

PLATE PRESS



Rime GmbH | Blechverarbeitung & Schweißfachbetrieb Heinrich-Schönberg-Straße 6 | 01591 Riesa | Germany | www.rime.de



Bending of Large Parts



The production of extra long bent parts is easily possible with our two XXL press brakes.

In addition, the press force of 2,500 tons allows us to bend plates (S235JR) up to 25 mm thick over the full length of 16 meters. Our 8-meter press is a very good addition in the field of large parts processing.



More Press Brakes in Medium and Small Sizes



Bending with Advanced Angle Sensor Technology



This machine enriches our bending department with its high precision made possible by mechanical and optical laser sensors.

These sensors control the angular accuracy already during the bending process. The machine is particulary suitable for the series production of small and medium-sized bent parts.



Swing Beam Bending



Swing beam bending machine

The Swing beam bending machine offers a variety of different advantages. Complex bent parts can be produced without turning the plate.

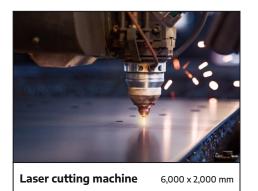
The bending of coated plates or tear-drop plates is done without scratches or tool marks. Different radii can be produced without time consuming tool changes.



Processing until:

4,040 mm x 4 mm

Co₂ - Laser Cutting



Our machine park includes three laser cutting machines with working areas of 6 x 2 metres. For cutting filigree laser parts, we use the advanced BrightLine cutting method.

When cutting thicker materials, we use the CoolLine method, which actively cools the workpiece during the cutting process.



CoolLine & BrightLine - Cutting method

XXL-Laser Cutting & Chamfer Laser Cutting



Fibre Laser Cutting

Extremely long laser parts can be produced with our XXL laser cutting system.

In the working area of 16 x 4 metres, it is also possible to cut chamfers up to an angle of 45°. This machine is the perfect complement to our XXL bending press, with which we can bend plates up to 16 metres in length.



Chamfer laser cutting up to 45° / 16 m



The fibre laser cutting system has a powerful output of 15,000 watts and can cut plates up to 30 mm thick.

When cutting thinner plates, it is much faster than conventional laser cutting machines, reducing production time and protecting the material. This machine is one of the fastest of its kind in Germany.



Cutting of thicker material thicknesses

Shearing



Shearing machine

The use of shearing machines can be advantageous when long and straight plate cuts are required. Depending on the material, shearing can be faster than laser cutting. In addition, the energy input is lower and there is no hardening at the cut edges.

We will be happy to advise you if your parts are suitable for shearing.



Shearing machine

3,050 x 8 mm

Milling & Machining







Chamfer milling machine

EasyMillDrill

EasyFlipper



EasyMillDrill is an optically controlled robotic system that can independently load and unload a machining centre. (Read more about this system in the article on pages 18 and 19).

The robot uses a camera and various sensors to detect and recognise workpieces based on their size and geometry. The robot can handle parts weighing up to 150 kg.





Our EasyFlipper is used when workpieces need to be turned for machining (e.g. deburring).

This system can turn heavy workpieces up to 20 times faster than conventional methods. The system is suitable for steel, stainless steel and aluminium.

Read more on page 17!



Grinding & Barrelling



Deburring machine

Barrelling is excellent for removing dirt, grease, scratches and burrs from small workpieces.

Larger workpieces are processed with a rotary brushing machine. It can deburr, break or round the edges of steel, stainless steel and aluminium workpieces. The radius on the workpiece edges is affected by the number of passes.



Vibratory grinding machine 100 x 200 mm

Punching & Roll Bending



Induction Straightening

With our punching machine we can produce various shaped elements such as louvres, beads, circular blanks, hooks and threads. With a wide range of different tools, punching offers many interesting possibilities in plate metalworking.

Our roll bending machine can produce tubes, rings, half shells and transition pieces.



Roll bending machine

2,500 x 6 mm



We can efficiently eliminate deformations that occur during the production of welded constructions with our induction straightening machine.

A magnetic field heats the material precisely at the deformed points. This relieves stress in the material. As the metal is heated from the inside, this process is very gentle on the

surface of the material.



3D - Coordinate Measuring Machine



Measuring range: 10 x 5 x 5 m (XYZ)

We use a 3D coordinate measuring machine to check the quality of our workpieces. By continuously tracking an infrared measuring probe, we can accurately measure the flatness, parallelism and distances between points on a dot-by-dot basis.

The machine allows complex measurements to be made and produces full measurement reports at the touch of a button.



Manufacturing of Welded Assemblies up to a Weight of 50 t



We are a certified welding company

- Use of common welding processes such as MIG, MAG and TIG as well as spot and stud welding
- Certification in accordance with DIN EN ISO 3834-3 for metal, machine and vehicle construction, as well as for piping, plant and steel construction
- We are certified according to EN 1090-2 EXC 2 and EN 1090-3 EXC 2 for the welding of load-bearing components made of steel and aluminium.

TruBend 5130 - Our New Machine



The TruBend 5130 is a highly productive and powerful machine from Trumpf. It offers simple and fast operation as well as higher productivity through faster return speeds. In addition, the TruBend 5130 achieves higher bending precision, eliminating time-consuming and costly rework.

The machine is ideal for serial production as the bending operations are carried out with high repeat accuracy.

Sensors for greater precision

To achieve this high accuracy, our machine is equipped with the Trumpf-developed ACB optical laser angle sensor system and the ACB mechanical angle sensor system.

These sensors check and, if necessary, correct the angle accuracy during bending.



The press brake also offers easy tool changing and automation options. This machine is a great addition to our bending department! With a bending length of 3,230 mm, it is suitable for bending small to medium sized plates.

For example, with a press capacity of 130 tonnes, plates (S235) up to 4 mm thick can be bent to full tool length.

Bending of all Plate Formats



In addition to laser cutting, bending is one of our most important plate working processes.

Our machinery includes a total of six press brakes, which enable us to process plates in all common formats.

Of particular interest is our XXL press brake, which can bend plates up to a total length of 16 metres.

#	Bending Length	Thickness on full length	Press Capacity
1	16,000 mm	25 mm	2,500 t
2	8,000 mm	12 mm	600 t
3	6,000 mm	5 mm	300 t
4	3,500 mm	6 mm	225 t
5	3,230 mm	4 mm	130 t
6	1,020 mm	5 mm	36 t



Economical Production of Small Bent Parts

Our smallest bending machine has a maximum working width of 1,020mm and can bend parts up to 5mm thick with a press force of 36 tonnes. The machine has automatic tool clamps and can be retooled in a matter of minutes.

This reduces set-up costs to a minimum, making the production of small parts very economical. The machine offers a perfect combination of speed and accuracy. To improve quality, a laser projects the bending line directly onto the workpiece.





Swing Beam Bending

Swing beam bending is an excellent process for bending sheet metal parts, allowing, for example, the production of any radius with no visible bending steps, or scratchfree processing of stainless steel or materials with coated surfaces.





The up-down technique allows us to bend plates in both up and down motions. There is no need for time-consuming turning of the plates. With this technique, even very complex bent parts can be produced in a very short time and with little handling.

Only one universal set of tools is required to produce different angles, radii and plate thicknesses. However, if tool changes are required, the machine can carry them out independently, significantly reducing set-up times.



By lining up short bending segments (step bending), radii of any size can be produced. In contrast to die bending, the bending steps are not visible.

The process is well suited for scratch-free processing of stainless steel plates or plates with coated surfaces.

Due to the short set-up times and the high degree of automation, swing beam bending is a very economical bending process.



Impressionless bending is impressively demonstrated in the production of stair treads. The tread on the left was produced by swing beam bending, the tread on the right by die bending. The indentations in the tears are caused by the punching tools and are unavoidable in conventional die bending.



Fibre Laser Cutting

We have also been using a solid-state laser cutting machine for the past two years. Because of its high output, this machine is particularly suitable for cutting very thick steel and aluminium. When cutting thinner plates, the machine can work much faster. **The machine is currently one of the fastest of its kind in Germany**.



Working area: Output: Feed rate: Acceleration:

Possibilities:

Steel: Stainless steel: Aluminium: 6,000 x 2,000 mm 15,000 Watt 150 m / minute 6 G

bis 30 mm bis 30 mm bis 25 mm

Minimal hole size:

0,2 x Blechdicke

Laser Cutting of Large Parts

When it comes to producing extra large laser parts, you've come to the right place! Our XXL laser cutting machine has a working area of 16,000 x 4,000 mm and can cut steel plates up to 20 mm thick.

If required, the laser cut parts can then be bent on our XXL press brake.



A NORE LASEREX Z

Chamfer Laser Cutting

This machine not only offers the ability to produce extra large laser parts. It is also possible to tilt the cutting head continuously from -30° to +45°. This means that chamfering and cutting can be done in one operation.

This saves a lot of time as there is no need to cut the required chamfers afterwards.

These chamfers can be produced to a very high degree of quality. This depends on the grade of material and surface finish.

CoolLine & BrightLine

We produce laser parts using the advanced CoolLine and BrightLine cutting processes. These processes improve the quality of the cut edges and increase process reliability for greater material thicknesses.

The cutting head of this laser cutting machine is equipped with the BrightLine cutting process. This process significantly reduces the roughness of the cut surface. As a result, the quality of workpieces made from thicker materials is greatly improved.

Our machine can cut steel and stainless steel up to 25 mm thick in such a way that no reworking is required. BrightLine also improves the squareness of the cut edges.





CoolLine offers another major advantage with its innovative cooling system, which cools the workpiece during cutting. This increases process reliability, especially when cutting thicker materials.

In addition, more filigree contours can be cut than would be possible without cooling. CoolLine also enables more efficient use of plate, helping to reduce waste.

Welding

All common welding methods are used in our modern welding shop. In addition to MIG / MAG and TIG welding, we also offer spot and stud welding.

Our staff is highly qualified and receives regular training. Contact us if you need welded assemblies. We will be happy to help you!



Welding Assemblies in all Formats



Whether small parts or larger welded assemblies - in our modern welding department, we manufacture assemblies weighing up to 50 t on an area of 1,000 m².

Rime GmbH is a certified welding company! We fulfil all requirements for the production of components for steel and aluminium supporting structures according to EN 1090-2 EXC 2 and EN 1090-3 EXC 2.

In addition, we are certified as a specialist company for the manufacture of equipment and components for metal, machine and vehicle construction as well as for pipeline, plant and steel construction in accordance with DIN EN ISO 3834-3.

Robot Welding

We can also produce smaller assemblies using robotic welding. We have invested in the latest welding robot from ABB, which offers a number of advantages thanks to its advanced features.

Robot welding cannot and will not replace manual welding, but it does offer some advantages that we can now offer you with our robot. Its use is always worthwhile when welding operations have to be repeated. This is especially the case in series production.

Robot welding makes it possible to mass-produce welded constructions of consistent quality, which minimises the error rate. Welding identical assemblies reduces cycle times and increases productivity.

While the robot is welding inside the cabin, the next assembly can be prepared on a shuttle table outside the welding cabin.

After completion, the shuttle tables are exchanged and the prepared assembly is transported into the cabin for welding.

The finished assembly can be removed without entering the cabin. The use of shuttle tables significantly improves the workflow.



Once a program is created, it can be stored and run as often as required. This is particularly useful for customers who run large orders in small batches throughout the year.

5-Axis Milling



- Extremely large working area
- Very long traverse paths (4,200 / 3,630 x 750 x 500 mm)
- Rotary table with a diameter of 750 mm
- Interference area of 1,100 mm
- Face machining of workpieces up to 3,200 mm



Chamfer Milling

Chamfers can be very well produced by laser cutting. However, there are limitations in terms of material thickness.

Milling is a very good alternative, especially for thicker materials, and can produce chamfers with various standard angles, such as 30° or 45°.

Other angles can be produced on request. Please contact us if you require machined parts with chamfers.





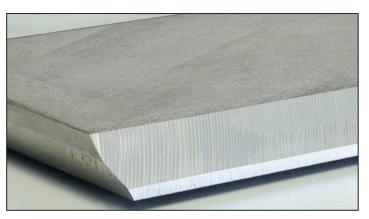
- Steplessly rotatable main spindle (98°)
- Automatic access to up to 50 tools
- High cutting performance with great precision
- Production of long and bulky workpieces
- Machining on 5 axes

Milling up to 7 m Long

TIP: If you need even larger machined parts, you should contact our sister company Tosec. They have an extra large machining centre that can machine workpieces in the range of 7,000 x 1,200 x 3,300 mm (XYZ) with three or four axes.

5-axis milling is possible up to a workpiece size of 1,200 x 1,200 x 1,300 mm.

https://tosec.nl/nl/contact/





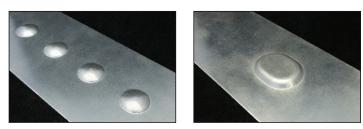
Punching & Nibbling

With our punching machine we can produce beads, louvres, hooks, dimples and threads. We have hundreds of tools in different shapes and sizes.

Punching is a very good alternative to laser cutting when repetitive features need to be added to plates. Punching a single louvre takes less than a second and can be repeated as often as required.

We can punch steel up to 6mm thick and stainless steel up to 3mm thick. The machine can automatically access a tool magazine and change the tools itself. This reduces set-up times enormously!





The working area of our punching machine is 1,600 x 8,000 mm.

Within this range, shaped elements such as beads or louvres can be produced in any length.









Roll Bending & Step Bending

Our roll bending machine can produce smooth radii from a diameter of 260mm. A variety of shapes are possible, such as half shells, conical curves, transitions and rings. Roll bending is possible up to a sheet thickness of 6mm.

Larger thicknesses can also be bent into radii. This is done by step bending, where the plates are bent at regular intervals until the desired radius is achieved.

Thicker material thicknesses can be bent using this bending process. However, the radii are not smooth due to the bending. The individual bending steps are clearly visible.

Please contact us if you need larger radii! We will be happy to assist you!







Grinding and Rounding Edges

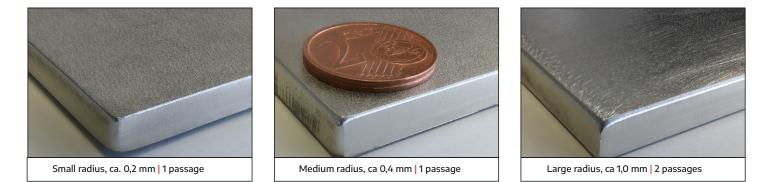


Some machining processes create burrs that can cause injury and reduce dimensional accuracy.

Our grinding machine can process plates up to 1,600 mm wide and, by removing burrs, creates a perfect base for coating the parts.

It is also ideal for edge breaking and rounding. Further grinding operations (more passes through the machine) result in larger radii on the edges of the workpieces.

By simply changing the brushes, the machine can be converted to work on steel, stainless steel or aluminium.



Six Good Reasons for Machining Workpiece Edges

- 1 Visual Burrs do not look nice.
- 2 **Functional** The product cannot be used or can only be used poorly because of the burrs.
- **3** Mountability The workpiece does not fit or the burrs prevent accurate fitting.
- 4 Further processing The workpiece cannot be correctly clamped or aligned.
- 5 Security Burrs pose a safety risk and can lead to cuts.
- **6 Coating** No chipping of the coating (paint/zinc) on the sheet edges

Barrelling of Small Parts

For small workpieces up to a size of 100 x 200 mm, we offer deburring and rounding of workpiece edges by barrel finishing.

We have two machines, each with different abrasives, to achieve the best possible quality for each workpiece.

This process does not just work on the edges. The entire surface is ground to remove dirt, grease and scratches.



Induction Straightening

During the production of assemblies, deformations or warping can occur due to the heat input of the welding process.

These do not only have a negative influence on the visual appearance of the assembly, but can also impair the subsequent usability. To eliminate these deformations, we use the induction straightening process.



In induction straightening, the deformed metal is heated selectively and very precisely at suitable points.

The heating is carried out by an alternating magnetic field, which heats the material from the inside. The magnetic field can heat the material up to 700 $^{\circ}$ C in a few seconds.



The heating causes the metal to expand. The magnetic field only heats the selected area of the material and has no effect on the surrounding material. When the desired area is sufficiently heated, the magnetic field is switched off. The metal contracts again as a result of the cooling that now begins, smoothing out the deformations.

The depth effect of the magnetic field and the heat development can be influenced by adjusting the working frequency. The rapid, localised heating and comparatively low annealing temperature not only protects the surface of the material, but also largely avoids structural changes and annealing effects.



Basically, all fusible and weldable metals are suitable for inductive straightening. We mainly use it for our constructions made of steel, rustproof steel and aluminium.

Induction straightening offers several advantages over flame straightening:

- Time saving: Due to the fast heating, the straightening process can be carried out much faster. The time saving can be up to 50%.
- Productivity: The straightening of very large assemblies is possible in a relatively short time.
- Precision: The inductor enables very precise application.
- Energy saving: Induction straightening is faster and uses much less energy than straightening with a flame.
 The energy saving makes induction straightening much more economical.
- Quality: Moderate heating of the material prevents changes in the material structure and prevents the occurrence of tempering effects. Heating from the inside to the outside protects the material surface.

Our 3D Coordinate Measuring Device

In general, there is nothing wrong with using conventional measuring equipment such as a tape measure, caliper gauge or measuring arm. However, when it comes to inspecting large workpieces, these tools quickly reach their limits. The following problems can occur:

- The measuring device offers a too small measuring range.
- Several people are needed for the measurement.
- Measurement errors can quickly slip in on complex assemblies.

With our mobile 3D coordinate measuring machine, these problems are a thing of the past. Even large welded assemblies can be easily measured by one person. The measuring range is 10,000 x 5,000 mm on the horizontal plane and up to 5,000 mm on the vertical axis.



Measurement data is collected using a wireless sensor equipped with infrared markers. The measuring head is equipped with three cameras to determine the position and track all movements of the sensor.

The operation is very simple. The desired measurement point is simply targeted with the probe's stylus and transmitted to the sensor head at the touch of a button.



Testing the dimensional accuracy of form elements



Checking the evenness of a selected area



Checking the evenness of an entire workpiece

The device is capable of measuring flatness, parallelism and distances between the control points on a point-by-point basis. Once the measurements are complete, an automatic test report can be generated.

The device is used directly in production and can even check workpieces that are still in the machine, such as a machining centre.

With this 3D coordinate measuring device, our quality assurance department has a high-precision measuring tool to quickly and easily find and correct any tolerance deviations before delivery.



Tollenaar Industries

In addition to Rime, Tollenaar Industries has four other companies.

Each company specialises in a particular area. By working together, our group offers a wide range of products and services, making us a versatile and reliable partner for industrial companies around the world.

Tosec

www.tosec.nl

Like Rime, Tosec specialises in plate metalworking. The processing range is similar to that of Rime, but Tosec can also offer plasma and oxyfuel cutting of extremely thick plates.

Tosec is also a specialist welding company, certified to the requirements of ISO 3834-2 and EN 1090-1 EXC 4. Welded assemblies can be manufactured up to a total weight of 110 tonnes.





www.teqram.com

Teqram has experts in vision-based robotics. By using vision technologies, the robots are much more flexible in dealing with product variations or changes in the environment than conventional industrial robots.

In addition to 3D vision, Teqram's innovative add-on devices provide reliable and productive problem solving. The EasyFlipper is an example of our creativity in solving difficult handling problems.

C Tegram

www.tme.nl

TME builds machines and facilities and supplies companies worldwide in the asphalt and concrete industry, the offshore sector and companies specialising in the handling of bulk materials such as sand, gravel or ore.

TME machines and equipment are designed, manufactured and delivered ready for use according to the customer's requirements.

TME also carries out maintenance and repair of such equipment.

Tubecon

www.tubecon.co.za

Tubecon was established in South Africa in 1977 and is the oldest company in our group. Tubecon specialises in the production of cold formed steel tubes and hollow sections, offering a wide range of shapes and dimensions.

After more than 45 years, Tubecon has become one of the major producers of tubes and sections in South Africa and also supplies customers in Namibia, Botswana and Mozambique.





EasyFlipper

With the EasyFlipper, an invention of our Dutch sister company Teqram, heavy and bulky workpieces can be turned in no time at all.

The turning process is up to 20 times faster than manual turning. This saves a lot of time and increases safety!

We are already successfully using robots, including one that automatically loads and unloads a grinding machine.



Turn Heavy Parts Without any Problems



Typical Examples of Use

- Turning of extra heavy workpieces
- Turning of heavy laser, oxyfuel or plasma-cut metal parts
- Turning of steel or aluminium plates next to a CNC machining centre





- To control both sides for quality control purposes
- Turning over heavy products to meet the packaging requirements of customers
- Turning tear-drop plates and perforated plates

Technical Specifications

The equipment of an EasyFlipper can be adapted to specific requirements. The modular design allows for different configurations. The following applies to the standard configuration:

- Size of a EasyFlipper arm: 1,200 x 800 mm
- Runs on 230 volts / Requires 6 bar air pressure



- Easy I/O connectivity for integration with our visually guided robots
- Weight of the EasyFlipper: approx. 400 kg

Turning Large Parts

It is possible to connect several EasyFlippers together to turn even longer workpieces. The support surfaces can also be enlarged with extension arms.

In the example on the left, 8 EasyFlippers have been combined to turn a 12 metre long panel.

See the XXL EasyFlipper in action!



EasyMillDrill

Loading workpieces into a milling machine and removing them after machining is a labour-intensive process. The heavier the workpieces, the slower and more tedious the process, especially if a crane is used for handling.

Up to now, there has been very little interest in automation using conventional methods of automation!

Despite the amount of work and time involved, automating the loading and unloading process was financially unattractive. This is due to the time-consuming learning process and the complexity of programming.

With conventional automation, the robots have to be laboriously adapted to the parts to be handled in the future work cycles. This is done through a time-consuming teaching process.

For small batches or workpieces with a wide variety of shapes, this effort was not worthwhile, and companies decided to load and unload their machines manually for cost reasons.

Computer Vision - The Gamechanger for Automation

EasyMillDrill was developed by our sister company Teqram. With this technology, the time-consuming learning process is finally a thing of the past.

But how does it work?

EasyMillDrill is a robotic system equipped with computer vision.

The camera enables the robot to perceive its surroundings and thus automatically recognise the parts provided.





The camera is just one component of automation.

By combining the camera system with additional sensor technology and a user-friendly software solution, machining centres can be loaded and unloaded fully automatically.



EasyMillDrill



It does not matter if you are dealing with small batches - the system pays off even with individual parts that vary greatly in shape and size.

EasyMillDrill recognises the workpieces and automatically selects the appropriate gripper. The robot then loads the milling machine and places the parts back on a pallet after machining.



With this technology, the efficiency of the production is significantly increased!

No programming knowledge is required to load, unload or change grippers! The software is easy to use and intuitive.

Typical Applications

EasyMillDrill is suitable for loading and unloading machining centres or automatic drilling machines.

The system is capable of handling workpieces such as laser, plasma or oxyfuel cut parts in steel, stainless steel or aluminium.

EasyMillDrill can be combined with other modules such as an EasyFlipper and a cleaning station.

This allows the system to handle workpieces that need to be machined on both sides and to automatically remove coolant and metal chips from the parts after the milling process.

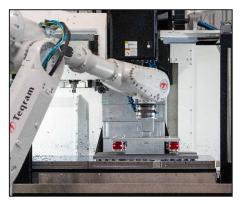


Continuous Development

The maximum workpiece weight is currently 150 kg. Robot systems for even heavier parts are nearing market maturity and will be available for order before the end of the year.







EasyGrinder - Automatic Grinding

When machining plate, sharp burrs can form on the edges of the workpiece, or an oxide layer or slag can be deposited. These not only pose a risk of injury, but often affect dimensional accuracy.

Deburring and slag removal is usually carried out manually using an angle grinder. This is tedious, time consuming and costly.

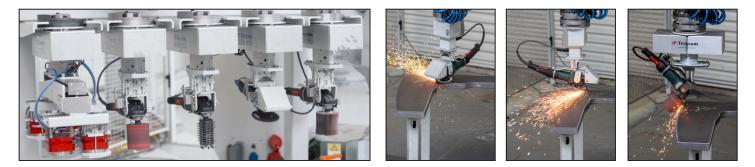
This system was also developed by our sister company Teqram and won the Blechexpo Award in the Surface Technology category.



In general, automatic grinding systems are not a new invention. With the EasyGrinder, the innovation is in the detail. Like the other Tegram applications, the EasyGrinder can also "see" with its camera system.

The system recognises the exact geometry of the workpiece and guides the robot arm with the grinding tool exactly along the recognised contour.

If several tools are required for the machining process, EasyGrinder carries out the tool and gripper change independently. The only requirement is that all the necessary tools are available in a rack.



VA range of standard grippers are available and customised grippers can be manufactured on request. A wide selection of inexpensive standard grinding tools can be used.

To start machining, the workpieces simply need to be placed in the robot's work area. This can be on a roller table, on pallets or in containers.

Workpieces weighing up to 100 kg can also be picked up and moved by the robot. This can be necessary when parts need to be machined on both sides.

The PC-based user interface can be operated intuitively by any operator. No special programming skills are required to use the EasyGrinder.

Typical Application Possibilities

- Deburring of laser, plasma or autogenous cut workpieces
- Grinding metal parts
- Edge rounding to prepare the coating
- Removal of slag and oxide deposits
- Machining of XXL parts (weighing several tonnes and many metres long)

Contact us if you are interested in automating your production processes!

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