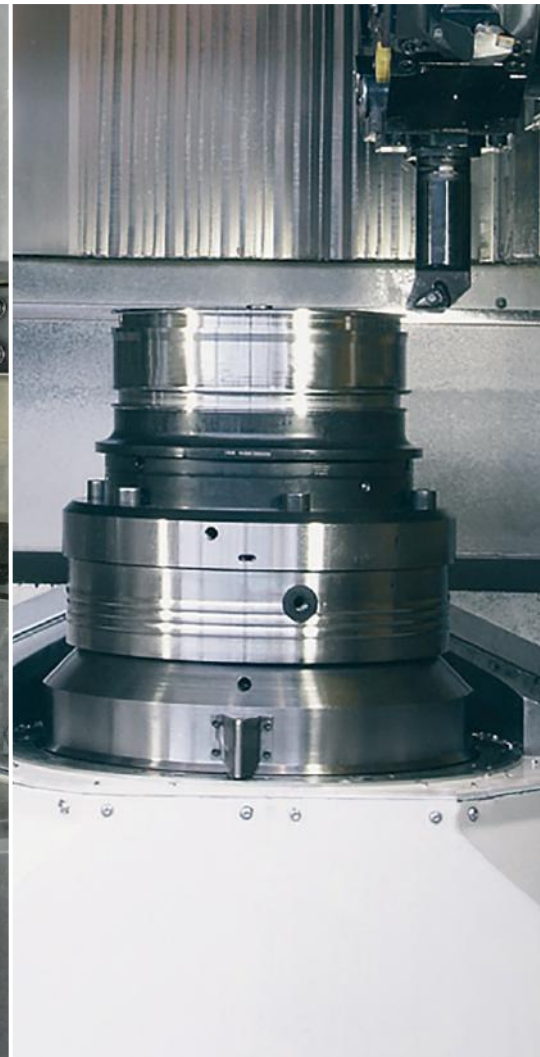


# HESSAPP

## DVT SERIES



Pick-up Vertical Turning Machines with Transfer Technology



# The Compact Production Turning Machine

## Unique machine design

The proprietary Hessapp DVT design stands for complete machining without compromise, combined with maximum precision. When it comes to high precision in one chucking after another, in particular, the advantages are significant, because the workpiece is transferred to the next chuck still clamped, without losing its position. Ever more restricted production floor space requires a compact machine design. Compared to the footprint of two individual machines with interlinking and turnover station, the advantages of the DVT are especially obvious. The ergonomic machine design with

large doors and windows guarantees maximum user friendliness, easy setup and fixturing. As the turnover station is dispensed with, automation setup times are also minimized.

## Technologies

- ▶ Turning
- ▶ Drilling
- ▶ Milling
- ▶ Grinding
- ▶ Hard turning

## Industries

- ▶ General mechanical engineering
- ▶ Aerospace
- ▶ Automotive
- ▶ Commercial Vehicles
- ▶ Construction Machinery
- ▶ Fittings



## Advantages

### Innovative transfer technology

- ▶ Automatic loading / unloading of the machine
- ▶ Workpiece transfer with maximum positioning accuracy
- ▶ Machining process layout according to the specific advantages of a suspended and a fixed spindle regarding gravity and chip fall
- ▶ No conveyors or turnover stations between the first and second chucking operations
- ▶ High axis speeds for low cycle times and minimal non-productive times
- ▶ Low cost through high productivity

### Components and options

- ▶ Simple, reliable, tried-and-tested components
- ▶ Numerous options for your individual DVT
- ▶ Highly versatile
- ▶ Short setup times
- ▶ Rapid installation and production start-up

### Excellent ergonomics

- ▶ Easily accessible, generous work area
- ▶ Unlimited freedom of movement
- ▶ Easy setup, keeping idle times to a minimum
- ▶ Large window for observing the manufacturing process

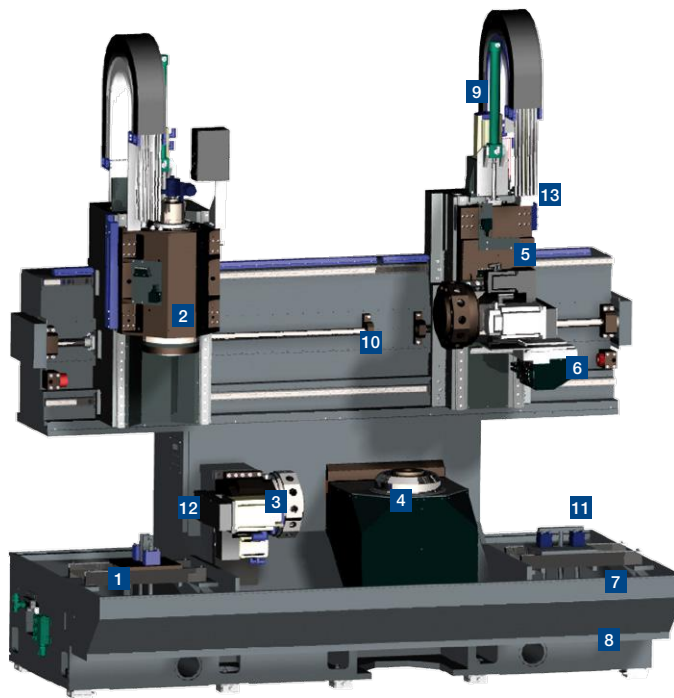
### Problem-free handling systems

- ▶ Self-loading / unloading
- ▶ No loaders required
- ▶ Easy changeover to different workpiece diameters
- ▶ Problem-free linking to other equipment

## Extract from the workpiece range



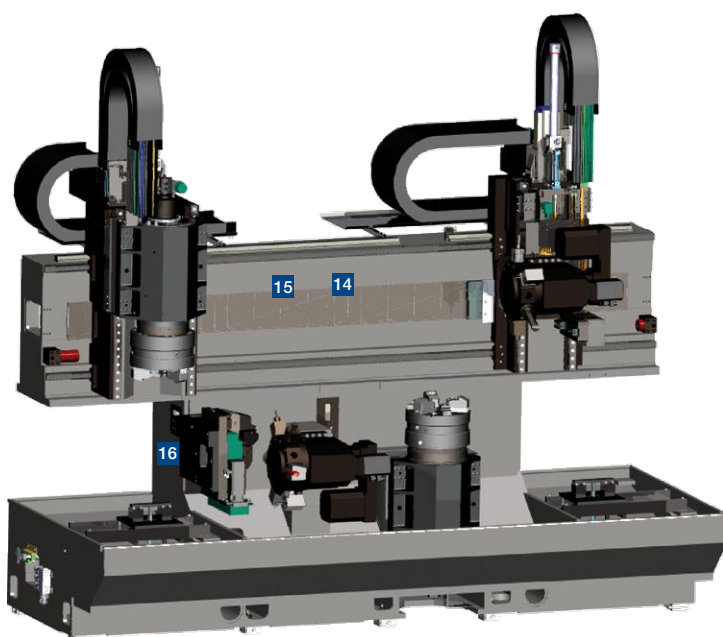
# Functional Design – Transfer Technology



## DVT – Standard configuration

- 1 Workpiece infeed conveyor
- 2 Travelling (suspended) motor spindle
- 3 Stationary turret head
- 4 Fixed motor spindle
- 5 Cross slide
- 6 Workpiece gripper for unloading
- 7 Workpiece outfeed conveyor
- 8 Tray-type enclosure
- 9 Hydraulic counter-balancing
- 10 Ball screw drive
- 11 Hydraulic lift unit with run-over protection
- 12 Y-axis
- 13 Linear measuring systems in all axes

DVT 200 / 300 / 400 also available as mirrored configuration



## DVT Auxiliary components

- 14 Linear drive
- 15 Linear guides with integrated measuring systems
- 16 Technology modules for grinding, NC-slide, drilling, milling

DVT 500 / 630 / 750 also available as mirrored configuration

# Complete Machining of Two Workpieces without Turnover Device

## The uniqueness of the DVT

Instead of two individual machines linked by handling and turnover stations, just one DVT is required for machining workpieces from two sides with maximum precision. The basis for this system is the automatic loading of the machine through the suspended spindle and machining in an enclosed work area. Direct transfer to the chuck of the fixed spindle after machining takes place without any loss of quality between the two chucking operations.

While the second side is being machined, the suspended spindle is loaded once more and machining continues without interruption. The fixed spindle is unloaded by a separate gripper. The finished component is removed by an integrated handling device, so that blank and finished parts are clearly separated for the operator.



Step 1: Load



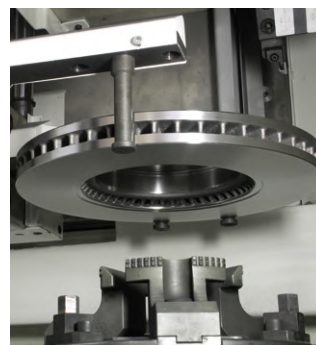
Step 2: Machine 1st side



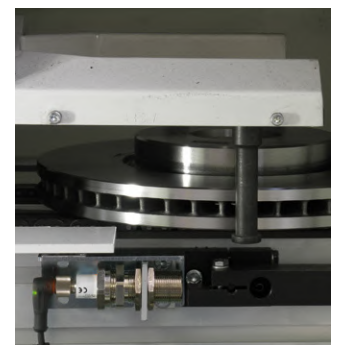
Step 3: Transfer workpiece



Step 4: Machine 2nd side



Step 5: Unload



Step 6: Stack

# Modular System



**Motor spindle**

- ▶ max. 42 kW (40 % duty)
- ▶ max. 5000 rpm



**Motor spindle**

- ▶ max. 71 kW (40 % duty)
- ▶ max. 4000 rpm

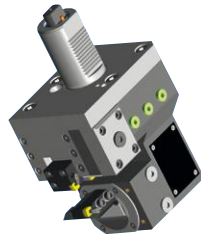


**Motor spindle**

- ▶ max. 80 kW (40 % duty)
- ▶ max. 4000 rpm



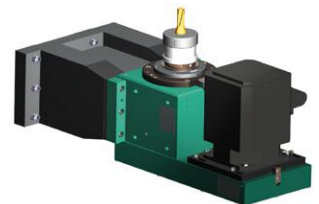
**Multiple drill head**



**Tool holder with  
NC lift-off slide**

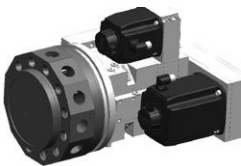


**Crown turret**



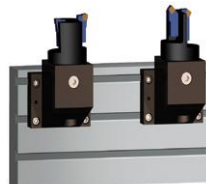
**Drilling/milling unit**

- ▶ 100 Nm / 3000 rpm
- ▶ B-axis\*

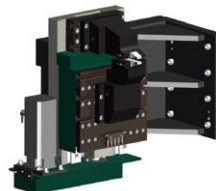


**Turret with live tools**

- ▶ 100 Nm / 4000 rpm
- ▶ 250 mm tool length

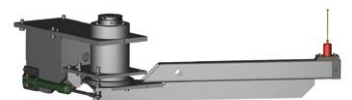


**Multifunction plate**



**NC lift-off slide**

- ▶ Stroke max. 40 mm
- ▶ For holding static tools
- ▶ Workpieces up to Ø 500 mm



**Workpiece gauge**



**Oval conveyor belt drag conveyor**



**Inverted-tooth chain driven conveyor**



**Flat chain driven conveyor**

# Standard Options

## Machine bed

- ▶ Intrinsically robust machine base
- ▶ Strong-walled, extensively ribbed structure
- ▶ Short strokes keep idle times to a minimum
- ▶ Use of driven tools
- ▶ Linear measuring system with pneumatic overpressure in the X-axis
- ▶ Machine bed available as mineral casting
- ▶ Integrated measuring system in X-axis



Machine bed and cross slide

## Highly dynamic motor spindles

- ▶ High speed
- ▶ High motor power
- ▶ Liquid-cooled, ensuring high thermal stability and low noise
- ▶ Exact positioning through integrated C-axis
- ▶ Integrated clamping stroke monitoring reduces setup requirements



Highly dynamic motor spindles

## Options:

### CNC controls

- ▶ SIEMENS
- ▶ FANUC

**SIEMENS**  
**FANUC**

### Handling systems

- ▶ Drag conveyor
- ▶ Inverted-tooth chain driven conveyor
- ▶ Pallet conveyor
- ▶ Oval conveyor

### Clamping/fixture options

- ▶ Oil filled for low maintenance
- ▶ Quick jaw change
- ▶ Clamping device exchange support

### Optional technology

- ▶ B-axis (on request)
- ▶ Drilling/milling unit
- ▶ NC lift-off slide
- ▶ Multifunction plate
- ▶ Turret with static tool
- ▶ Turret with driven tool
- ▶ Special chucks
- ▶ Workpiece/tool gauging
- ▶ Y-axis +/- 75 mm
- ▶ NC lift-off tool in turret

### Chip disposal/coolant

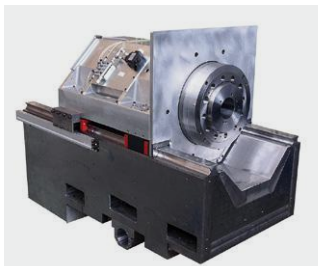
- ▶ Scraper chip conveyor
- ▶ Hinged chip conveyor
- ▶ Coolant tank 950 l
- ▶ Paper belt filter
- ▶ Edge filter
- ▶ Heat exchanger
- ▶ Extractor
- ▶ High pressure coolant 80 bar

# DVT Models

## Advantages

- ▶ Powerful motor spindles
- ▶ Fast axis speeds
- ▶ Configuration from modular system
- ▶ Various chip conveyors and cooling systems (high pressure)
- ▶ Selection of different tools and tool carrier systems
- ▶ Despite the compact work area, all machine components – such as the spindle, chuck and tool turret – can be easily reached for setup work

## DVT 200/300



Highly dynamic motor spindles as plug & play components



Slide version with 12-unit turret as technology carrier

- ▶ For workpieces with a swing diameter of up to 250/280 mm
- ▶ Access to entire work area through one large door, large windows
- ▶ Electric turret drive for minimal thermal effects
- ▶ Y-axis +/- 75 mm as option
- ▶ The multifunction plate offers space for various machining modules, such as drilling, milling and grinding



Thermo-symmetrical construction



Multifunction plate as a low-cost alternative to the turret (DVT 300)

## Technical Data

|                             |    | DVT 200 | DVT 300 |
|-----------------------------|----|---------|---------|
| <b>Work area</b>            |    |         |         |
| Turning diameter max.       | mm | 200     | 300     |
| Swing diameter max.         | mm | 260     | 320     |
| Workpiece height with chuck | mm | 318     | 320     |



## DVT 400 / 500



- ▶ For workpieces with a swing diameter of up to 510 mm
- ▶ The DVT 500 also offers space for various machining modules, such as drilling, milling and grinding
- ▶ The diverse options available are rounded off by an integrated Y-axis, tool and workpiece gauging, and driven tools with internal coolant supply
- ▶ Modular tooling systems suitable for high pressure cooling up to 80 bar

### Technical Data

|                       |    | DVT 400       | DVT 500       |
|-----------------------|----|---------------|---------------|
| <b>Work area</b>      |    |               |               |
| Turning diameter max. | mm | 450           | 500           |
| Swing diameter max.   | mm | 510           | 510           |
| Workpiece height      |    | 470 US/       | 470 US/       |
| with chuck            | mm | 360 – 420 LS* | 355 – 475 LS* |

\*US = upper motor spindle / LS = lower motor spindle

## DVT 630 / 750



- ▶ For workpieces with a swing diameter of up to 630/750 mm
- ▶ Steep gradient of the walls in the work area guarantees the best chip removal
- ▶ Lower spindle can be configured as travelling motor spindle
- ▶ Automation options for large and heavy parts

### Technical Data

|                             |    | DVT 630 | DVT 750 |
|-----------------------------|----|---------|---------|
| <b>Work area</b>            |    |         |         |
| Turning diameter max.       | mm | 570     | 630     |
| Swing diameter max.         | mm | 630     | 750     |
| Workpiece height with chuck | mm | 450     | 500     |

# Components and Options for Your Individual Machine

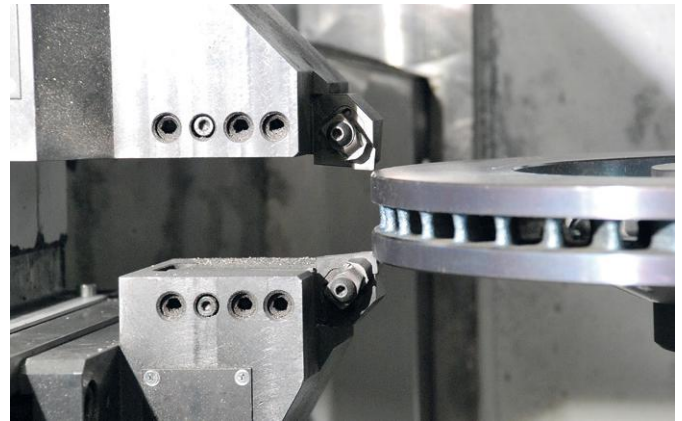
## Drilling/milling unit

The modular drilling / milling unit can be used both for individual tools and multiple drill heads.



## NC lift-off slide with tool

The NC lift-off slide was specially developed for the manufacture of brake disks. It can be employed for the machining of all plane surfaces, however. Two cutters can operate simultaneously.



### Technical Data

#### Performance class 1

|            |     |      |
|------------|-----|------|
| Speed max. | rpm | 4500 |
| Torque     | Nm  | 40   |
| Power      | kW  | 20   |

#### Performance class 2

|            |     |      |
|------------|-----|------|
| Speed max. | rpm | 3000 |
| Torque     | Nm  | 100  |
| Power      | kW  | 23   |

### Technical Data

|               |           |
|---------------|-----------|
| Stroke        | ±20 mm    |
| T-slot        | DIN 650   |
|               | a = 14 mm |
|               | b = 23 mm |
|               | c = 9 mm  |
| Slot distance | DIN 55200 |
|               | 100 mm    |

## Driven tools

Turning, drilling, milling and tapping in a single chucking offers the best machining quality. No setup is needed between operations and the number of fixtures required is reduced. To reduce the clamping pressure, the workpiece is supported by a fixture integrated in the turret.



# Material Handling Systems – Flexible, Trouble-free, Adapted to the Job



DVT 200 with rotary conveyor in a gear manufacturing cell with integrated robot automation and subsequent gear machining on a Modul hobbing machine

## Flexible handling systems

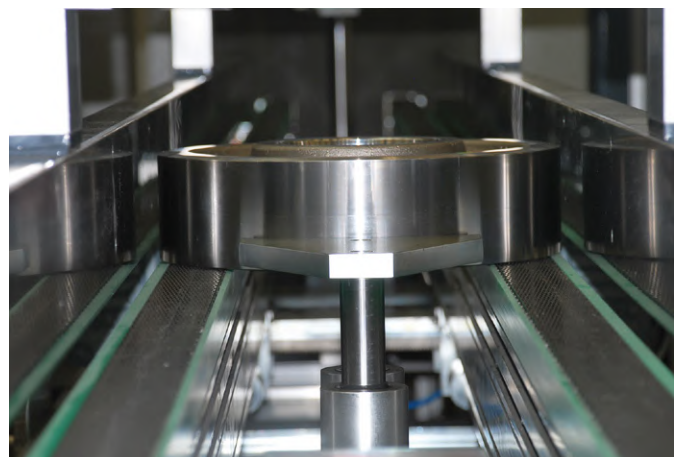
Our technical partnership with you begins with your workpiece, your machining challenges, quality and output requirements. From these individual elements, we develop a process that revolves around your workpiece, in every sense of the word. The end result is your own tailor-made vertical turning machine. The DVT machine series is ideal for complete machining, and can be expanded for use in automated turning cells and lines. For complete machining of brake discs including roughing and

finishing operations, as well as optional grinding, drilling, and milling, Hessapp offers turnkey solutions consisting of a DVH and a DVT machine or two DVT machines. Whether you are looking at multiple machine operation, production through break times or in shifts with minimal staffing, a comprehensive range of equipment is available for whichever degree of flexibility and automation you require.

This includes equipment for workpiece identification, loading, gauging and monitoring.



Flat chain driven conveyor



Chain driven conveyor

## Technical Data

| Machine type                                |           | DVT 200         | DVT 300         | DVT 400                |
|---|-----------|-----------------|-----------------|------------------------|
| <b>Work area</b>                            |           |                 |                 |                        |
| Turning diameter max.                       | mm        | 200             | 300             | 450                    |
| Swing diameter max.                         | mm        | 260             | 320             | 510                    |
| Workpiece height with chuck                 | mm        | 318             | 320             | 470 US / 360 – 420 LS* |
| <b>Motor spindle</b>                        |           |                 |                 |                        |
| Front bearing diameter                      | mm        | 100             | 100             | 150                    |
| Spindle nose                                | DIN       | 55 026          | 55 026          | 55 026                 |
| Spindle nose cylindrical<br>(spindle taper) | size      | A6              | A6              | A11                    |
| Speed max.                                  | rpm       | 5500            | 5500            | 4000                   |
| Motor power at 40 % duty                    | kW        | 34              | 34              | 80                     |
| Torque at 40 % duty                         | Nm        | 360             | 360             | 795                    |
| <b>Feed rate/rapid traverse</b>             |           |                 |                 |                        |
| Rapid traverse Z-axis                       | m/min     | 30              | 30              | 30                     |
| Rapid traverse X-axis                       | m/min     | 60              | 60              | 60                     |
| <b>Tool turret</b>                          |           |                 |                 |                        |
| Tool positions                              | number    | 12              | 12              | 12                     |
| Cylinder shank ø mm                         | DIN 69880 | 40              | 40              | 50                     |
| Tool length max.                            | mm        | 180             | 200             | 250                    |
| <b>Machine foot print</b>                   |           |                 |                 |                        |
| Dimensions L x W x H                        | m         | 4.0 x 2.4 x 3.1 | 4.4 x 2.4 x 3.1 | 3.8 x 2.7 x 3.8        |
| Weight                                      | kg        | 11 500          | 12 100          | 16 000                 |

\* US = Upper spindle / LS = Lower spindle



| <b>Machine type</b>                         |           | <b>DVT 500</b>         | <b>DVT 630</b>  | <b>DVT 750</b>  |
|---|-----------|------------------------|-----------------|-----------------|
| <b>Work area</b>                            |           |                        |                 |                 |
| Turning diameter max.                       | mm        | 500                    | 570             | 630             |
| Swing diameter max.                         | mm        | 510                    | 630             | 750             |
| Workpiece height with chuck                 | mm        | 470 US / 355 – 475 LS* | 450             | 600             |
| <b>Motor spindle</b>                        |           |                        |                 |                 |
| Front bearing diameter                      | mm        | 150                    | 180             | 220             |
| Spindle nose                                | DIN       | 55026                  | 55026           | 55026           |
| Spindle nose cylindrical<br>(spindle taper) | size      | A11                    | A11             | A15             |
| Speed max.                                  | rpm       | 4000                   | 2800 / 800      | 2000 / 800      |
| Motor power at 40% duty                     | kW        | 80                     | 80 / 68         | 55 / 68         |
| Torque at 40% duty                          | Nm        | 795                    | 1150 / 2950     | 1780 / 2950     |
| <b>Feed rate/rapid traverse</b>             |           |                        |                 |                 |
| Rapid traverse Z-axis                       | m/min     | 30                     | 30              | 20              |
| Rapid traverse X-axis                       | m/min     | 60 / 90                | 45 / 60         | 20              |
| <b>Tool turret</b>                          |           |                        |                 |                 |
| Tool positions                              | number    | 12                     | 12              | 8               |
| Cylinder shank ø mm                         | DIN 69880 | 50                     | 50              | 60              |
| Tool length max.                            | mm        | 260                    | 270             | 300             |
| <b>Machine foot print</b>                   |           |                        |                 |                 |
| Dimensions L x W x H                        | m         | 4.6 x 2.7 x 3.8        | 5.7 x 2.6 x 3.6 | 5.8 x 2.6 x 3.9 |
| Weight                                      | kg        | 18 000                 | 20 000          | 30 000          |

Subject to change without notice

# OEM Service for our Brands and Legacy Brands

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**MODUL**



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**Honsberg**



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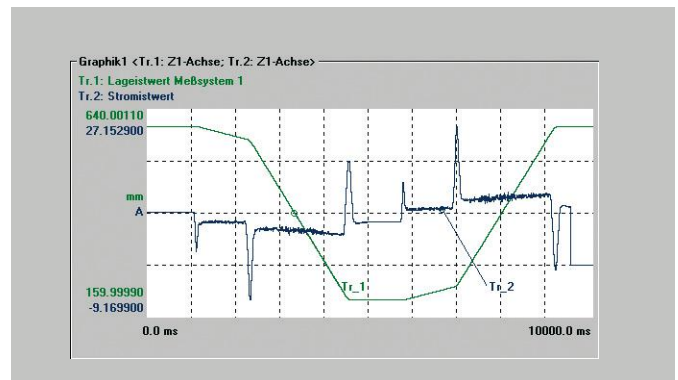
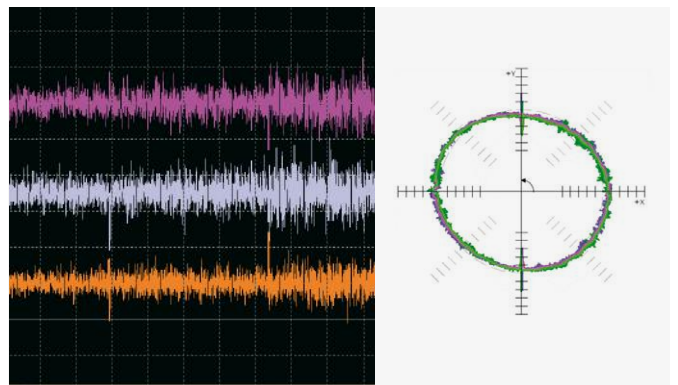
## Service and support

- ▶ Commissioning
- ▶ Maintenance and inspections
- ▶ Repair service
- ▶ Spindle service
- ▶ Overhaul and retrofit
- ▶ Used machines
- ▶ Service contracts
- ▶ Machine relocation



## Process and production optimization

- ▶ Process optimization
- ▶ Programming
- ▶ Software: machine data acquisition, diagnosis, condition monitoring, energy management, virtual machine



Machine condition monitoring "Finger print" via vibration analysis, ballbar test and trace measurement.

## Spare parts

- ▶ 24/7 delivery
- ▶ Central warehouse
- ▶ Individual service concepts



## Training

- ▶ Operator training
- ▶ Maintenance training (mechanical, electrical)
- ▶ Programming training



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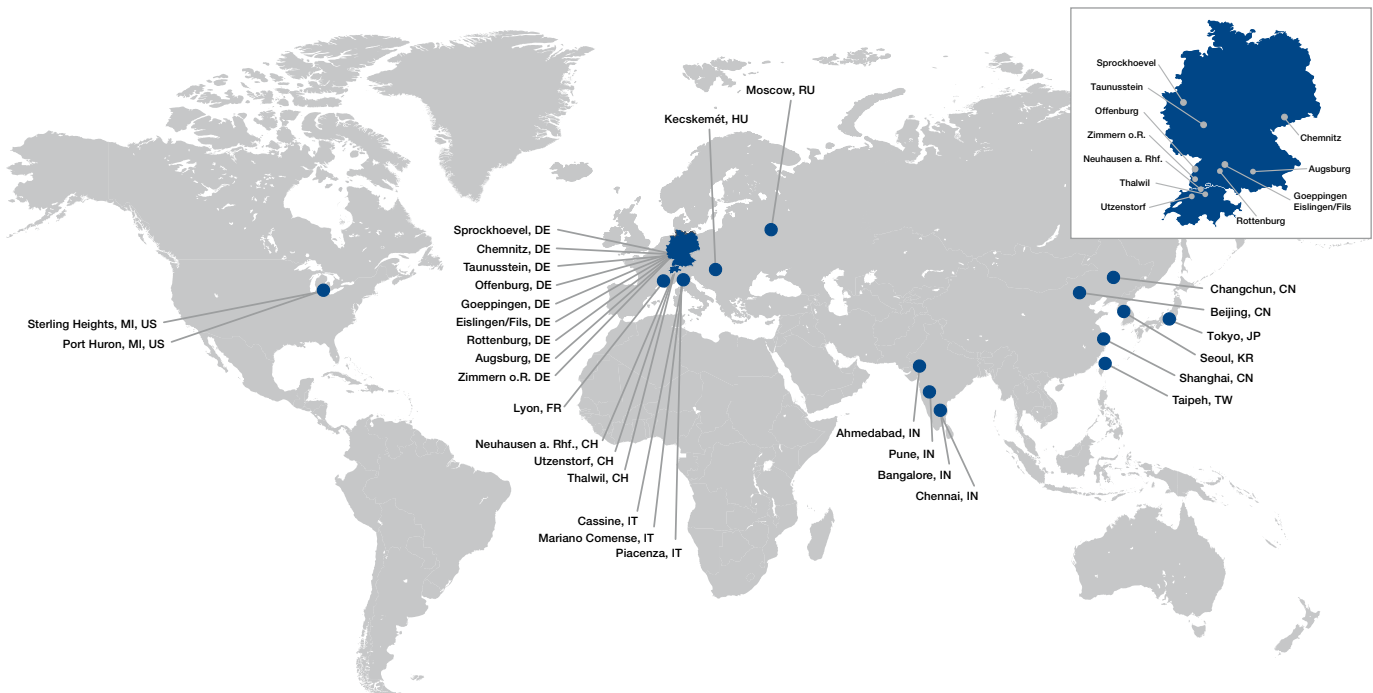


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### About FFG Europe & Americas

The FFG entities in Europe and the Americas unite major players from the German, Italian, Swiss and American machine tool industry with a broad range of milling, turning, grinding, and gear manufacturing technology, and the knowhow of the renowned machine tool brands VDF Boehringer, Hessapp, IMAS, Jobs, MAG, Meccanodora, Modul, Morara, Pfiffner, Rambaudi, Sachman, Sigma, SMS, Tacchella and Witzig & Frank. Since 1798, these brands have substantially contributed to the progress in industrial manufacturing and are well known as reliable and innovative equipment and systems solutions suppliers for the automotive and truck, aerospace, machine building, general machining, railway industry, energy and heavy engineering industries. While being an independent group, these entities benefit from the strengths and opportunities of the global Fair Friend Group. They stand for premium technology within FFG.



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