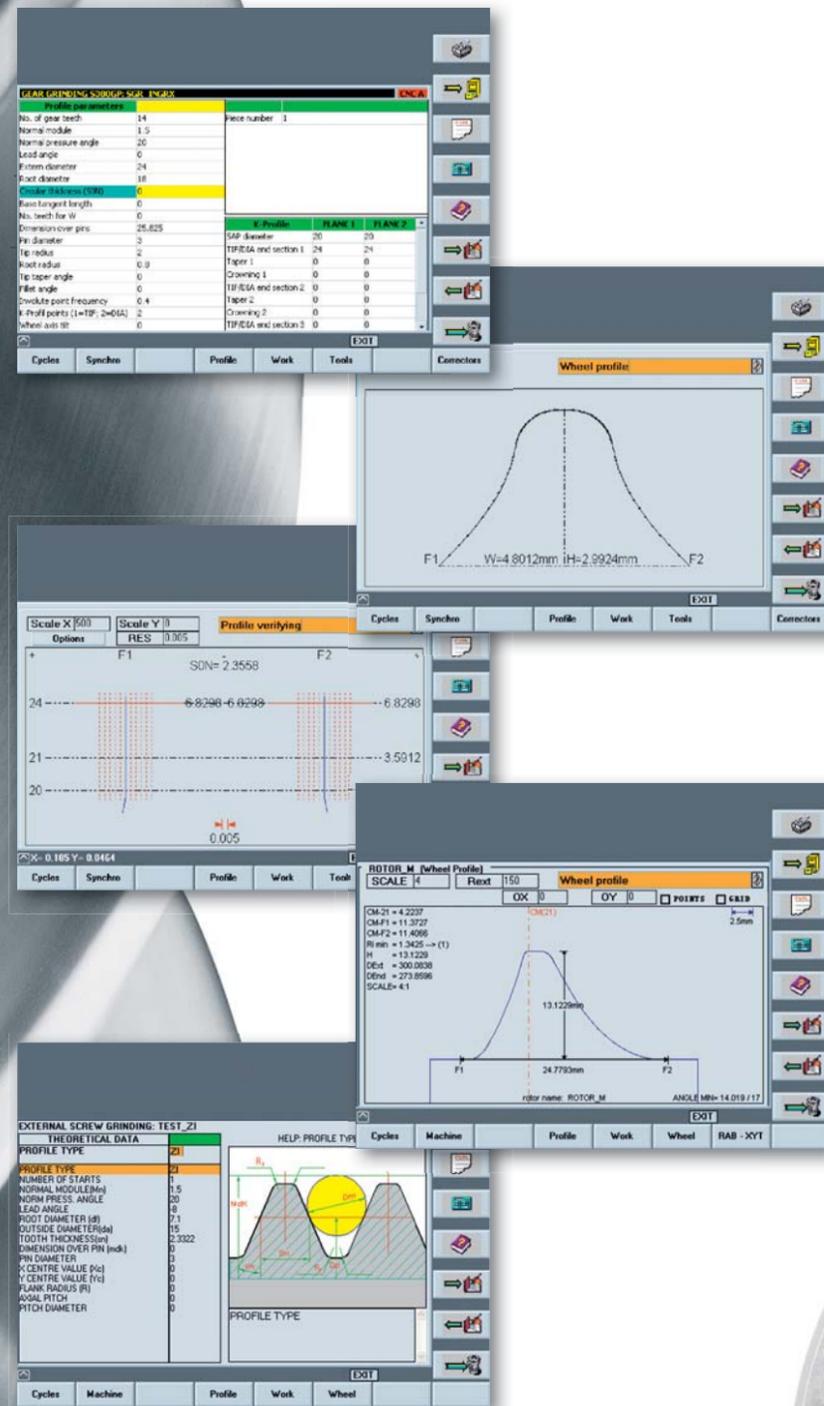


Software for the most demanding applications made easy

With the user-friendly Samputensili menu-guided operator interface running in a true Windows® environment, users are guided through the manufacturing process via easy and intuitive entry and demonstration screens and are supported by data validation and error correction software.

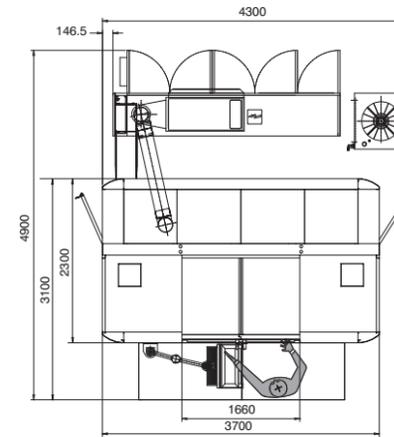
Easy and intuitive data entry interfaces
Wheel profile calculation and visualisation
Simple and direct profile correction options

Point by point rotor grinding wheel profile calculation
Profile inspection with data view and graphics visualization

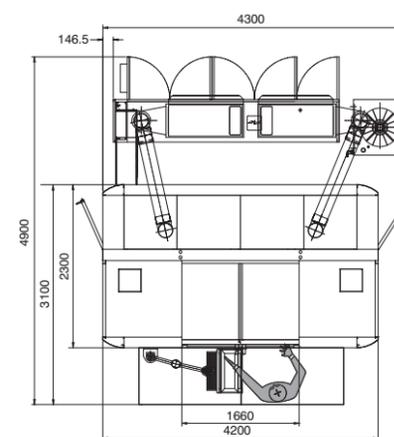


Layout

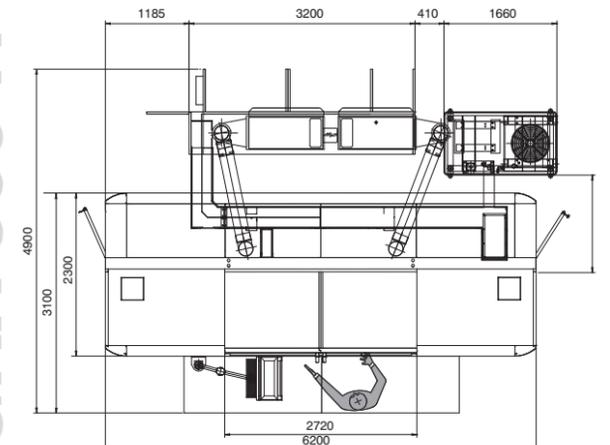
G 375 H



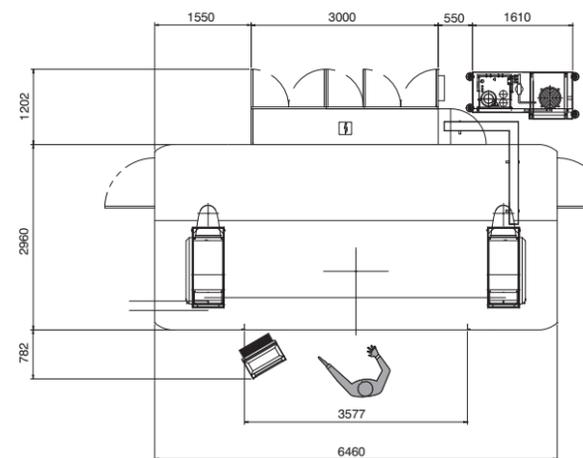
G/GP/GR
GT 500 H



GRX 500 H



GW 3600 H

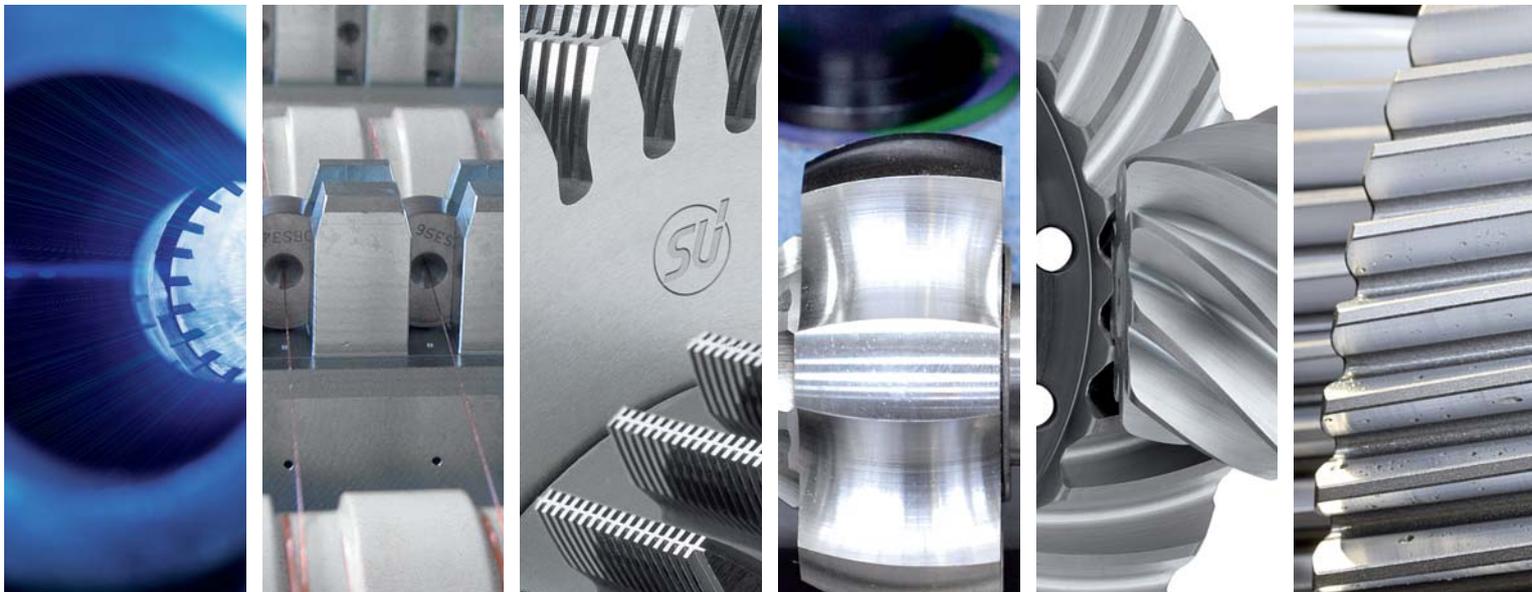


Technical data

	G 375 H	G 500 H (HL)	GP 500 H (HL)	GT 500 H (HL)	GR 500 H (HL)	GRX 500 H	GW3600H (-TC)
Workpiece diameter, max. (mm)	375	500	500	310	400	420	250
Module range	0.5 / 15	0.5 - 22	0.5 - 15	17	n/a	n/a	n/a
Profile depth, max. (mm)	35	53	35	40.0	53 / 80	100	20
Tool head swivel range (degree)	+/- 90	+/- 90	+/- 90	+/- 55	+/- 60	+/- 55	+/- 90
Workpiece length, max. (mm)	900	1,250 (2,100 HL)	1,250 (2,100 HL)	1,150 (1,850 HL)	1,250 (2,100 HL)	1,650	3,800
Axial travel, max. (mm)	650	900 (1,500 HL)	900 (1,500 HL)	900 (1,500 HL)	900 (1,500 HL)	1,500	3,600
Radial travel, max. (mm)	210	330	330	330	330	385	390
Tangential travel, max. (mm)	n/a	+/-1	160	220	n/a	220	n/a
Tool spindle power (opt.) (kW)	23 / 28	23 / 28	5,5 / 10 / 19	48	23 / 35	48	35 (28)
Ceramic wheel diameter (mm)	40 - 300	12 - 360	12 - 300	270 - 400	330 - 500	270 - 400	500 (360)
Ceramic wheel thickness, max. (mm)	60	105	40	120	120	160	90
CBN wheel diameter (mm)	30 - 300	12 - 300	12 - 220	345	n/a	345	n/a
CBN wheel thickness, max. (mm)	60	60	35	120 single / 90 double	n/a	150 single / 110 double	n/a
Dressing disc diameter, (mm)	80 / 100	120 / 150	120 / 150	120	100 / 150	100	120
Tool spindle speed, max. (rpm)	8,000 / 18.000*	6.000 / 40.000*	10.000 / 40.000*	8.500	6.500	8.500	5.000 (10.000)
Work spindle speed (rpm)	0 - 100	0 - 600	0 - 600	0 - 200	0 - 600	0 - 200	0 - 100
Workpiece weight, max. (Kg)	150	350	350	350	350	600	350
Total connected load (kVA)	83	120	120	120	120	140	100
Machine weight, including standard equipment (kg)	11.000	15.000 (16.000 HL)	15.000 (16.000 HL)	16.000 (17.000 HL)	15.000 (16.000 HL)	18.000	25.000

*) Depending on grinding wheel spindle.

Technical data is subject to change without prior notification. Max. values depend on the application.



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