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Rollwasch® Italiana S.p.a.

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Robotic finishing by Rollwasch

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Robotic finishing by Rollwasch

Starting from the year 2008, Rollwasch Italiana S.p.a., historical brand of the mass metal finishing "made in Italy" since 1950, started-up a program of perfected machines and finishing process based on the robotic aided technology.

Thanks to some important patents like the *Multichannel Wave Finishing*, to the *Microfluid* wet finishing process or to the *Vibrodry* dry finishing process, combined with evolved finishing solutions like *Carving Finish* and *Multidrag finishing* systems, Rollwasch has determined a growing trend towards the robotic finishing solutions at 360°.

The Rollwasch engineering has in fact, boosted its R&D activity in the last ten years, offering to the market a new "*alternative*" and "*creative*" range of robotic finishing solutions, applied to several important fields of application like: aerospace, energy, automotive, additive manufacturing, high precision mechanics, and many others.

The solutions developed and based on approved projects and/or to systems manufactured and sold in the most different market areas and countries, are divided in almost five categories, like:

1. **RoboTEP** - Multichannel Wave Finishing (Patent pending - I)
2. **RoboKEM** - PMRF based on Rotosync finishing vibrators
3. **RoboGRIND** - Robotic belt grinding and polishing/buffing system
4. **RoboBLAST** - Air blast robotic finishing system
5. **RoboPILOT** - Pilot Production system available to start-up robotic finishing projects

RoboTEP - Multichannel Wave Finishing (Patent pending - I)

The production of modern aircraft engines is increasingly geared towards using technologies that can ensure repeatable, consistent and qualitatively homogeneous results. All in the highest degree of automation possible and with very high efficiency levels. RoboTEP wave finishing systems are now mature and evolved, offering very low finishing time, with homogeneous finishing results and total respect of the workpiece geometry. The RoboTEP systems are based on «Wave Finishing" technology, obtained by insertion of the metal piece in a dynamical mass of finishing

«media». This mass is placed in rotation within a particular circular tank, duly shaped. These systems employ one or more robots to make the finish, combined with the most advanced process technologies. Almost all the RoboTEP systems are designed to perform finishing process taking advantage of the MULTICHANNEL TECHNOLOGY, a patent pending (I) exclusive solution offered by Rollwasch, able to offer, in the same time, two or more different media into concentric rotating tanks. This creates incomparable advantages in the finishing tasks and throughput performances.



Robotep wave finishing system

RoboTEP wave finishing systems are designed also with specific features for the field of Hard Metal Tools. The aim of the Wave Finishing process in this case is to reach three main results:

1. Achieve an edge honing of the sharp edges before presenting the tool to the PVD process. This result is obtained in a time of finish on average between 60" and 120" seconds;
2. Avoid the sticking of the finishing media into the lubrication holes of the tool, this is possible thanks to the operating technique of the machines RoboTEP configured for these processes;
3. remove the droplets, remaining after the PVD process, from the grooves of the tools, and polishing obtaining a smooth and sliding surface;

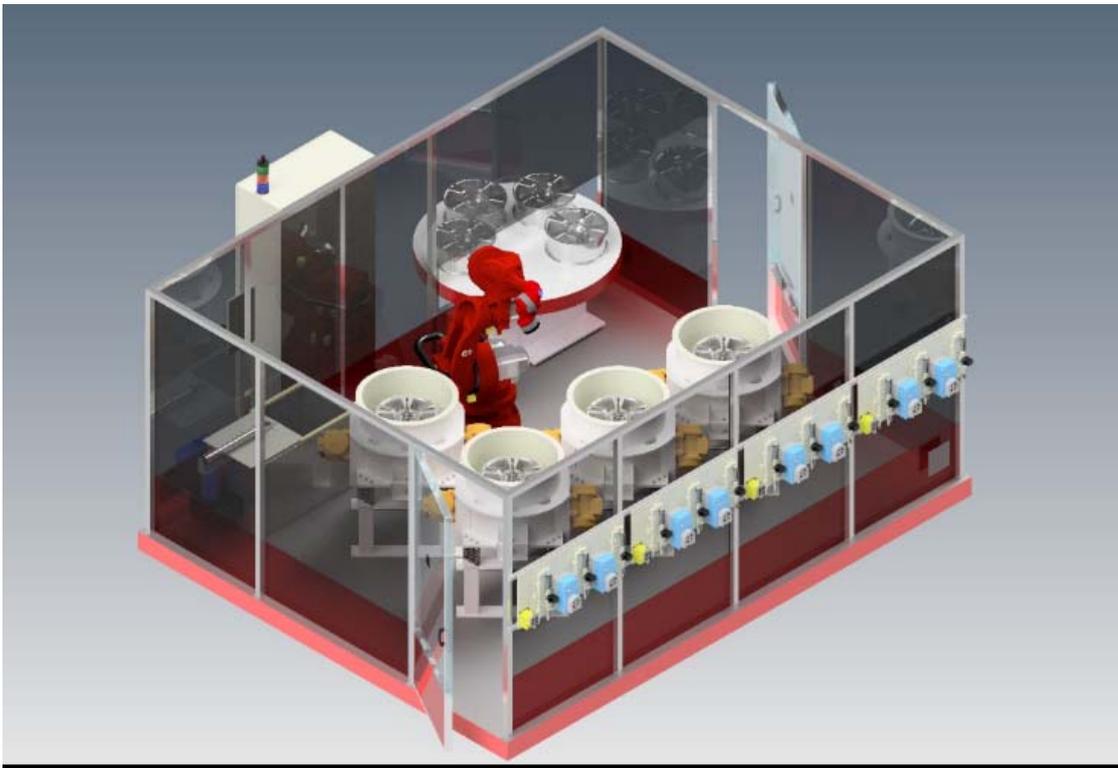
As evident by the pictures in this first pages, RoboTEP wave finishing systems are available with ABB, Comau, Fanuc, or Stäubli Robots, upon request, but we are available to consider also other brands.

RoboKEM - PMRF based on Rotosync finishing vibrators

PMRF is the acronym of Precision Material Removal Finishing, and it is usually identifying processes where the workpieces are fixed to a frame, submitted to a finishing action that can be vibratory finishing, drag finishing, wave finishing, etc.

Rotosync range of machines offers a way to avoid to unload and re-load every time the media (required with the static version) offering a completely automatic lifting device that provides to lift out from the media the workpiece or the frame holder with several workpieces mounted on it, to an

external position where a robot can pick and place them (load and unload automatically). The Pneu-Lift device offered with the Rotosync range of machines can be controlled by means of a profibus system, provided with a robotic cell where the most important brands of Robots can be foreseen - Rollwasch has main competences with: ABB, COMAU, FANUC, STAUBLI Robots - nevertheless we are open to integrate other brands, whenever required.



RoboKEM - PMRF based on Rotosync finishing vibrators

The RoboKEM robotic finishing systems open new horizons for surface finish, allowing the unusual combination of vibratory finishing machines to robots, with innovative design concepts.

It's so possible to achieve higher levels of automation combined with reliable process technology and consolidated for decades, ensuring consistent results, efficient and competitive.

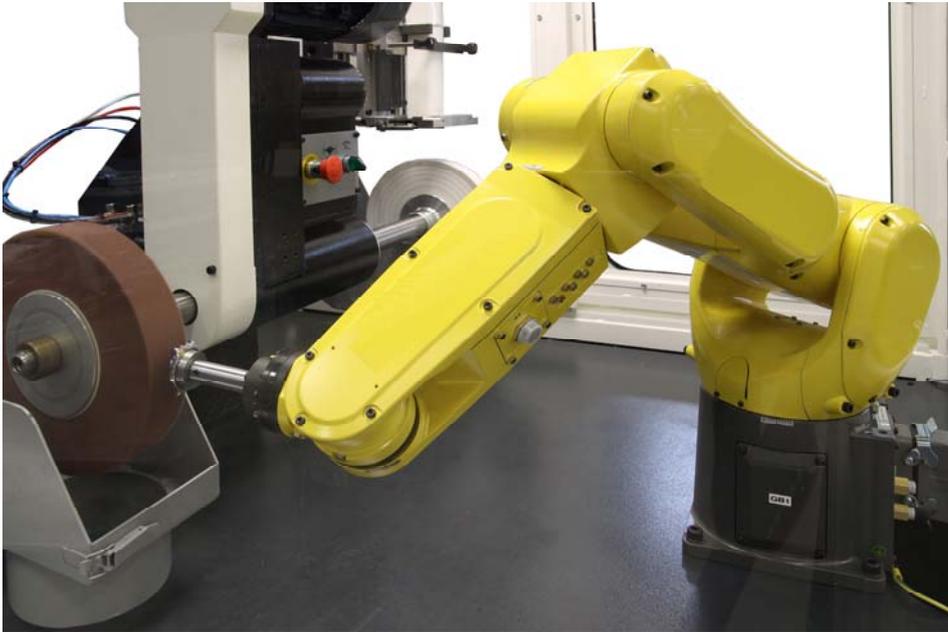
The RoboKEM plants allow to operate in combination with both processes ABRAKEM, DIAFINISH, and MICROFLUID (Patent pending - I) wet finishing process. With suitable combinations, they can also be compatible with VIBRODRY finishing process, without water.

RoboGRIND - Robotic belt grinding and polishing/buffing system

The RoboGRIND program offers grinding islands that may be based on a variety of hardware including, mainly Fanuc, but involving also brands like ABB, Comau, Kawasaki, and Stäubli. The mainboard design is primarily based on Siemens, but it is possible to implement on demand other brands software and hardware.

The constant activity of R&D lead us to the automation or streamlining of the interaction between grinding and vibratory finishing to offer an integrated solutions.

In spite of the range of systems name «RoboGRIND», this program includes not only belt grinding, but also polishing with classic cotton buffs and sisal buffs.



RoboGRIND - Robotic belt grinding and polishing/buffing system

The RoboGRIND program offers a very important advantage for the BELT GRINDING processes, consisting in an evolved management of the «PRESSURE COMPENSATION CONTROL» (patent pending - I).

The software of the pressure control, managed by the Siemens PLC of each Belt Grinding Unit, is able to assure, within a predetermined tolerance that can be fixed in the software parameters of each unit, the compensation range of the contact wheel on which the grinding belt is rotating.

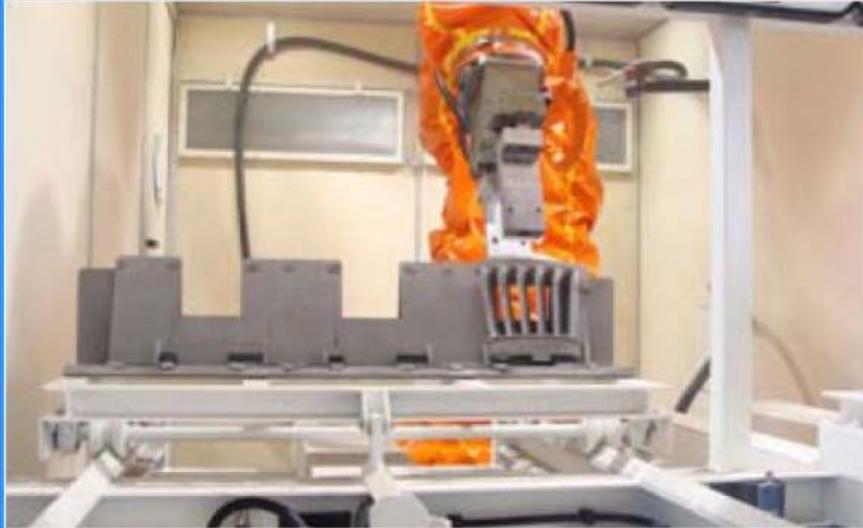
This strong point of the RoboGRIND technology, allows to the final client to invest in the state of the art of belt grinding technology, assuring the most constant result on the finished workpieces, independently from the tolerances of some geometries or of some different sized burrs present on each component to be grinded.

RoboBLAST - Air blast robotic finishing system

At Rollwasch® we offer our wide experience and knowledge of surfaces, to support your most advanced projects, to reach a common target. This is more and more extended to the processes of sand blasting, shot peening and HTWF (High Turbulence Wave Finishing).

This last kind of process, part of the family of the sand blasting applications, is a special combination of blasting technologies with wave finishing media that, when applied in the correct

way, can reduce the roughness in an extremely efficient way, also on very hard alloys (i.e.: in the aerospace field).



RoboBLAST - Air blast robotic finishing system

Some projects combine, for example, the shot peening «mechanical» effect of hardening to the surface, with a wave finishing cycle later on, to reduce the surface roughness and maintain the technical requirements of smoothness.

The combination of this two different technologies, depending on the volumes required, can be generally managed by two specific robotic lines cooperating interactively.

The RoboBLAST line of projects can be flexibly designed according different technical specifications and, accordingly, the Robot that can be used can be ABB, COMAU, FANUC, and STAUBLI - nevertheless we are open to integrate other brands, whenever required.

RoboPILOT - Pilot Production system available to start-up robotic finishing projects

Rollwasch® is above all a manufacturer of machines and systems as well as chemical compounds and finishing media. However, to support the most important projects and to offer the widest possible series of guarantees to its customers, Rollwasch® provides a specific type of evolved service called "PILOT PRODUCTION".

This service consists in agreeing, in support of a specific project, a series of "pre-series" or "pilot" finishing services, for a fixed period of time or for a number of pre-set pieces.

In order to provide this type of service, Rollwasch® invested in a "pilot" robotic island, consisting of:

1. A RoboTEP robotic wave finishing unit with «Multichannel» technology - two channels and relative media (Patent pending - I);

2. A RoboGRIND double grinding unit (two customizable units with appropriate contact wheels and abrasive belts), complete with pressure control - programmable as desired;
3. A unit (available only from October 2018) RoboKEM, with a Rotosync circular vibrator, can be loaded and downloaded via a robot and a special piece holder frame.



RoboPILOT - Pilot Production system available to start-up robotic finishing projects

The Rollwasch® pilot robotized island is available in a dedicated and confidential area of the company, separated from the customer testing laboratory (or test room) so as to ensure maximum confidentiality.

In fact almost all the pilot production services offered through this pilot plant are protected by a confidentiality agreement.

Depending on the project, the plant can realize the pilot finish on components of various types such as: components for the aerospace industry, for the energy field, for the finishing of molds of all kinds, with the only limitation of the dimensions that are compatible. Among the countless types of sectors that can benefit from this sub-contract finishing service, we also find applications for the sectors of: automotive, additive manufacturing, precision mechanics, and mechanics in general.

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