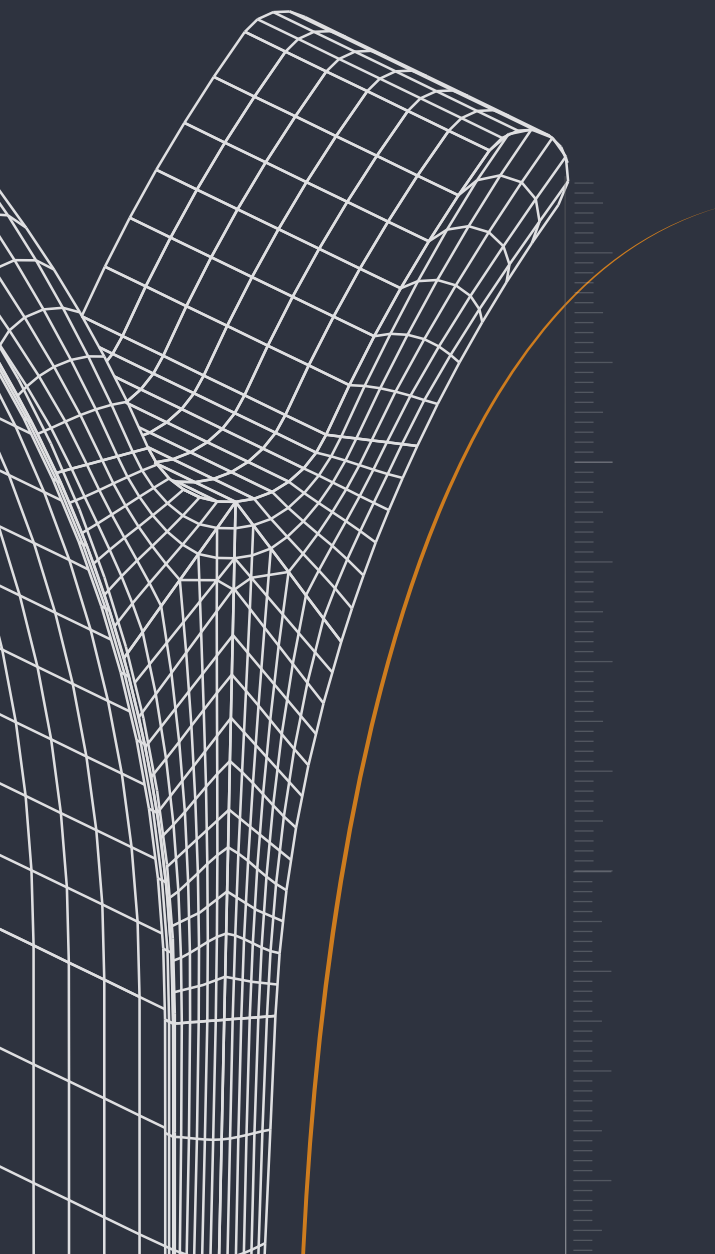




Equipment modernization

Technical service shot blasting



Mass Finishing



High-performance equipment and innovative technologies – productive and cost-effective

Shot Blasting



Customer-oriented equipment technology and intelligent process solutions – long-lasting and energy-efficient

AM Solutions



Comprehensive solutions for additive manufacturing, especially 3D post processing equipment

> **80**

More than 80 years of **experience**



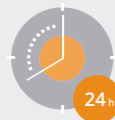
15 locations –
over **150** distributors –
over **1,500** employees **across the globe**



Worldwide **Customer Experience Center**



More than **15,000**
different types of media and compounds



Our technical service –
round-the-clock support



Transfer of professional knowledge
by certified trainers

Contents

| | |
|---|---------|
| TuneUp – your partner for equipment modernization | 4 |
| Blast turbine technology | 5 |
| Stable shot blasting processes | 6 |
| Numerous features and accessories | 7 - 9 |
| Equipment controls and digital communication | 10 - 11 |
| Dust collectors | 12 |
| After-sales-service | 13 |
| Checklist for TuneUp | 14 - 15 |

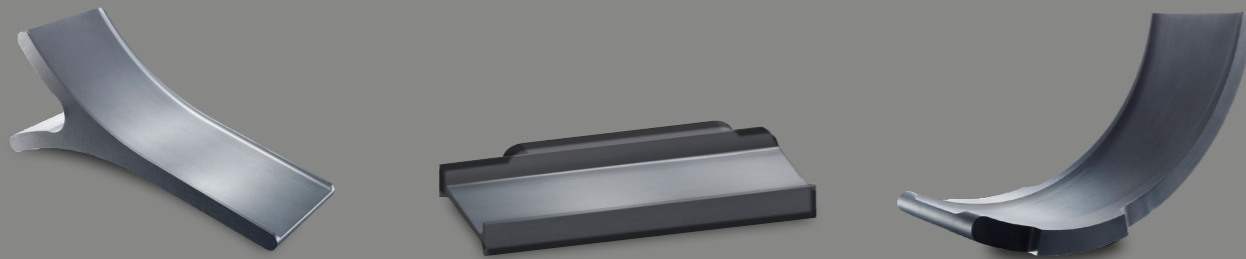
TuneUp – your partner for equipment modernization

How to achieve maximum efficiency and excellent quality at the lowest possible costs?

RÖSLER TuneUp - the ideal concept for equipment modernization

We are certain that we can optimize your shot blasting equipment to your satisfaction. For this reason we guarantee the success of our work. If you are not satisfied with the modernization results, we will remove the new turbines free-of-charge.

- CONSISTENCY > improved process stability
- VERSATILITY > handling of different shot blasting tasks
- FLEXIBILITY > quick adaptation to new requirements
- STATE-OF-THE-ART TECHNOLOGY > use of ultramodern components



Up to 16 times higher wear resistance

Uptimes of up to 40,000 hours*
 ▶ Lower expenditures for maintenance work

Shorter cycle times

Achieved by an up to 77 % higher impact energy of the blast media*
 ▶ Productivity increase

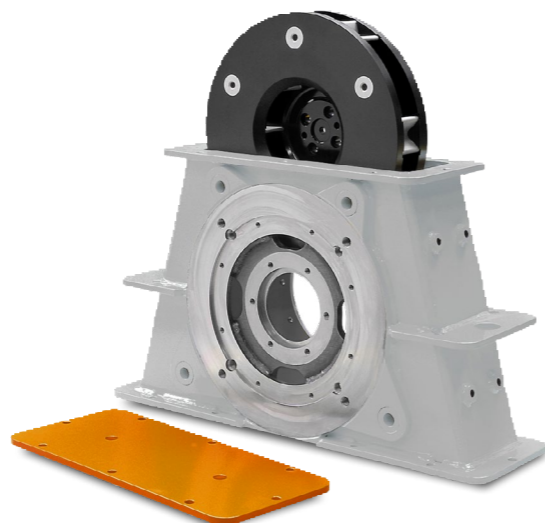
Lower energy consumption

Cost savings of at least 10 to 25 %*
 ▶ Reduced expenditures for energy

Lower consumption of blast media

Savings of up to 30 %*
 ▶ Improved profitability

- + Efficiency
 - + Quality
 - + Cost savings
-
- = **Rösler high performance turbines**



BLAST TURBINE TECHNOLOGY

The turbines are the most critical components of shot blasting machines. They influence the shot blasting results, are the highest users of wear parts and require extensive maintenance. With our broad range of different turbines we can offer the optimal solution for practically any application.



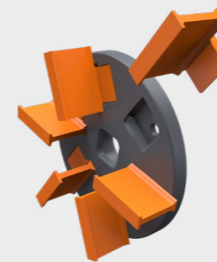
RUTTEN – The “long-life” turbines

- ▶ The precisely calculated curvature of the throwing blades guarantees maximum throwing speeds, a precise blast pattern and optimum operational efficiency
- ▶ Up to 25 % more energy-efficient blast media acceleration
- ▶ Throwing blades, made from wear resistant steel alloys, guarantee a high uptime
- ▶ Their special design allows the use of both sides of the throwing blades
- ▶ Easy change of the rotational direction of the turbines
- ▶ Depending on the blast media 10 to 16 times higher blade uptimes



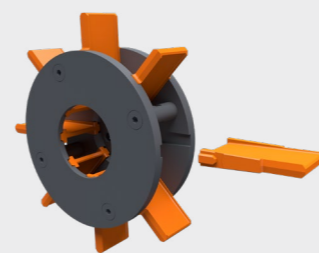
GAMMA G – Easy to maintain

- ▶ The precisely calculated curvature of the throwing blades guarantees extremely high throwing speeds, a precise blast pattern and optimum operational efficiency
- ▶ Up to 15 % more energy-efficient blast media acceleration
- ▶ Special throwing blades, made from forged tool steel, guarantee a high uptime
- ▶ Easy change of the rotational direction of the turbines
- ▶ Their special design allows the use of both sides of the throwing blades
- ▶ Depending on the blast media 3 times higher blade uptimes
- ▶ Opening of the top lid of the turbine housing allows easy access for changes of the throwing blades



HURRICANE – Highly flexible

- ▶ Available in cast, tool steel and carbide metal versions
- ▶ Wide choice of different wear parts allows easy adaptation to different shot blasting requirements
- ▶ Modern, single disk turbine wheel with fewer wear parts allows quick and easy maintenance
- ▶ The clever design does not require any internal bolts



EVOLUTION – High blast media throughput

- ▶ Specially designed for high blast media throughputs
- ▶ Twin disk turbine wheel ensures a dense blast pattern for highly efficient shot blasting
- ▶ The clever design does not require any internal bolts
- ▶ Clockwise and counterclockwise rotation allows a variety of applications

STABLE SHOT BLASTING PROCESSES

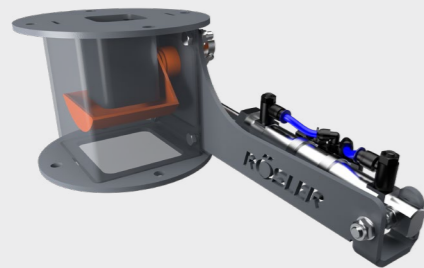
The demands of the market for higher qualities can only be met with stable, consistent shot blasting results. With our range of products and services we offer technical solutions that guarantee these stable results.



MagnaValves – Dosing of ferromagnetic blast media by the creation of an electromagnetic field

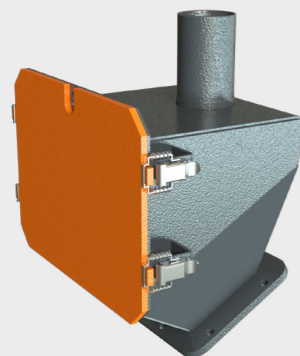
MagnaValves offer maximum process stability and accuracy for the precise dosing of the blast media to the turbines as well as for the media replenishment into the media recycling system.

- ▶ The combination of a permanent magnet and an electromagnet guarantees the precise dosing of the media
- ▶ During the blast operation the magnetic field is neutralized so that the media can flow through the valve
- ▶ Since no moving parts are utilized, the system does not wear and is easy to maintain
- ▶ In MagnaValves with sensor coil the media flow can be precisely measured



Shell valves – Blast media dosing with electro-pneumatic dosing valves

Shell valves are proven and cost-efficient systems for dosing the media to the turbines. Shell valves are electro-pneumatically activated and guarantee a safe media supply to the turbines.



Screen insert

Any objects such as screws or other metal debris getting into a turbine pose a serious risk for damaging or destroying the turbines. The insertable screen, placed in the inlet tube of a turbine, removes all foreign objects from the media. The screen can be removed through a maintenance lid placed at the front of the inlet tube.

NUMEROUS FEATURES AND ACCESSORIES

Selecting the right products from our comprehensive range of accessories will allow you to optimize your entire shot blasting operation. This goes along with substantial cost savings as well as increases in productivity within a short time period.

Automatic change of the blast pattern

Whenever a large variety of work pieces must be processed with different shot blast programs, a quick change of the blast pattern can significantly improve the shot blasting processes. The blast pattern changes are managed by the processing programs stored in the PLC. This allows substantial productivity improvements.



Magnetic separator

Magnetic separators are used for discharging non-magnetic particles like sand from the blast media. This reduces the wear of the turbine components. The Rösler magnetic separators reduce the amount of sand in the blast media down to 0.1 %.



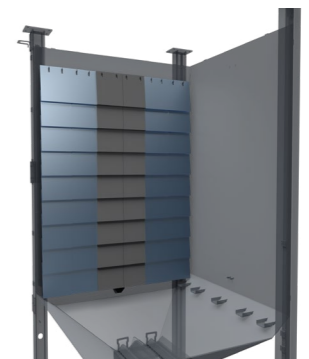
Blast media replenishment

Level sensors in the media hopper control a pneumatic valve. As soon as the media quantity in the hopper falls below a preset level, the valve opens and media is added to the system. The quick replenishment of missing media guarantees a stable operating mix.



Wear lining

Our special wear linings represent another possibility to lower the operating costs. With their patented mounting design and excellent wear resistance the linings help prevent expensive repairs of the blast chamber. Since both sides of the wear plates can be utilized, the uptime of the linings can be doubled.





Blast media transport and cleaning systems

Modern blast media recycling systems ensure the optimal transport of the blast media through the entire machine. This guarantees a stable operating mix and excellent blast results. Various safety devices quickly discharge foreign objects from the recycling system. This helps prevent equipment damage and unscheduled machine downtimes.

The components of the media recycling system are specially adapted to the respective machine. They can be configured as individual systems or combinations thereof. For example, such components can be augers, elevator units, air wash separators and magnetic separators.

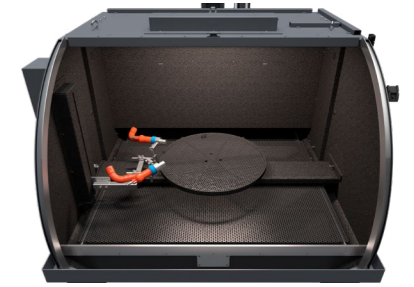
PU and rubber linings as wear protection

The lining of blast cabinets, especially in pressure blast systems, helps not only to reduce the noise level, but it also increases the overall uptime.

An insulating material in the form of rubber sheets has been especially effective. It not only reduces the noise level but also protects the blast chamber. The rubber sheets are cut to the proper size at RÖSLER so that they fit into the respective blast chamber and can be easily installed at the machine location.

Polyurethane coatings are also an effective wear protection. PU linings of containers, equipment components and work piece fixtures increase the equipment uptime and availability.

PU and rubber linings can be installed in our central lining department or at the machine location.



Work piece transport systems – for trouble-free transport and effective tumbling of the work pieces

Optimal work piece transport, along with the tumbling action in certain shot blast machines, helps minimize the cycle times and ensures perfect shot blast results.

Transport belts, specially adapted to the work pieces, for example, troughed rubber or steel belts, guarantee high quality and represent a significant added value.

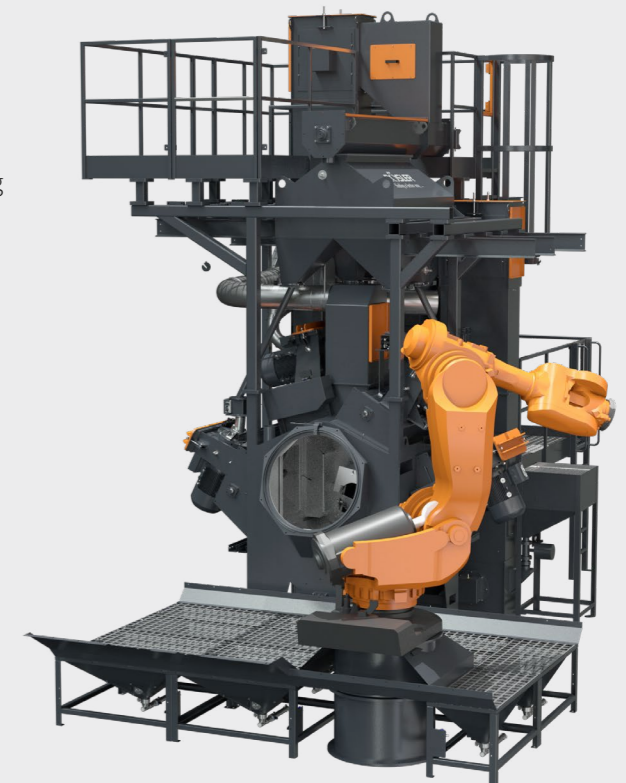
Automated shot blasting operations

The users of shot blasting systems are increasingly looking for automating their equipment. Automation not only relieves the employees from tedious, dangerous and monotonous work, but it also results in quality improvements and increased productivity. In addition, automated shot blasting operations facilitate production planning and allow the processing of more work pieces in shorter cycle times.

Before selecting a material handling tool, be it a linear handling system, a robot, etc., the following criteria must be evaluated:

- ▶ Work piece shape and fragility
- ▶ Work piece volume (batch sizes)
- ▶ Integration of the shot blast machine into the manufacturing flow
- ▶ Customer-specific technical equipment characteristics

Shot blast machines are generally linked with other manufacturing operations. Therefore, a detailed layout of the automation systems is essential. In close cooperation with your staff we prepare a master plan that includes a detailed description of your requirements, the project planning, the implementation as well as operator and maintenance trainings for the automated shot blasting system.



Air blast components

Blast hoses and nozzles are the main wear components in pressure and injection (suction) blast systems. The right selection of hoses and nozzles significantly improves equipment availability and uptimes as well as process stability.

Our special hoses and boron carbide blast nozzles have proven themselves under the most challenging operating conditions. The optimal selection and fine-tuning of these items can also help reduce energy usage and media consumption.

All key components are stocked in our central warehouse and can be used in Rösler blast machines as well as in equipment made by other manufacturers.

EQUIPMENT CONTROLS AND DIGITAL COMMUNICATION



Control panel

Well-designed control panels are essential for the proper function of any shot blast machine. Unforeseen wear or the failure of a single component can cause an equipment shutdown. Today, rapid and, sometimes, extensive technical improvements of electric and electronic components demand the constant modernization and upgrade of the machine controls. Frequently, such upgrades and modernization measures are also necessary to maintain the compatibility between different generations of electronic control components.

Moreover, to maintain the compatibility between electric and electronic components, the internal customer specifications frequently prescribe the use of particular control elements.

Jointly with you we conduct a technical review of the control panel of your shot blast equipment and develop a plan to upgrade it to the latest technical level.

The modernization of equipment controls also includes the development and optimization of process visualizations, the installation of new drive systems and sensors and updating the entire equipment documentation.

The customer benefits:

- ▶ Compliance with all current technical standards like DIN/VDE, etc.
- ▶ The modular design of the latest control components ensures the functionality of your equipment in the future
- ▶ Less downtimes by remote process monitoring and trouble shooting
- ▶ Reliable spare part supply for the current product cycle
- ▶ Linking of the equipment controls with higher-level computer systems (manufacturing execution systems, production control systems, ...)
- ▶ Compliance with internal technical specifications to maintain process stability and safety

We will also upgrade the controls of blast machines that were supplied by other manufacturers. Of course, this includes the integration of the proven Rösler graphical interface solutions.



Remote trouble shooting

Our web-based remote trouble shooting system has an ethernet interface to the PLC of your shot blast machine. This allows to run error diagnostics upon request in real time.

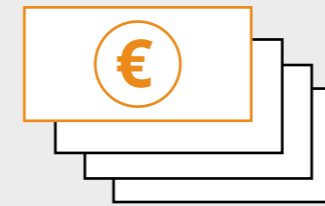
Benefits:

- ▶ Increased productivity and improvement of your market position through real time detection of machine faults and their rectification
- ▶ Lower maintenance costs through shorter machine downtimes
- ▶ The expenses for the remote trouble shooting system can be quickly amortized, sometimes already with the first equipment fault
- ▶ Data transfer also possible by mobile communication systems

Technical characteristics:

- ▶ Integrated firewall with AES/SSL encoding guarantees absolute data safety
- ▶ Complete documentation of the remote trouble shooting actions
- ▶ Remote trouble shooting system can be turned off by the customer with a simple switch. Therefore, access to the equipment is completely controlled by the customer.

An update of your current remote trouble shooting system to our web-based version is possible at low costs.



Equipment modernization also includes energy savings

The modernization of existing machines also includes energy saving measures. In this respect the installation of frequency inverters for the existing electric motors has proven to be very effective. Compared to direct motor starts, adjustable electrical ramps in combination with frequency inverters can substantially reduce electrical peak loads during startup. This protects the machine against premature wear and also reduces the peak load charges by the power company. The braking of motors also allows feeding electrical energy back into the grid. In addition, braking of the turbines also helps reduce unproductive equipment times. Frequency inverters also allow the individual adjustment of the shot blasting processes to different requirements. This guarantees better blasting qualities and absolute process stability.

Such equipment modernization projects are supported by tax incentives and subsidies. For example, in Germany the ministry for economics and environmental protection (BMWK) subsidizes energy-saving projects with up to 40 % of the costs.

- + Lower energy consumption by feeding back surplus energy back into the electrical grid
- + Lower unproductive equipment times
- + Optimal use of the turbines (lower wear rate)
- + Higher process stability
- + Up to 40 % of the investment expenditures are reimbursed by the government

= Quick amortization + long-term cost savings

DUST COLLECTORS



Rösler high-performance dust collectors – Prevention of unwanted equipment wear and safe operation

Certain shot blasting processes generate flammable and, even, explosive dust. Therefore, it is absolutely essential to choose dust collectors that meet the individual process requirements.

The right selection of dry and wet dust collectors guarantees process stability and equipment safety. Moreover, it substantially reduces the dust load in the shot blast machine. This improves the equipment uptime and helps reduce the operating costs.



Antibacterial dosing unit for wet dust collectors – Helps prevent hazardous legionella contamination of the water

In 2017 the German government passed a law that requires regular tests of industrial liquids with the goal of maintaining their hygienic integrity. The law also demands the documentation of these tests in a log that can be inspected by the authorities at any time. And finally, the law also stipulates that laboratory tests are conducted on a regular basis.

With the special Rösler RDS dosing unit the labor intensive and costly manual testing process can be completely eliminated. In addition, the antibacterial dosing unit offers the following benefits:

- ▶ The legally mandated maintenance of an operational diary **is replaced** by the fully automatic recording of the data!
- ▶ Time-consuming and costly lab tests **are no longer needed!**
- ▶ The costly cleaning of the dust collector after a contamination with bacteria **is no longer necessary.** This also eliminates expensive downtimes!
- ▶ Re-commissioning procedures, for example, after a vacation or shutdown period **are no longer required!**

AFTER-SALES-SERVICE



Twenty-four-seven technical support – throughout the entire life of your machine!

Irrespective of what surface treatment issues you might have, we offer professional support and meet all your requirements:

- ▶ Spare and wear parts, also for equipment supplied by other manufacturers
- ▶ Tailormade maintenance contracts
- ▶ Control and calibration of dust collectors
- ▶ Modernization and relocation of existing equipment
- ▶ Expert advice for all process questions
- ▶ Blast media analysis
- ▶ Support in meeting the operating standards for your equipment
- ▶ Protective ground wire tests (in accordance with EN 60204-1 / VDE 0113)
- ▶ BUS measurements
- ▶ Customer Experience Centers and process labs around the world
- ▶ Training courses for operators and maintenance personnel
- ▶ Added value through service contracts: 24 h emergency hotline



Maintenance and repair service

Our professional service team stands ready to serve you, be it helping with an emergency, a repair or a scheduled maintenance. With quick response times and well-equipped service vehicles we are able to maintain your onsite equipment or get it running again.



Spare and wear parts – also for equipment supplied by other manufacturers

By nature all shot blast machines are subject to wear! Rösler maintains a large stock of spare parts. This guarantees quick delivery and a high equipment uptime. If needed, we will arrange for delivery overnight.

Please find more information to our service for shot blast machines at www.rosler.com

CHECK LIST for TuneUp – Upgrade of turbines

It will be a pleasure to analyze the cost-saving potential of a modernization of your shot blast equipment. Simply fill out the questionnaire below and send it to the E-mail address or fax number listed at the bottom of this questionnaire.

All your information will be treated with the utmost confidence. Your data will NOT be provided to third parties.

1. Customer data

Name:
 Address (street):
 Address (postal code):
 Address (town):
 Value-added tax ID (as needed):
 Industry:

Techn. contact (name):
 Techn. contact (phone number):
 Techn. contact (E-Mail):
 Commercial contact (name):
 Commercial contact (phone number):
 Commercial contact (E-Mail):

2. Information about the shot blast equipment

Manufacturer:
 Model name:
 Equipment type (roller conveyor blast machine, etc.):
 Processing goal / work pieces:
 Manufacturing date (year):
 Operating hours: (h)
 Blast hours: (h)
 Utilization per working day: (h)

3. Modernization goals

Higher throughput: Yes No
 Better shot blast results: Yes No
 Lower energy consumption: Yes No
 Miscellaneous / special remarks:

4. Blast media

Media name as listed by the supplier:
 Supplier:
 Blast media type (grit / shot):

5. Usable life

Impeller: (h) Operating hours Blast hours
 Control cage: (h) Operating hours Blast hours
 Turbine disk: (h) Operating hours Blast hours
 Side wear plates: (h) Operating hours Blast hours
 Throwing blades: (h) Operating hours Blast hours
 Material of which the wear parts are made:

6. Information about the blast turbine(s)

Manufacturer:
 Model name:
 Installed power of the motor: (kW)
 Throwing blades/turbine: (quantity)
 Ø turbine disk / wheel: (mm)
 Turbines (rotational direction: Clockwise): (quantity)
 Turbines (rotational direction: Counterclockwise): (quantity)
 Drive system (direct / indirect):
 Ø Drive disk electric motor (**): (mm)
 Ø Drive disk turbine (**): (mm)
 Motor RPM (**): (U/min.)
 Turbine RPM (**): (U/min.)
 Max. throwing speed (*): (m/s)
 Max. blast media throughput (*): (kg/min.)
 Max. turbine amperage draw: (A)
 Frequency inverter/rated load: (model/kW)
 * If available!
 ** Only required for turbines with indirect drive!

7. Information about potential subsidies and ROI calculation

Annual sales volume of the customer:
 Number of employees at the customer:
 Hourly rate for the shot blast machine:
 Labor costs per hour:

8. Remarks to the required data

For the installation of new turbines the actual performance data of the shot blast machine are required. The data can be collected from the serial number plate, actual readings of the displays in the control panel and measurements of the turbine components. The performance data can also be obtained from the operating manual.

9. Additional information

For an assessment of the conditions at the machine location photos of the shot blast equipment are very helpful, especially photos of the entire machine as well as details of the turbine placement and the wear lining in the blast chamber.

We will gladly support you in any way possible!

Please contact our TuneUp team by phone under the number **+49 (0) 9533 924-333**, by E-Mail under **service-de@rosler.com** or per fax under the number +49 (0) 9533 924-601!

If desired, one of our service engineers can also assist you in the collection of the required data.

Mass Finishing
Shot Blasting
AM Solutions
www.rosler.com

Germany

Rösler Oberflächentechnik GmbH
Werk Memmelsdorf
Vorstadt 1
D-96190 Untermmerzbad
Tel.: +49 9533 / 924-0
Fax: +49 9533 / 924-300
info@rosler.com

Rösler Oberflächentechnik GmbH
Werk Hausen
Hausen 1
D-96231 Bad Staffelstein
Tel.: +49 9533 / 924-0
Fax: +49 9533 / 924-300
info@rosler.com

USA

Rösler Metal Finishing USA, L.L.C.
1551 Denso Road
USA-Battle Creek
MI 49037
Tel.: +1 269 / 4413000
Fax: +1 269 / 4413001
rosler-us@rosler.com

France

Rösler France
Z.I. de la Fontaine d'Azon
CS 50513 - St. Clément
F-89105 Sens Cedex
Tel.: +33 3 / 86647979
Fax: +33 3 / 86655194
rosler-fr@rosler.com

Italy

Rösler Italiana S.r.l.
Via Elio Vittorini 10/12
I-20863 Concorezzo (MB)
Tel.: +39 039 / 611521
Fax: +39 039 / 6115232
rosler-it@rosler.com

Switzerland

Rösler Schweiz AG
Staffelbachstraße 189
Postfach 81
CH-5054 Kirchleerau
Tel.: +41 62 / 7385500
Fax: +41 62 / 7385580
rosler-ch@rosler.com

Spain

Rösler International GmbH & Co. KG
Sucursal en España
Polg. Ind. Cova Solera C/Roma, 7
E-08191 Rubí (Barcelona)
Tel.: +34 93 / 5885585
Fax: +34 93 / 5883209
rosler-es@rosler.com

Netherlands

Rösler Benelux B.V.
Reggestraat 18
NL-5347 JG Oss
Postbus 829
NL-5340 AV Oss
Tel.: +31 412 / 646600
Fax: +31 412 / 646046
rosler-nl@rosler.com

Belgium

Rösler Benelux B.V.
Avenue de Ramelot 6
Zoning Industriel
B-1480 Tubize (Saintes)
Tel.: +32 2 / 3610200
Fax: +32 2 / 3612831
rosler-be@rosler.com

Austria

Rösler Oberflächentechnik GmbH
Hetmanekgasse 15
A-1230 Wien
Tel.: +43 1 / 6985180-0
Fax: +43 1 / 6985182
rosler-at@rosler.com

Romania

Rösler Romania SRL
Str. Avram Iancu 39-43
RO-075100 Otopeni/ILFOV
Tel.: +40 21 / 352 4416
Fax: +40 21 / 352 4935
rosler-ro@rosler.com

Russia

Rösler Russland
Borovaya Str. 7, bldg. 4, office 107
111020 Moscow
Tel. / Fax: +7 495 / 247 55 80
rosler-ru@rosler.com

Great Britain

Rösler UK Ltd.
Unity Grove, School Lane
Knowsley Business Park
GB-Prescot, Merseyside L34 9GT
Tel.: +44 151 / 4820444
Fax: +44 151 / 4824400
rosler-uk@rosler.com

Brazil

Rösler Otec do Brasil LTDA
Av. Antonio Angelo Amadio, 1421
Centro Empresarial Castelo Branco
18550-000 Boituva
São Paulo - Brasil
Tel.: +55 15 / 3264-1117
Tel.: +55 15 / 3264-1112
info@rosler-otec.com.br

China

Rösler SURFACE-TECH (BEIJING) CO., LTD.
Beijing Office
Fu Hua Mansion, Office A-11-K
No. 8, Chao Yang Men North Avenue
Beijing 100027, P.R. China
Tel.: +86 10 / 6554 73 86
Fax: +86 10 / 6554 73 87
rosler-cn@rosler.com

and over 150 additional distributors
around the world



Find your contact