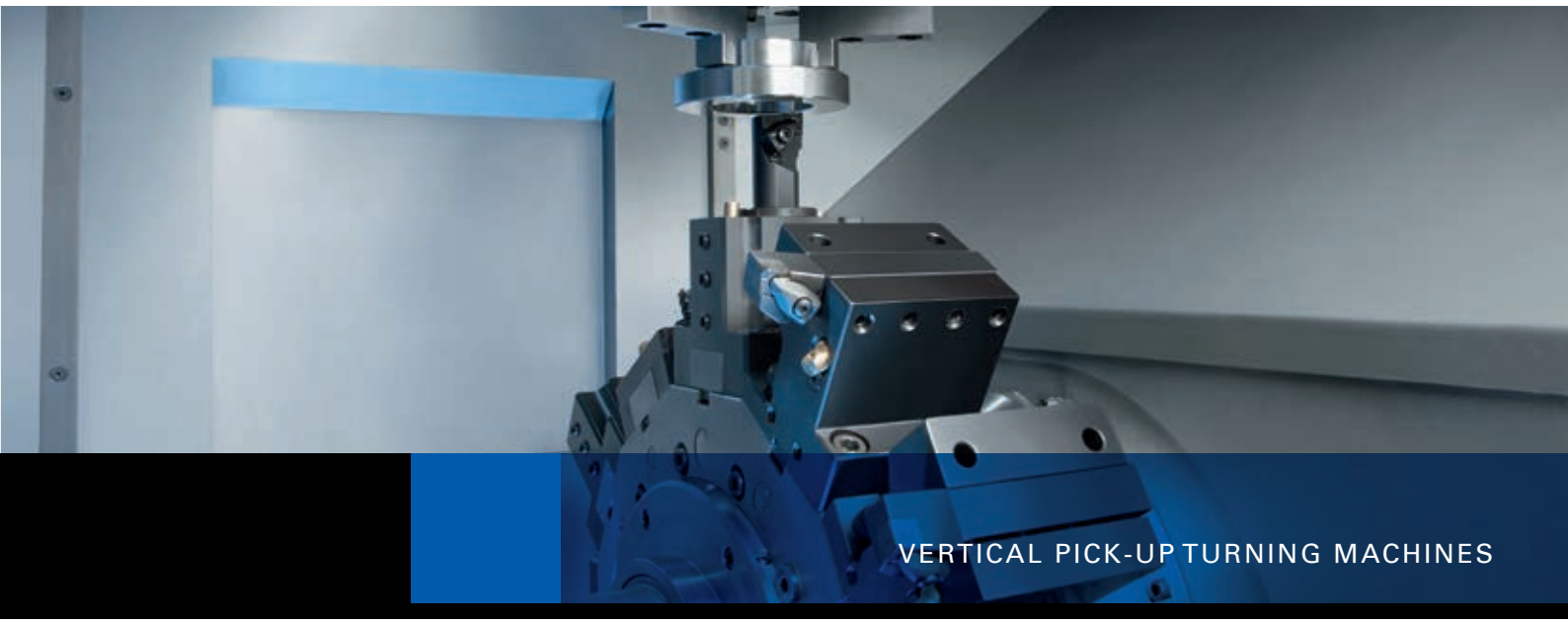
# VL-SERIES

## VL 2 · VL 3 DUO · VL 4 · VL 6 · VL 8



VERTICAL PICK-UP TURNING MACHINES

think VERTICAL

EMAG

+ **Consistent vertical model families with modular design ensure a large range of versions**

+ **Ideal for medium and large scale production**

+ **Every machine features the full range of automation and handling technologies.**

+ **Designed for manual loading, but also easy to automate**

+ **Suitable for operation of multiple machines**


VL 2

Workpiece diameter, max.: 100 mm

Workpiece length, max. 150 mm


VL 4

Workpiece diameter, max. 200 mm

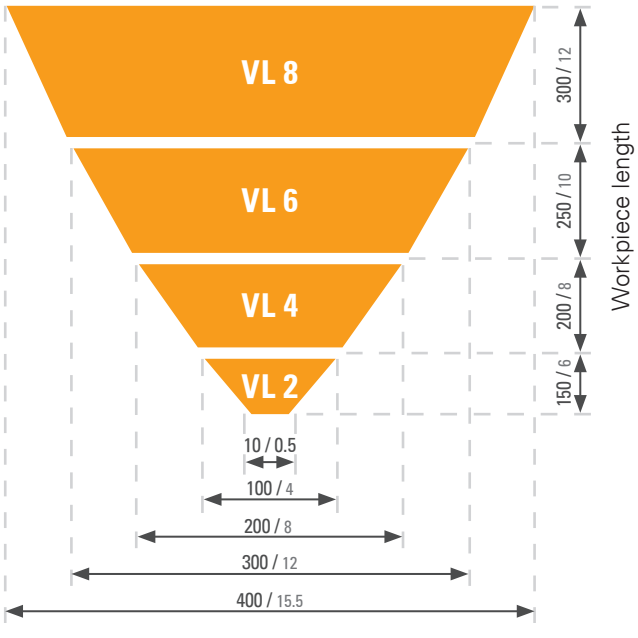
Workpiece length, max. 200 mm

THE
VL PLATFORM

**AUTOMATED PRODUCTION WITH MINIMUM SPACE REQUIREMENT**

## THE WORKPIECE RANGE

Specifications in mm / inch






## VL 6

Workpiece diameter, max. 300 mm

Workpiece length, max. 250 mm

## VL 8

Workpiece diameter, max. 400 mm

Workpiece length, max. 300 mm

Machines shown with optional decorative sheet kit

## THE BENEFITS

1. **Machining of chucked parts = Standard machine concept**
2. **Small footprint (chaku-chaku or close linear arrangement) = Reduced floor space costs, more possibilities for the machine layout**
3. **Possibility of simple interlinking via central feeding and discharge belts and pick-and-place unit/changer = flexible as regards to future developments, lower automation costs, and shorter tooling times**
4. **Integrated automation = No additional costs (interface, etc.)**
5. **Short transport distances = Optimization of idle times**
6. **Common parts strategy, standard spare parts warehousing = Lower maintenance costs**
7. **Ease of operation (extremely accessible machining area) = Quicker machine set-up**
8. **High energy efficiency = Reduction in energy costs**

+ Three axes (X, Z, C), optional Y-axis
+ Turret with up to twelve (driven) tools
+ Automation


# TURNING MACHINES
VL 2 · VL 4 · VL 6 · VL 8

COMPACT

# Low Costs per Piece Guaranteed

**A design which ensures a giant leap forward in terms of production performance: The machines of the VL series are space-saving vertical turning machines with integrated automation.**

Maximum performance at low costs per piece – this performance is based on high-quality components. All VL lathes feature a machine body made of MINERALIT® polymer concrete with world-class damping properties, a pick-up working spindle that moves in the X- and Z-axes with minimum response times and a tool turret that guarantees short swiveling times.xxx

Furthermore, the machines can be fitted with a Y-axis in the turret to allow for the machining of complex geometries. The possible fields of applications for the machines are thus increased massively.

**The result:** the machine structure ensures a high level of component quality and process reliability while requiring minimum floor space.

## THE MOST IMPORTANT KEYWORDS

**HIGH STRENGTH**
**Large working spindle bearing diameter + machine body made of MINERALIT®**

**FULL AUTOMATION**
**Including raw and finished parts storage areas**

**SIMPLE HANDLING**
**All the service units are easy to reach**

**MINIMUM FOOTPRINT**
**thanks to compact machine design**

**MAXIMUM PERFORMANCE**
**thanks to short transport distances**

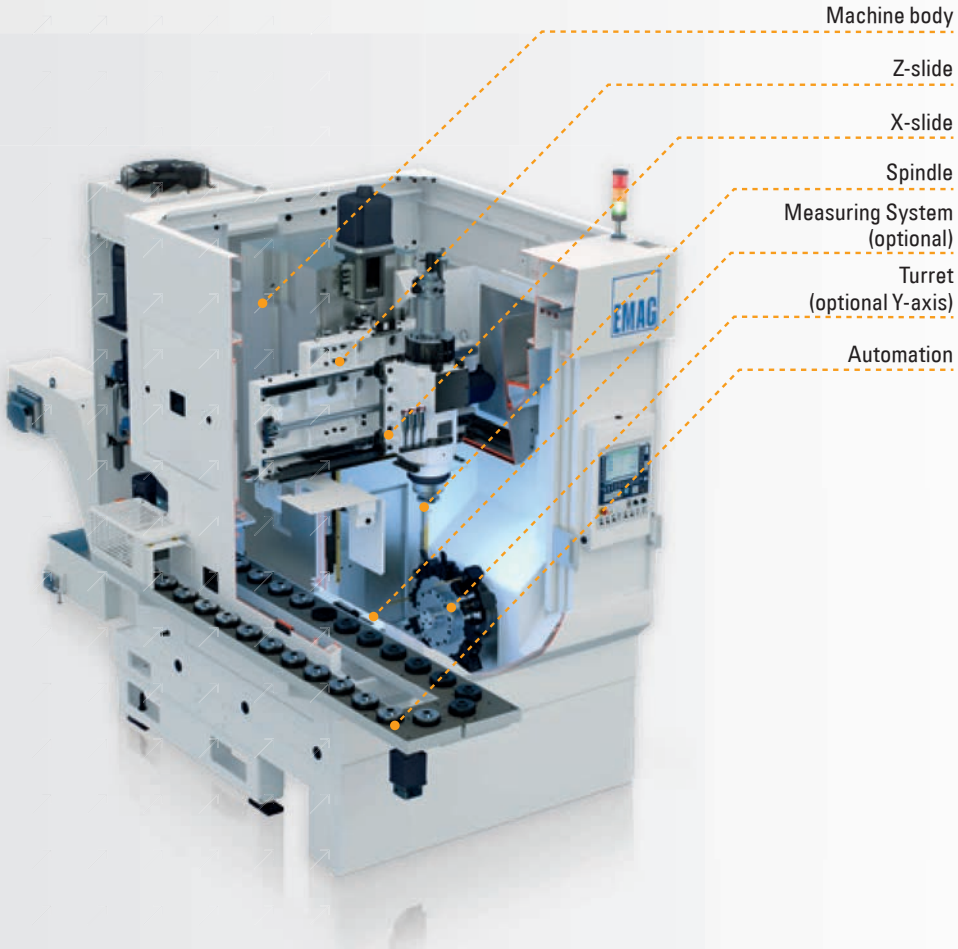
| TECHNICAL DATA | VL 2 | VL 4 | VL 6 | VL 8 |
|---|---|---|---|---|
| Chuck diameter | 160 mm<br>6.5 inch | 260 mm<br>10 inch | 400 mm<br>15.5 inch | 500 mm<br>19.5 inch |
| Workpiece diameter, max. | 100 mm<br>4 inch | 200 mm<br>8 inch | 300 mm<br>12 inch | 400 mm<br>15.5 inch |
| Workpiece length, max. | 150 mm<br>6 inch | 200 mm<br>8 inch | 250 mm<br>10 inch | 300 mm<br>12 inch |
| X-axis travel | 700 mm<br>27.5 inch | 740 mm<br>29 inch | 880 mm<br>34.5 inch | 995 mm<br>39 inch |
| Z-axis travel | 375 mm<br>15 inch | 400 mm<br>15.5 inch | 480 mm<br>19 inch | 580 mm<br>23 inch |
| Y-axis travel (optional) | ± 50 mm<br>± 2 inch | ± 30 mm<br>± 1 inch | ± 30 mm<br>± 1 inch | ± 30 mm<br>± 1 inch |
| Main spindle | | | | |
| » Power rating, 40% / 100% | 18.1 / 13.9 kW<br>24 / 19 hp | 25 / 18 kW<br>34 / 24 hp | 39 / 28 kW<br>52 / 38 hp | 44 / 34.5 kW<br>59 / 46 hp |
| » Torque, 40% / 100% | 77 / 59 Nm<br>57 / 19 hp | 280 / 202 Nm<br>207 / 149 ft-lb | 460 / 340 Nm<br>339 / 251 ft-lb | 775 / 600 Nm<br>572 / 443 ft-lb |
| » Max. number of revolutions | 6,000 rpm | 4,500 rpm | 3,100 rpm | 2,850 rpm |
| Turret tool positions | 12 | 12 | 12 | 12 |
| Rapid-traverse rate X / Y / Z | 60 / 30 / 30 m/min<br>2,363 / 1,181 / 1,181 ipm | 60 / 15 / 30 m/min<br>2,363 / 591 / 1,181 ipm | 60 / 15 / 30 m/min<br>2,363 / 591 / 1,181 ipm | 60 / 15 / 30 m/min<br>2,363 / 591 / 1,181 ipm |
| Revolutions of driven tools | 6,000 rpm | 6,000 rpm | 6,000 rpm | 6,000 rpm |
| Torque driven tools, 30% / 100% | 27 / 15 Nm<br>20 / 11 ft-lb | 27 / 15 Nm<br>20 / 11 ft-lb | 27 / 15 Nm<br>20 / 11 ft-lb | 48 / 30 Nm<br>35 / 22 ft-lb |

The compact machine design means that the modules can be closely positioned while the maintenance and servicing areas are easily accessible from the rear. This makes the VL-machines easy to link and therefore ideal for line production or chaku-chaku layout.

# Measuring – Fully Integrated in the Process

An optional measuring station is available outside the machining area. The measuring station is installed between the machining area and the pick-up station. Measuring is carried out during transportation to the loading / unloading station, thus saving time.







## KEY FEATURES

**1. EASILY ACCESSIBLE**

All the service units are ergonomically arranged.

**2. LOW SERVICE COSTS**

All the units are always accessible (electrics, hydraulics, cooling system, cooling lubricant and central lubrication system).

**3. EASY TO OPERATE**

The control interface remains the same regardless of the control unit.

# AUTOMATED PRODUCTION

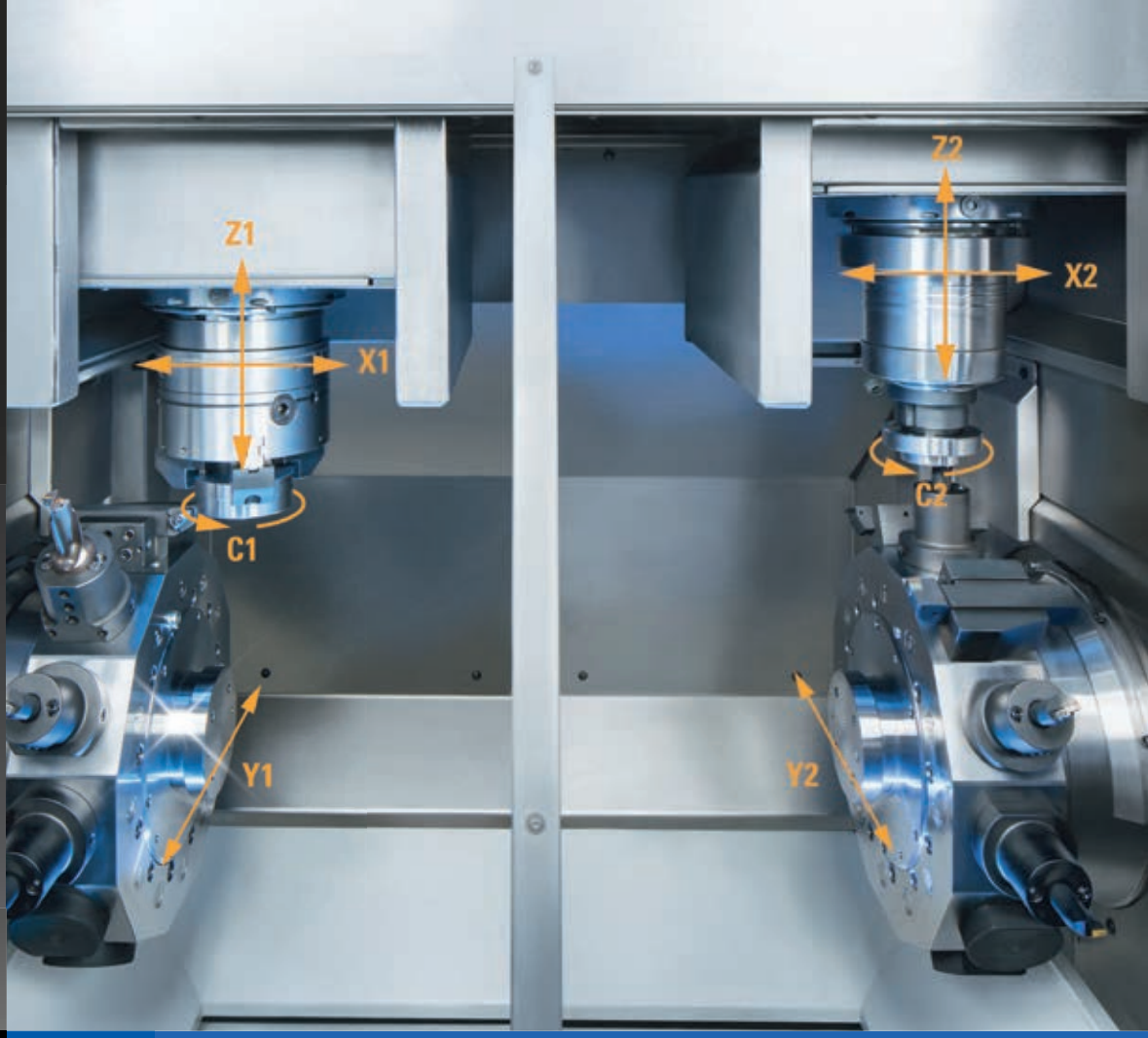

## THE AUTOMATION

The VL machines are equipped with “O” automation. The “O” automation is a workpiece transport system which is fitted to the left-hand side of the machines. It transports the workpieces to the pick-up station.

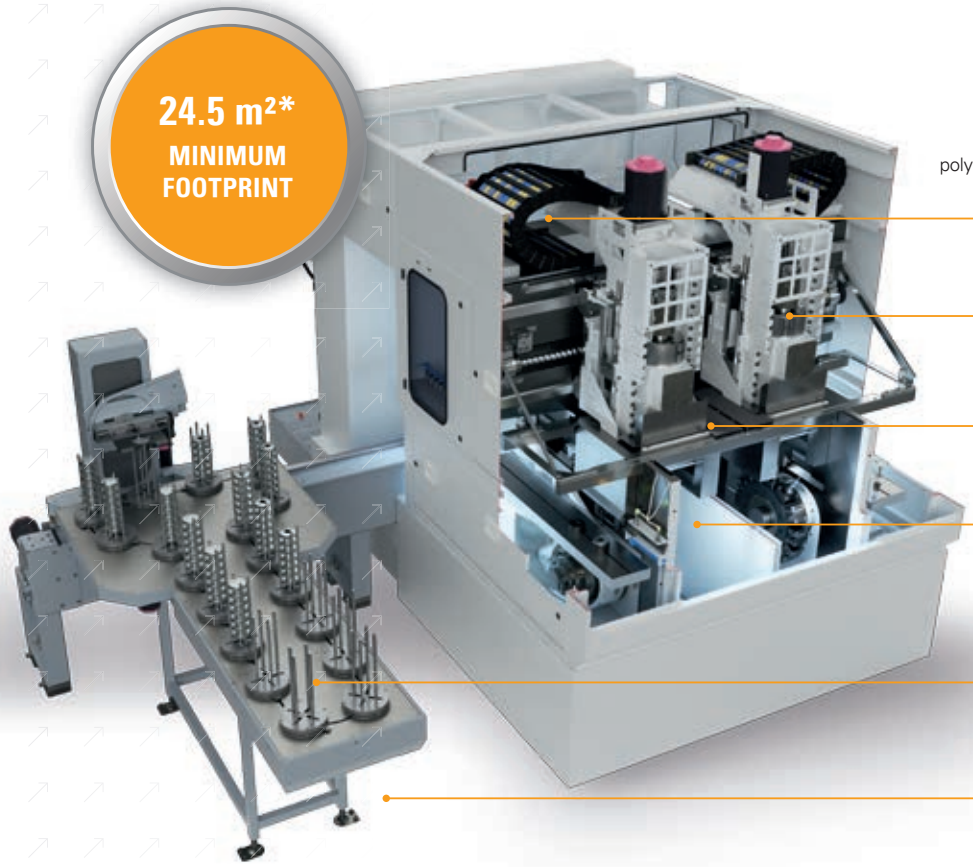

BOTH CHANGERS AND PICK-AND-PLACE UNITS ARE AVAILABLE FOR AUTOMATED PRODUCTION

THE MACHINE IS AUTOMATICALLY LOADED AND UNLOADED AT THE PICK-UP STATION

The VL 3 DUO is the most compact and highest performance twin-spindle turning machine for chucked parts with a diameter of up to 150 mm on the market. Low chip-to-chip times of just 5 seconds (depending on the workpiece geometry) minimize idle times and therefore ensure maximum productivity. The VL 3 DUO is fitted with two main spindles with a rating of 18 kW and a torque of 142 Nm. Other options include driven tools in the turrets and measuring stations outside the machining areas.




## MACHINE DESIGN




**High precision**
Machine base made of MINERALIT® polymer concrete, machine weight 10,000 kg, size 45 linear roller guides
and direct position measuring systems in all axes

**Integrated automation**
Pick-up working spindle for loading and unloading

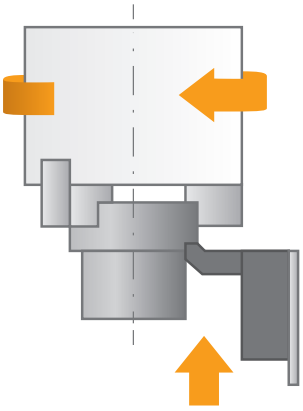
**Unique machine concept**
Two working spindles and two high-performance tool turrets with torque motor

**Optimum accessibility**
Short distance to the turrets and working spindle ensure optimum accessibility

**Increased flexibility**
Parts storage facility for up to 400 workpieces* and TrackMotion automation system for high-speed part transport between the parts storage facility and machining areas as well as for turning the workpieces

**Minimum floor space requirement**
24.5 m² for the complete machine: VL 3 DUO + TrackMotion + parts storage area + chip conveyor

Machines shown in trade fair format.
*Fully equipped machine including chip conveyor, TrackMotion and parts storage facility for up to 400 workpieces (depending on the workpiece geometry)

ap = 4.75 mm
f = 0.4 mm/rev.
vc = 250 mm/min

## HIGH-PERFORMANCE TURNING WITH THE VL 3 DUO

The VL 3 DUO scores highly due to its rigid machine design for heavy-duty machining. High feed forces with a large cutting depth reduce the machining time.

## TECHNICAL DATA

| | |
|---|---|
| Workpiece diameter, max. | 150 mm<br>6 inch |
| Chuck diameter | 210 mm<br>8.5 inch |
| Workpiece length, max. | 110 mm<br>4.5 inch |
| Travel distances: X (machining stroke) / Y (optional) / Z | 505 / ± 30 / 250 mm<br>19.5 / ± 1 / 10 inch |
| Main spindles (2x) | |
| Power rating, 40% / 100% | 17.9 / 15.5 kW<br>24 / 21 hp |
| Torque, 40% / 100% | 144 / 98 Nm<br>106 / 72 ft-lb |
| Max. number of revolutions | 5,000 rpm |
| Spindle flange to DIN 55026 | Size 6 |
| Spindle bearing dia., front | 100 mm<br>4 inch |
| Turrets (2x) | |
| Turret tool positions | 12 |
| Rapid-traverse rate X / Y / Z | 60 / 30 / 30 m/min<br>2,363 / 1,181 / 1,181 ipm |

## THE ADVANTAGES OF THE TRACKMOTION SYSTEM

+ **Minimal set-up time – the TrackMotion automation system is ready for use as soon as the workpiece height and part diameter have been entered.**
+ **Great reliability due to its simple, sturdy design**
+ **Flexible system – multiple TransLift units (pick-and-place units and changers) can be installed on a single rail system**
+ **The workpieces are positioned and turned over in one cycle**
+ **Space-saving since the whole TrackMotion automation system is installed behind the machines**
+ **Measuring equipment, marking systems, cleaning machines and lots of other functions can be integrated**
+ **Easy to service – TrackMotion is easily accessible from all sides**
+ **Short part transport time: Travel speeds – horizontal: 150 m/min and vertical: 35 m/min**

# TrackMotion: Transporting Parts as if They Were on Rails

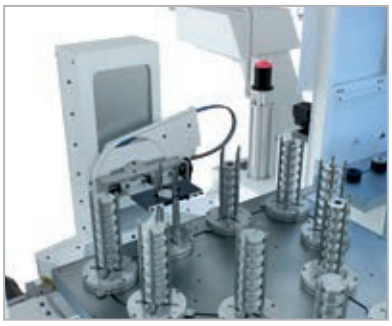
**TrackMotion is an automation solution which combines the previous concept of conveyor belts, pick-and-place units and changers in a single system.**

Put in simple terms, with TrackMotion a so-called TransLift unit runs on a rail system (hence the name "Track") through the machines.

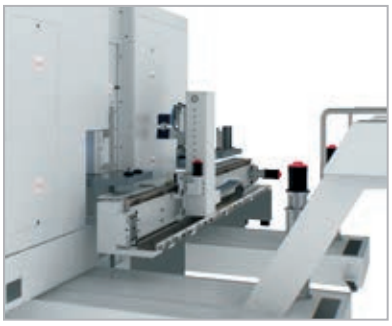
The TransLift grips the parts at different heights, while also positioning and turning the workpiece over. Multiple machines can be linked to each other very easily using a TrackMotion system. Multiple TransLift units can be used for short cycle times. What is more, the TrackMotion automation system is also extremely fast.

EMAG TrackMotion for the simple interlinking of multiple machines





A parts storage facility supplies the raw parts (storage capacity up to 400 parts, depending on the workpiece geometry).



The machines are linked via the TrackMotion automation system which handles both picking and placing the workpieces and turning them over.


Depiction without safety fence

Linking three VL machines using the EMAG TrackMotion system.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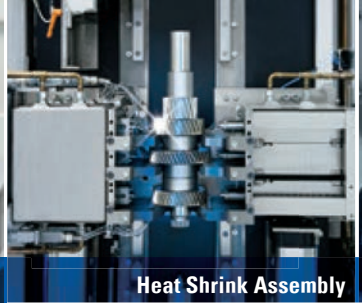
Heat Shrink Assembly

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Induction Hardening


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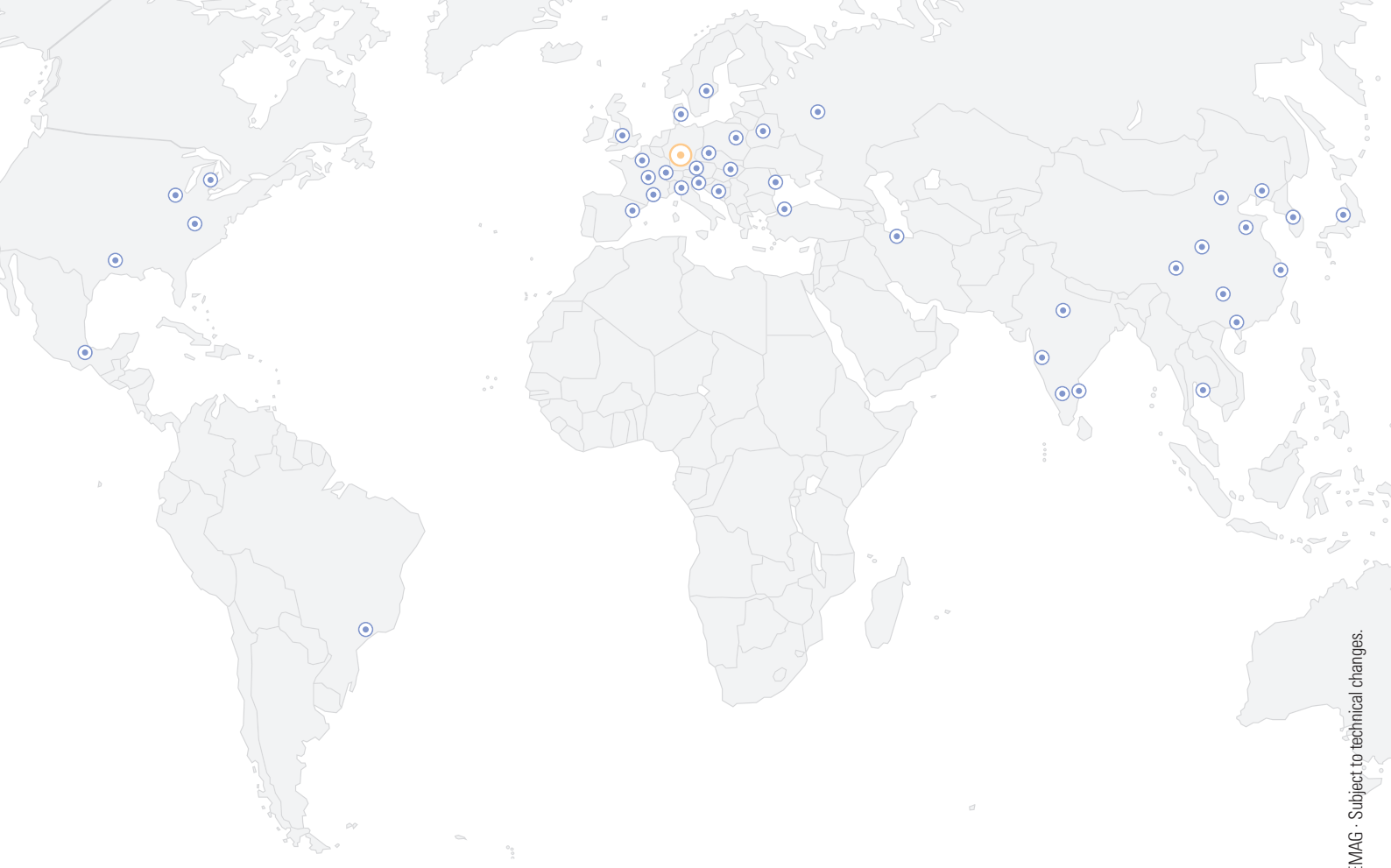



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