

matec machines - as individual as your fingerprint



Our topics:

- **FINGERPRINT**
matec quality assurance effectively increases machine availability in your production
- Automation reduces costs. Innovative high-quality machine design
matec-30 PP with pallet changer
- Unmatched flexibility:
Customized HV machines boost the competitiveness of our customers



EDITORIAL

FINGERPRINT

Dear customers,

after one hundred days in office politicians are often asked for a first summary of their activities. I will meet also such a demand with a few words on the status of matec. The company matec was founded more than 20 years ago with the approach to manufacture flexible, highly precise and at the same time durable machines for the application in all sectors. Today matec is a globally active, innovative company with highly productive machine concepts that have a decisive advantage compared to others. The technological options of our matec modular component system transform the basic machines into highly productive machine concepts – some of them in the standard range, the majority custom-tailored to create highly individual manufacturing solutions. Thus for each customer an ordered matec machine is

as individual as his fingerprint

Based on our machine series, our engineers can design a multitude of manufacturing solutions, customized to the special task of each customer. In a way each customer-specific solution is "standard" for us, because we design each machine using the components from our intelligent modular system in an excellent cost-to-benefit ratio of 80%. That way matec machining centers meet highest quality standards and still have an excellent price/performance ratio. Our quality assurance FINGERPRINT ensures, that the exceptional quality of each matec machine is maintained for a long time.

In the future we will further develop the innovative approach of our machine concept, with a clear focus on process integration. Our flexible HV series is unmatched in this respect. You can find examples in this issue of the matec News.

Cordially

Armin Wunderlich

Managing Director matec Maschinenbau GmbH

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Special Automation

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The matec quality assurance FINGERPRINT

For us our customers' satisfaction always comes first. From the planning of a machine tool concept, which is exactly customized to the requirements of the customer to our excellent after-sales service our mechanical and application engineers master any special task.

Machine condition analysis

In order to permanently and consistently secure the quality of our machines, matec has developed a quality assurance procedure which we call FINGERPRINT. FINGERPRINT is applied on the whole manufacturing process: from planning, design, construction and customization of a machine to delivery, installation and initial operation.

In the beginning all reference points of a machine are defined, listed and optimized. This perfect status is the so-called FINGERPRINT of the machine. It can be referred to at any time for inspections and problem analysis.

The FINGERPRINT analysis is perfected during machine acceptance in the matec plant and once again after installation and initial operation in the customer's production. The reference points which are taken on those occasions will serve as a basis for different applications such as optimisation in machining processes or service work during the whole life-cycle of a machine.

Predictive maintenance

The technical data stored in the FINGERPRINT can help in cases of service or damage for faster and better analysis, the most positive effects are achieved in predictive or status-oriented maintenance. Each repair and each maintenance are saved in FINGERPRINT.

The specific machine condition analysis and predictive maintenance has the following advantages for you:

Cost reduction

through less production failures
prevention of severe machine damages
reduction of maintenance costs, spare parts and personnel. Early error indication at the machine results in reduced repair and reconditioning

Prolonged life-cycle of the machine
and better prevention of serious damages

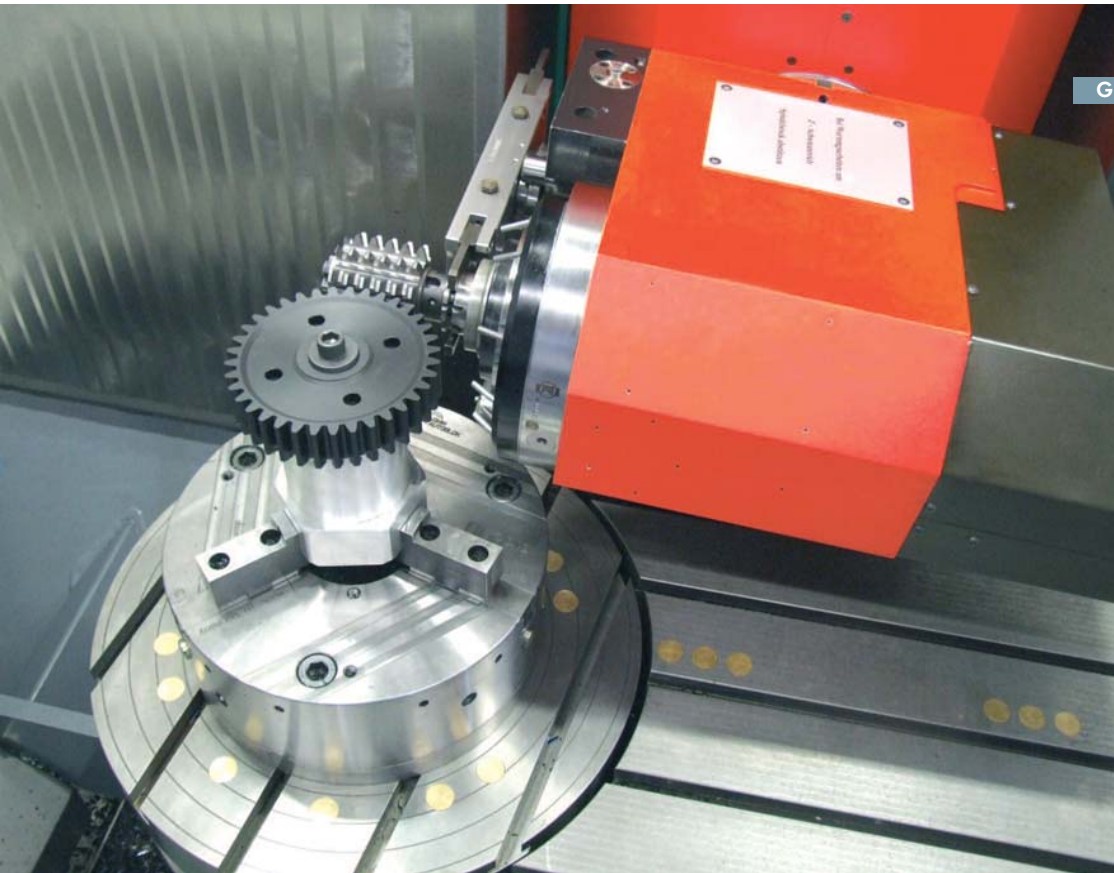
Higher machine availability
through reduction of unplanned machine breakdowns

Planned machine standstill for maintenance purposes reduces production failures



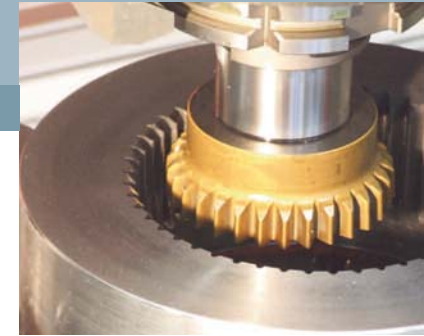
matec machines
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Process integration in the HV series



Gear cutting

Milling and turning in one machine



Fast milling and turning

Almost all the machining centers of the traveling column series can be additionally equipped with a lathe spindle or high-speed rotary table with direct drive. In connection with a CNC swivel head we have developed a universal milling/turning center especially for supplier companies in single-part and small-part production.

Economical machining of complex parts

Complex parts can be machined economically on such machines in one or two clampings in demanded tolerance and surface quality. Designed correspondingly, our machines even allow controlled boring of inner contours in slant borings. The advantage is evident: two machining processes united in one machine – the work part machined either on the face or on the perimeter and in every angular position – that saves time and costs. matec's modular component system offers a wide range of options for all kinds of machining tasks.



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HEXAGON
METROLOGY

Gear cutting on a general-purpose machine

All traveling column machining centers of the HV series can additionally be equipped with a hobbing module. This module can be used for straight and helical gearing as well as for worm-shaped gearing. The extremely rugged HV machines are perfectly fit for this kind of application. Gears up to 2 m in diameter can be manufactured in single and series production. Equipped with an integrated rotary table the HV machines are ideally suited for the machining of flat gears; for the gearing of long shafts the machines are fitted with a horizontally mounted rotary table with tailstock.

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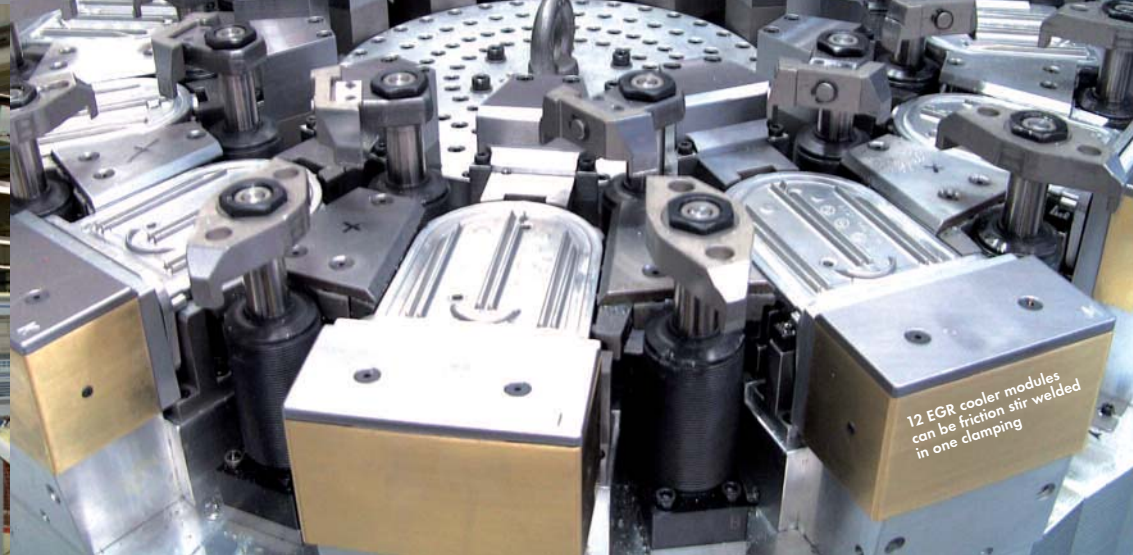
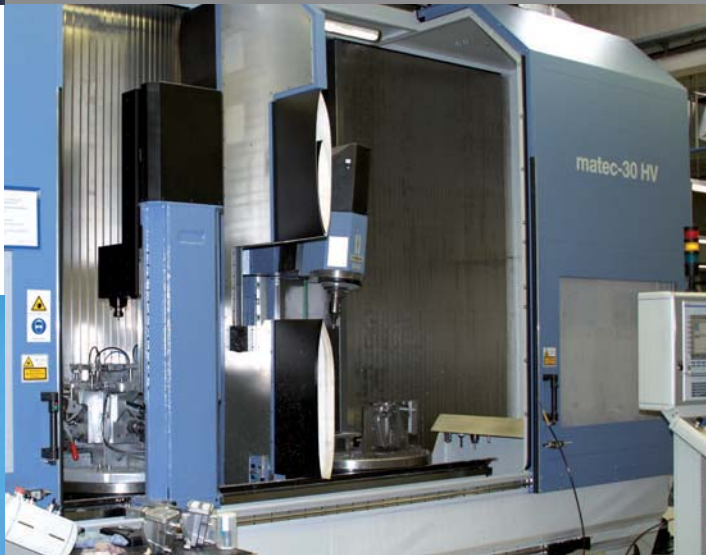
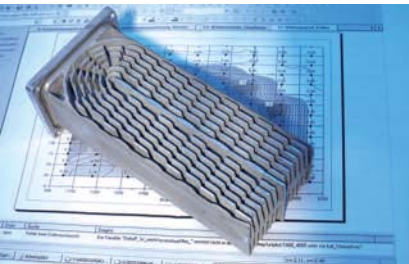
Shaking up the highly competitive market of EGR coolers for Diesel engines was the masterstroke of Pierburg GmbH. The company's internal process know-how was brought in sync with matec's machine tool expertise. Their focus is on the manufacturing of EGR cooler modules for state-of-the-art Diesel engines. Corrosion-resistant cast aluminium undergoes a friction stir welding process.

The original version of this article was published in Werkstatt + Betrieb, Author: Helmut Damm

matec-30 HV with two traveling columns

Reducing non-productive time by pendulum machining is a main characteristic of the matec-30 HV: in the working area to the left the welded parts are finished, the traveling column containing the deburring spindle is in the front position. In the working area to the right the main spindle is performing the friction stir welding process in the main time. The manufacturing of absolutely impermeable exhaust gas recirculation valves is quite complicated. Two simultaneous machining processes - friction stir welding and deburring - on the matec-30 HV, using an additional column in a separate working area, saves time and money.

Below: Causes a lot of turbulence: EGR cooler made of die-cast aluminium silicon with finned profiles



Success Story 3D friction stir welding and deburring of complex aluminium die-cast components Pierburg AG

The company Pierburg GmbH is a subsidiary of Kolbenschmidt Pierburg AG, which in turn forms the business unit „Automotive“ of the Rheinmetall Group. One of the company's core competences is the technological development and manufacturing of systems and components for air supply, cooling and emissions reduction for combustion engines. The market share of approx. 50 % in the realm of EGR exhaust gas recirculation valves is the result of the high systems expertise on fluidic interactions concerning the ventilation of a motor.

New Euro norms with tougher NOx emission regulations and lower limits for supercharged Diesel engines foreshadowed: in the future there was no way around exhaust gas cooling. In view of six to eight million diesel engines in Europe running in cars and light commercial vehicles, the manufacturing of EGR radiators would develop into a highly competitive market.

The established cooler manufacturers in their position as technological market leaders entered the race with tubular radiators. Although Pierburg also offered the tube technology in their product range for standard applications with sufficient installation space, they had other plans, because this technology is limited with regard to the flexible adaption of the radiators in tight spaces. On top, the inherent disadvantage of this technology was the severe loss of cooling capacity within the life-cycle. Due to the reduced free-flow in the exhaust gas circulation a gradual sooting of the cooler is unavoidable. The Pierburg team saw the great potential to stand out from the crowd by developing concepts which were more flexible, more compact and more efficient in comparison with the rigid tubular structures. The necessary comprehensive systems expertise had been there all along. The new concept included an integrated intake manifold with exhaust gas recirculation and exhaust gas cooling system. Under high pressure the team worked in parallel on product design, machining processes and production technology. The ultimate breakthrough is owed to the ambitious development team - and the very committed and reliable partner matec.

Friction stir welding - solution and difficult task simultaneously

The main comprehensive task was a more flexible constructive design, more compact dimensions and an improved reliability concerning the long-term cooling performance. Since the suction pipes were made of acid and corrosion-resistant die-cast aluminium silicon, the team agreed at an early stage that the cooler unit was to be made of the same material. Constructively die-cast aluminium has many advantages, especially concerning the deliberate turbulence of the gas-flow caused by finned profiles inside the cast. But it was quite clear that the

technical feasibility of the EGR cooler depended on the long-term stability of the joined materials - which in turn depended on the temperature resilience of each separate component.

The search for a suitable welding process started with the definition of the prerequisites: the welding seams should be a hundred percent waterproof and airtight, heat and corrosion resistant, reproducibility and process reliability should be secured.

14 welding processes were tested; the friction stir welding rated best both technologically and economically. (pictures to the right)

The FSW process has long been established in aircraft and ship building industries. During the welding operation a hard-wearing cylindrical tool equipped with a front-mounted rotating welding head is moved under pressure along the welts of two cast or sheet metal parts. The aluminium is plasticized at a temperature of 550°C as a consequence of the friction between the mating surfaces of the parts and the tool shoulder. The materials around the rotating pin are displaced, stirred, compressed and firmly joined during the cooling process (see picture on page 8).

There was only one catch: in order to adjust the EGR coolers to the vehicle's specific data and at the same time consider cost-effective production in multiple clamping, the friction stir welding process had to be adapted for three-dimensional and force-controlled operation. Depending on the design, up to seven complex single parts had to be welded together in a series of steps. In the search for the appropriate mechanical

engineering skills and the necessary applications know-how the team found the right partner: matec.

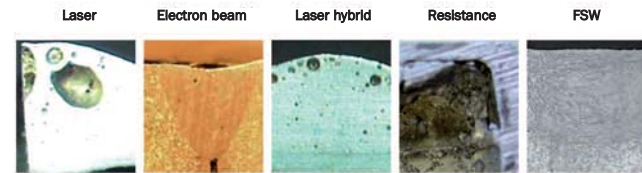
Welding tool is "surfing" on a 5-axis machining center

A standard traveling column machining center type »matec-30 HV« with swivel head was chosen as basis and optimized in several steps with elementary modifications.

Since the results of the welding process depended on the compliance with the process parameter window, they had to make sure that the welding tool which was mounted in the main spindle was moved alongside the 3D welded seam with a pre-defined angle to the feed direction and a consistent pressure of approximately 5 kN. Since the welding operation is directly followed by the deburring of the welding seams, the necessarily rigid spindle

has to perform a balancing act regarding the performance parameters: for welding processes a speed of approximately 5,000 rpm and a high axial power are required, economical milling starts at 12,000 rpm.

The solution to this tricky task: the motorspindle is installed on a separate slide, with a definable force regulation integrated at the interface. It operates like a 6th axis parallel to the Z-axis, but in most diverse angles. Via the Bosch CNC control it is now possible to regulate the pressure during welding operations, while the hydraulic bearing preload can be switched off during milling with higher speed. Due to this 6th axis the tool magazine could not be installed in the traveling column for short tool change time, but in quite a distance from the spindle.





The prototype machine has proven its productivity and prepared the ground for 10 additional machines

Technical information: Friction stir welding on matec-30 HV

matec process:

5-axis machining, 3D machining

Material:

Aluminium and its alloys

Result:

Gas-tight and waterproof welding seam

Advantages:

High process reliability, no rejects, energy and time-saving

Branches:

Container industry, manufacturers of gas-tight tanks, automotive industry, medical technology

Friction stir welding is a variant of friction welding. It combines the advantages of welding in the solid phase, i.e. below the melting point of the joining partners, allowing long butt joints even in thick-walled material and lap joints.

As in conventional friction welding the material at the welds of both joining partners is plasticized as a consequence of the friction produced by a rotating welding head, it is then compressed and firmly joined during the cooling process. The matec friction stir welding method brings best results.

→ The successful trial machining runs on a machining center with one working area in the matec plant in Kängen were followed by process installation at the Pierburg plant. The machine set-up took two days – and then the demanding operation got started effectively. Up to this day 10 additional matec-30 HV machines have been installed. Starting with the second machine, the continuously optimized process reduced unit costs as expected.

Extra column reduces process cycle time

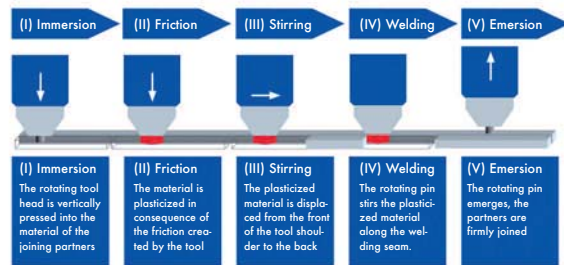
The conversion to hydraulic multiple clamping was accompanied by the addition of pendulum machining. The X-axis was prolonged to 3,000 mm, with two rotary tables with direct drive integrated into the machine table. A panel separates two working areas, both of which are operated by one traveling column. After welding and deburring processes, the finished parts can be replaced by raw parts in the main time. Since around 50 percent of the friction stir welding process are performed with angled tools in the X-axis, the recently purchased machine closed another gap. Since the workpiece exchange is faster than the machining time, an additional traveling column was installed, which travels in front of the main column, conceived for the deburring of parts, which is solely performed in the X- and Y-axis.

The two travelling columns operate in criss-cross motion, the main spindle is performing the welding process, while the second spindle does the deburring. Whenever the parts allow, the deburring is performed in the second working area, the change of parts is done manually in the clamping devices. The deburring time is then part of the cycle time.

Market's pricing structure turned upside down

In the face of severe time restriction, the innovative technology brought the breakthrough, resulting in profitable framework agreements. As a consequence, the customer is full of praise for this efficient example of simultaneous engineering cross-company: »Given the tight deadlines, the matec team has kept a clear head and has creatively mastered the technical challenge. Today we have a well-functioning process, which put us in a technological stand-alone position and facilitates the realisation of further customized products. And apart from the technologies friction stir welding and deburring we have invested in all-round, high-performance machining centers. I definitely call that flexible.«

The different stages in friction stir welding



Meanwhile 10 matec 6-axis machining centers are in operation at Pierburg. The components of the new EGR cooler are friction stir welded and deburred in four production steps.



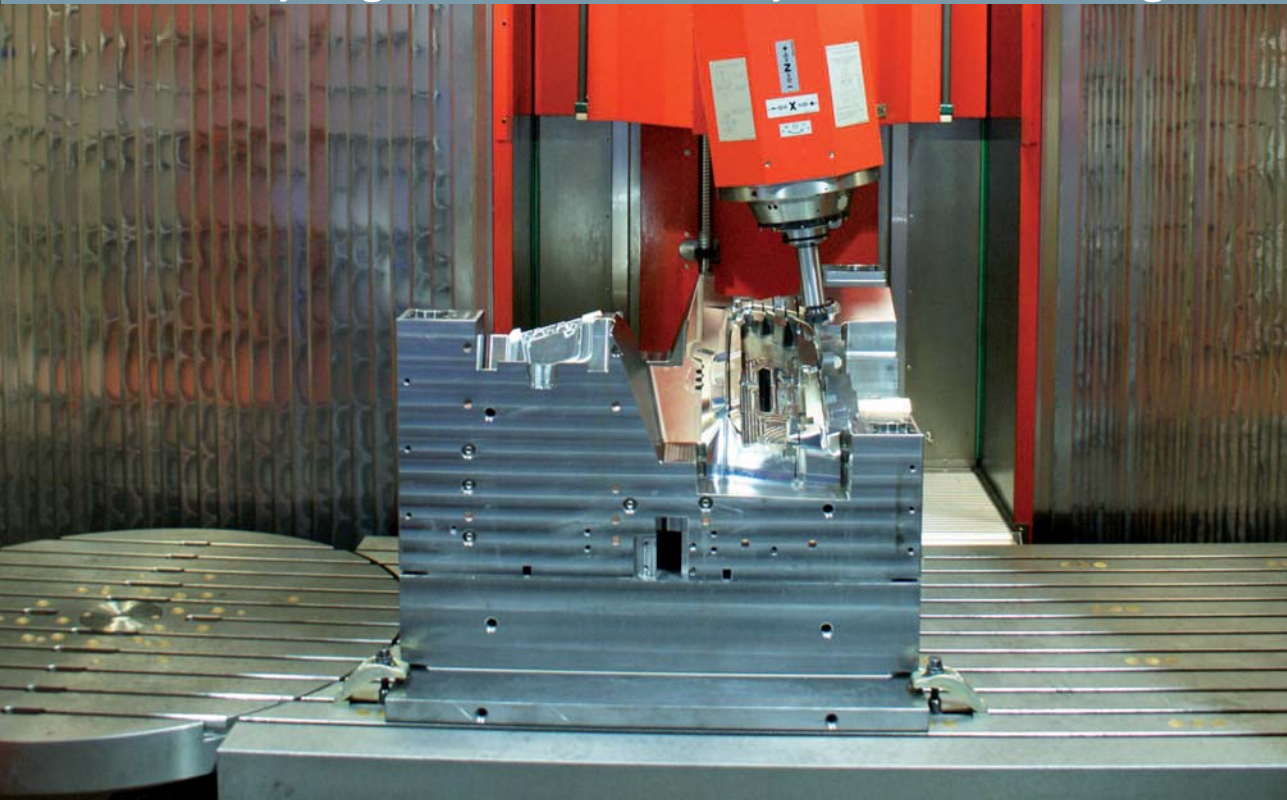
5-axis *machining*

During milling operations on 5-axis machining centers geometrical forms on parts are often performed with diverse tool angles. Besides a high positioning accuracy to DIN ISO 230-2 the optimizing of the correlation of the axes is essential. In order to manufacture precise parts in 5-side machining or 5-axis simultaneous machining, a high accuracy in the complete machining process is essential.

The matec-30 HV is equipped with CNC swivel head with direct drive in the traveling column continuously variable $\pm 105^\circ$. A motorspindle with a spindle speed of 18,000 rpm performs roughing and finishing processes on free-form surfaces. The rigidity of the machine allows powerful roughing, and the perfectly machined finished surfaces of the hardened parts reduce any necessary polishing process enormously.



with highest
surface accuracy



The company Sigel Formen- und Werkzeugbau GmbH started manufacturing injection and die-cast moulds as well as press and rubber moulds in 1972. The majority of the moulds and tools is delivered to the automotive industry and their suppliers, other long-term customers are renowned manufacturers of white goods and gardening tools. The extensive machinery park includes CNC machining centers, diverse wire eroding machines and vertical eroding machines, HSC milling machines for hard machining and for the manufacturing of electrodes, plus a digitisation machine and a state-of-the-art coordinate measuring machine in the test room. 3- and 5-axis milling operations are programmed right at the machine on programming stations. For paperless production, all data is stored in the company network.

Left:

The matec-40 HV is equipped with a fixed machine table. A flushly integrated CNC rotary table with diameter 1,250 mm allows the machining of large workpieces, extending the clamping area for long parts. Multiple clamping devices are easily mounted on the table.

Right:

The polishing process for the 52 HRC-hardened parts, which were finished on one of the three matec machines in use in Sigel's production, was reduced from three days to one. The excellent surface quality of the hardened form elements, which is achieved during the milling process using angled tools, reduce any kind of refinishing work to a minimum.



Oliver Sigel manages the Sigel Formen- und Werkzeugbau (mould and tool making) GmbH in the second generation. Together with 40 employees he applies all his technical expertise on the milling of hardened parts. The mechanical processing of the highly complex moulds and tools is performed on matec machining centers.

5-axis machining of tall parts

Over the years the tool and mould making unit of the company had grown considerably, which meant that in 2008 an additional machining center for the milling of voluminous parts was required. Two aspects had to be considered: the machine was supposed to introduce 4- and 5-axis machining into the work process and it had to be suited for rough machining from solid as well as for the finishing of hardened mould inserts.

matec offered the perfect machine concept: a traveling column machining center type matec-30 HVK, which was optimized for the requirements of mould making, using components from the matec modular system. The machine was equipped with a Heidenhain iTNC 530 which offers adequate additional features, and is just the right CNC-control for the high standards of the task. A precondition for the machining of exact contours and optimal surface quality of the workpiece are fast axis movements. The direct drives in both swivel head and rotary table are backlash-free and the separation of the axes B and C enables stable chipping conditions.

The machine has traveling paths of 1,300 mm in the X-axis and 600 mm in the Y-axis. The long Z-axis with a traveling path of 800 mm allows the machining of tall parts. A CNC rotary table with diameter 630 mm is integrated in the fixed machine table. It allows for part sizes up to a swing diameter of 940 mm and rotates with 80 rpm. Since it is flushly integrated, the rotary table can additionally be used as support bed for long parts. The maximum table load is 1,000 kg.

The tool changer is installed right next to the spindle. It can load the HSK 63 tools from the tool magazine in 3.5 sec, if the spindle is positioned vertically, resulting in a chip-

time of 5.5 sec. In the standard version the tool magazine is equipped with 60 tool pockets. The moving tool magazine is protectively installed in the center of the traveling column. A double gripper, which is positioned directly in the main spindle plus a variable tool coding in the tool magazine provides for a quick tool change in any given XY position.

In connection with a motor spindle in the CNC swivel head with a spindle speed of 18,000 rpm adapted for hard machining and a Heidenhain iTNC 530 control the machine meets every demand of tool and mould making for complex machining tasks in 3D and in 5-side machining and at the same time allows turning operations in all angular positions.

Larger workpieces – high spindle performance

With the HVK new, even more demanding contracts were acquired, which required the purchase of a further machine. In the decision-making process the technical requirements were emphasised, but particular attention was put on the dimensions of the machine, which should be adequate for considerably larger parts.

Oliver Sigel reports: "As a matter of course we did contact all other manufacturers as well, just like we had done in the run-up of the purchase of the first machining center. For two main reasons we once more decided to buy a matec. For one thing, our experiences with the matec machine were positive all round. We practically had no request for service. The machine is still running with the same spindle and the precision and surface quality of the workpieces is still as high as it was in the beginning, although the machine is continuously running in two shifts. On the other hand, matec uses only brand-name components, i.e. motors, drives and cables are made by renowned manufacturers. If a repair gets necessary it can be done by every qualified repair shop without any problems. That means you don't have to send the parts back to the manufacturer for repair and pay high charges. Production manager Peter Fischer adds: "The vicinity to matec has played an important role for us. matec machines are a local product. The parts for the machines are manufactured regionally, if not on matec machines themselves. Local products manufactured on local machinery – that's our compa-

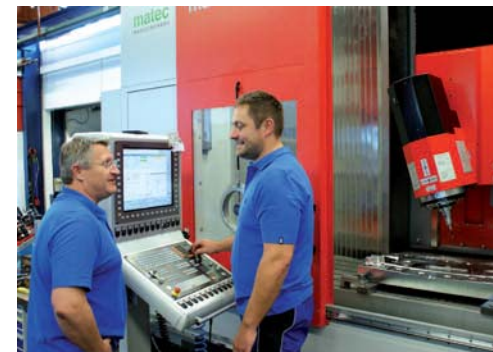
ny philosophy. And if we actually do have a case of failure, which may well happen, considering continuous three-shift operation including two unmanned shifts, the service team is within a convenient distance."

Flexibility in machining sparks enthusiasm

The new matec machine, a machining center type matec-40 HV, has identical mechanical features as the HVK with traverse paths of X=4,000/Y=1,200/Z=1,300 mm. The CNC swivel head (continuously variable $\pm 105^\circ$ indexing precision ± 3 sec.) in combination with the rotary table with direct drive provides for the 5-axis simultaneous machining of parts. The fixed machine table is completed by an integrated rotary table with direct drive, diameter 1,250 mm. The rotary table can be fixed, the total length of the mounting table can then be used for the multiple clamping of parts. "We achieve a very high stability and an unparalleled flexibility. The parts are machined successively, set-up times are minimized," says Sigel. 60 tools are disposable, the customized tool changer is not installed in the traveling column as standard, instead it was installed alongside the machine. Oliver Sigel specifies the reasons: "The working space is not as restricted and the machine reaches higher dynamics. Additionally tools can set up during main time. The HSK 100 spindle has a speed of 12,000 rpm. This high performance is especially important for drilling operations and deephole drilling. The HSK spindle is equipped with an internal coolant supply with a pressure of 70 bar".

Peter Fischer: "The machine has excellent dynamics, so we can reach extraordinary results in 5-axis simultaneous machining and machining with angled tools. With a spindle operating time of 110-150 hours per week the machine is in operation around the clock. All our machine operators are specialists, they do the programming right at the machine, which means we don't need a CAM department."

Meanwhile still another matec machining center, type matec-30 HV, started service at Sigel. Again with the requirement of a long Z-axis. Like the 40 HV the new machine is equipped with a separate tool changer with 60 tool pockets, equipped with tools for deephole drilling up to 2,000 mm. The machine has traverse paths of X=2,000/Y=800/Z=1,200 mm and a rotary table with direct drive, diameter 800 mm, which is flushly integrated into the machine table. These technical features allow the flexible machining of a great variety of parts.



Oliver Sigel and Peter Fischer are enthused by the flexibility of the matec machines.

matec-30 PP

with pallet changer or parts up to 2,000 x 2,000 mm

A robot provides for a safe change of tools from the tool magazine



A pallet changer as automation is advantageous especially for the machining of voluminous and heavy parts and in complete machining and long machining time



While one part is machined on pallet 1, a second part is mounted on pallet 2.



After the machining, pallet 1 is removed from the working area and lifted pneumatically. Pallet 1 and 2 are then formlocked.



Both pallets move to one side. Pallet 2 is positioned in front of the machine door, the pallet is lowered and the formlock is disconnected.



Pallet 2, loaded with a raw part, is moved into the machining area - pallet 1 is ready for loading.



Specifications matec-30 PP/40 PP

Working area X	3,000 mm
Working area Y	3,200 mm
Working area Z	1,300 (1,500) mm
Gantry clearance height	30 PP 1,350 / 40 PP 1,500 mm
Gantry clearance width	2,260 mm
Pallet size	2,000 x 2,000 mm
Spindle	SK 40 (HSK-A 63) / SK 50 (HSK-A 100)
Speed	9,000-4,2000 / 8,000 rpm
Power	30 PP 16 (30) / 40 PP 26 kW - 40% DC
Torque, max.	30 PP 100 (191) / 40 PP 340 Nm - 40% DC
Rapid feed	30 m/min
Tool magazine	up to 200 pcs
Subject to technical changes	

Highlights

- 2-axis CNC swivel head for 5-axis simultaneous machining
- C-axis (rotary axis) $\pm 180^\circ$ /B-axis (swivel axis) $\pm 95^\circ$
- Long Z-axis up to 1,500 mm
- Stable gantry bridge
- Tool magazine with 250 tool pockets
- Pallet changer

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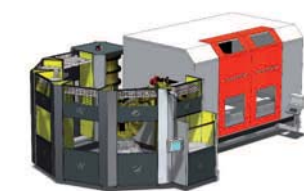
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matec-40 HV pallet loading system and additional circular tool magazine with 200 tool pockets



- 1-axis CNC swivel head for 5-side machining $\pm 105^\circ$
- CNC rotary table, swing diameter max. 940 mm

- Long Z-axis up to 1,100 mm
- Tool magazine with 210 tool pockets

Time-saving and economical

High cost pressure on the market makes automation even more important. State-of-the-art solutions bring flexibility even in single part production. Manufacturing with less manpower reduces unit costs - a lot of companies follow this route today.

matec has the right automation for every machine series. Usually the customer orders a matec machine together with an automation, especially if series production and a high productivity are demanded. In this case standard systems are customized to the machine. More complex solutions are designed and manufactured by matec.

The traveling column series is highly flexible and has a great variety of traverse paths. Heavy-weight parts in small to medium-sized batches can be machined. The automation depends on the machining task. A gantry loader is more expensive than a robot, but it can transport longer and heavier parts. The gantry loader (3 or 4 axes) has a linear movement, which is ideal for long distances. The gantry loader can load linked machines quite easily, a robot can't. Due to its joints (practically 6 and more axes) the robot is the most flexible.

The matec-30 HVK is the perfect solution for complex machining tasks in 3D and in 5-side machining. The picture shows a combination of pallets and robot automation. The HVK is also available as milling/turning center.



- Traverse paths X=1,300/Y=600/Z=800 mm
- Integrated rotary table diameter 630 mm with swing diameter up to 940 mm
- Direct drive in rotary table (A-axis) and swivel head (B-axis)

HV series

Swiss manufacturer of packaging machines relies on matec-30 HV and 30 HVC with robot cell

"Our vision was to manufacture in three shifts, on seven days a week - fully automated and flexible down to lot size 1." To link vision and reality was the task given to the matec engineers by a Swiss manufacturer of packaging machines.

matec's representative in Switzerland SMI recommended a matec-30 HVC, equipped with 5 simultaneous axes and combined with an automation concept. The SMI machine concept was based on a customized standard machine with a production-specific automation, which covered 80 percent of all cubic parts as well as Rychiger's requirements concerning lot size.

The manufacturing cell consisted of a matec-30 HVC, a Fanuc robot with a lifting capacity of 210 kg, a pallet magazine for pallets 400 x 400, 500 x 500, 500 x 800 and 600 x 800 mm, a loading station for pallets and tools, and a magazine with transfer station for 210 HSK 63 tools, additional to the 48 tool positions inside the machine.

The pallet magazine allows a random storage of pallets in various sizes. The matec-30 HVC is equipped with traveling paths in X/Y/Z of 1,500 x 800 x 1,100 mm, B-axis $\pm 105^\circ$, C-axis 360° , and an integrated rotary table placed slightly off-center in X/Y direction with diameter 630 mm. The off-center placement augments the interference circle diameter.

A Unilock zero point clamping system clamps pallets, vices, multiple clamping systems and mounting towers. The smaller pallets are made of steel lined with mineral casting, in order to have less weight, more rigidity and a good damping. The larger pallets are made of aluminium. The customer is full of praise: "Our vision of a 24/7 production is almost fulfilled. From the maximum of 168 hours available per week, we already achieve more than 100 hours of real spindle time."



Robot loading of drawer magazines



Magazing and loading of chucks by gantry loader



matec-30 HV with bar feeder and saw unit for machining from the bar

The easiest way to automate a machine is by means of an NC gripper in the tool magazine. It can perform the loading and unloading, the axes of the machine acting as handling system

The matec-30 HV shown on the left is used for the manufacturing of radial gear units of large engines. It is equipped with a rotary table with vertical face-plate for the machining in the first clamping. After the machining of the fifth side the part is handed over to a second rotary table with jaw chuck or other clamping fixture with horizontal face-plate. It is located on a slide unit traveling up to 1,400 mm. Both tables rotate 360°. In combination with the swivel head, it is possible to machine up to 5 sides of a workpiece. The saw unit crosscuts the workpiece to the required size after transferring it over to the second machining area. After the machining the NC gripper removes the part from the working area and deposits it on a discharge belt.

Due to the bar feeder no clamping device is necessary for the machining of parts. Every kind of part within the diameter of the bar can be machined - up to diameter 120 mm and up to a length of 400-500 mm.

Bar feeder, saw unit and NC gripper – economic and efficient automation



Pendulum machining. Workpiece handling by means of an NC gripper, loaded from the tool magazine. Working area on the left side: Raw parts/finished parts Working area on the right side: machining



NC gripper loading the part into the lathe spindle



NC gripper depositing the part

Range of Products

Traveling Column Series

Highly flexible machines for single and series production

matec-30 L	matec-30 HVT
matec-30 L duo	matec-30 HVTH
matec-30 LD	matec-30 HV duo
matec-40 L	matec-40 HV
matec-50 L	matec-50 HV
matec-30 HV	matec-30 HVU
matec-30 HVK	matec-50 HVU
matec-30 HVC	

Swivel Table Series

Highly productive machines for series production

matec-30 SH	matec-30 SD
matec-30 S	matec-30 SHV
matec-30 SG	

Gantry Series

The specialists for the machining of voluminous and heavy parts

matec-30 P with vertical spindle
matec-30 P with 2-axis swivel head
matec-30 PB with 2-axis swivel head
matec-30 PBU with universal head
matec-40 P with 2-axis swivel head
matec-40 PB with 2-axis swivel head
matec-40 PBU with universal head
matec-50 P with 2-axis swivel head
matec-30 PP with pallet changer
matec-40 PP with pallet changer