EMAG news

Nº29

SCHERER · KOEPFER · RICHARDON · ELDEC · LASER TEC · REINECKER · KARSTENS · KOPP · NAXOS-UNION · WEISS · ECM

EMAG VIDEO

Dive into why Humbel chose the VL 4 from EMAG.

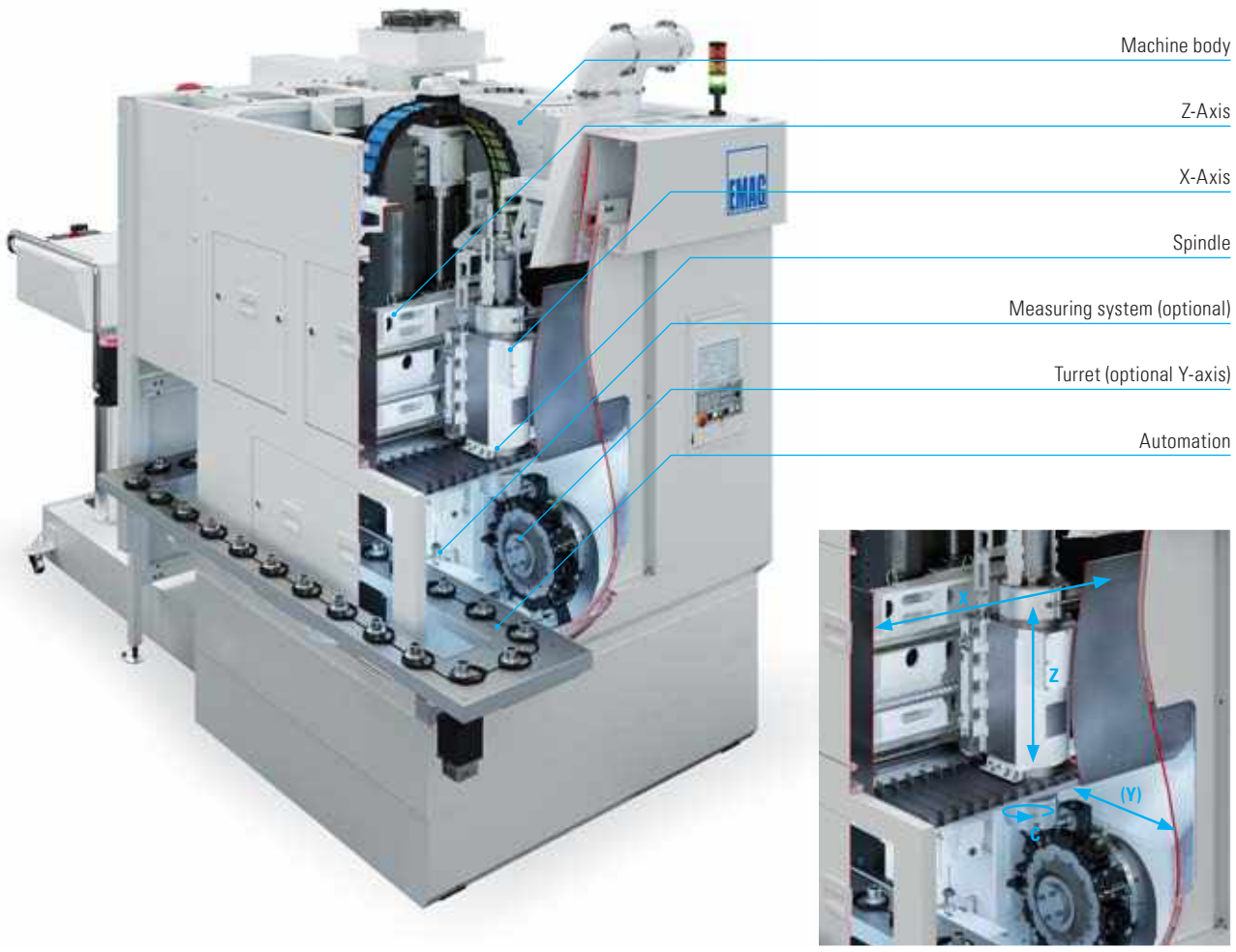
VL SERIES: NOT JUST FOR LARGE-SCALE PRODUCTION

Two examples for using vertical pick-up turning machines for small production runs

WKT Technische Produkte GmbH, located in Rimback, Hesse, Germany provides its customers with a wide range of services. From installation work, fitting and structural steelwork for private customers, to specialized mechanical engineering and the production of precision parts for industrial companies. WKT manufactures a wide range of workpieces for customers from the most diverse sectors, from mechanical engineering, to the energy industry. From the complete machining of sawn parts and castings, to the finishing of flame-cut parts. Batch sizes range from 10 to 3,000, and part diameters are between 130 – 360 mm (5 – 14 in). The pick-up automation of the machine delivers significant benefits in terms of productivity. For parts with longer cycle times, the machine runs completely autonomously after the parts have been loaded into the parts storage area so that personnel can take care of other tasks. This is not possible with manually loaded horizontal turning machines that require the full attention of the attendant all day.

Quality is particularly important to Humbel Gear Technology, located in Switzerland. The gears and gearboxes developed and produced by Humbel are used for a variety of things, including in motorsports or as prototypes for the development of electric motors – both extremely demanding applications that require smaller production runs. Only 50 – 200 flange parts are soft machined on a VL 4 at Humbel before the component is changed. The main reason for purchasing the VL 4 was the integrated pick-up automation and the extremely high machining quality. The integrated automation allows for increased productivity, even on small production runs. Ultimately, once the machine has been set-up, the entire process requires very little from personnel and is extremely reliable. Another benefit is the simple design of EMAG's automation solution, which differs from the complicated solutions offered by other suppliers, making them more susceptible to errors.

AVAILABLE CONTROL SYSTEMS: SIEMENS 840 D SL OR FANUC 32I



SERIES

VL

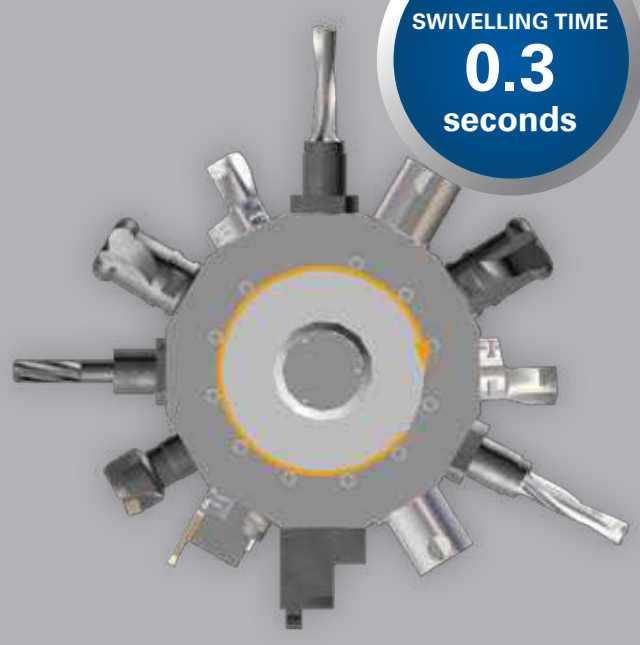
THE BENEFITS OF THE VL SERIES

- Consistent, vertically modeled product families with a modular design
- Direct position measuring systems are included on all VL machines
- Perfect for large or small runs, and even mass production
- Every machine features the full range of automation and handling technologies
- Simple, automated linking of multiple machines made possible by uniform automation levels
- Ideal for operating multiple machines

THE EMAG TURRET

- **Fast, with zero play and wear** – The EMAG turret features a direct drive unit (torque motor) for its swivelling movement
- **Precise** – Thermal stability is ensured using a cooling system controlled by the ambient temperature
- **Flexible** – The turret has space for twelve tools. Driven tools can be used in all tool stations

TURRET SWIVELLING TIME 0.3 seconds



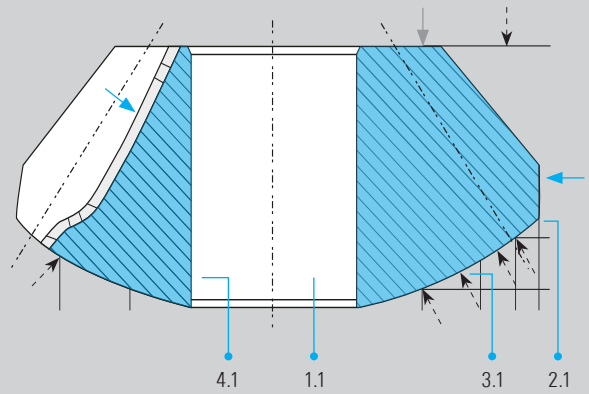
VL 1 TWIN:

LOW COST MANUFACTURING FOR A LARGE QUANTITY OF BEVEL GEARS

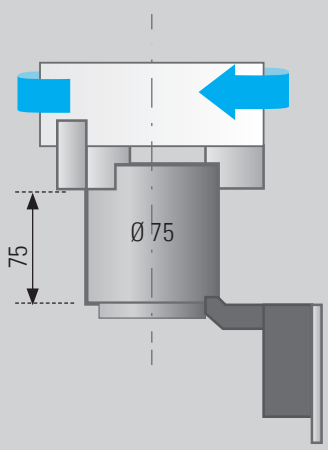
The EMAG VL 1 TWIN is perfect for the turning and drilling of bevel gears. This vertical turning machine has two pick-up spindles that can machine bevel gears up to 75 mm (3 in) in diameter, simultaneously.

The systems high speed production and small footprint are guaranteed to minimize the cost per piece, while the robot cell and tilting table make it simple to load and unload. Whether it is for soft or hard machining, the VL 1 TWIN from EMAG is the perfect fit, and can reduce costs by simultaneously machining parts. To increase the production volume even more, EMAG developers can combine the VL 1 TWIN with a powerful robot cell and tilting table.

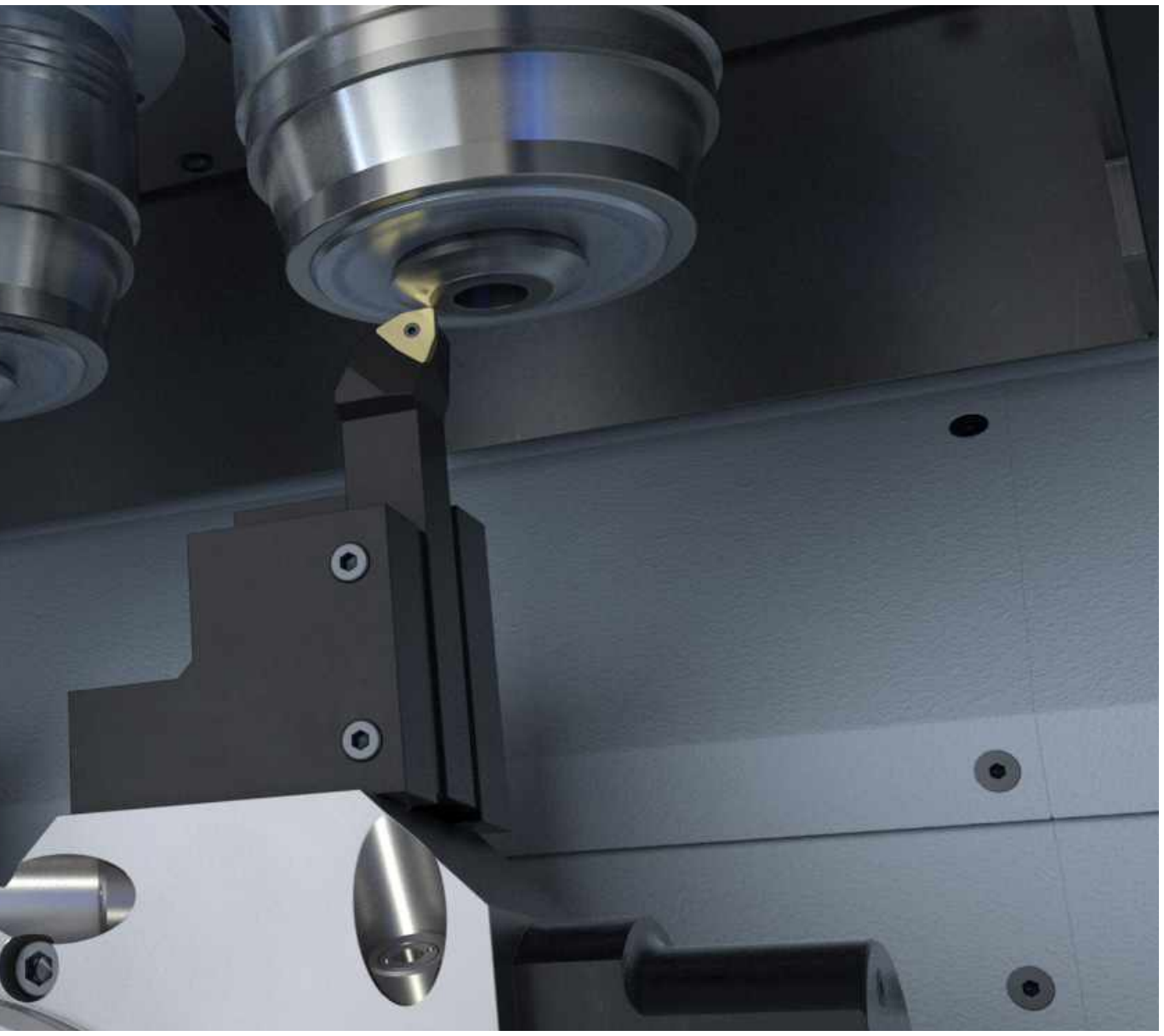
Integrated robot cell provides automation

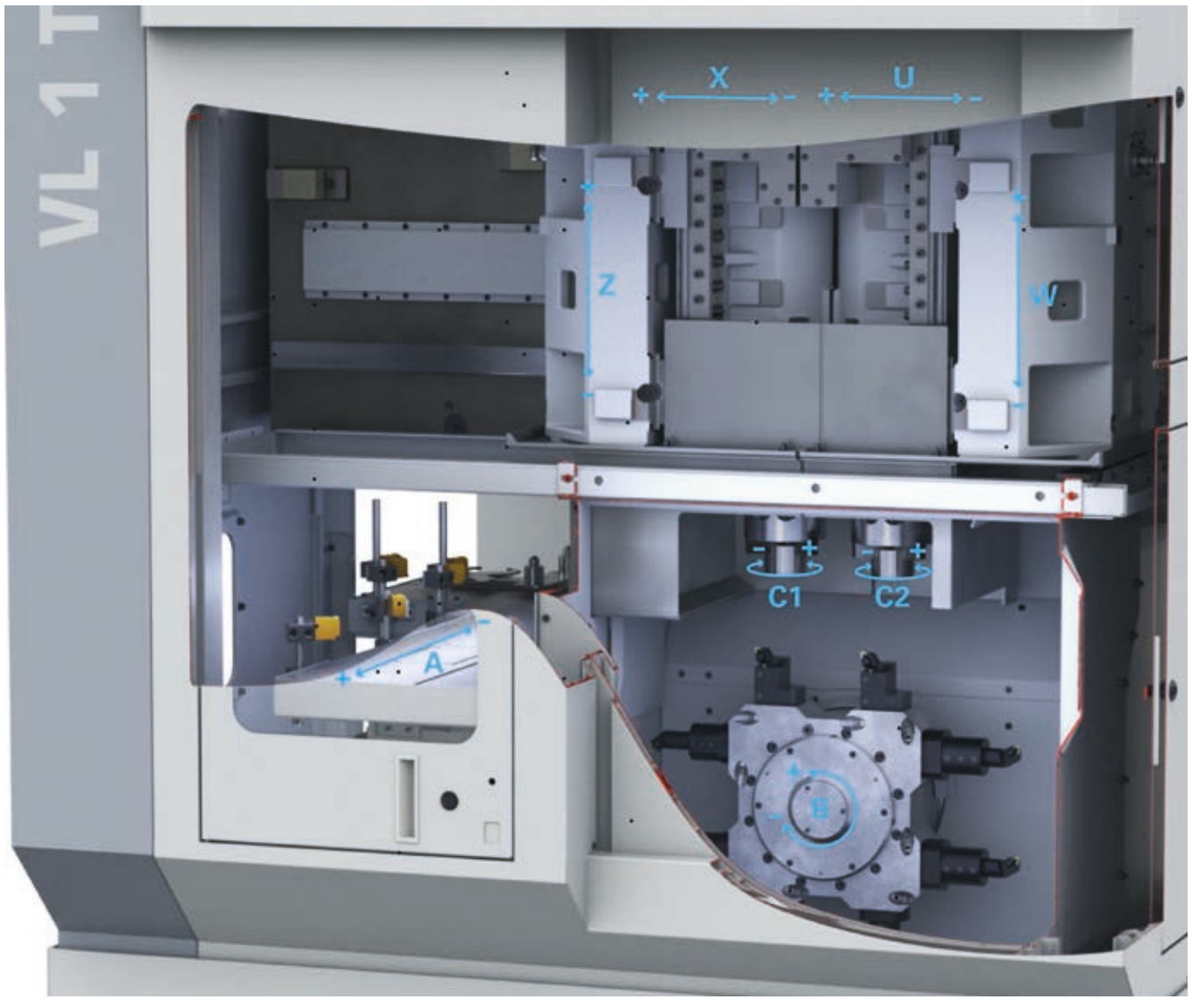


- 1.1 Central drilling
- 2.1 External longitudinal turning of spherical cap
- 3.1 Turning the external contours of spherical cap
- 4.1 Internal longitudinal turning



Workpiece	Differential pinion
Material	21NiCrMo 2
Machine	VL 1 TWIN





WORKPIECES

Cam

Planetary gear

Bevel gear

TWIN VL 1

HIGH SPEED LINEAR MOTOR

BENEFITS AT A GLANCE

- Fast simultaneous machining of two identical bevel gears
- Linear drive in the X-axis for maximum dynamics
- Integrated automation
- Robot loading for even shorter cycle times
- Excellent accessibility to the machining area and service units
- Small footprint
- Optional: probe outside the machining area
- Wide range of components up to 75 mm (3 in) in diameter

TECHNICAL DATA

	VL 1 TWIN
Workpiece diameter, max.	75 mm 3 in
Chuck diameter	140 mm 6 in
Swing diameter	160 mm 6 in
Workpiece length, max.	75 mm 3 in
Workpiece weight	1 kg 2 lbs
Travel distances, X/Z	600 / 200 mm 24 / 8 in
Main spindle	
» Power rating, 40%/100%	13/11.7 kW 17 / 16 hp
» Torque, 40%/100%	113/88 Nm 83 / 65 ft-lbs
» Speed, max.	6,000 rpm
Rapid-traverse rate, X/Z	60/30 m/min 197 / 98 ft/min
Tool stations	2 x 4 – VDI30/BMT 45
CNC controller	Fanuc 31i with Manual Guide i

EMAG VIDEO

Check out the complete machine design in this animated video.

VT SERIES:

MAXIMUM PERFORMANCE FOR SHAFT PRODUCTION

Scroll-free turning on machines in EMAG's VT series

Scroll-free turning has been a primary technology used on a number of different projects for over 10 years at EMAG. With the VT series, EMAG has designed a platform that is perfectly equipped for this technology. This includes the machines mechanical systems and tool turrets, as well as the parameterization of the indexing axis and its adjustment by the control system.

Scroll-free turning is the perfect technology for the hard machining of bearing seats, which are often required for the components listed here. The technology delivers the benefit of very short cycle times (up to 10 times faster than grinding or longitudinal turning, corner radius of 0.8 mm, feed of 0.15 – 1.5 mm to produce surface quality of Rz 6.3).

Additionally, implementing scroll-free turning achieves better tool service lives because the process uses the entire cutting blade. This leads to a positive cascade effect for all of the processes manufacturing costs. In addition to reducing change costs due to longer service lives (and intervention times for the blades), the machine costs are also reduced due to shorter cycle times.

» TRACKMOTION AUTOMATION

The VT Series can be linked perfectly using EMAG's TrackMotion automation system.

» EMAG TOOL TURRET

The VT-series features two of EMAG's own tool turrets. Each turret has 11 tool positions + a tool gripper for loading and unloading, driven tools or a Y-axis are also possible.

» DIRECT POSITION MEASURING SYSTEMS

Glass scales are included on all linear axes achieving maximum precision.

WORKPIECES

» INTEGRATED PICK-UP AUTOMATION

The VT-series machines automatically load workpieces from integrated storage areas for raw and finished parts using workpiece grippers in the turret.

» 4-AXIS MACHINING

By using both tool turrets, machining can be performed on both sides of the machine, significantly reducing machining times.

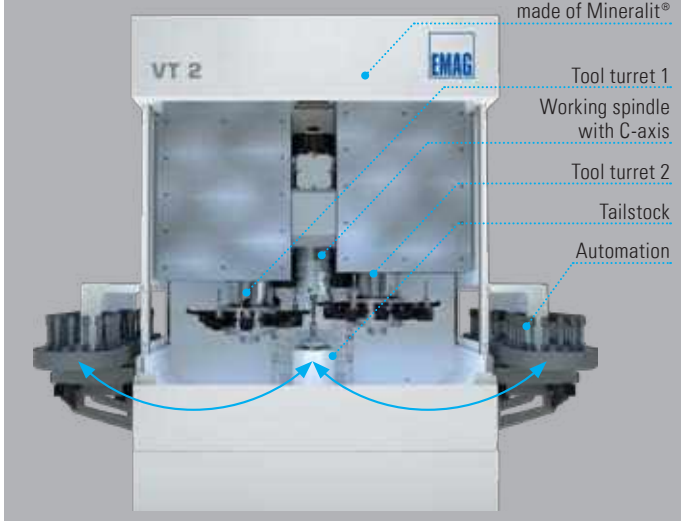
EMAG VIDEO

Explore the complete machine design with this animation.

SERIES VT

THINK VERTICAL:

Detailed description of VT-series pick-up turning machines.

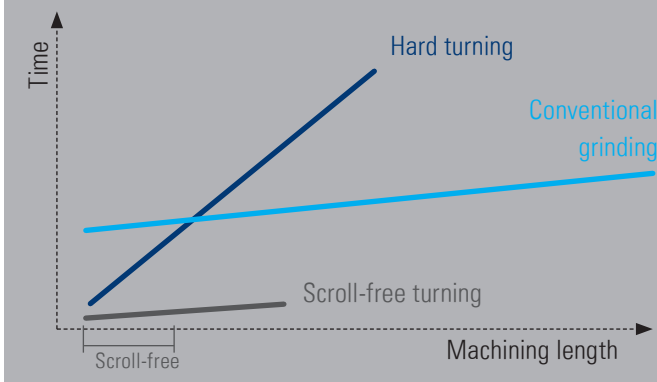


AUTOMATION SEQUENCE:

The gripper in turret 1 grabs the workpiece from the raw part storage area and transports it to the main spindle/ tailstock. Simultaneously, the gripper in turret 2 will move the machined workpiece from the main spindle/tailstock to the finished parts storage area.

COMPARISON OF SCROLL-FREE TURNING, HARD TURNING, & GRINDING:

Scroll-free turning is used for dry hard machining and is up to 10 times faster than grinding.



TECHNICAL DATA

	VT 2	VT 4
Chuck diameter	160 mm 6 in	250 mm 10 in
Swing diameter	210 mm 8 in	270 mm 11 in
Workpiece diameter	100 mm 4 in	200 mm 8 in
Workpiece gripper diameter, max.	63 mm 2 in	90 mm 3 in
Workpiece length, max.	400 mm 16 in	630 mm 25 in
X-axis travel	340 mm 14 in	395 mm 15 in
Z-axis travel	625 mm 25 in	810 mm 32 in
Y-axis travel, optional	±25 mm 1 in	±25 mm 1 in
Main spindle		
» Power rating 40%/100%	17.9/14.1 kW 24 / 19 hp	32.4/26.4 kW 43 / 35 hp
» Torque 40%/100%	142/90 Nm 105 / 66 ft-lb	250/200 Nm 184 / 148 ft-lb
» Speed, max.	6,000 rpm	4,500 rpm
Turret tool positions	2 x 11 (2 x 1 gripper)	2 x 11 (2 x 1 gripper)
Rapid-traverse rate, X/Y/Z	30/15/30 m/min 98/49/98 ft/min	30/15/30 m/min 98/49/98 ft/min
Speed of driven tools, max.	12,000 rpm	9,600 rpm
Torque of driven tools 30%/100%	30/16 Nm 22/12 ft-lb	56/33 Nm 41/24 ft-lb

DOOR OPENING SYSTEMS:
HIGH PERFORMANCE GEAR SOLUTIONS

Production of small gears with a wide range of parts leads to increasing demands for gear hobbing machines.

EMAG KOEPFER gear cutting machines are primarily used for machining workpieces that are changed frequently. The automatic loading system, as well as the essential loading and unloading portal ensures that this does not have a negative impact on productivity.

ELECTRIC MOTOR

Worm hobbing

GEAR WHEELS

Gear hobbing for straight and angled gear cutting in metal and plastic

HLC 150 H

An all-round solution in every respect

Covering a unique spectrum of production applications, the HLC 150 H stands out because of the number of innovations included. This machine's ability to hob either straight, angled, or worm gear profiles on a wide range of geometries (short gears or long shafts with gear profiles), puts all of EMAG KOEPFER's expertise at the user's disposal. To compliment this machine's abilities, a device for chamfering and deburring of components during loading and unloading, without interrupting operation is also included. Together, these features allow for the perfect gear-cutting solution with short cycle times and minimized costs.

HLC 150 H

Module, max.	3
Workpiece diameter, max.	150 mm 6 in
Workpiece length, max.	500 mm 20 in
Angle of inclination	-45/+135°
Tool diameter, max.	120 mm 5 in
Shift distance	220 mm 9 in
Speed of gear hobbing head, max.	4.000 (12.000) 1/min
Power rating, 100% duty cycle	28 kW 38 hp
Torque, 100% duty cycle	140 Nm 103 ft-lbs

K 160

Horizontal gear hobbing machine for very short machining cycles

This high performance gear cutter can machine a large range of workpieces, from armature shafts and pinions, gear wheels, planetary gears and worm gear wheels to transmission shafts measuring up to 300 mm (12 in) in length.

HOME AUTOMATION

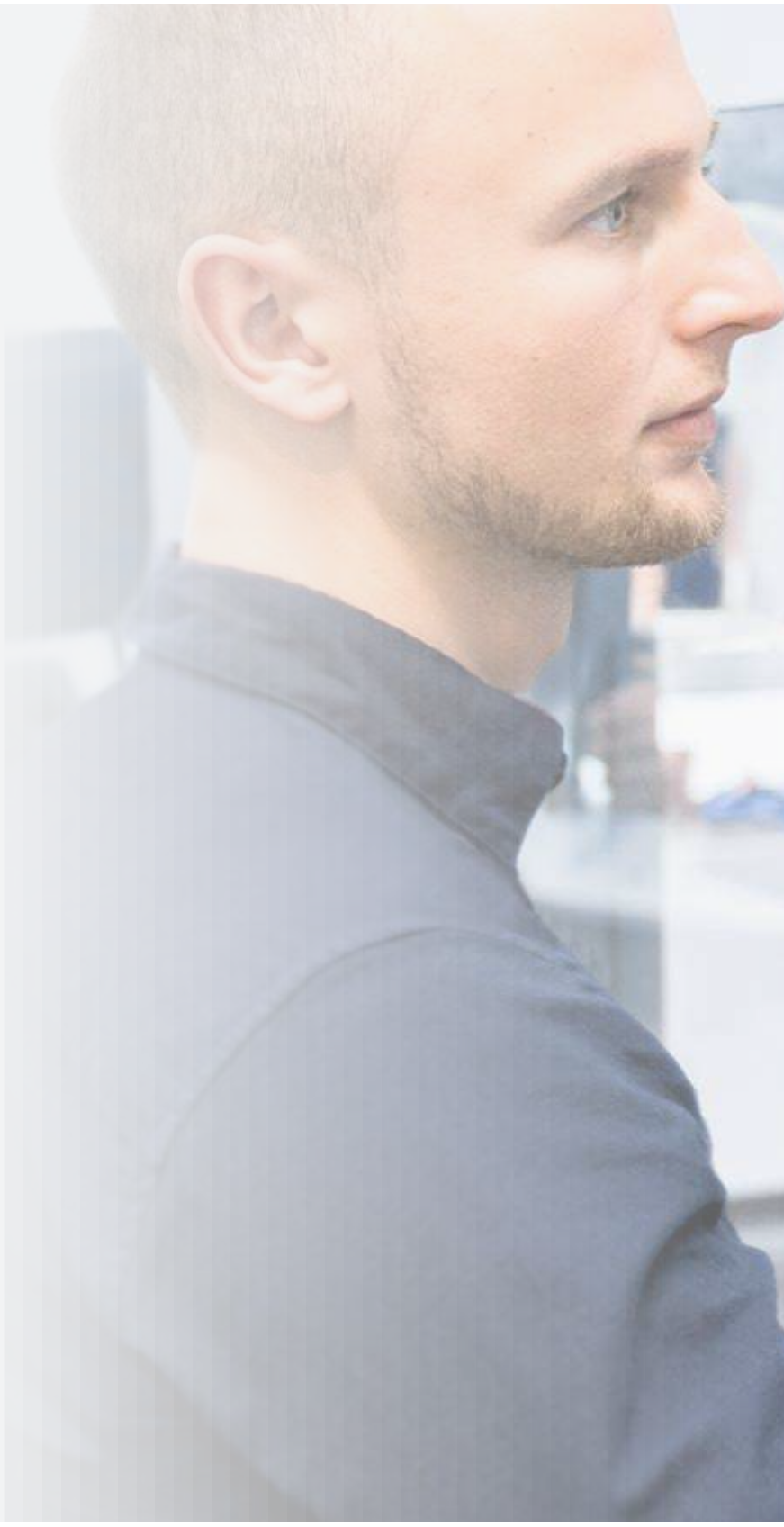
From automated doors and windows, to shading systems, gates and garage door opening systems – EMAG supplies a wide range of technology for the production of small gearboxes. EMAG provides support for the process development from single machines, to fully automated complete systems.

K 160

Module, max.	2.5
Workpiece diameter, max.	100 mm 4 in
Workpiece length, max.	300 mm 12 in
Cutter diameter, max.	63 mm 3 in
Cutting length, max.	200 mm 8 in
Shift distance, max.	160 mm 6 in

Even non-circular gear systems can be manufactured on EMAG KOEPFER gear hobbing machines.

EDNA:
THE FACTORY OF THE FUTURE IS CONNECTED



Our philosophy for digitalization here at EMAG is simple: make life easier for our customers.

Whether you want to visualize production figures, improve shifts or avoid machine downtimes, we have the perfect solution!

EDNA, or EMAG DNA, is a modular software ecosystem that develops control interfaces for the future by implementing data-driven and value added solutions. We use EDNA information to inform and lead all of our technological developments.

» Collecting and processing data
EDNA IoT CORE + EDNA CORTEX

Make your machine networkable

The EDNA IoT Core is an industry PC that connects your machine control system and other sensors located in the machine to your corporate network. The software for collecting, processing and supplying the data is called EDNA CORTEX. Both blocks together create the foundation for generating value-added data from your machine.

» Visualization & analysis
EDNA LIFELINE DASHBOARDS

Everything at a glance

The LIFELINE DASHBOARDS are used to visualize and analyze the processes taking place in your machine or production line. This allows you to improve your processes and stay on top of things – using either a mobile device or computer.

» Proactive maintenance
Health Check + NEURON 3DG

Automated condition monitoring and proactive maintenance

EDNA HEALTH CHECK assesses the current condition of your machine by analyzing measurements taken to record regular vibration. To perform this health check, the system will analyze data from all possible measurement conversion sensors (Neuron 3DG). By combining the expertise from the EMAG experts, and the machine systems, we can provide some extensive insight into the wear condition for a variety of machine parts.

EDNA

reddot award 2020
best of the best

NEW EDNA HMI CONTROL PANEL ALLOWS YOU TO CONTROL MULTIPLE MACHINES

The new EDNA HMI control panel is a modern HMI that was developed using input from a number of machine operators that were focused on making the system intuitive and simple to use. Additionally, this new control panel will be the base for integrating your existing portfolio of software tools and Industry 4.0 applications. This means that the user will be able to control everything with just one single control panel.

HCM 110: MACHINING CV JOINT CAGES

Flexible manufacturing concept for window milling

EMAG can now supply flexible manufacturing solutions for the window milling of CV joint cages with its HCM 110 twin spindle milling machine. This system will significantly reduce running costs compared to traditional grinding manufacturing solutions.

Hard and soft milling in one machine configuration

The HCM 110 milling machine is designed for the particular production of ball bearing cages, and delivers high productivity because of its shuttle or DUO principle. With this system, hard or soft milling options are available for bearing cages, and the process can be performed dry, using KSS or MQL. To maximize component handling speed, a robot has been integrated into the system.

OP 10 / OP 20 operations have been designed to maximize the amount of flexibility. Instead of 4-axis simultaneous machining both using milling spindles, a separate operation is performed by each spindle. This means that bearing cages with different radii or window designs can be manufactured in a single machine in two clamping operations.

HCM 110

BENEFITS AT A GLANCE

- Hard and soft milling operations on one machine
- Modern, flexible, and highly productive machine concept
- Reduces running costs compared to grinding applications
- Very short cycle times
- Logical development of technology competence
- Global service network with propeller shaft specialists
- The machine can be designed with no hydraulics
- Three modes of operation: DUO, shuttle, and OP 10/20

SHUTTLE PRINCIPLE FOR VERY SHORT CYCLE TIMES

Using the shuttle principle, both milling spindles will machine one bearing cage simultaneously, alternating spindles. During this process, the other workpiece spindle is loaded and unloaded outside of the machining area, making the shuttle principle the method with the shortest cycle time. During the DUO principle, the left-hand milling spindle only machines the bearing cage on the left side of the workpiece spindle, and the right-hand milling spindle machines the right side of the bearing cage. A third method is required for bearing cages that have two different radii or window designs, and therefore must be machined with two different tools. This is known as an OP 10 / OP 20 operation.

TECHNICAL DATA

	HCM 110
Workpiece diameter, max.	110 mm 4 in
Workpiece diameter, min	30 mm 1 in
Workpiece height, max.	60 mm 2 in
Workpiece height, min.	15 mm 0.6 in
Workpiece weight, max	1 kg 2 lbs
Spindle flange to DIN 55026	Size 5
Machine weight	8 t 18,000 lbs

WORKPIECE MANUFACTURING PROCESS

Typical process

Soft turning of internal/external diameter	Punching or soft milling of windows	Hardening	Grinding of internal/external diameter	Hard milling of windows
MODULAR STANDARD » VL 3 DUO » VL 2 » VL 100		» Through carburization	» Not from EMAG	
CUSTOMIZED » VLC 150 DUO » VLC 100	» **HCM 110**		» Centerless internal/ external diameter	» **HCM 110**

VLC 350 GT:
TURNING AND GRINDING MACHINE FOR THE PRODUCTION OF GEARBOX PARTS FOR COMMERCIAL VEHICLES

EMAG is launching the VLC 350 GT turning and grinding machine, expanding on the VLC-GT series – one of the most successful product launches in recent history.

The new VLC 350 GT is larger than the previously launched VLC 200 GT, and is designed for components with a maximum diameter of 350 mm (14 in) – perfect for gearbox parts used in commercial vehicles. The "GT" featured in the name is an abbreviation that stands for Grinding and Turning, and refers to the biggest strength of this machine. The combination turning and grinding processes (plus the addition of other processes) using the proven EMAG pick-up automation technology makes the system perfect for a wide variety of manufacturing solutions, covering the complete mechanical machining required for gearbox parts.

1 Loading and unloading

The pick-up spindle loads and unloads workpieces from the shuttle or conveyor belt.

2 Turning

Flat surfaces are typically turned to finish. Boreholes and synchronous tapers are pre-turned depending on the allowance.

3 Grinding

The boreholes and synchronous tapers are fully ground. Using the B-axis makes it possible to grind internal tapers with a cylindrical grinding tool.

4 Measuring system

A measuring sensor, used to provide intermediate measurements during a cycle or after tool change, is located outside the machining area and is protected from chips.

VLC 350 GT

MACHINE HIGHLIGHTS

- The combination of hard turning, external grinding, and internal grinding enables the machine to complete gears in a single clamping cycle.
- Additional technologies can be integrated, making the machine extremely flexible.
- The separate dressing spindle means that rotating dressing tools can be used.
- The large front service door provides easy access to the machining area, making setting and tooling work easy.
- The turret can be supplemented with an optional Y-axis, which make additional processes such as powered tools milling longitudinal grooves possible.
- An additional optional B-axis makes even more processes possible.

APPLICATION GEAR WHEEL MACHINING

Process sequence:

1 Flat turning

2 Flat turning

3 Borehole pre-turning

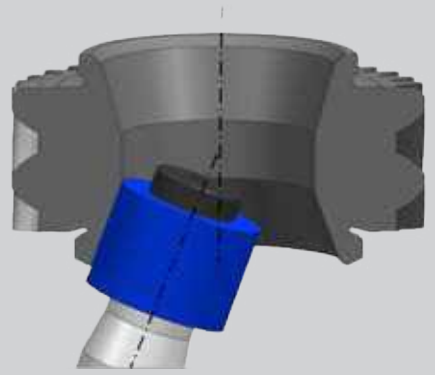
4 Synchronous taper pre-turning

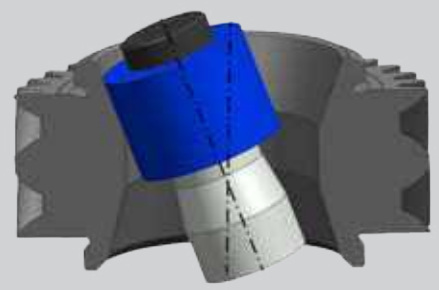
5 Borehole finish grinding

6 Synchronous taper finish grinding

APPLICATION TAPER MACHINING

If the optional B-axis is used,a cylindrical grinding tool can be used to grind tapers.





TECHNICAL DATA

	VLC 350 GT
Workpiece diameter, max.	350 mm 14 in
Chuck diameter	400 mm 16 in
Swing diameter	400 mm 16 in
Workpiece length, max.	200 mm 8 in
Travel distance X (total stroke from pick-up to turret) / Z	2,390 / 350 mm 94 / 14 in

EMAG BLOG

Interview with Marina Manger about the development of the VLC 350 GT

W 11 CNC:

CNC CYLINDRICAL GRINDING MACHINE FOR SINGLE PARTS, PROTOTYPES, OR SMALL PRODUCTION RUNS

Since last year, the EMAG Group has supplemented its highly productive, high precision cylindrical grinding products with the grinding technology of CNC-Technik Weiss.

EMAG has gone in a different direction with the launch of its new W 11 CNC cylindrical grinding machine, which appeals to manufacturers of single parts, prototypes or small production runs. The machine model can produce workpieces from 1 – 400 mm (0.04 – 16 in) in diameter, with a length of 5 – 1,000 mm (0.2 – 40 in). It has an infinitely adjustable B-axis, which means that the grinding wheel can be swung, very precisely, into the work position, or bevels can be ground using piercing longitudinal grinding with gauge accuracy.

LIVE AT GrindTec

RETROFITTING KARSTENS MACHINES

Benefit from our decades of experience in retrofitting KARSTENS machines. We can provide you with the assurance that your machine will benefit from the same high quality standards during the retrofit, as you would receive on a new machine. Depending on the machine design, you can save up to 40% by retrofitting a machine as opposed to buying new. One of the real highlights of this program is our exchange concept. We will work on retrofitting a used machine similar to yours; you will continue to work on your old machine until the very last day when we will replace your old machine with the completely updated used machine.

If you are interested, we can provide attractive quotes featuring modern technology at a fixed price with a 12-month warranty. If your machine configuration allows it, we will upgrade with completely new technologies, control systems and drive units.

Before

After

GrindTec 2020

10-13.11.2020
Hall 3,
Booth 3002

W 11 CNC

BENEFITS AT A GLANCE

- Extremely flexible
- Very easy set-up
- Simple and user-friendly
- Quick-action clamps on the assemblies for retooling
- Very precise supply and trueness to size within 0.001 mm
- Easy operator accessibility

TECHNICAL DATA

	W 11 CNC
Center length	650 / 1,000 mm 26 / 39 inch
Center height	200 mm 8 inch
External grinding diameter	1 / 400 mm 0 / 16 inch
Workpiece floating MK4, max.	100 kg 221 lb
Workpiece weight between centers, max.	250 kg 551 lb

Touchscreen control desk in manual mode for 2 in 1 automatic and conventional cylindrical grinding.

AN ALL-ROUND SUCCESS STORY

Specialized mechanical engineering, retrofitting, servicing, repairs, and advice about grinding – CNC-Technik Weiss GmbH is an innovative full service partner for cylindrical grinding.

In 2019, CNC-Technik Weiss became part of the EMAG Group, opening up new opportunities in terms of development, construction, sales and service for Weiss products.

EMAG ELDEC MIND-L 1000:
MAXIMUM PRECISION FOR MORE WORKPIECES

The High Precision Tool System (HPTS) signals EMAG eldec's entry into a new dimension of induction hardening:
The combination of 3D design and simulation, 3D SLM printed inductors, 3D QS and 3D coil connect means that setting and retooling times can be radically reduced. Reduction in wait times allows for more workpieces to be heat treated.

Worm gear

Sprocket

Steering pinion

Gear wheel

Flange

Rotor shaft

Balancing shaft

Tulips

MIND-L 1000 – the new generation of vertical index disk machines for large volumes

eQC
eldec Quality Control

EMAG eldec eQC

EMAG eldec eQC is a package of different modules that build on and complement each other. By combining these modules, users are guaranteed a fully monitored process, and if applicable, the use of process and generator data in an Industry 4.0 environment.

eSM earth fault • eSM RFID • eSM coil leakage • eSM cooling ph • eSM cooling conductivity • eSM cooling flow eSM cooling temperature • eSM cooling water level • eSC cooling water level • ePM energy • ePM flux • eDH recording eDH supply

3D Design · 3D Manufacturing · 3D Q-Control · 3D Coil Connect
eldec EMAG HPTS HIGH PRECISION TOOL SYSTEM

HPTS

The combination of inductors designed using 3D CAD, modeled with FEM, and manufactured using 3D SLM, 3D quality control and 3D "Coil Connect" inductor mounting, which will significantly reduce the new HPTS (High Precision Tool System) set-up and tooling times.

EDNA
EMAG HMI 4.0

EDNA, EMAG DNA

It is an option to have the MIND-L 1000 fitted with an EDNA HMI, a modern touchscreen with an award-winning graphical interface. The EDNA user interface allows for the hardening process to be configured quickly and easily, with easy to follow graphics and automatic NC code generation.

MIND-L 1000

If you are looking for precision and speed when you're hardening parts, the EMAG MIND-L 1000 from eldec is perfect for you. The precise generator control system combined with precise axis positioning and enhanced rigidity provides the base for fast, accurate hardening processes. The standard index disk ensures fast cycle times.

BENEFITS AT A GLANCE

- Modular element system creates flexibility for hardening shaft and chucked parts
- Excellent accessibility for setting, cleaning, and maintenance work
- Maximum process reliability through high precision access positioning and generator capacity, combined with enhanced rigidity
- Index disk standard, full focus on multiple processes during the machining time
- Significant reduction in time required for setting, retooling and replacement of inductor using HPTS (High Precision Tool System)
- eQC (eldec Quality Control) is the most comprehensive process and machine data recording system on the market. It provides a continuous stream of information about the process and machine status, and allows for use of this data in the I4.0 environment
- Two control system concepts to choose from: SIEMENS 840 D SL and the new EMAG HMI 4.0
- Integrated automation concepts
- Price reduction for almost all configurations (compared to the predecessor series)

TECHNICAL DATA

	MIND-L 1000
Workpiece length, max.	800 mm 31 in
Workpiece diameter single/ double spindle, max.	200/160 mm 8 / 6 in
Workpiece weight per spindle, max.	10 kg 22 lbs
Generator capacity	10 – 1,000 KW 13 - 1,341 hp LF, MF, HF, DFG, SDF®

Laser Welding

VS

In addition to laser beam welding, electron beam welding has become an established alternative to arc welding over the last few years – but what are the actual differences between these processes?

LASER WELDING

THE BENEFITS

+ Small heat influence zone due to precise energy input
+ Low thermal warpage in surrounding structure
+ Less training required

SIMPLE, SAFE machine set-up

+ The system can be set up without a laser beam (focus length = distance to lens)

NO X-RAY RADIATION

+ Components with reflective surfaces can be welded easily using pulses
+ The size of the component is irrelevant

NO VACUUM CHAMBER required

+ Flexible using fiber optic cable
+ Workpieces do not require demagnetization
+ Shorter cycle time

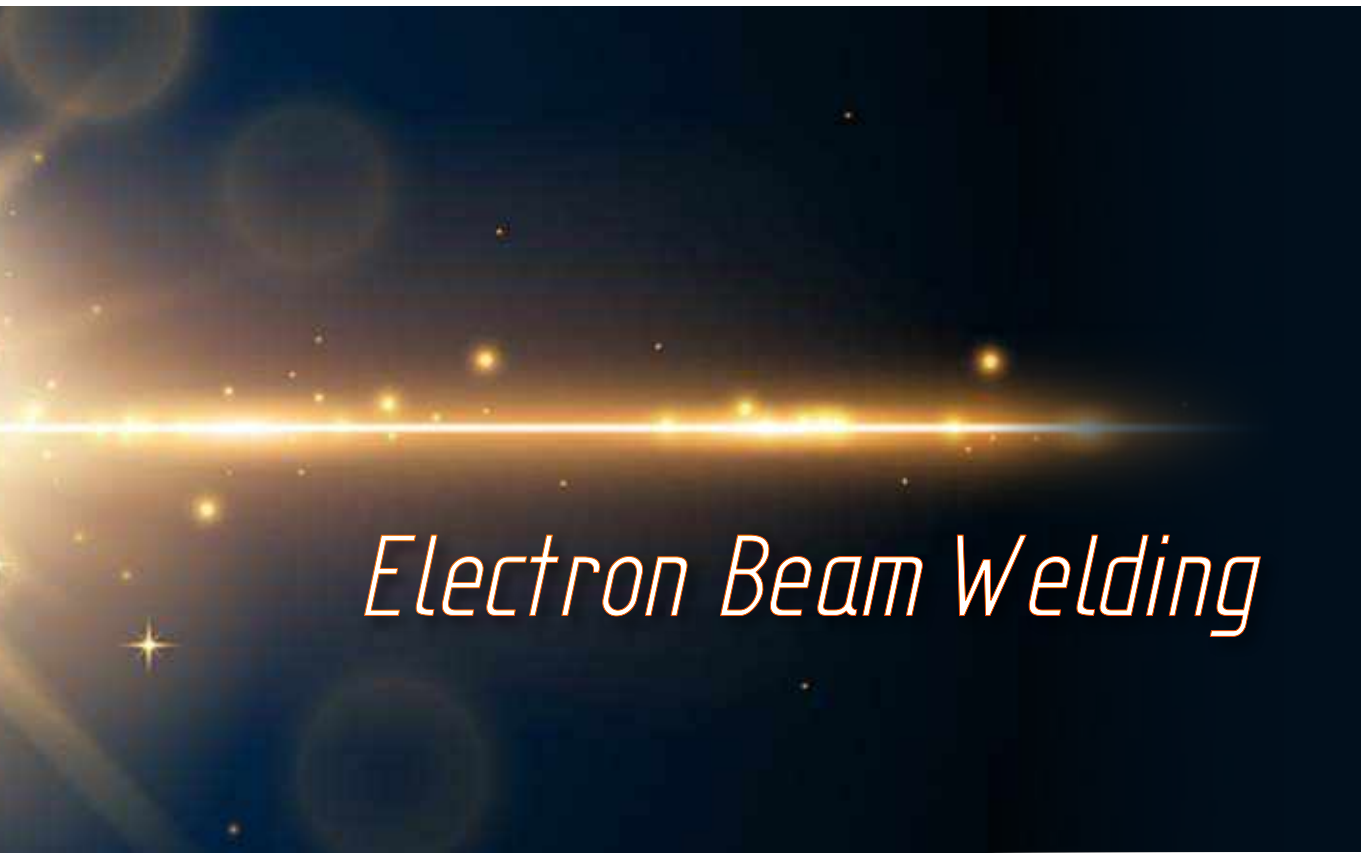
WORKPIECES

Differential

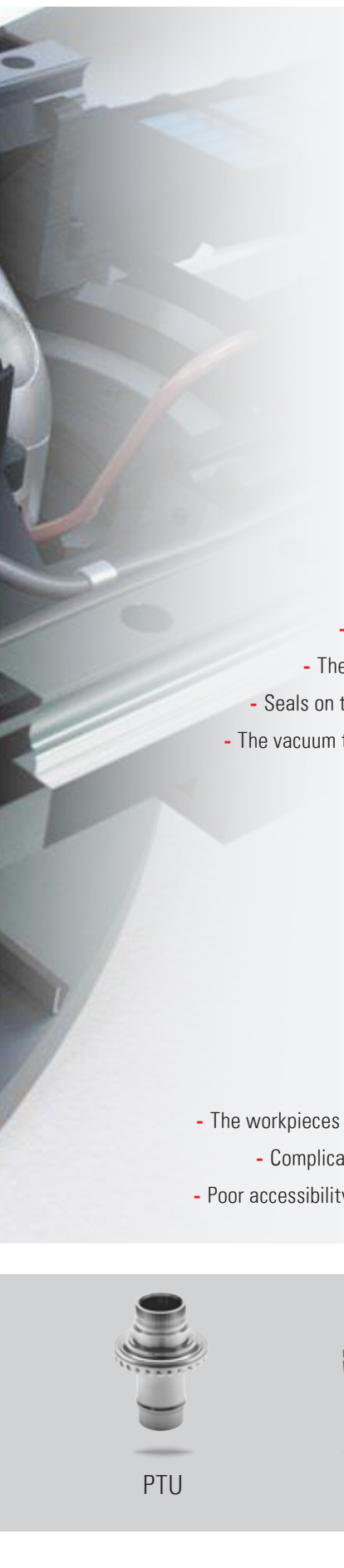
Dual mass flywheel

AT/DCT clutches

AT shaft



Electron Beam Welding



ELECTRON BEAM WELDING

THE BENEFITS

+ Good heat management and weld design
+ Welding in a vacuum produces high weld quality
+ High welding speeds using multi-beam technology

THE DRAWBACKS

WELDING IN A VACUUM

- Pumping times to establish the vacuum are included in the cycle time
- The fluctuating vacuum jeopardizes the reproducibility of the weld quality
- Seals on the vacuum chamber require continuous maintenance and replacement
- The vacuum technology requires special lubricants and area to be completely clean
- Susceptibility of the pumps

INDUSTRIAL SAFETY

- X-ray radiation is released during electron beam welding
- The workarea must be screened with lead casing

WORKPIECE HANDLING

- The workpieces must be demagnetized otherwise the electron beam may be deflected
- Complicated set-up: The system can only be set up using an ocular or a camera
- Poor accessibility: Opening the chamber means that the vacuum has to be regenerated

PTU

Gear wheel

Planetary carrier

Output shaft

BENEFITS

LASER WELDING: BENEFITS AT A GLANCE

- Low spatter laser welding
- No weld sinks or end craters
- Minimized component deformation
- Low energy consumption
- BrightLine weld technology

FACTS AND FIGURES

Compared to electron beam welding, laser welding is

20%

faster and easier to set up.

Laser welding is

25%

less susceptible to dirt.

The cycle time for laser welding is

25%

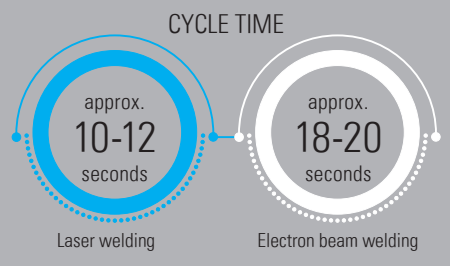
faster than electron beam welding.

20%

easier maintenance of the equipment for laser welding

EXAMPLE OF A CAR RATCHET

The vacuum time for electron beam welding is around 3-5 sec. The welding times for electron beam welding and laser welding are fairly similar.



NEW TO THE EMAG GROUP: SCHERER FEINBAU

Vertical, multifunctional, and flexible turning machines with one or two spindles

On August 1, 2020 EMAG acquired the Lower Franconian company, Scherer Feinbau based in Alzenau, Germany. Scherer Feinbau is a specialist in CNC vertical turning machines and vertical shaft turning machines.

Scherer has been developing efficient production solutions for the automotive, aerospace, mechanical engineering and metal casting industries for over 40 years – from machining and parts handling, to automation.

VDZ DUAL-SPINDLE CNC VERTICAL TURNING MACHINE

A wide variety of equipment options are available on a customized machine configuration – from the turret machine and milling spindles, to special modules for spherical turning, milling ball raceways and gear hobbing. An additional Y-axis in the main spindle that can travel 200 mm (8 in) ensures high productivity for even the most complex machining processes.

WORKPIECES

Machining examples manufactured on turning machines and shaft turning centers from Scherer Feinbau

VDZ VERTICAL SHAFT MACHINING CENTERS

For low unit cost production – reliable, efficient WDZ vertical shaft machining centers for workpieces with a maximum turning diameter of 250 – 350 mm (10 – 14 in).

EMAG

SCHERER

SCHERER EMAG FEINBAU

THE BENEFIT OF SCHERER AND EMAG

The acquisition of Scherer by EMAG is mutually beneficial for both parties. Now, EMAG and its market companies will sell Scherer's CNC vertical turning machines around the world. EMAG's global networking in the automotive industry will provide Scherer with an excellent opportunity for success in the future. The EMAG worldwide service network will also be available to all Scherer customers in the future.

For EMAG, the company has continued to extend its technological expertise with the takeover. Most importantly, the company's expertise in the machining of brake discs.

For more information, go to:
www.schererfeinbau.de

EMAG Salach GmbH

Salach
Austrasse 24
73084 Salach
Germany
Phone: +49 7162 17-0
Fax: +49 7162 17-4027
E-mail: info@salach.emag.com

Frankfurt
Martin-Behaim-Strasse 12
63263 Neu-Isenburg
Germany
Phone: +49 6102 88245-0
Fax: +49 6102 88245-412
E-mail: info@frankfurt.emag.com

Leipzig
Pittlerstraße 26
04159 Leipzig
Germany
Phone: +49 341 4666-0
Fax: +49 341 4666-2114
E-mail: info@leipzig.emag.com

Austria
Glaneckerweg 1
5400 Hallein
Austria
Phone: +43 6245 76023-0
Fax: +43 6245 76023-20
E-mail: info@austria.emag.com

Denmark
Horsvangen 31
7120 Vejle Ø
Denmark
Phone: +45 75 854854
Fax: +45 75 816276
E-mail: info@daenemark.emag.com

Sweden
Glasgatan 19B
73130 Köping
Sweden
Phone: +46 221 40305
E-mail: info@sweden.emag.com

Hungary
Gerenda 10
1163 Budapest
Hungary
Phone: +36 30 9362-416
E-mail: lbujaki@emag.com

Czech Republic
Lolkova 766
103 00 Praha 10 – Kolovraty
Czech Republic
Phone: +420 731 476070
E-mail: mdelis@emag.com

Poland
ul. Krzycka 71A / 6
53-020 Wrocław
Poland
Phone: +48 728 389 989
E-mail: info@poland.emag.com

Turkey
Sanayi Cad. No.: 44
Nish İstanbul Sitesi D Blok
D: 155 Yenibosna – Istanbul
Turkey
Phone: +90 532 694 54 44
E-mail: ckoc@emag.com

Market Companies

EUROPE

EMAG MILANO S.r.l.
Via dei Mille 31
20098 San Giuliano Milanese (Mi)
Italy
Phone: +39 02 905942-1
Fax: +39 02 905942-24
E-mail: info.milano@emag.com

EMAG MILANO S.r.l.
Succursale en France
5 Avenue de l'Europe
18150 La Guerche sur l'Aubois
France
Phone: +33 02 48 7711-00
Fax: +33 02 48 7111-29
E-mail: info.france@emag.com

EMAG MILANO S.r.l.
Sucursal en España
Pasaje Arrahona, n° 18
Polígono Industrial Santiga
08210 Barberà del Vallès (Barcelona)
Spain
Phone: +34 93 7195080
Fax: +34 93 7297107
E-mail: info.spain@emag.com

EMAG UK Ltd.
Newport Road (Newport House)
ST16 1DA Stafford
United Kingdom
Phone: +44 1902 37609-0
E-mail: info@uk.emag.com

EMAG OOO
ul. Akademika Chelomeya 3/2
117630 Moscow
Russia
Phone: +7 495 287 0960
Fax: +7 495 287 0962
E-mail: info@russia.emag.com

AMERICA

EMAG L.L.C. USA
38800 Grand River Avenue
Farmington Hills, MI 48335
USA
Phone: +1 248 477-7440
Fax: +1 248 477-7784
E-mail: info@usa.emag.com

EMAG L.L.C. USA (Charlotte)
1213 West Morehead Street
Charlotte, NC 28208
USA
Phone: +1 248 483-1392
E-mail: info@usa.emag.com

EMAG MEXICO
Maquinaria EMAG Mexico S de RL de CV
Av. Hercules 301 Nave 1
Poligono Empresarial Santa Rosa
76220 Santa Rosa Jauregui, Querétaro
Mexico
Phone: +52 442 291 1552
E-mail: info.mexico@emag.com

EMAG DO BRASIL
Edifício Neo Corporate Offices,
CJ 1503
Rua Enxovia, 472
04711-030 São Paulo SP
Brazil
Phone: +55 11 38370145
Fax: +55 11 38370145
E-mail: info@brasil.emag.com

ASIA

EMAG (China) Machinery Co., Ltd.
Sino-German Advanced Manufacturing Technology
International Innovation park Building 2, No. 101,
Chen Men Jing Road
215400 Taicang
Jiangsu, China
Phone: +86 512 5357-4098
Fax: +86 512 5357-5399
E-mail: info@emag-china.com

EMAG (Chongqing)
Intelligent Technical Co., Ltd
Building 7, No. 24 Fangzheng Avenue
Beibei District
Chongqing 400714
China
Phone: +86 23 49783399
Fax: +86 23 49783388
E-mail: info@emag-china.com

TAKAMAZ EMAG Ltd.
1-8 Asahigaoka Hakusan-City
Ishikawa Japan, 924-0004
Japan
Phone: +81 76 274-1409
Fax: +81 76 274-8530
E-mail: info@takamaz.emag.com

EMAG INDIA Pvt. Ltd.
Technology Centre
No. 17/G/46-3, Industrial Suburb
2nd Stage, Yeshwantpur
Bengaluru – 560 022
India
Phone: +91 80 50050163
E-mail: info@india.emag.com

EMAG KOREA Ltd.
Rm204, Biz center, SKn Technopark
124 Sagimakgol-ro, Sangdaewon-dong
Jungwon-gu, Seongnam City
Gyeonggi-do, 462-721
South Korea
Phone: +82 31 776-4415
Fax: +82 31 776-4419
E-mail: info@korea.emag.com

SCHERER FEINBAU · KOEPFER · RICHARDON · eldec · LASER TEC · REINECKER · KARSTENS · KOPP · NAXOS-UNION · WEISS · ECM