

Advanced Grinding Solutions at EMO 2023

Seven of Advanced Grinding Solutions principals are exhibiting at the forthcoming EMO exhibition including Rollomatic (Hall 6 stand E66) Tschudin (Hall 11 stand E31) Gerber (Hall 11 stand D51) Meccanica Nova (Hall 11 stand D07) Comat (Hall 6 stand F42) FLP Microfinishing (Hall 11 stand C46) and GPA Innova (Hall 11 stand C13).

At the center of Rollomatics display will be their SMART FACTORY; a proven concept to meet the new challenges faced by cutting tool manufacturers. The new LASERSMART®810XL, designed for machining large-diameter tools, will also be in the spotlight in Hannover, as will the high-performance LEAN grinding solutions from the SMART AUTONOMOUS GRINDING programme and the latest STRAUSAK grinding machine for the resharpening of all kinds of cutting tools. Customers remain at the heart of ROLLOMATIC's philosophy. This is also the case when it comes to thinking ahead and being proactive in offering the best manufacturing solutions. This philosophy has led the company to develop the especially effective SMART FACTORY programme. It provides a new way to organise production resources using information technology, machine communication systems and robotics. ROLLOMATIC's extensive experience in the above-mentioned fields enables it to support customers throughout the SMART FACTORY process. Cutting tool manufacturers want more autonomous machines in order to cut production times without skimping on operational quality. ROLLOMATIC has mastered the production stages, is constantly optimising processes and, above all, understands what customers need. ROLLOMATIC SMART FACTORY solutions can satisfy those needs.

ROLLOMATIC's laser solutions are the most effective offerings on the market for cutting ultra-hard materials and 3D machining. With the new LASERSMART®810XL, specifically designed for machining large-diameter tools, ROLLOMATIC covers a very wide range of possible applications. Designed for the production of cutting tools in ultra-hard materials and featuring 6 simultaneously interpolated axes, the new, ultra-compact LASERSMART®810XL has been designed to machine tools up to 300 mm in diameter, 350 mm in length and weighing up to 15 kg. An automatic loader with a capacity of 30 parts is included as standard. The LASERSMART®810XL is the perfect solution for machining ultra-hard tools used in the automotive, aerospace and woodworking industries. The LASERSMART®510 femto offers unlimited machining possibilities and maximises productivity, precision and surface quality. In addition to PCD, P-CBN, CVD, MCD and natural diamond, the LASERSMART®510 femto can machine ceramics, carbide, sapphire, glass and new combinations of materials. Thanks to this revolutionary machine, users can achieve results that set a new standard for machining ultra-hard materials.

Rollomatics LEAN philosophy forms an integral part of their corporate culture and permeates the design of all of their products. Reducing lead times, non-productive and

non-value-added time, and optimising process management are just some of the challenges facing cutting tool manufacturers. The GRINDSMART®660XW is a perfect illustration of what LEAN can do. With the GRINDSMART®830XW machine, ROLLOMATIC offers grinding solutions for the entire range of micro and macro tools to the very largest ones.

STRAUSAK, which celebrates its 100th anniversary this year, joined the ROLLOMATIC Group in 2011. As part of the group, it helped expand the range of sharpening solutions for cutting tools, as evidenced by STRAUSAK ONE, its flagship model. This latest-generation 5-axis grinding machine has been designed for the production of special tools, inserts or resharpening.

TSCHUDIN will present an innovative product portfolio at EMO; both the award-winning CUBE 350 with a robot loader and the ecoLine 400 will be on display. Iwan von Rotz, CEO of TSCHUDIN, explains: "Our customers grind workpieces of the most diverse sizes on our machines: from the smallest wires for medical technology to tapered roller bearings weighing up to 11 kg that are used in large-diameter bearings in wind turbines." The CUBE 350 is designed for machining small workpieces up to 20 mm in diameter. The 400 ecoLine / proLine is suitable for machining medium-sized workpieces up to 150 mm in diameter, and the 600 ecoLine / proLine can machine workpieces up to 250 mm in diameter. The maximum grinding wheel width is 500 mm.

The Cube uses Tschudins patented W-axis which has the workrest blade mounted onto its own CNC axis that allows for parts to be loaded to it outside of the grinding area making loading efficient, fast, and very safe. Traditional centerless grinding machines require parts to be loaded to a fixed work-rest blade that sits inside of the machine between the grinding wheel and control wheel making loading difficult, more expensive, and sometimes unsafe. This also makes changeovers more complex and therefore lengthier. The Tschudin machine overcomes all of these issues and claims to be the world easiest and fastest centerless grinding machine to set-up. The centerless cylindrical grinding machines from TSCHUDIN are used in all industries where mechanical components are required with high accuracy and at economical unit costs – from medical technology and the bearing industry to hydraulics, automotive engineering, drive technology, toolmaking, and aerospace. The materials machined, such as steel, aluminum, glass, titanium, carbon, ceramics, or silicon, are just as versatile as the areas of application.

Gerber will be launching its latest deburring machine on their stand: the BP Motion. This machine is the ultimate solution for deburring, edge honing, and polishing. It offers unparalleled flexibility, dynamic performance, and digital capabilities. This innovative machine has been designed to remove sharp edges and burrs, brush defined radii and

contours on edges, and to polish surfaces to the highest levels. With its extended speed range of up to 1000 rpm, the BP Motion delivers deburring results in record time. The BP Motion also incorporates cutting-edge features such as even more precise automatic brush measurement and automatic compensation for brush wear to ensure maximum process reliability.

For producing small, medium, or large batches of parts the BP Motion is the perfect choice. With a variety of applications for flat and slightly curved parts, this machine offers incredible versatility. Thanks to its Industry 4.0 connectivity and preparation for fully integrated automation, it also provides the highest level of productivity.

One main application for the Gerber machines is the edge preparation, deburring and polishing of all types of cutting tool inserts and Gerber are able to list worldwide industry leading clients such as Plansee-Tizit, Sandvik, P.Horn, Sumitomo, Iscar, and Kennametal amongst its many end users. Apart from insert production, Gerber machines are also used in the medical industry and for the manufacture of valve plates, pump components and rotors etc. whereby parts need to be de-burred with edge forms being controlled.

Nova manufactures flexible CNC Grinding Machines that feature excellent accessibility for quick change-over, serviceability and maximum up-time whilst providing the rigidity required for the most demanding of grinding applications. The range comprises of Internal, External, Combined and Special grinding machines for the Bearing and Constant Velocity Joint industries.

Nova internal grinders are used to make small parts, such as bearings, valve lifters, and giant parts such as landing gear struts. Three work holding systems are available: roller/shoe type, magnetic/shoe type and chucking with front loader or through the spindle. Tooling costs are low and change-over is rapid. The bearing industry typically uses the magnetic/shoe system. Parts must be made from magnetic steel and have a ground OD and face. When the part has a ground OD the roller/shoe system is used. Chucking systems are available when the parts do not have ground external surfaces. External grinding is critical to many manufacturing organizations. The performance of parts such as bearings and CV joints are directly tied to how well they are ground. At the same time external grinding is a bottleneck for most manufactures. The Nova PGE series of external grinders are built to achieve roundness of less than 0.0005mm with cycle times as short as a few seconds. Dressing systems are available to shape the wheel for roller bearing tracks, ball bearing grooves and C-V Joint cage OD's.

Comat will be displaying their super-filtration systems that deliver $\leq 2-3\mu\text{m}$ filtration quality (making oil cleaner than unused oil as supplied new) and importantly do so throughout the entire working cycle whilst minimizing lifetime running costs and

maintaining maximum coolant consistency. Importantly for end users, the Comat filter systems use their Intelligent Performance Technology that allows them to be remotely monitored in real-time during the manufacturing processes with customers filter systems fine-tuned by Comat to ensure that the optimum filtration quality is obtained at all times. Furthermore depending upon the model the Comat filter units can be monitored, controlled, and optimized by integrated controls or externally by PCs, tablets or smart phones. Today, more than 20,000 machine-tools use Comat Filtration Systems, with more than 120,000,000 litres of metal working oil being super-filtered every single day. Comat operate globally and have a 30-year history in developing the most advanced filtration systems that are available. Comat's Superfiltration Technology uses continuously regenerating filtering media (diatomaceous earth, cellulose or other vegetable media), to ensure that particles larger than $\leq 2\text{-}3\mu\text{m}$ are removed from cutting fluids and the fluid is maintained at a stable desired fixed temperature of ± 0.2 degrees. Main applications for these filter systems include tool grinding on Rollomatic and similar grinding machines and also on turning machines and automatic lathes. Comat systems can operate with any oil having a viscosity ranging between 5 and 30 Cst at 40°C (104°F). Remarkably so the filtration levels from the Comat systems are so high that new virgin oil has to be go through several regeneration cycles in order for it to meet the finer filtered quality of older/used oil that is filtered with Comat filter systems. The low cost media used in Comat systems is very cheap and as there are no cartridges, paper rolls or expensive candles to replace; Comat filters offer the lowest running costs of filter units.

The latest generation of FLP machines will be exhibited at the EMO. FLP Microfinishing is the only company in Germany to offer the entire range of industrial fine grinding, lapping and polishing machines for flat surface finishing from a single source. The four FLP product lines are new single and double sided machines (both standard and full CNC), fully rebuilt and refurbished machines, the supply of lapping consumables and tooling, and finally a large sub-contract lapping facility. The broad range of FLP fine grinding and lapping machines includes for both twin wheel – double sided CNC Lapping Machines as well as single wheel machines. Around 25% of FLPs sales are for Fine Grinding machines that offer 2-3 times the stock removal of more traditional lapping machines with 75% of sales being for Lapping machines that are used where there is a low stock removal requirement with a mirror finish and perfect flatness. The fine grinding process, that uses Diamond or CBN wheels, is much cleaner than lapping and virtually eliminates work piece cleanliness issues. Furthermore, this process is many times faster than lapping and bridges the gap between traditional lapping and standard grinding technologies. Fine grinding creates a micro cross-hatched finish on parts that is akin to one after a Superfinishing operation that has advantages in terms of surface retention of lubricant whilst still offering very high degrees of flatness and a mirror like surface.

The revolutionary DLyte polishing machines produced by GPA Innova benefit from utilising the world's first dry electro polishing process. The DLyte range of machines use a totally unique, single step automated process, for polishing metals; this is a revolutionary dry non-abrasive electro polishing process that does not use any liquid as the electrolyte. These new patented machines polish and deburr Steel and Stainless-Steel, Cobalt Chrome, Titanium, Aluminium, Nickel and precious metal alloys components for the Dental, Medical, Aerospace, Automotive and other industries. Typical applications include bone screws, artificial hip and knee joints, turbine blades, cutting tools, and any similar component whereby fine surfaces finishes to under 0.09um Ra are required without altering key part geometry after the previous grinding or milling process.

AGS will be present throughout the EMO to welcome engineers to their principals stands and further information can be seen on their website www.advancedgrindingsolutions.co.uk or contact AGS on +44 (0) 2476 22 66 11