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Robot Gripper shot blast machines



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Noricor Group is the parent company of DISA and Wheelabrator.

Robot Gripper shot blast machines



Robot Gripper

- 1 Maintenance platform
- 2 Abrasive reclamation unit
- 3 Bucket elevator
- 4 Abrasive silo
- 5 Abrasive control units
- 6 Blast wheel
- 7 Blast chamber
- 8 Rotating membrane seal
- 9 Abrasive collecting hopper
- 10 Gripper
- 11 Robot



Programme-controlled workpiece movement and high blast performance

The Robot Gripper unites the advantages of two technologies to deliver precisely targeted surface treatment at high efficiency. The combination of an industrial robot and an efficient wheelblast machine provides programme-controlled accurate movement of the workpiece to achieve a high blast performance.

The robot arm holding the workpiece is introduced through a special rubber membrane seal into the blast chamber and is tightly docked to it by a sealing plate. The membrane seal protects the robot from abrasive and dust whilst allowing great mobility and flexibility to the robot arm. The fully programmable robot is enabled to

move three-dimensionally within the chamber and allows the optimal guidance of the workpiece in the blast stream.

Features

- Fully programmable robot guidance
- High blast performance
- Targeted blasting of defined areas
- Optimal utilisation of wheelblast energy
- Optimal angle of impact
- Special gripper avoiding blast recesses
- Abrasive removal from the part by defined movements (blow-off/blow-out as an option)

- Exceptional efficiency
- Small space requirement, no foundation pit needed
- Easy integration into production lines

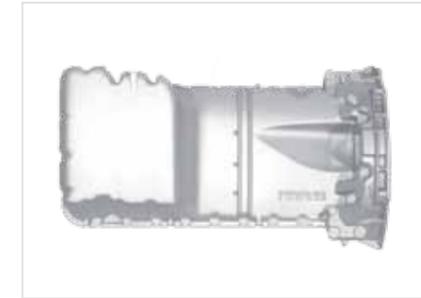
Applications

- Removal of fire cracks, e.g. from aluminum castings
- Shot peening
- Blasting of filigree parts (no deformation by a targeted selection of surfaces to be blasted)

Typical applications



Motor blocks



Oil sump



Gearbox

Typical applications

The Robot Gripper is primarily used when

- highly targeted blasting of parts is requested, e.g. when delicate parts should only be blasted at defined points.
- a high blast performance is needed, but only closely defined areas must be treated, e.g. deep internal areas.

Typical usage by industry sector

Foundries

- Primarily blast cleaning (cosmetic finishing) and burr removal: Robot Grippers can be directly integrated in foundry lines and run in the same cycle.
- Due to its space-saving construction, the Robot Gripper can be easily integrated in fully automated die cast cells. Parts to be blasted may include cylinder heads, oil sumps, motor blocks, gearboxes and steering boxes.

Automotive industry

With ever increasing performance and torque requirements especially in gear manufacturing and the resultant additional cyclical stresses, the fatigue life of gearwheels must be increased by shot peening.

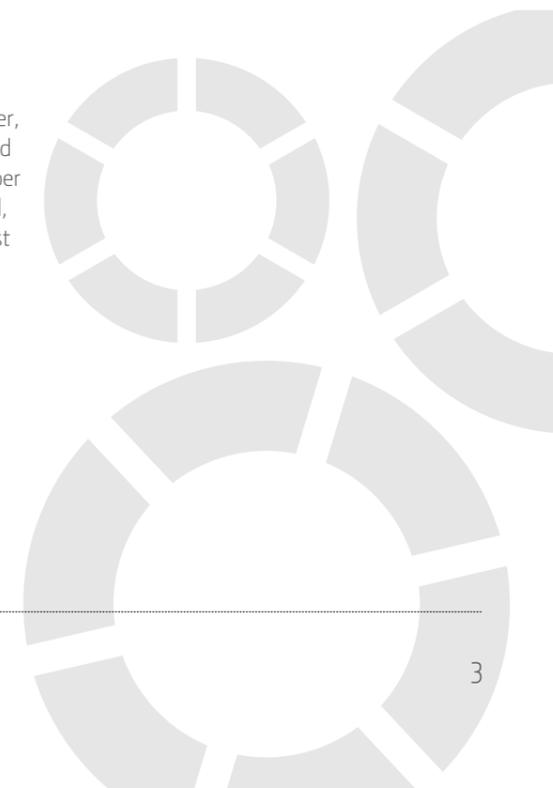
The Robot Gripper performs very accurate movement of the workpiece within the blast stream so that the areas to be peened can be optimally treated.

In automotive applications

Magnesium parts are increasingly used in automotive applications due to the weight advantage that the material offers. However, magnesium dust can be highly explosive and must be handled carefully. The Robot Gripper is an attractive solution due to its patented, airtight seal, which wholly contains any dust and abrasive in the blast chamber.

Aerospace

Highly stressed safety components are accurately shot peened to increase fatigue life. The programme-controlled workpiece movement by the robot assures accurate repeatability of the process. Parts may include air brakes and landing gear components.



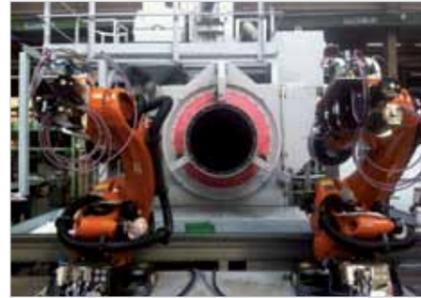
Special features and options



Loading



Patented moving membrane seal



Efficiency increase by use of 2 robots

The process

The robot picks up the workpiece and introduces it through a special rubber membrane seal into the blast chamber. A sealing plate fixed to the robot arm docks it to the seal. The connection is 100 per cent tight, protecting the robot and its environment from abrasive and dust. Before docking, the rubber membrane seal is held in position by three arms.

The workpiece is then very accurately blasted as it is moved by the robot in the blast pattern in accordance with the required blast result. Afterwards the membrane seal is held by the holding arms and the robot undocks. The robot moves the part into the emptying position where the abrasive is removed by defined rotations. Finally, the part is transferred to storage or transport systems.

Patented membrane seal

Due to the 100 per cent tight connection of the Robot Gripper's sealing plate and the patented membrane seal, the robot (and its vicinity) are completely protected and all abrasive and dust remains within the blast chamber.

The patented membrane seal is, however, incredibly flexible and provides enormous mobility to the robot arm so that the part can be moved into all positions in front of the blast stream.

The membrane seal follows the rotational movements of the robot so that the rubber seal is not damaged. Furthermore the robot turns the membrane seal 120° during undocking in order to rotate the main stress points of the seal to extend its service life.

As an additional safety feature, the membrane seal has a two-layer structure so that if one layer is damaged or reaches the end of its service life, the second will still be available. If abrasive enters into the intermediate space, this will be detected and a security device stops the machine automatically.

Flexible, quick, efficient

The use of industrial robots not only provides exact, programme-controlled part movement during blasting, but also enables the machine to be integrated into the preceding and successive production processes.

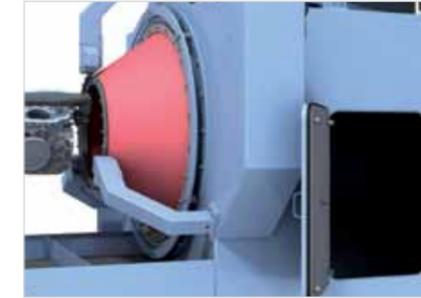
The Robot Gripper machine can be automatically connected to a cell, e.g. parts can be directly taken from a punch, blasted, and then delivered back to the production line. This material handling capability can greatly reduce cycle times.

The part holder can be easily and automatically changed to allow the blasting of various components. In addition, the use of two alternately working robots can further increase process efficiency.

Special features and options



Blast wheel maintenance at ergonomic height



Easy accessibility



Robot Peener

Easy to maintain

Wheelabrator Robot Gripper blast machines provide high availability/operational readiness as the robot is protected from abrasive and contamination by the membrane seal.

Other than the gripper arm of the robot which is constructed in hardened manganese and tool steel, there are no more mobile parts for workpiece handling within the blast chamber, so there is no additional wear.

Large blast chambers ensure that the abrasive has already lost a considerable share of its velocity when hitting the wear liners. This has a positive effect on the service life of these parts.

The machine is designed to enable easy access, and the blast wheels, installed in the bottom part of the cabinet, are easy to reach for maintenance work.

Specific functions

Combination of a blast wheel with an air blast nozzle

For specific blast functions an airblast nozzle can be installed in the cabinet. This is recommended when very targeted, touch-up blasting of small areas is needed.

Robot Peener

For specific, pinpoint-targeted shot peening work, Wheelabrator offers the Robot Peener. The Robot Peener utilises airblast technology as well as blast wheels, but the construction and machine elements are very similar to the Robot Gripper. The same membrane seal for dustproof docking to the blast cabinet is used to provide the same three-dimensional mobility in the blast chamber. However, the Robot Peener (and its robot, gripper, nozzles and blast wheels) is specifically designed for shot peening applications.

The Robot Peener's pinpoint airblast treatment allows powerful shot peening of those parts which should or must be blasted only at clearly defined points.

The wheelblast technology of the Robot Peener combined with the precise targeted airblast technology delivers shot peening to a high level of accuracy and efficiency to deliver faster treatment times.



Wheelabrator Test Centre / Laboratory



The right solution

We will configure your machine utilising the knowledge gained from our extensive experience in many industries and applications as well as from specific tests carried out on your original parts in our laboratory. We aim to achieve the best blast results for your needs, this is particularly important for the process reliability of peening tasks.

Our Technology Centre, Metelen houses a test centre which is equipped with a variety of trial blast machines. The laboratory features an X-ray diffractometer (amongst other equipment) which allows us to optimize the blast process by the measurement of internal stresses.

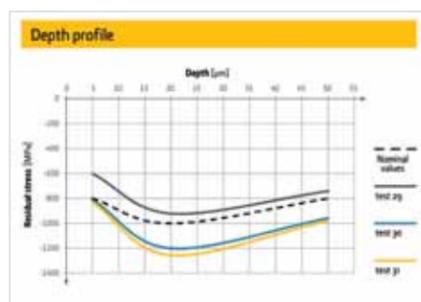
These facilities enable us to guarantee the best solution for your requirements. As one of the only companies in our industry with this

specialised equipment in-house, we are able to deliver quality and repeatability of the blast results.

Not only can we provide exact statements about blast results with different programmes, wheel parameters and abrasives, but we can do this in a very quick turnaround time.

Benefits at a glance:

- Testing in-house saves time and ensures the product doesn't get damaged in transportation
- Best blast process for your products to meet your specifications
- Repeatability
- Cost reductions
- Service life extension



About Wheelabrator and Wheelabrator Plus



As the world's leading surface preparation company, **Wheelabrator** offers a complete range of equipment, replacement parts and services.

For more than 100 years, companies from the foundry, automotive, aerospace, energy, shipbuilding, railway, engineering and many other industries have been using the products and services of Wheelabrator Group. Using insight gained from thousands of different applications, Wheelabrator's technical experts work in close cooperation with customers to design specific solutions to meet their operating needs, and to increase their productivity and profitability.

With approximately **15000 active customers** in nearly **100 countries**, and over **35000 machines installed throughout the world**, Wheelabrator continues to use the experience of having the largest installed base in the industry to deliver the best solution for the customer.

This approach has been so well received by the market that approximately two thirds of Wheelabrator's surface preparation equipment sales are custom-engineered to the precise specifications of the customer. The remaining third consists of standard machines which

incorporate the same level of Wheelabrator quality and reliability, but can be delivered more quickly at a competitive price.

Wheelabrator is part of the Norican Group, and offers together with its sister company DISA, a global service from moulding, to wheel- and air blasting, to coating applications.

- **5 Technology Centres** in Canada, France, Germany, Denmark and Switzerland
- **6 Manufacturing sites** in India, China, USA, Mexico, the Czech Republic and Poland plus a global service support network
- More than 100 years of experience in air and wheel blasting machines
- More than 35000 machines operating in the field
- Broadest range of products available on the market
- Quality products which provide flexible solutions to deliver consistent performance
- Full service from product development and installation, through to continued service and maintenance delivered by the global **Wheelabrator Plus** team

Wheelabrator Plus offers the largest aftermarket parts, supply, service and technical support for the surface preparation industry globally. With the capability of maintaining and upgrading surface preparation equipment from both Wheelabrator and most other brands within the industry, Wheelabrator Plus continually strives to help you to profitably meet or even exceed your customer's requirements.

Our service can be developed to fit your specific needs to ensure you have minimum downtime whilst achieving maximum productivity. Services include:

- Replacement parts
- Service contracts and inspections
- Machine maintenance
- Equipment modernisation and upgrades
- Technical support
- Training
- Equipment relocation