


SHAPESMART®

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ShapeSmart®

ShapeSmart® series are cylindrical grinding machines which are based on the original innovative technology invented by Rollomatic of pinch and peel grinding with two grinding wheels engaging simultaneously, incorporating grinding quality and machine performance.



ShapeSmart® NP50 & NP30

TECHNOLOGICAL EVOLUTION AND UNPARALLELED PERFORMANCE

With a choice of 4 and 5 CNC axes, both ShapeSmart® precision pinch and peel grinding machines are based on the proven method of pinch grinding, a technology invented by Rollo-matic, that ensures polished surface finishes and unmatched performances achieving micron precision. There are two grinding methods, the first one consists of peeling the part in a single pass with simultaneous engagement of a roughing and finishing wheel. For large material removals, the second process is a series of roughing passes followed by a final roughing/finishing pass. This reduces wear on the roughing wheel and still provides excellent accuracy and minimal run-out.

Designed for unmanned production of both long and short batches, the ShapeSmart®NP50 and NP30 cover a range between \varnothing 0.025 et 25.0 mm.

Two innovations mark this generation of ShapeSmart®:

The roughing station enables different wheel positions with a rotation change from 0° to 10° and 90° in just a few minutes, offering a huge savings on set-up times and an unlimited flexibility in the choice of applications to be applied.

The two synchronous spindles provide excellent torque and quiet operation, and their power increased to 14 kW allows roughing operations to be carried out simultaneously on both axes, offering a considerable productivity gain. In addition, the direct drive of the spindles ensure high-quality surface finishes.



ShapeSmart®NP50



ShapeSmart®NP30

ADVANTAGES

- > Surface finish quality as low as Ra 0.02 mm
- > Set-up time shortened to less than 10 minutes
- > Shank guide V-block with pressure roller ensures TIR below 0.002 mm
- > The in-process part measuring system allows automatic size compensation and increases the dimensional size consistency below 0.002 mm
- > 3D touch probe for front positioning and for locating on neck and conical clearances between the cutting portion and the shank
- > Flipper station allows the grinding of double ended tools (up to 200 mm)
- > Job Manager software for unattended production of tools with over 10 different geometries



ShapeSmart® NP50

EVEN GREATER FLEXIBILITY AND POWER

The ShapeSmart®NP50 is ideal not only for preparing cylindrical blanks, but also for non-round applications, thanks to the new patented method of pinch and peel grinding, developed by Rollomatic and called SmartPunch™.

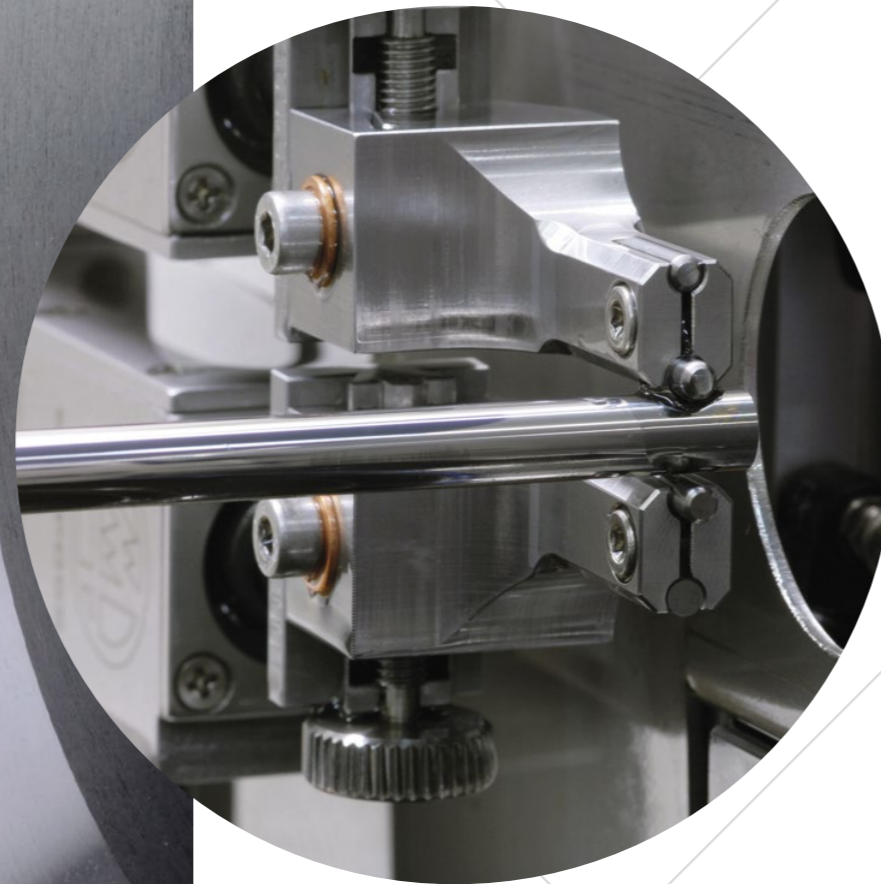
The newly design workhead with direct drive offers more rigidity and a precise indexing control, especially for applications requiring flat surfaces, threads as well as for non-round punches. The gripper adapter on the loader is now interchangeable and easily adjustable or replaceable.

Each wheel arbor can accept up to 2 grinding wheels and combined with the CNC-controlled tool rotational axis, operations for medical and dental applications can be performed, such as quick-disconnect features requiring indexed flats, grooves and cylindrical portions.



ADVANTAGES

- > Precision and size consistency in production with tolerances of just a few microns
- > Radius shape accuracy within 0.003 mm
- > An integral automatic high-speed pick & place tool loader with a capacity of up to 1'360 tools as part of the standard machine
- > Grinding of medical and dental tool attachments as well as flats and threads
- > Unlimited number of non-round applications: ellipses, eccentric shapes, squares, triangles, hexagons and more
- > Change of roughing wheel configuration in less than 5 minutes



ShapeSmart® NP30

THE IDEAL MODEL FOR ALL CYLINDRICAL APPLICATIONS

The ShapeSmart®NP30 is designed for tool manufacturers who are looking for a machine with the best value for quality, reliability, price and performance.

This precision pinch and peel grinding machine has been developed and optimized for the preparation of cutting tool blanks such as endmills, drills, stepped tools as well as punches and all other cylindrical applications. The complete grinding of these parts, including taper and radii, requires only one setting. In addition, the workhead includes, as standard, a 12.0 mm diameter through-hole, which combined with the "multi-clamp" process, offers the advantage of grinding tools up to 600 mm in length.



ADVANTAGES

- > Unmatched diameter/ length ratio up to 400x D
- > An integral automatic high-speed pick & place tool loader with a capacity of up to 1'360 tools as part of the standard machine
- > Grinding of blanks including steps, taper, radii and more in a single setup
- > Precision and size consistency in production with tolerances of just a few microns
- > Grinding with multiple passes for large material removal
- > Change of roughing wheel configuration in less than 5 minutes

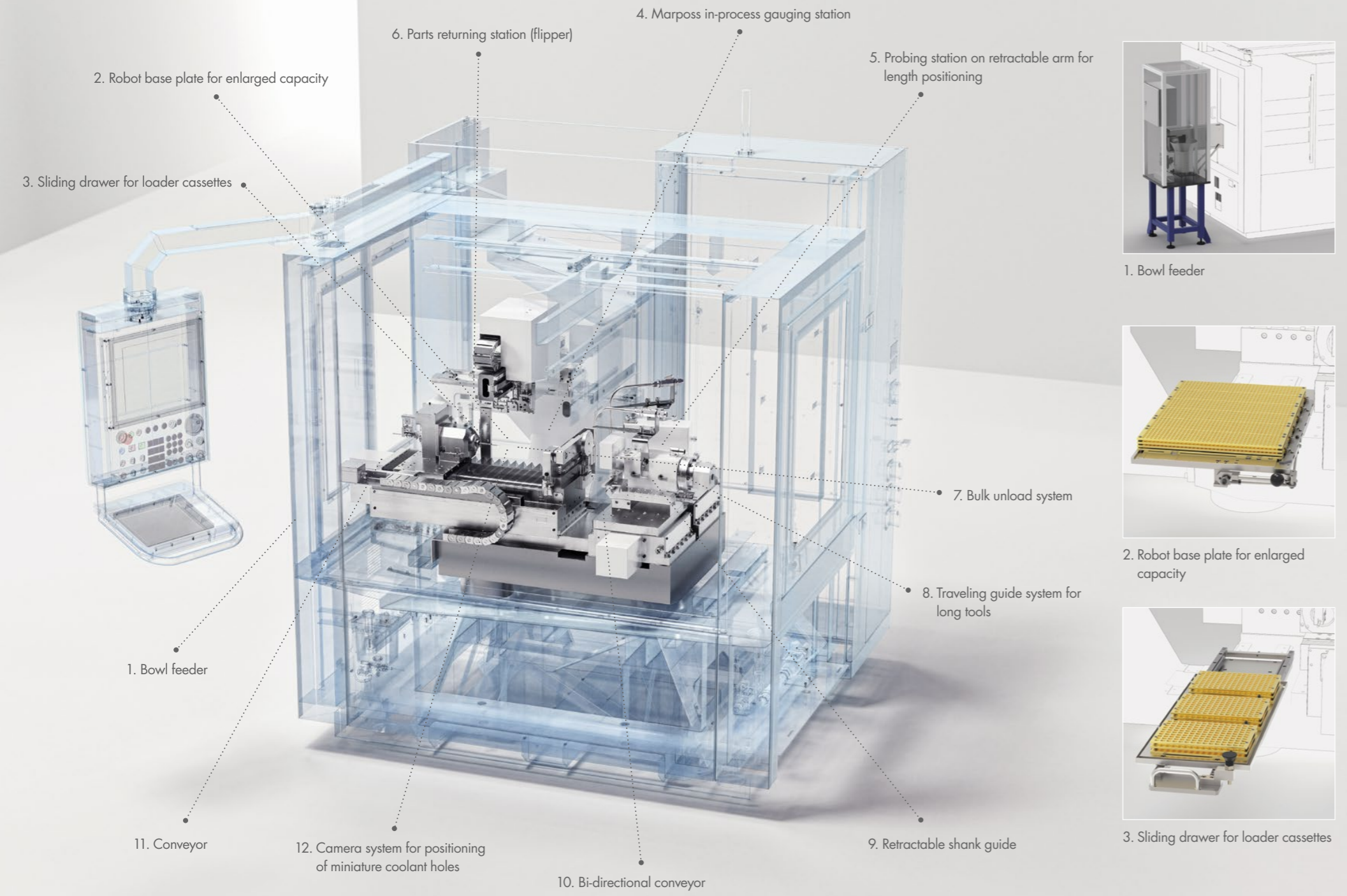


Options and software

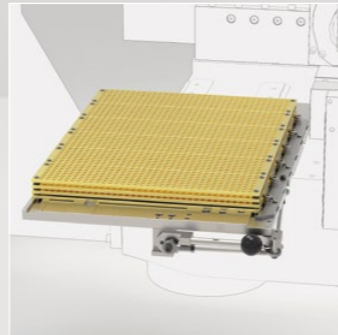
The machines allow customization with a variety of options. In combination with our software, countless challenges can be met.

10°
90°

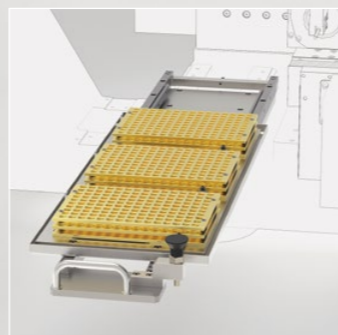
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1. Bowl feeder



2. Robot base plate for enlarged capacity

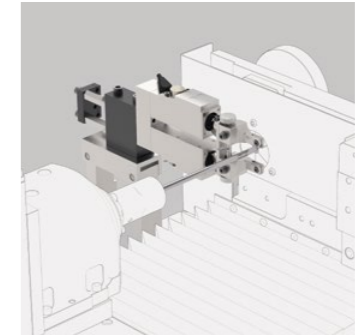


3. Sliding drawer for loader cassettes

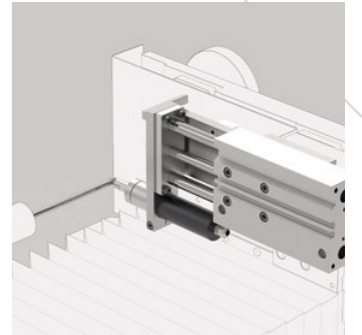
MACHINE OPTIONS

EQUIP YOUR SHAPESMART® IN A PERSONALIZED WAY

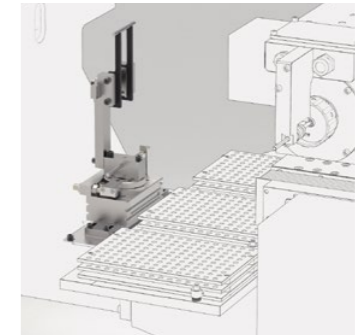
With fully customizable options and easily interchangeable tooling, the Rollomatic machines have been designed to meet any requirements. Thus, each user with a specific need will find the options necessary to arrive at a tailor-made solution and carry out an unlimited number of applications with the machine.



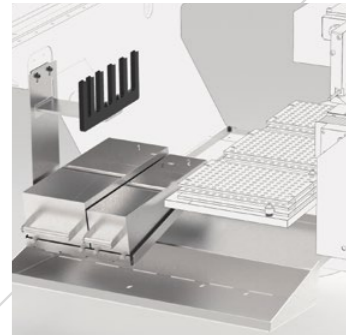
4. Marposs in-process gauging station



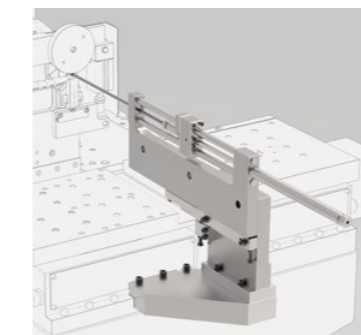
5. Probing station on retractable arm for length positioning



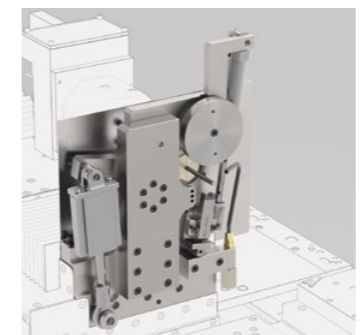
6. Parts returning station (flipper)



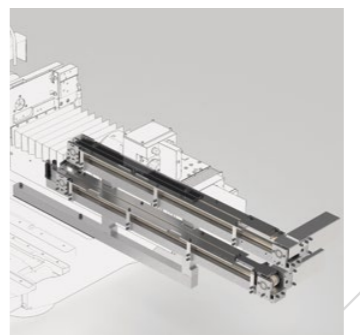
7. Bulk unload system



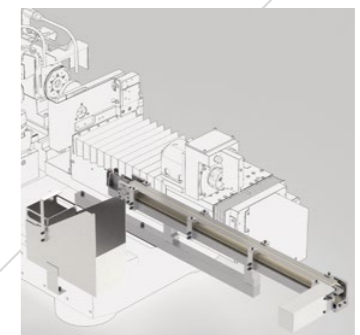
8. Traveling guide system for long tools



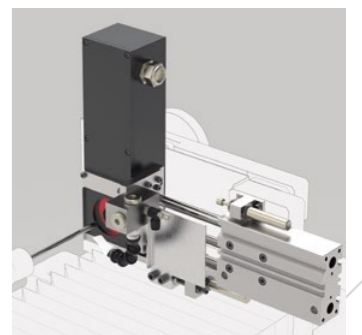
9. Retractable shank guide



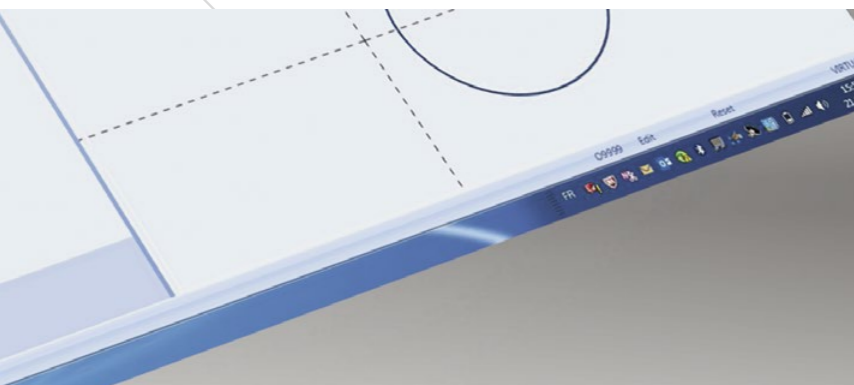
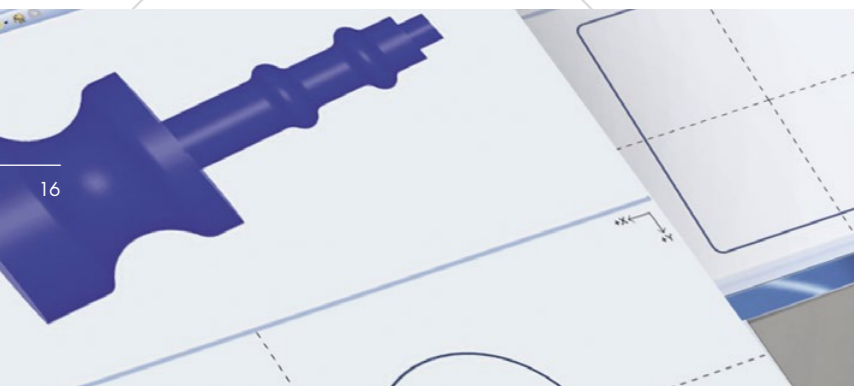
10. Bi-directional conveyor



11. Conveyor



12. Camera system for positioning of miniature coolant holes



SHAPESMART® PRO

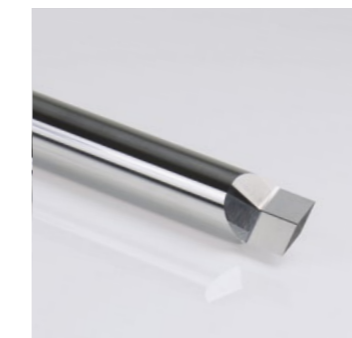
INTUITIVE AND LIMITLESS PROGRAMMING

User-friendly, modern and flexible, the ShapeSmart®Pro programming software has been developed by our software engineers and allows the grinding of any profile in one setup.

The user interface has been designed on the same basis as the software for Rollomatic tool grinding machines: VirtualGrind®Pro. These similarities facilitate the use of a common platform to allow operators to switch easily from one type of machine to another.

Thanks to the import of the axial profile in .dxf format, the user has the possibility to create any type of round punches in just a few clicks. ShapeSmart®Pro is also used in the SmartPunch™ non-round grinding process.

The Rollomatic machines are designed and built in-house in Switzerland. The software is also developed and maintained by Rollomatic, allowing for optimal efficiency.



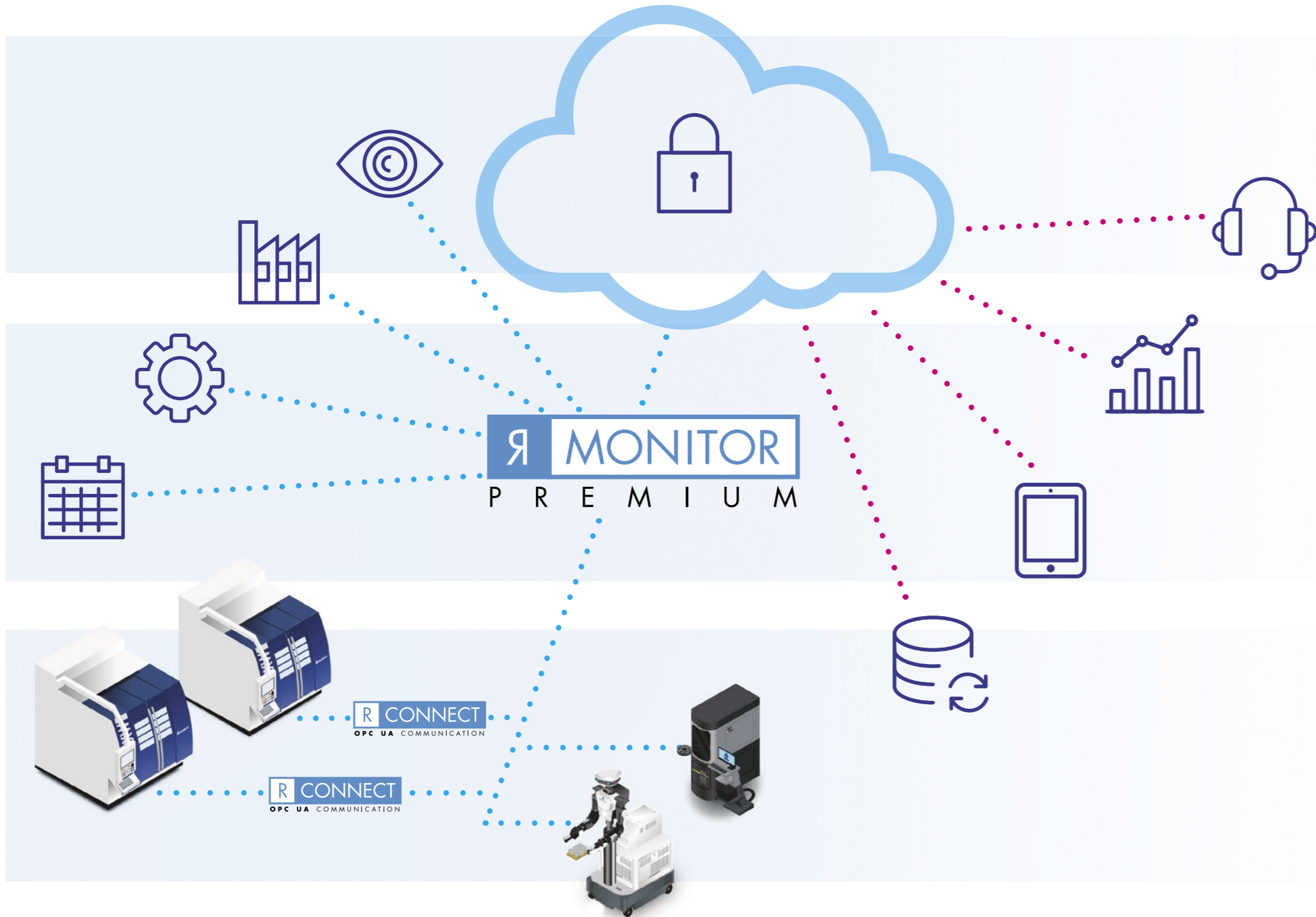
SMARTPUNCH™

All non-round applications such as ellipses, eccentric, square, triangular or hexagonal shapes are achieved using Rollomatic's new patented SmartPunch™ pinch and peel grinding process, which simultaneously uses a roughing and a finishing wheel. This grinding process offers the advantage of always using the same wheel geometry regardless of the tool profile.

This feature offers considerable time savings when setting up compared to an infeed grinding process where the grinding wheel must be adapted to the shape of the tool. In addition, by importing a .dxf file, programming with ShapeSmart®Pro is done in just a few clicks.

ADVANTAGES

- > Free software updates during the entire machine lifetime
- > Different axial profiles can be programmed on each step
- > Eccentric cylindrical shapes with tolerances below 0.001 mm can be achieved
- > Possibility to machine very thin and long punches with step lengths up to 400x D
- > Offline access for pre-production work on an external PC



ROLLOMATIC AUTONOMOUS GRINDING™

Our vision of "Autonomous Grinding" is to provide Rollomatic machine users with a fully autonomous machine capable of managing the production by itself with very little human intervention.

A part of this ambitious project is the ability of the machine to manage the offsets to get the first parts within specification. Further items include to be able to achieve unattended production over several days within very tight tolerances and to interact with external robotic and automation systems.

The Autonomous Grinding project also includes machine connectivity and communication exchange systems with other equipment such as measuring machines, laser etching, etc.

CONNECTIVITY

RMONITOR

- > Visualization of real-time data via a mobile app (notifications included)
- > Display of the machine production rate over a chosen period

RCONNECT

- > Uses a standard OPC-UA protocol
- > On-demand information is reported in a standardized format and can be used to improve the production process over time
- > Possibility to read and edit any machine data



WORLDWIDE CUSTOMER SUPPORT

RESPONSIVE & IN CLOSE COLLABORATION

Rollomatic pays special attention to customer needs, levels of product training, and helps to maintain high production capabilities of their machines. To do this, Rollomatic has developed an extensive international network of know-how.

ROLLOMATIC LEARNING CENTER

More than 200 training courses are conducted yearly by our highly qualified multilingual personnel to deliver key learning objectives through continual workforce upskilling to guarantee the sustainable growth of the customers. We pledge to share our experience and expertise in the design of cutting tools as well as grinding technology and procedures encompassing all stages: perfect machine setup, grinding process optimization, unattended production and tool measurement.

The series of Rollomatic eLearning courses are user-friendly and include effective software training that enhances the operator's know-how and the ability to increase the machine productivity.

AFTER-SALES SERVICE

Rollomatic offers its customers a free hotline that responds to their requests in a reactive and accurate manner during the entire machine lifetime. The mission of its After-Sales Service is to provide qualified and competent technical assistance thanks to a team of technicians specially trained on all new products and machine customizations.



ADVANTAGES

Training and customer support

- > Training according to specific customer needs
- > Wheel profiling techniques
- > Assistance in designing new tools
- > Sharing of tool measurement techniques
- > Long-term commitment to support users of Rollomatic machinery
- > Training on our software provided at all levels of knowledge
- > Openly sharing our grinding know-how and expertise

After-Sales Service

- > A support hotline consisting of highly qualified technicians trained in machine diagnostics
- > 70% of service cases are able to be solved remotely
- > Constant in-house stock of consumable parts reserved for after-sales service
- > Remote maintenance diagnostic service

SHAPESMART® TECHNICAL DATA

SHAPESMART®NP50

GRINDING RANGE

Grinding	Ø 0.025 – 25.0 mm (.001"– 1")
Grinding length	330 mm (13") in one clamping

CONTROL

FANUC	32iB
CNC axes	5 C/Y/Z/X/V
Y axis	Stroke 350 mm (13.7")
	Resolution 0.0001 mm (.000004")

Z axis	Stroke 100 mm (3.95")
	Resolution 0.0001 mm (.000004")

X axis	Stroke 32 mm (1.25")
	Resolution 0.00001 mm (.0000004")

V axis	Stroke 32 mm (1.25")
	Resolution 0.00001 mm (.0000004")

C axis	Tool rotation 0 – 3000 r.p.m.
	Resolution 0.0001°

Linear interpolation up to 4 axes simultaneously
+ 3 robot axes

WORKHEAD

Clamping system	Schaublin W20
Clamping type	Pneumatic
Clamping range	Ø 1.0 – 25.0 mm (.04"– 1")

ROBOT LOAD & UNLOAD

CNC axes	3 U _L /V _L /W _L Robot station (L = Loader)
Shank	Ø 1.0 – 20.0 mm (.04"– .78")
Overall length	30 – 300 mm (1.2" – 12")

MANUAL LOADING

Shank	Ø 1.0 – 25.0 mm (.04"– 1")
Overall length	20 – 350 mm (.787" – 13.8")

SHAPESMART®NP30

GRINDING RANGE

Grinding	Ø 0.025 – 25.0 mm (.001"– 1")
Grinding length	330 mm (13") in one clamping

CONTROL

FANUC	0i-F PLUS
CNC axes	4 Y/Z/X/V
Y axis	Stroke 350 mm (13.7")
	Resolution 0.0001 mm (.000004")

Z axis	Stroke 100 mm (3.95")
	Resolution 0.0001 mm (.000004")

X axis	Stroke 32 mm (1.25")
	Resolution 0.00001 mm (.0000004")

V axis	Stroke 32 mm (1.25")
	Resolution 0.00001 mm (.0000004")

Linear interpolation up to 3 axes simultaneously
+ 3 robot axes

WORKHEAD

Clamping system	Schaublin W20
Clamping type	Pneumatic
Clamping range	Ø 1.0 – 25.0 mm (.04"– 1")

Motor	0.70 kW (1 HP)
Rotation	300 – 3000 r.p.m. adjustable, converter

ROBOT LOAD & UNLOAD

CNC axes	3 U _L /V _L /W _L Robot station (L = Loader)
Shank	Ø 1.0 – 20.0 mm (.04"– .78")
Overall length	30 – 300 mm (1.2" – 12")

MANUAL LOADING

Shank	Ø 1.0 – 25.0 mm (.04"– 1")
Overall length	20 – 350 mm (.787" – 13.8")

SHAPESMART®NP50

GRINDING MOTOR & SPINDLE

Roughing Motor	14 kW (19 HP) Direct drive, Internal cooling
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Roughing Spindle	Ø 118 mm (4.6"), PerfectArbor™
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Rotation speed	Max. 7600 r.p.m. adjustable
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Roughing Wheel	Ø 250 mm (10")
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Finishing Motor	14 kW (19 HP) Direct drive, Internal cooling
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Finishing Spindle	Ø 118 mm (4.6"), PerfectArbor™
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Cutting speed	Adjustable, frequency converter
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Finishing Wheel	Ø 150 mm (6") (200 mm (7.9"))
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Rotation speed	Max. 10000 r.p.m. adjustable
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DIMENSIONS

L x W x H	1830 x 1765 x 2441 mm (72" x 70" x 96")
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Net weight	Approx. 3000 Kg (6614 lbs.)
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Total Power	Maximum 15 kW, 3 x 400V/25A
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SHAPESMART®NP30

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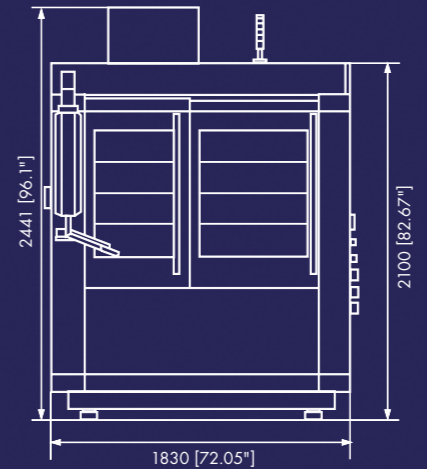
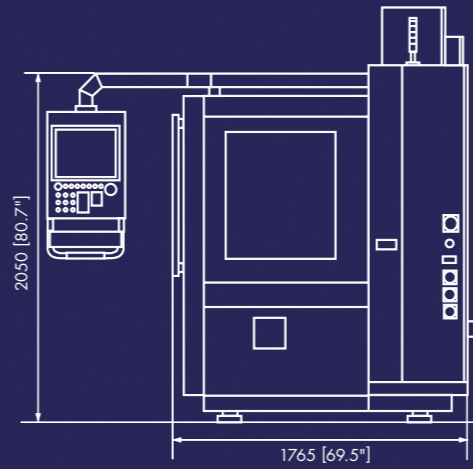
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* Specifications are subject to change without notice



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