

**mpmc**  
multi product machining center



E | 07.2021



complete  
**SOLUTION**

# **mpmc**

*multi product machining center*

solutions for  
**PLASTICS  
INDUSTRY**



solutions for  
**ENERGY  
INDUSTRY**



solutions for  
**AERO SPACE  
INDUSTRY**



solutions for  
**RAILWAY  
INDUSTRY**



solutions for  
**OIL & GAS  
INDUSTRY**



solutions for  
**GENERAL  
MACHINING**



solutions for  
**PUMP  
INDUSTRY**



COMPLETE SOLUTIONS FOR ALL INDUSTRIES // [weingartner.com](http://weingartner.com)



## UNIQUE CUSTOMIZATION

Based in Austria, Weingärtner is a global leader in machine tool technology. The mpmc is our pride and joy and our team of highly qualified engineers continually strive to improve and develop it further.

Since its conception, the mpmc with its integrated software package, has had such a high degree of customization potential that, although we still talk about a series, it really is a complete solution tailor-made to your specific and unique requirements. Be assured to receive a world-class, high-end machine that delivers on the Weingärtner promise.

This remarkable machine regularly sets new standards for complete horizontal machining of various types of

complex components, including:

- // injection molding screws
- // extruder screws
- // turbo-generator shafts
- // gas- and steam turbine shafts

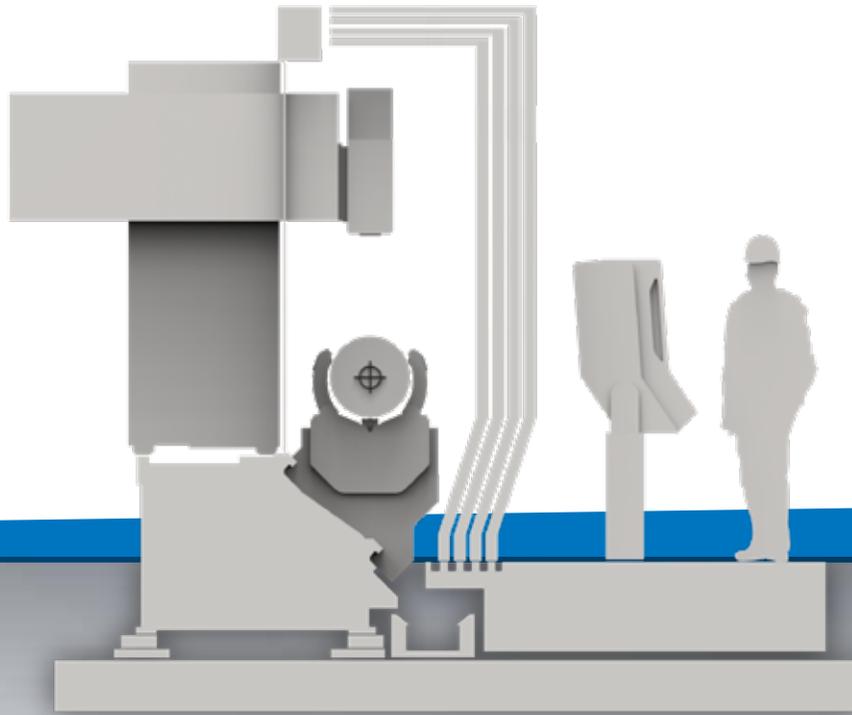
Precision, efficiency and versatility are just a few features this machine concept has to offer – a concept which increases the quality of a workpiece, at the same time reducing production costs.

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## MACHINE BASE

The mpmc is a modular, inclined-bed turning & milling machine with efficient chip removal. The ergonomic design of the machine guarantees comfortable and safe operation. The wide base, the excellent guide ratio and the configuration of the guideways ensure stability and prevent vibration during operation, even under extreme cutting conditions.



## A ROBUST AND ERGONOMIC DESIGN

Every major machine component has been designed with stringent safety features in mind. These aspects combined with the solid structure of the machine are crucial to meet the mpmc's high performance expectations. The heavy machine bed achieves highly effective shock absorption and accuracy, even when operating under maximum load. The full working load is always centered to the base of the machine, thus preventing any vibrations from being transferred across critical components.

Due to the ergonomically well-engineered concept of these machines, the highest level of comfort is provided for the operators. Barrier-free access to the machining area for tool, and workpiece inspections is the prerequisite to eliminate accidents during daily operations on a machine tool.

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## INNOVATIVE DESIGN

The mpmc has earned its reputation as an innovative solution provider due to very specific integrated features, giving it the impressive ability to completely machine really complex workpieces. The aim is to produce at

higher performance rates and with greater accuracy in comparison to similar machines on the market. Its efficient operation maximizes production output and keeps maintenance costs at a minimum.



### MASTER SLAVE DRIVE IN B, C, Z – AXIS

A master-slave drive-system for the B, C and Z-axis is incorporated for precise positioning accuracies. The Z-axis is driven by a rack-and-pinion drive instead of a ball-screw-spindle. This keeps service- and repair costs down, as well as significantly reducing noise levels during operation.

Master and slave system:

- The master motor determines the position
- The slave motor works on a defined torque against the master motor to eliminate backlash in the gears
- Guarantees high accuracy
- Increases torque



### UNIQUE B-AXIS FOR SWIVELING OF MACHINING HEADS

The B-axis structure is similar to the C-axis with integrated “master-slave” technology, where two servo motors with high-ratio gears are engaged on a central gear. The in-house developed B-axis clamping mechanism allows infinite indexing of the machining-heads in any angular position. A hydromechanical clamping mechanism is used instead of a Hirth-Joint indexing system. This also functions as an overload protection and prevents damage in the event of any kind of collision. A re-alignment procedure, or in other words a mechanical repair interruption by a service technician is not necessary with the advanced B-axis mechanism. A high-resolution direct measuring system ensures the position accuracy of  $\pm 3$  ArcSec.



### STRONG AND POWERFUL HEADSTOCK

The nature of its core function demands robust power steered with absolute precision. Driven by two powerful AC main spindle motors complete with automatic switch gearbox, a twin-drive system to run the turning- and milling operations, and hydraulically actuated power chucks, the headstock is guaranteed to operate flawlessly in any application. It's positioning accuracy of  $\pm 3$  ArcSec, controlled by a high-resolution direct measuring system, delivers precise machining results.



## INTERCHANGEABLE MACHINING HEADS WITH AN AUTOMATIC PICK-UP-SYSTEM



To save manufacturing time and costs, and to maximize productivity, the mpmc can complete an entire workpiece with only a minimal number of setups. It has the capability to perform all machining duties usually processed by several different machines, making it highly versatile.

Multiple machining heads are stored in a pickup station and are readily available to be exchanged by the automatic pick-up quick-clamping device which selects the right head for the corresponding process, e.g., HSC-milling, bottle boring, trochoidal milling, slot milling or grinding.

## COUNTER SPINDLE SYSTEM

The requirements on multi-task machines are becoming more complex, and idle times in all processes have to be reduced. Thanks to the counter-spindle system, complete machining of a workpiece in one single setup has become reality.



## SOFT LANDING

The mpmc series is designed for heavy duty machining up to 60 tons, 15 meters turning in length and 2 meters of workpiece swing diameter. Larger workpiece dimensions can be accommodated on request.

A soft-landing system with prismatic support pads is incorporated into the design to ease the loading and unloading of large and heavy workpieces (e.g., work rollers).



## STEADY REST

On special request, a steady rest solution with CNC-controlled support movements is available for heavy workpieces. The support rollers, or the hydrostatic support pads can be used alternately on the same steady rest unit. What makes it unique is that it allows a correction of the workpieces' center position under full load. This eliminates the procedure of lifting the workpiece with the crane, correcting the steady position and re-loading it back to the steady rest, which is common on other machines.

## BORING BARS AND SPECIAL TOOLING

The storage station for boring bars and other long and heavy tools is situated above the headstock or at the end of the machine bed, i.e., behind the tailstock. Depending on the machine size up to four storage stations can be accommodated at each location. A separate heavy-duty magazine is available if a larger number of heavy special tools is required.

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|                                    | 700 S                              | 900 L/S                            | 1200 L                             | 1000 S                             | 1300 L/S                           | 1800 L                             | 1400 S                             | 2000 L/S                           | 2800 L                             |       |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|-------|
| <b>WORKPIECE DIMENSIONS</b>        |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |       |
| swing over bed and slide           | 700                                | 900                                | 1200                               | 1000                               | 1300                               | 1800                               | 1400                               | 2000                               | 2800                               | mm    |
| weight between chuck and tailstock | 3000                               | 3000/8000                          | 3000/8000                          | 8000/16000                         | 8000/16000/30000                   | 8000/16000                         | 16000/30000                        | 16000/30000/60000                  | 16000/30000                        | kg    |
| <b>MAIN SPINDLE</b>                |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |       |
| spindle head DIN 55026             | A11                                | A11 / A15                          | A11 / A15                          | A15 / A20                          | A15 / A20                          | A15 / A20                          | A20 / A28                          | A20 / A28                          | A20 / A28                          |       |
| <b>TOOL SPINDLE</b>                |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |       |
| tool interface                     | C6/C8/HSK100                       | C6/C8/HSK100                       | C6/C8/HSK100                       | C6/C8/HSK100                       | C6/C8/HSK100                       | C6/C8/HSK100                       | C10 / HSK125                       | C10 / HSK125                       | C10 / HSK125                       |       |
| <b>SWIVEL AXIS</b>                 |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |       |
| swivel range                       | ±110                               | ±110                               | ±110                               | ±110                               | ±110                               | ±110                               | ±110                               | ±110                               | ±110                               | °     |
| <b>X-AXIS - VERTICAL SLIDE</b>     |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |       |
| total travel distance              | 900 / 1000                         | 1000 / 1150                        | 1150                               | 1100 / 1250                        | 1250 / 1500                        | 1500                               | 1500 / 1800                        | 1800 / 2200                        | 2200                               | mm    |
| above workpiece center             | 850 / 950                          | 950 / 1100                         | 1100                               | 1000 / 1150                        | 1150 / 1400                        | 1400                               | 1350 / 1650                        | 1650 / 2050                        | 2050                               | mm    |
| below workpiece center             | 50                                 | 50                                 | 50                                 | 100                                | 100                                | 100                                | 150                                | 150                                | 150                                | mm    |
| rapid feed                         | 30                                 | 30                                 | 30                                 | 20                                 | 20                                 | 20                                 | 20                                 | 20                                 | 20                                 | m/min |
| <b>Y-AXIS - HORIZONTAL SLIDE</b>   |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |       |
| travel distance                    | -175 / +175                        | -275 / +275                        | -425 / +275                        | -300 / +300                        | -450 / +450                        | -700 / +450                        | -425 / +425                        | -725 / +725                        | -1125 / +725                       | mm    |
| rapid feed                         | 30                                 | 30                                 | 30                                 | 20                                 | 20                                 | 20                                 | 20                                 | 20                                 | 20                                 | m/min |
| <b>Z-AXIS - LONGITUDINAL SLIDE</b> |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |       |
| rapid feed                         | 30                                 | 30                                 | 30                                 | 20                                 | 20                                 | 20                                 | 20                                 | 20                                 | 20                                 | m/min |
| <b>CONTROL</b>                     |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |                                    |       |
|                                    | SINUMERIK 840D SL<br>SINUMERIK ONE |       |



## AXIS

|          |   |                    |
|----------|---|--------------------|
| X-axis   | = | Vertical slide     |
| Y-axis   | = | Horizontal slide   |
| Z-axis   | = | Longitudinal slide |
| V-axis   | = | Steady rest slide  |
| W-axis   | = | Tailstock slide    |
| C-axis   | = | Milling mode       |
| SP1-axis | = | Turning mode       |
| B-axis   | = | Swiveling drive    |
| SP2-axis | = | Tool drive         |

THE DIMENSIONS AND LENGTHS OF THE MPMC  
ARE ADAPTED TO INDIVIDUAL REQUIREMENTS



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## TOOL HANDLING

Keeping up with the times means implementing current, intelligent automation technologies with the aim of improving the performance of machine tools. Efficient processes require tailor-made solutions which optimize workflows. The mpmc is customizable to meet your desired production objectives.

Basic applications use a conventional chain magazine in combination with an independent shuttle which can be located at the head stock or the tail stock end of the machine base.

The tool change itself can take place in any longitudinal position of the Z-axis, during the machining process. All required tools are made available simultaneously, thus guaranteeing the shortest possible changeover times.

Complex applications require a more sophisticated handling method to store and supply a series of prearranged tools. For these purposes, the entire handling of tools is automated and connected to an external tool delivery feeder system.



## AUTOMATED SOLUTIONS

Like with the automation of tools, the handling of workpieces can be automated by connecting the mpmc to an external delivery feeder system. If required, an AGV (Automated Guided Vehicle) can be installed to safely handle and store workpieces. The automation is carried out in accordance with all internationally required safety standards and is Industry 4.0 enabled.



## ONE MACHINE FOR EVERY APPLICATION

In addition to its precision, adaptability and efficiency, the mpmc impresses with a wide range of further abilities to handle demanding applications, such as; the

production of injection molding- and extruder screws, or gas- and steam turbine shafts.

## INJECTION MOLDING- AND EXTRUDER SCREWS

Due to its versatility the mpmc is considered to be the ideal machine for the production of injection molding screws, extruder screws and their corresponding cylinders. It can process and complete a workpiece with a minimum number of setups, from an unmachined component to a finished part, regardless of whether the workpiece is made of nitriding steel, powder-metallurgical steel, or if it is hard-plated.



## GAS- AND STEAM TURBINE SHAFTS

To serve the energy sector, the mpmc comes standard with a world-class unique hydrostatic steady rest solution that presents entirely new possibilities for the complete machining of gas- and steam turbine shafts. Processes included are turning, milling, dovetail groove- and fir-tree profile milling, deep hole drilling, honing, in-process measuring and deep grooving.



## TURBO GENERATOR SHAFTS

The unique high-performance disk-milling-head processes an entire rotor quickly and accurately, without interruption. It is an integral part of the machine and together with the standard turning-milling-head the mpmc is capable of performing all required machining operations (turning, milling, slotting, drilling, honing, etc.).



## CRANKSHAFTS

The use of a particularly rigid and powerful milling head, specially designed machining cycles and an application-specific steady rest design enable cost-effective, high-precision complete machining of large crankshafts.



## MULTIPLE MACHINING OPTIONS

The mpmc's flexible and comprehensive machine concept covers all relevant production processes in the field of metal cutting technologies. It is capable to

precisely and efficiently machine very complex designed workpieces. Additional technologies are also available, such as:

ROLLER BURNISHING // DEEP ROLLING // BROACHING // POLISHING // GRINDING

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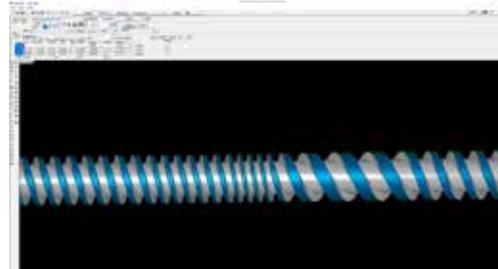
## SOFTWARE MADE BY WEINGÄRTNER

weinCAD® is a sophisticated, user-friendly programming- and production software, designed for easy, intelligent and intuitive navigation around the mpmc's functionality. The optional WMDS® (Weingärtner Machine Diagnostic System) and an emulation module guarantee ease of use and maximum production availability. The software is updated regularly and made available online.

The in-house developed CAD/CAM software, the process engineering and the machining technology are all tailored to particular conditions. The weinCAD® Screw Designer was specifically developed to meet the needs arising during the production of helical components. Easy workflows are guaranteed by the reference dependence of the individual modules, which save an enormous amount of time.

- // Calculations
- // Mapping from one geometry to others
- // Volume calculations
- // Simulations
- // Additional modules
- // Analysis modules
- // Throughput calculations
- // Generation of the geometry

## EXTRUDER DESIGNER



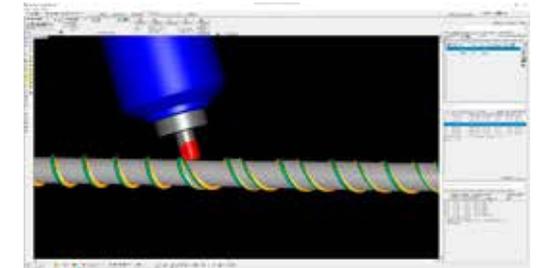
## COMPRESSOR DESIGNER



## GEAR DESIGNER



## CAM

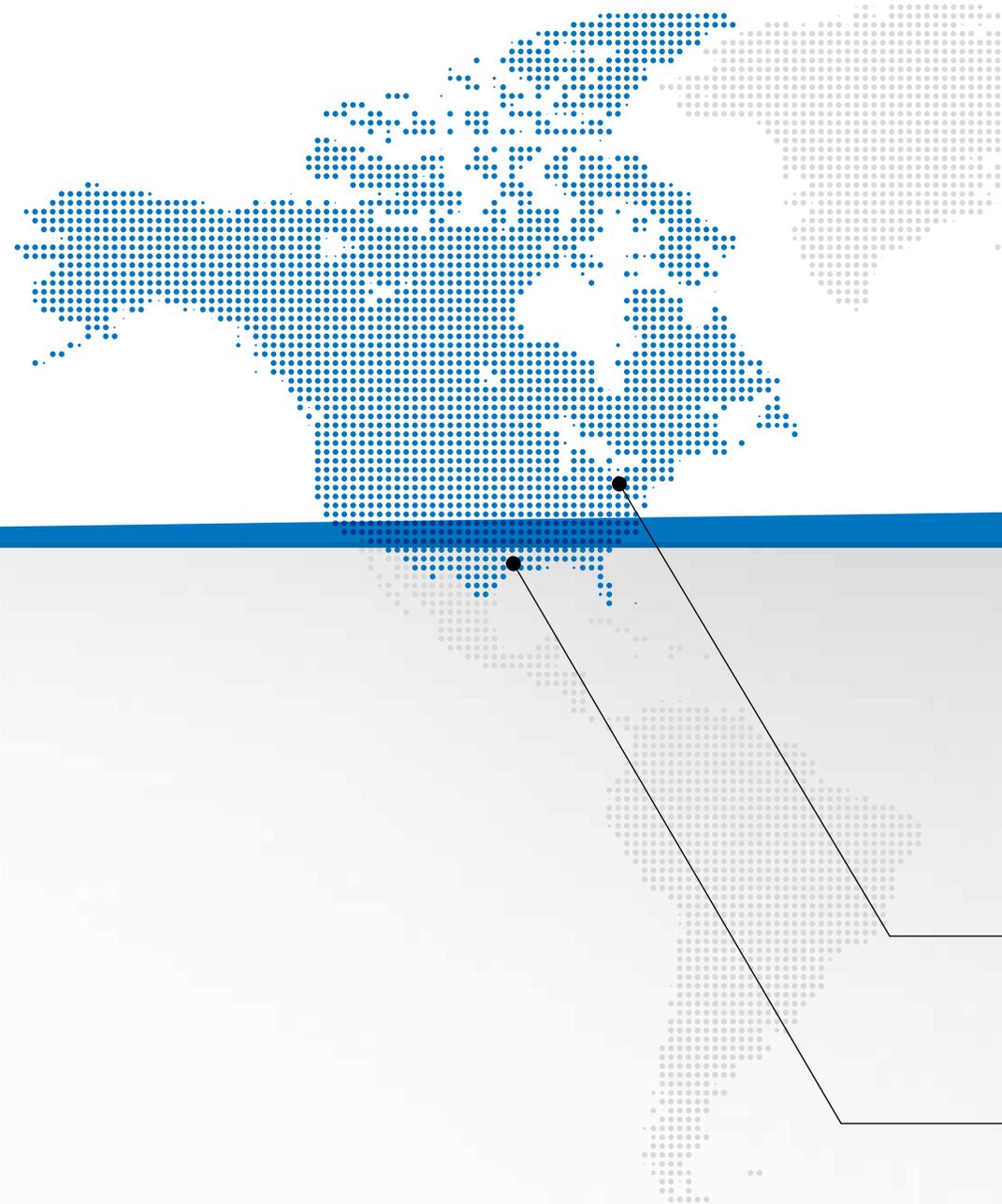




INDUSTRY 4.0

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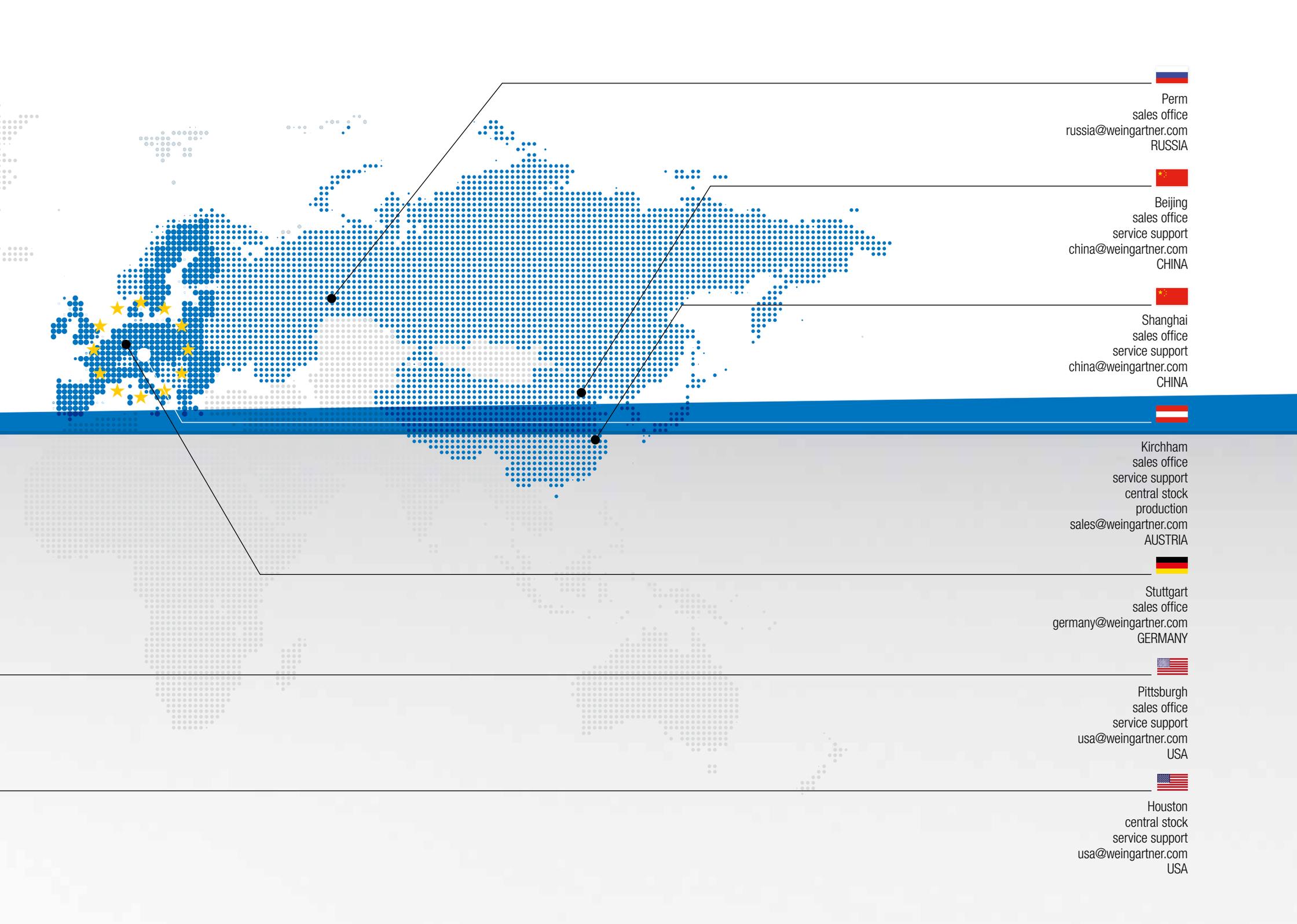


## *weingärtner* **SALES & SERVICE LOCATIONS**

Weingärtner is a supplier of complete solutions – everything from a single source.

We support our customers around the world throughout the entire Weingärtner experience; from the initial consultation, the expert advice, the layout, design and simulation right through to the manufacturing, delivery, commissioning and our after-sales service. You'll always be in good hands!

**We guarantee** - delivery of world-class, tailor-made machines  
**We promise** - to support you as our partner throughout and beyond



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## WEINGÄRTNER MASCHINENBAU GMBH



Visionary leadership has led the Weingärtner brand to become the globally trusted name in machine tool technology. Operating since 1965, we are a team of over 600 employees worldwide, our roots still deeply entrenched in Austrian soil. Part of the Weingärtner Group, we consider ourselves a leading technology solution supplier to many industries, including energy, oil and gas, plastics and heavy engineering.

In addition to our resolute commitment to innovation and customer focus, we lay a great deal of emphasis on the intangible values which have played a significant role in our growth and success. Above all, loyalty to our customers and employees, always keeping our doors open for pioneering ideas, and never forgetting our humble beginnings. With this in mind, we are committed to taking on social responsibilities to aid the welfare of our surrounding communities, giving back to the very society which has endorsed our growth, directly impacting our success over many years.

WEINGÄRTNER MASCHINENBAU GMBH

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