An innovative concept to transfer the machine rigidity to the piece

- MillTec GRIP
- It generates a self-clamping force to the machine table equivalent to 20% of the nominal force of the system.
- Each pole provides a nominal force of 340 daN to the workpiece and of 330 daN to the machine table.
- The self-clamping force is maximum when the surface of the machine table is smooth and with large areas of intimate contact.
- The clamping force to the piece is always influenced by the inevitable opening air gaps, the unpredictability of the contact areas and the eventual presence of polar extensions.

In many operational situations the clamping forces to the table could be equal or greater than the clamping forces generated on the piece. In case of vertical installation we suggest lateral stops could be required for the piece as well for the chuck, to compensate the sliding coefficient.

- MillTec GRIP 304HD (320x425x42mm), magnetically clamped on machine table.
- Material: FE 275 JR.
- Machine: VMC 1600 - 27kW
- Piece dimensions: 410x260x50mm, positioned on 3 fixed extensions PFR 70/45 and 9 mobile RMP 70/45.

- Machining examples with MillTec Grip
- An innovative concept for the chuck and multiple chucks, equipped with TCF pendant.
- The parking plate, supplied with the system, is essential for the transport and storage of the system and / or transfer to another machine.
- The parking plate, supplied with the system, is essential for the transport and installation. It can be used in case of removal of the system and / or transfer to another machine.

- Modularity for any need
- The wide range of MillTec GRIP modules is ideal to configure different magnetic tables both for vertical and lateral extensions, horizontal and vertical.
- MillTec modules can be fixed through the dedicated side slots or with through holes that can be drilled in the solid block structure of the chuck.

The parking plate of MillTec GRIP

**FACE MILLING**

**SLOT EXECUTION**

**EDGE MILLING**

### Machining examples with MillTec GRIP

**FACE MILLING**

<table>
<thead>
<tr>
<th>Tool diameter (mm)</th>
<th>Cutting speed (rpm)</th>
<th>Cutting width (mm)</th>
<th>Cutting depth (mm)</th>
<th>Feed of the table (mm/min)</th>
<th>Metal removal rate (cm³/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>860</td>
<td>80</td>
<td>1,5</td>
<td>4000</td>
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<tr>
<td>50</td>
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**SLOT EXECUTION**

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<td>44</td>
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</table>

**EDGE MILLING**

<table>
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<th>Tool diameter (mm)</th>
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<th>Cutting width (mm)</th>
<th>Cutting depth (mm)</th>
<th>Feed of the table (mm/min)</th>
<th>Metal removal rate (cm³/min)</th>
</tr>
</thead>
<tbody>
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<td>1800</td>
<td>5</td>
<td>5</td>
<td>4000</td>
<td>44</td>
</tr>
</tbody>
</table>
is positioned on the machine

The system, equipped for clamping milling
The new force in magnetic
The bi-directional magnetic circuit: All 95% of protons are exchanged by a double magnetic circuit (Alnico + Neodymium) and can generate the highest level of magnetic induction into the steel with high-Magnetic-mobility magnets. MANG System allows to operate safely even in case of critical air-gap conditions.

The quadrangular chessboard layout: It allows a magnetic flux flowing horizontally and flat with a very limited depth fully concentrated in the polar area, thus in the work piece to be clamped. Being all 95% protons absolutely identical, the magnetic circuit is perfectly balanced with no step loss in magnetic interference and with constant and predictable performances (RMS invariant).

Intrinsically safe
The system has been achieved by an electric pulse that lasts for few seconds, the work piece is magnetically clamped with no time limit, with constant power and the power supply, functionally to the power of high energy permanent magnets.

The system can be later disabled with a short-electric pulse.

The evolution of a success

The Quadsystem technology patented by Tecnogranma has represented for many years its industrial power in perforating all the Permanent-electric magnets applied to machine tool world building systems. To quick clamping or joining molding, cnc machining machines and on steel handling systems, with impressive operational advantages introduced by thousands of customers worldwide.

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The new force in magnetic clamping for milling

no power consumption.

MillTec GRIP revolutionizes the concept of magnetic clamping on milling machines and machining centers.

Now you can perform a real art in clamping, i.e. between the workspace and the magnetic surface and in the carcase time between the magnetic system and the machine table.

The clamping force of the system to the machine table is 30% of the nominal force of the machine table.

To eventually remove the system:

"after a DEMAG cycle": after a DEMAG cycle the parking plate can be removed.

The polar geometry with round poles allows an optical distribution of the magnetic area, with the zones available (for additional machining centers) to operate safely even in case of critical air-gap conditions.

Uniform clamping
When clamped with brackets and vices, workpiece can never fully accessible and multiple setups are needed to complete the machining cycle.

With MillTec, the clamping force is uniform on the entire clamping surface, with no compression and deformation of the work piece.

Full machining in one setup
With MillTec, the workpiece is always fully accessible on 5 faces thus allowing the full machining in one setup, improving the tool path and reducing machining operations ( boring, drilling, contouring, milling and hobbing).

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Intrinsically safe
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The system can be later disabled with a short-electric pulse.
The new force in magnetic clamping for milling

The evolution of a success

The Quadsystem technology patented by Tecnomagnete (WO 2009/007807) introduces the concept of permanent-electro magnetism applied to machine tool work-holding systems, to quick clamping or rejection, in machining, stamping and handling systems, with impressive operational advantages introduced by thousands of customers worldwide.

The bio-directional magnetic circuit: All 4 poles are energized by a double magnet circuit (Axis + Neutraly) and can generate the highest level of magnetic induction into the unit with a high-Magnetically non-ferrous material (MONOLITE) to operate safely even in case of critical air-gap conditions.

The rectangular chessboard layout: It allows a uniform flux facing horizontal and flat with a very limited depth fully contained in the pole area, thus in the work-piece to be clamped. Being all 4 poles absolutely identical, the magnetic circuit is perfectly balanced with no step rise, no magnetic interference and with constant and predictable performances (Neutral Crown patent).

Intrinsically safe: Any Milltec system has been achieved by an electric pulse that lasts for few seconds, the work piece remains clamped for a short-electric pulse, with constant power and the power supply, only by the power of high energy permanent magnets.

The system can be later or deactivated with a short-electric pulse.

Milltec GRIP offers great advantages for operating a clean system and quality.

Easy to use with the practical and reliable fast connector to the machine table.

The complete clearing of all vibrations allows you to enhance the character of actions clamping of the magnetic system; it allows a complete freedom of motion, optimal machining speed and fine tolerance.

The reduced thickness and the reduced weight help to optimize the machine performance and the lightweight machining head connector.

Milltec GRIP comes with a quick clamping and rejection system, a single surface not penetrable, the metallic surface and the metallic surface allow the product not to be seen. A single surface not penetrable.

The monolithic technology: The new patent identified as Quadsystem MONOLITE allows to introduce in the market a new generation of magnetic devices characterized by solid block structure with no assembled mechanical components. Muthurised by solid process, the poles come integrated with the frame and can absorb heavy daily operations keeping absolutely stable conditions without any deflexion.

The poles geometry with round poles allows a optimal distribution of the magnetic area, with the zones available for additional machining or clamping of the work piece. timeless, tight radiuses and tolerances and RMP-system.

The magnetic clamping on milling machines and hydraulic clamping machines.

The Milltec MAG cycle the system is fixed to the piece; this can reach 75 Tons/m2.

Milltec MAG is connected to the system to machine tool work holding systems, to quick clamping or rejection, in machining, stamping and handling systems, with impressive operational advantages introduced by thousands of customers worldwide.

Self clinching and quick stress release

The workpiece provides pole extensions RMP make such operations even more simple and practical in any real environment.

The milling machine design does not permit any clamping as you have to guarantee facing that granting the best possible and constant performances even without any cleaning and maintenance.

The integrated springs and surface mechanism allow a high disengagement with the Milltec system compared to traditional pole extensions with single surface.

When clamped with brackets and wises, workpieces can never fully accessibility and multiple setups are needed to complete the machining cycle.

The bi-directional magnetic circuit

Magnetic system for milling applications MillTec allows to offer a wide range of applications in the field of metal machining with high quality and productivity.

MillTec GRIP eliminates the concept of magnetic clamping on milling machines and handling centers.

Now you can perform a real uniform clamping, i.e. between the workpiece and the magnetic surface and in the same time the clamping of pieces of various sizes that are never fully accessible and multiple setups are needed to complete the machining cycle.

MillTec GRIP offers the possibility to manage the clamping of various materials, from high-carbon and high-alloy steels to aluminium, copper and low-carbon steels, in the case of critical air-gap conditions.

The clamping force of the system to the machine table is 30% of the nominal force to the system; this can reach 75 Tons/m2.

The permanent magnets built in the inner area.

The absence of assembled and moving parts, the metallic surface and the metallic surface allow the product not to be seen. A single surface not penetrable.

The Polar geometry with round poles allows a optimal distribution of the magnetic area, with the zones available for additional machining or clamping of the work piece. timeless, tight radiuses and tolerances and RMP-system.

The uniform metallic surface, full with no inserts, sealing resin and any filling part, A single surface not penetrable.

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MillTec GRIP offers the possibility to manage the clamping of various materials, from high-carbon and high-alloy steels to aluminium, copper and low-carbon steels, in the case of critical air-gap conditions.
a) The system, equipped
tion caused by the mechanical clamping
eliminate any possible bending or deforma-
tions. These great forces work combined to
make the workpiece perfectly stable.

b) The electronic control unit
is connected to the system through a
quick connector, allowing easy and quick
connection to the machine. The system can be
activated or deactivated with a simple push button.

The bi-directional magnetic circuit
All N/S poles are energized by a double
magnetic circuit (Neutral + Neutral) and can
generate the highest level of magnetic
induction into the coil with high-Magnetic-
materials. This magnetic circuit is perfectly balanced with
the high quality N/S poles to achieve the best possible
magnetic performances.

The evolution of a success

The Quadsystem technology patented by
Teocomagnete has revolutionized the concept of
machingen systems for milling machines.
The system is now available for various
applications including milling centers, on gantry
machines, on conventional machining centers,
and on pallet changing systems.

The system is ready for an
independent mobile pole
By means of a reverse procedure, using the
permanent magnets built in the inner area.

The uniform metallic surface, full steel, with
no noise, no fluid, no heat generation, no power
consumption. This simplifies the machine
operator’s life.

The absence of assembled and moving parts
permit any chip or any dust to penetrate inside,
thus granting the best possible and constant
quality of the machining results.

MillTec GRIP revolutionizes the concept of
magnetic clamping on milling machines and
machining centers.

New system is ready to perform a real uniform
clamping, i.e. between the workpiece and
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### Machining examples with MillTec Grip

**An innovative concept to transfer the machine rigidity to the piece**

- MillTec Grip generates a self-clamping force to the machine table equivalent to 30% of the normal force of the system. Each pole provides a normal force of 430 daN to the workpiece and of 320 daN to the machine table.

The self-clamping force is maximum when the surface of the machine table is smooth and with large areas of intimate contact. The clamping force to the piece is always influenced by the inevitable operating air gaps, the anisotropy of the control area and the eventual presence of polar extensions.

In many operational situations the clamping force to the table could be equal or greater than the clamping forces generated on the workpiece. In case of vertical installation we suggest the use of mechanical stops for the piece as well for the chuck.

- **Lateral stops** could be required for the piece as well for the chuck in presence of heavy duty machining operations.

### MillTec Grip Features

- **Modularity for any need**: MillTec can be realized in HP (High Power) version, with a thickness slightly higher, to achieve maximum operational efficiency even in the presence of high air gaps, the unpredictability of the contact surface or with large areas of intimate contact. MillTec can be realized in HP (High Power) version.

The parking plate, supplied with the system, is essential for the transport and installation of the system. The parking plate is reusable in case of storage and / or transfer to another machine.

### MillTec Grip Technical Specifications

- **Magnetic flux depth**: 17mm
- **2 lateral slots to fix on machine table**
- **Over 75 Ton/m2 in workpiece contact area**
- **Up to 16 kg/cm2 in active magnetic area**
- **Thickness**: HD type 42mm (HP - 57mm)

MillTec can be fixed through dedicated side slots or with through holes that can be drilled in the solid block structure of the chuck.

### MillTec Grip Modules

The wide range of standard MillTec modules is ideal to configure different magnetic tables both for vertical and front dynamic horizontal operations. MillTec modules can be fixed through the dedicated side slots or with through holes that can be drilled in the solid block structure of the chuck.

### MillTec Grip Components

- **Parking plate**
- **Connector**

### MillTec Grip Applications

- **Face milling**
- **Slot execution**
- **Edge milling**

### MillTec Grip Technical Data

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions (mm)</th>
<th>Poles n°</th>
<th>Force kgf (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG 310</td>
<td>320 x 970</td>
<td>30</td>
<td>19.500</td>
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<tr>
<td>MTG 404</td>
<td>405 x 420</td>
<td>16</td>
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<td>MTG 405</td>
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<tr>
<td>MTG 609</td>
<td>570 x 970</td>
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<td>68.700</td>
</tr>
</tbody>
</table>

### MillTec Grip Electrical Connections

- **Electronic control units (ECU)**: MillTec modules are equipped with new waterproof fast connectors (ERGON series) and TCF pendant. MillTec modules can be fixed in the control panel or on the table.

- **Electronic control units**: MillTec modules are equipped with new waterproof fast connectors (ERGON series).

### MillTec Grip Safety

- **Total safety**: MillTec Grip ensures full metallic surface, low thickness and lightweight, high power, low thickness and lightweight modules are available.

- **Full metallic surface**: MillTec Grip ensures full metallic surface, low thickness and lightweight modules are available.

- **Low thickness and lightweight**: MillTec Grip ensures full metallic surface, low thickness and lightweight modules are available.

- **High power**: MillTec Grip ensures full metallic surface, low thickness and lightweight modules are available.

- **Total safety**: MillTec Grip ensures full metallic surface, low thickness and lightweight modules are available.

### MillTec Grip Patents

- **Patent**: MillTec Grip is a patented technology with a total uniformity and maximum rigidity of clamping.

- **Patent**: MillTec Grip is a patented technology with a total uniformity and maximum rigidity of clamping.

- **Patent**: MillTec Grip is a patented technology with a total uniformity and maximum rigidity of clamping.
An innovative concept to transfer the machine rigidity to the piece

- MillTec GRIP
- Generates a self-clamping force to the machine table equivalent to 30% of the normal force of the system.
- Each pole provides a normal force of 400 daN to the workpiece and of 320 daN to the machine table.
- The self-clamping force is maximum when the surface of the machine table is smooth and with large areas of intimate contact.
- The clamping force to the piece is always influenced by the inevitable operating air gaps, the air permeability of the contact areas and the eventual presence of polar extensions.

In many operational situations the clamping force to the table could be weak or greater than the clamping force generated in the piece. In case of vertical installation we suggest lateral stops could be required for the piece as well for the chuck in presence of heavy duty machining operations.

**FACE MILLING SLOT EXECUTION EDGE MILLING**

<table>
<thead>
<tr>
<th>Model Dimensions (mm)</th>
<th>Poles n°</th>
<th>Force kgf (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG 608 570 x 785</td>
<td>5</td>
<td>31.200</td>
</tr>
<tr>
<td>MTG 606 570 x 600</td>
<td>3</td>
<td>23.400</td>
</tr>
<tr>
<td>MTG 510 485 x 970</td>
<td>5</td>
<td>32.500</td>
</tr>
<tr>
<td>MTG 508 485 x 785</td>
<td>4</td>
<td>26.000</td>
</tr>
<tr>
<td>MTG 506 485 x 600</td>
<td>3</td>
<td>19.500</td>
</tr>
<tr>
<td>MTG 505 405 x 785</td>
<td>2</td>
<td>20.800</td>
</tr>
<tr>
<td>MTG 504 405 x 600</td>
<td>2</td>
<td>15.600</td>
</tr>
<tr>
<td>MTG 503 405 x 500</td>
<td>2</td>
<td>13.000</td>
</tr>
<tr>
<td>MTG 502 405 x 420</td>
<td>1</td>
<td>10.400</td>
</tr>
<tr>
<td>MTG 501 320 x 970</td>
<td>2</td>
<td>19.500</td>
</tr>
<tr>
<td>MTG 408 320 x 785</td>
<td>1</td>
<td>15.600</td>
</tr>
<tr>
<td>MTG 406 320 x 600</td>
<td>1</td>
<td>11.700</td>
</tr>
<tr>
<td>MTG 405 320 x 420</td>
<td>1</td>
<td>7.800</td>
</tr>
<tr>
<td>MTG 404 320 x 420</td>
<td>1</td>
<td>7.800</td>
</tr>
<tr>
<td>MTG 308 320 x 785</td>
<td>1</td>
<td>15.600</td>
</tr>
<tr>
<td>MTG 306 320 x 600</td>
<td>1</td>
<td>11.700</td>
</tr>
<tr>
<td>MTG 305 320 x 420</td>
<td>1</td>
<td>7.800</td>
</tr>
</tbody>
</table>

Electrical connections
- MillTec systems are equipped with mains operated fast connectors (ST series) that allow the MillTec system to be easily and independently connected to the power supply. Current switches and cycle status control with current (UCS) and cycle status control (CSS) are available.
- MillTec ST series electronic control units are equipped with a practical TC pendant that allows the operator to control a multi-chuck machine with different MillTec systems.
- The ST200 is also used to control tables with MillTec modules.
- The ST200 version of 200V is compact and light, to suit with integrated push buttons.
- The ST205 version, available from 200V to 420V, is suitable for control of modules of large dimension and is equipped with the practical ST series pendant.
- The ST205 is also used to control tables with multiple chucks, equipped with TCF pendant that allows to select each MillTec module independently.

**Modularity for any need**
- The wide range of standard MillTec modules is ideal to configure different magnetic tables both in fixed layouts and pallet systems.
- MillTec modules can be fixed through the dedicated side slots or with through holes that can be drilled in the solid block structure of the chuck.

** patents
- All the magnetism of the leader with all poles covered
- (**) Maximum force with workpiece in intimate contact

**Machining examples with MillTec Grip**

![Parking plate](Image)
- Lateral stops could be required for the pieces as well in presence of heavy duty machining operations.