

EMAG

VL 3DUO OFFERS COMPACT PRODUCTION OF GEAR WHEELS

EMAG recently announced a direct development of its modular machines in combination with the TrackMotion automation system—the VL 3 DUO.

"We need just 13 m² (140 sq ft) to install the complete VL 3 DUO," explains Peter Loetzner, CEO at EMAG L.L.C. "For a twin-spindle vertical pick-up turning machine that is a fantastic size. Even if the machine is combined with a raw parts storage facility and the TrackMotion automation system, the dimensions for a complete manufacturing system for chucked parts up to 150 mm (2 in.) is almost laughably small. That makes the VL 3 DUO one of the most compact and efficient systems available from EMAG."

With its parts ranging up to 150 mm (2 in.) in diameter, the VL 3 DUO is ideal for the manufacturing of gearbox components, for example, machining blanks for gear wheel production. "Gearbox components such as gear wheels must be manufactured in very large quantities. The standard production process is always the same: in OP 10 and OP 20, both sides of the gear wheel blank are machined by a turning process and the surfaces are prepared; the gear cutting process follows in OP 30 and deburring takes place in OP 40," explains Loetzner. "The VL 3 DUO is, of course, primarily focused on the first process in this machining chain, in other words OP 10 and OP 20, which can be implemented perfectly with our system."

The VL 3 DUO can be fitted with EMAG's TrackMotion automation system as an option. The automation system consists of three central parts, the track (i.e. the rails) on which the TransLift NC gripper runs and the raw parts storage facility. The entire system is very compact and runs directly behind the machining areas of the VL 3 DUO. The TrackMotion always focuses on the individual component. Each transport process only moves a single component which allows for significant benefits for component management.

The increased mobility of the TransLift, including the Z-axis, means



that stackable pallets can be used on the raw parts storage facility, making it possible for the raw and finished parts to be stacked with minimal space requirements. In addition, the TransLift is also used as a changer between the two machining operations. This means that the TrackMotion automation system provides everything required for compact manufacturing on the VL 3 DUO: an extensive parts storage area that accommodates up to 400 parts and a fast, flexible parts transport system between the various manufacturing stations.

Like every modular machine, the VL 3 DUO has its own parts buffer and a pick-up spindle in each machining area. The TrackMotion automation system loads the individual part pallets on the parts buffer as they shuttle between the loading position near the machining area and the rear section of the machine. From there, the working spindle takes the raw part, transports it into the relevant machining area and places the part back onto the appropriate pallet after it has been machined. Immediately next to it, the subsequent part is waiting to be picked up by the spindle, so that only a few seconds pass until the next part is being machined.

The machining areas are arranged in a mirror constellation and each has its own working spindle which, with a rating of up to 18.1 kW and torque of up to 142 Nm, has plenty of power for high speed, precision machining. In addition, each machining area has a tool turret

with twelve tool positions which can be fitted with turning tools or driven tools. "The turrets can also be fitted with an additional Y-axis to extend the range of uses of the machine even further," explains Loetzner.

The VL 3 DUO adds a highly productive, compact manufacturing system for large-scale production to EMAG's modular machine family. "Its real strength can be seen when it is connected to other machines in the modular machine family," continues Loetzner. "Let's look at the example of gear wheel production mentioned above. If we supplement the VL 3 DUO with the VL 4 H, the modular gear hobbing machine from EMAG, and a VLC 100 CC or VLC 100 RC, the vertical chamfering and deburring machines, we create a manufacturing system for gear wheels which is completely linked using the TrackMotion automation system, with a very small footprint. The whole thing is made possible by the standard structure of the modular machines, the integrated automation system and the fact that the transfer height between the machines is always identical. In other words, almost as simple as using building blocks," Loetzner said.

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Emuge

INTRODUCES LINE OF END MILLS FOR TROCHOIDAL MILLING

Emuge Corp. recently announced the introduction of a new line of solid carbide end mills with unique geometry and chip breakers designed specifically for trochoidal milling. Emuge's new Trochoidal End Mills provide increased metal removal rates (MRR) of over 30 percent, fewer tool paths and longer tool life, while enabling a high axial depth of

cut of up to 4XD. The Trochoidal End Mill series was developed specifically for advanced milling strategies available in modern CAM software to optimize the calculation of milling paths and avoid unproductive tool motion.

Trochoidal milling is a relatively new cutting strategy growing in use, that involves the overlapping of circu-



lar cutting paths with linear movement and is especially suitable for difficult to machine materials and thin-walled components. The small contact angle on the tool reduces heat generation during machining and promotes less thermal stress increasing tool life. The end mill is fully utilized over the entire flute length, resulting in wear that is evenly spaced over the full cutting edge, which also contributes to longer tool life. In addition, high MRR can be generated even on low-powered machines and wear is reduced during full slot milling.

Emuge Trochoidal End Mills feature low vibration characteristics such as variable spacing, variable helix angles and improved micro-geometries, along with new high performance coatings of TiN/TiAlN or ALCR and a sub-micro grain carbide substrate. In addition, the newly developed chip breaker geometry reduces axial pull-out force and minimizes the risk of chip build up in pockets, since the resulting smaller chips can be easily removed with compressed air or coolant.

Emuge Trochoidal End Mills are available in two cutting geometries: *Jet-Cut* for both roughing and finishing in steel applications, and *Coolant-Through TiNox-Cut* for process-reliable roughing in tough materials such as Inconel, titanium and stainless steel. Standard and long-length rougher/finishers with flute length/diameter ratios of 2:1, 3:1 and 4:1 are available for applications in a wide range of materials.

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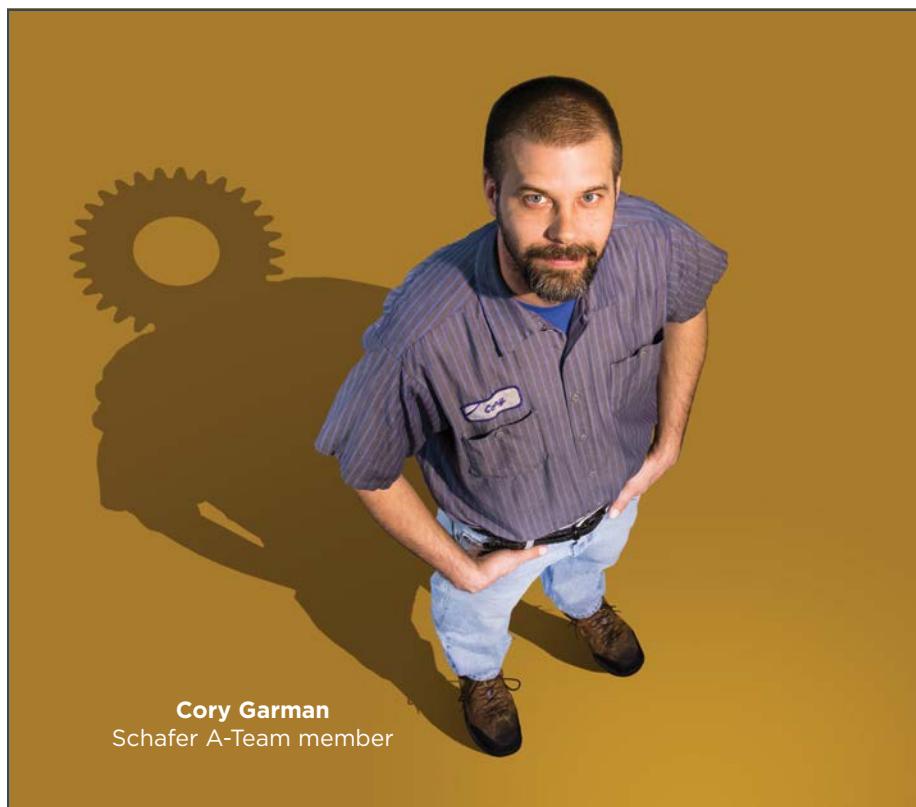
Ransohoff, a division of Cleaning Technologies Group LLC, has introduced its LeanDrum CF Washer. This new platform provides an energy efficient, reliable solution for your high-volume cleaning needs, along with an innovated design for cold forming applications.

The LeanDrum CF features a very robust, lower cost option utilizing stainless steel tanks, drum and housing, premium electrical components, a full immersion cleaning system and forced air dryer technology to produce consistently high quality cleaning results over an extended machine life. With this new design, you may recognize less chemical utilization and have better oil control resulting in a longer bath life. In this new design, you will have the ability to apply more aggressive chemicals without foaming. The new LeanDrum CF is designed for easy access that will allow easy drum removal for maintenance, with no crane required.

The new LeanDrum CF is a wash, rinse and blow-off machine in a small footprint of 5.3 ft. wide x 11 ft. deep x 5.3 ft. height. The part production rate is 12 CU FT/Hour at 2 rpm design drum speed, with a variable speed drive capable of 1-3 rpm's. This machine offers full immersion cleaning, eliminating any need for pumps and nozzles. The new LeanDrum CF comes standard with 3-2-1 warranty.

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Seco Tools

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Seco Tools has expanded its family of PCBN insert grades to cover the entire spectrum of hard part turning applications. Using a new bimodal substrate and nanolaminate coating process, these new inserts extend tool life and increase productivity in a broader range of applications.

Seco's PCBN grade chain for materials ranging from ISO H05 to H35 consists of CH0550, CBN060K, CH2540 and CH3515 and is designed specifically for turning hardened steels. They incorporate advanced coatings and a bimodal substrate with coarser grain materials, along with optimized cutting edge profiles for long and predictable machining performance.

CH0550 provides prolonged wear resistance in high-speed continuous cut H05 operations. CBN060K excels in continuous to slight interrupted cuts in H15 applications.

CH2540 is designed to offer unparalleled performance in continuous and moderate interrupted cuts in the H25 area. CH3515 exhibits extreme toughness handling heavy interruptions in H35 operations.

Each of Seco's PCBN grades is available in common ISO insert geometries in both metric and imperial specifications. High feed wiper geometry options are available to further enhance performance.

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Solar Atmospheres

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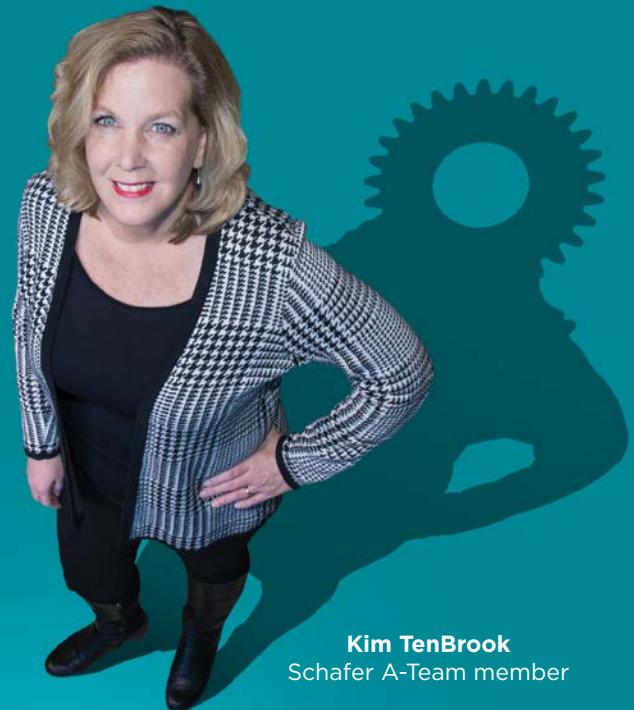
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Kevin Bekelja, vice president of operations, states, "With the new third party accreditation programs such as MedAccred gaining momentum, and knowing how detrimental high levels of humidity can be in the vacuum thermal processing of certain critical materials, we believe this venture is well worth the investment."

Both medical and aerospace contractors are continuing to demand that environmental conditions be controlled, processes validated and the risk of foreign object debris (FOD) be totally eliminated. This newly constructed environmentally controlled room will enable Solar Atmospheres of Western PA to pristinely

thermally process critical components, which in turn will add even more value to the customer's operations.

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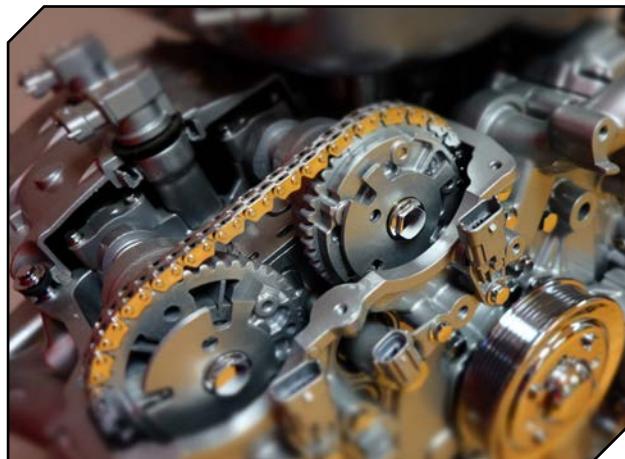


Carbodeon

IMPROVES ABRASIVE WEAR RESISTANCE WITH COMPOSITE COATING

Nanodiamond material specialist Carbodeon of Finland has worked with metal finishing specialist CCT Plating of Germany, to develop a new electroless nickel, PTFE and nanodiamond composite coating.

Electroless nickel-PTFE (EN-PTFE) coatings provide excellent anti-adhesive and low friction properties but are traditionally soft and wear quickly in abrasive conditions. By adding NanoDiamond particles to the EN-PTFE coating, Carbodeon has been able to improve the abrasive wear resistance of these coatings without compromising the sliding or release properties.



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Key performance characteristics include resistance to adhesive and abrasive wear with a Taber Wear Index 30 percent better than the equivalent EN-PTFE coatings, coatings can also be heat treated, there is no increase in wear of the counterpart, the process contains no hexavalent chromium and so is environmentally friendly and free of complex regulations and the low diamond content makes these coatings affordable and easy to apply.

Carbodeon CTO Dr. Vesa Myllymaki said: “Customer applications have multiple requirements that are a challenge for existing coatings. Through a combination of these three materials, nickel, nanodiamond and PTFE, we produce coatings which are resistant to the multiple modes of wear and failure that components and systems are subject to, while keeping the low friction and release properties of the NE-PTFE surface.”

For more information:

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Makino

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The Makino D200Z 5-axis vertical machining center answers machine challenges by combining the quickness of machine movements and accuracies with the latest software developments for high-precision, high-speed motion control. From roughing to high-speed finishing of multifaceted, contoured 3-D geometries, the D200Z boosts productivity with the most competitive processing capabilities for complex dies and molds typically found in the automotive, injection molding, packaging, medical and optical markets.

“With mold manufacturers strained for capacity and challenged to keep pace with new design changes, all while minimizing costs, the need for high-performance 5-axis machining has never been more critical,” said William Howard, vertical product line manager at Makino. “The speed and precision of the D200Z supply a unique foundation for responsive high-speed cutting and outstanding surface finishes that reduce or eliminate handwork. Its 30,000-rpm spindle and integral direct-drive table provide quick, precise, full 5-axis machining. All of this capability is tied together with Makino’s proprietary SGI.5 motion control software for the highest degree of accuracy and quality in the blends and matches of intricate surfaces and 3-D accuracy requirements typical of today’s die, mold, medical and intricate-geometry components.”

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Schafer A-Team member

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ing tool for any application depending upon hole geometry and material being machined. The COFA-C series is designed for ID and OD elliptical deburring on even and uneven bore edges in a single operation. They are ideal for automotive and aerospace applications such as forks, yokes, com-

mon rails, castings, tubes with cross bores, and other workpieces with cross bores in main bores.

The larger sized C-series consists of an independent blade that is fit into a more rigidly guided blade holder. This increases the tool life and process capability. The blade itself requires less material and can be changed quickly. Different blade sizes are available for the same tool body, allowing different cutting diameters based on a specific application.

Controlled by a simple spring, the carbide cutting blade follows the contour of the holes' surface, removing all burrs while creating an even tapered corner break. The blade does not cut as it passes through the bore and will not damage the hole's surface. The edge break begins only at the point where the blade contacts the material and then tapers the hole's edge. This allows for faster feed rates since the tool slows itself down as it enters the through hole.

This simple concept has no adjusting screws or presetting requirements. The choice of spring is typically determined by the material being machined. Blades are available for cutting front and back or back cutting only. C-series tooling is available in common sizes from 6-26 mm (.236-1.024 inches).

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