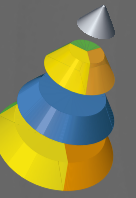


CHIP

2020

RÖSLER[®]
finding a better way ...



News from the surface technology

Mass Finishing

Efficient systems engineering and innovative technologies – powerful and economical

Shot Blasting

Individual systems engineering and intelligent process solutions – reliable and energy efficient

AM Solutions

The full solution provider for 3D post processing equipment and 3D printing services

Surface Finishing

is our **DNA**

EDITORIAL



The managing directors of the Rösler Oberflächentechnik GmbH: Volker Löhnert, Stephan Rösler, Frank Möller (f.l.t.r)

In order to grow in a sustainable manner, companies must continuously adjust their corporate structure to the actual market situation. The upheavals around the global spreading of the Corona virus (COVID-19) are posing extraordinary and, so far, unknown challenges for all of us. The pandemic has created an extremely difficult global economic situation and has caused many companies to drastically reduce their production volume. For this reason we must expect a significant sales decline within the Rösler group.

However, despite this development we adhere faithfully to our mission – long term sustainable plans and actions have a higher priority than short-term profit maximization. For this reason, Rösler has made and will continue to make numerous forward-looking investments like, for example, in the compound production, logistics, ceramic media production, the machining shop, the Rösler Academy, plastic media production and a new corporate cafeteria. We are proud to report that once all current and planned investments will be completed by the end of 2020, within a period of four years we will have invested more than 50 million Euro at our two German locations.

Recently we were able to conclude a partnership agreement with the globally renowned HP company in the field of automatic post processing of 3D printed components. This is ample proof that in the areas digitization and AM Solutions we are not only on the right track but also enjoy an excellent global reputation as specialist for surface preparation and surface refinement. Moreover, as of April 2020 we will have our own AM Solutions test center at our Memmelsdorf location. With an area of around 400 square meters and equipped with state-of-the-art equipment this new facility will allow us to define cost-effective and high-quality post process solutions for your 3D printed components, irrespective of the utilized printing method and the used materials. Furthermore, since early 2020 our Rösler Academy offers the seminar “AM.1 – Post Processing of 3D printed components”. Our Italian division “AM Solutions – 3D printing services” has started its business activities by the end of March. As service provider with comprehensive knowhow in the areas engineering, design optimization, printing and post processing this division is completing our product and service portfolio in the field of additive manufacturing.

Sustainability in the sense of saving valuable resources is also an extremely important subject for us! For example, for the ceramic media production we purchased innovative, energy-saving kilns, and as of May we will be commissioning a new photovoltaic system with an average annual capacity of about 1 million kWh. In our core business sectors mass finishing and shot blasting we also implemented sustainable and energy-efficient solutions to the benefit of our customers. Please read more about this subject on the following pages.

We will be pleased to tackle new, interesting technical challenges in close partnership with you. I hope that despite the current difficult situation you will still be able to enjoy reading our latest CHIP magazine. Please stay healthy!

Stephan Rösler

Imprint

Publisher and Dtp:

Rösler Oberflächentechnik GmbH | Vorstadt 1 | 96190 Untermmerzbach | Germany
Tel.: +49 9533 / 924-0 | E-Mail: info@rosler.com | Internet: www.rosler.com

Editorial office:

SCHULZ.PRESSE.TEXT | Doris Schulz, freie Journalistin (DJV)
Landhausstr. 12 | 70825 Korntal
Tel.: +49 711 / 854085 | E-Mail: doris.schulz@presstextschulz.de

Print:

Schneider Printmedien GmbH | Reußenberg 22b | 96279 Weidhausen | Germany
Tel.: +49 9562 / 9853-3 | Internet: www.schneiderprintmedien.de

Setting up mass finishing operations for the future
Total focus on automation, digitization and quality

Automation, digitization, quality control by continuous process monitoring, process documentation and energy efficiency; these are some of the challenges industrial manufacturing organizations are grappling with to prepare for the future. Of course, this also applies to mass finishing. Rösler can offer suitable and efficient solutions for any of these topics.

Be it for bulk goods or individual work pieces, mass finishing continuously opens new fields of application for precision finishing by innovative developments in equipment technology and consumables. This includes meeting stringent demands for quality, process stability and process documentation. In addition, within the scope of climate-neutral manufacturing operations energy efficiency and sustainability are becoming crucial targets. Rösler is meeting these innovation challenges head-on by developing new and continuously improving already existing solutions. The ultimate goal is to offer products and services that are precisely adapted to the customers' individual requirements allowing optimal and efficient mass finishing operations and offering a maximum in cost benefits.

Interlinked, fully integrated mass finishing operations for single piece processing

Especially in industries like automotive, aerospace, medical engineering or machine tool manufacturing increasing product diversity and product individualization result in smaller production lots, sometimes consisting of just one single piece. That is why there is a clear trend towards single piece processing that is directly integrated into a manufacturing line. In order to achieve optimum results multiple process steps like washing, deburring, edge radiusing and/or polishing are usually linked together. To ensure high cost efficiency and process stability these linked processes must be fully automated. As system partner for resolving such challenging tasks Rösler offers not only precisely adapted mass finishing equipment and consumables but also custom-engineered work piece fixtures for cleaning applications and automation including the integration of hardware and software, thus completely eliminating the risk of any interface problems. Precisely matching sensor technology allows continuous monitoring and documentation of all process parameters like RPM, dosing rate of process liquids, cycle times, even the control of the work piece position during the finishing process.

Moreover, quality control systems for the processed components, e.g. optical or tactile measuring instruments, can be integrated. The collected process data can be transferred to a higher-level MES, where they can be processed to allow complete process traceability. Of course, this documentation can be made available at any time throughout the organization.

Digitized solutions and services around the mass finishing operation

The continuous digitization and linking of equipment and processes represents not only a benefit for customers with complex, multi-stage operations. They are also advantageous for less complicated applications. For example, a machine can be controlled remotely, and its current process status can be called up. Software solutions that can be implemented retroactively allow, among other things, the collection of energy consumption data. This information allows the planning and controlling of energy saving measures. The Overall Equipment Effectiveness (OEE), i.e. equipment uptime and operational efficiency, can also be easily displayed on a dashboard. This metric allows drawing conclusions as to whether a higher work piece volume can be processed. Other areas where the digital solutions from Rösler can be beneficial are maintenance and service. By monitoring service relevant components unplanned equipment downtimes, which frequently cause delivery delays, can be prevented.

Your contact person:

Mr. Michael Striebe
Sales Manager Mass Finishing
Machines Germany/Branches
m.striebe@rosler.com
+49 9533 / 924-151



Fully automated processing line with a Rösler Multi-Surf-Finisher and a Rösler continuous flow washing system.

New equipment configurator for mass finishing systems Delivery times for standard equipment cut in half

With the new equipment configurator it is now possible to put together different mass finishing systems, including dryers and process water cleaning units from standard machine components and interlinking them in different combinations. This helps not only cutting delivery times in half but also simplifies equipment commissioning at the customer.

“Building” your new car on your computer with a car configurator is offered by practically all automobile manufacturers. With the development of the new equipment configurator Rösler has achieved a similar but slightly different objective: Supplying Rösler mass finishing systems fast to our customers. The configurator contains all relevant technical data of standard machine components, for example, rotary and tub vibrators, centrifugal disk and drag finishing machines, dryers, centrifuges and lifting stations for process water cleaning as well as material handling equipment. The new tool allows for the automatic and logical combination of these machine components. The tool generates the bill of materials required for assembling the selected equipment. Numerous mass finishing equipment and application experts with comprehensive experience and know-how participated in the development of this innovative design software. That is why, when composing a mass finishing system from standard machine components, the configurator can draw on intrinsic knowledge about the interaction of these components. This “artificial intelligence” ensures that only components and assemblies are selected, which are functioning well with each

other. This enhances not only the quality of the proposed equipment combination but also guarantees that the customer always receives the best possible finishing solution.

Numerous benefits - shorter delivery times, faster commissioning and guaranteed spare parts supply

Around 35 different machine combinations are already available in the new equipment configurator. To a certain degree it even allows consideration of individual customer requests. With the continued expansion of the system the number of automatically configured mass finishing solutions will steadily increase. Since the introduction of this tool about one year ago the delivery times for mass finishing equipment configured in this manner could be reduced by 40 to 60 %. Because regional electrical power supply values are taken into consideration, it makes no difference whether a mass finishing system is configured for use in Europe or the United States. Even custom paint colors can be specified to make sure your new equipment fits your corporate color scheme. Since the equipment audits required for obtaining a CE certificate are performed by an electrical expert in the

manufacturing plant, the configurator also helps speeding up and simplifying the commissioning of the equipment at the customer site. Of course, the use of standard machine components and assemblies significantly improves the availability of spare and wear parts resulting in considerably faster delivery times.

The new equipment configurator is already utilized at the Rösler headquarter in Untermerzbach and at various sales branches. Over time it will be used throughout the complete Rösler organization.

With the introduction of the equipment configurator Rösler has achieved another innovative milestone in implementing its vision to become the world’s best, customer-focused company in the field of surface treatment.

Your contact person:
Mr. Dennis Eichenberg
Head of Engineering
Mass Finishing
d.eichenberg@rosler.com
+49 9533 / 924-729

Your contact person:
Mr. Hans-Ullrich Jäckel
Head of Sales Department
Mass Finishing
h.jaekel@rosler.com
+49 9533 / 924-9975

Media and compound manufacturing expansion has been completed Significantly shorter delivery times and greatly improved sustainability

With the commissioning of two new kilns in the ceramic media production mid November 2019 Rösler has successfully completed the expansion of its manufacturing capacities for consumables. Major highlights are significantly shorter delivery times and considerable savings in energy consumption.

Media and compounds are essential for the stability and cost effectiveness of mass finishing processes as well as for the consistency of the finishing results. With over 15,000 different products the Rösler consumables range is not only standing out by the tremendous product depth but also by an exceptionally high quality level. The resulting, continuously growing demand for the company’s consumables had resulted in rapidly increasing delivery times. For this reason, during the past three years, Rösler has significantly expanded the manufacturing capacities for media and compounds.

Considerable savings in energy consumption

An essential aspect of this capacity expansion was also an increased focus on sustainability. With an additional investment expenditure of roughly 15 percent, various design modifications of the new kilns for the ceramic media production yielded energy savings of at least 20 percent. Additional energy savings are achieved by reclaiming the waste heat of the kilns. This is primarily used for drying the media in the green state. In addition, the utilization of air/ water heat exchangers made it possible to employ some of the waste heat for heating the offices and production halls.

In the new plastic media production facility the waste heat from the emission control system is used for heating the media tempering room, which also had a significant positive effect on the overall energy footprint.

25 to 40 percent higher manufacturing capacities

Upon completion of the plastic media capacity expansion project the plastic media production can now be run with seven manufacturing lines, each operated in dual shifts. The system was designed for maximum operational flexibility allowing all products to be manufactured on any one of the seven lines. In addition, the high degree of automation allowed increasing the overall capacity by roughly 40 percent. We are pleased to report that in the meantime delivery times for plastic media could be reduced to two to four weeks.

In September last year the compound production was relocated to a new production facility. This move resulted in a capacity increase of 25% allowing compound deliveries, depending on the specific products group, within one or two weeks after receipt of the customer order.

Last but not least, the new ceramic media production facility was completed by mid November 2019. Here the capacity could also be expanded by 40 percent so that all ceramic products can now be delivered again within two to four weeks.

Your contact person:
Mr. Rainer Schindhelm
Business Unit Manager
Consumables - Production
r.schindhelm@rosler.com
+49 9533 / 924-431



Overview of abrasive media and compound

Innovative work piece drying solutions for mass finishing applications Energy savings of up to 40 %

A new generation of dryers offers energy savings of up to 40 % for drying the finished work pieces after a mass finishing process. They are an important factor in the implementation of a consistent energy management per standard DIN EN ISO 50001:2018 as well as environmental and climate protection goals.

Around 90 % of all mass finishing applications are wet processes so that the finished work pieces must undergo a subsequent drying stage in either continuous feed or batch operation. This provides temporary corrosion protection, allows trouble-free down-stream manufacturing operations and guarantees a work piece surface free of water spots. The most common drying machines are rotary, vibratory dryers filled with a drying medium that absorbs the moisture from the work pieces. To achieve the required drying temperature the heat, generated by heating elements, is transferred through the "insulating medium" air to the base plate of the dryer. This, somewhat old-fashioned heat transfer is accompanied with a high heat loss. Since dryers are normally running non-stop during a shift, they require a considerable energy input.

Direct heating and temperature control save energy

With the newly developed heat block heating system Rösler can now offer rotary vibratory dryers with drying medium that allow significantly more energy-efficient drying operations. Since the heating system is now directly connected with the base plate of the processing bowl, the heat transfer takes place with minimal heat loss. This design change has reduced the energy consumption by 30 to 40 %. Further energy savings are achieved by the continuous, thermostatically controlled temperature of the drying medium. Once the set temperature for a specific drying process is reached, the heating system of the dryer is turned off and only turns on again, when the temperature falls below the pre-set level. This temperature control can be linked with the preceding mass finishing machine(s) or can be integrated into a higher-level control panel.

A patent application has been filed for the new heating technology in rotary dryers.

Energy-efficient solutions for hot air rotary and belt dryers

Hot air rotary and belt dryers are generally used for drying of work pieces with holes, where drying medium might get lodged, or for drying polished coin blanks. Since these dryer types require a high energy input as well, Rösler has also developed energy-saving solutions. For example, the integration of a condensation/drying system with a heat pump (Airgenex®) reduces the energy requirements for these machines by up to 40 %. Further energy savings can be achieved by using state of the art electronic controls. A positive side effect is that the dryers now require a significantly lower connected load. Since the dried work pieces are mostly immediately transferred to subsequent manufacturing operations or packaged, the dry-

ing temperatures can be reduced. The lower drying temperatures also ensure more comfortable work place conditions. A patent application was also filed for the new hot air dryers. These new, energy-efficient dryers will assist the customers in the implementation of a more effective energy management per standard DIN EN ISO 50001:2018, taking effect in February 2020, which demands significant energy savings. In addition, the new dryers make an important contribution to achieving the environmental and climate protection objectives. In Germany any investments resulting in sustainable energy savings qualify for subsidies by various institutions like the federal office for economic affairs and export control and the LfA Förderbank Bavaria. Other countries and even your local utility have similar incentives to encourage energy savings.



Your contact person:
Mr. Rüdiger Böhm
Manager Global R & D
Mass Finishing
r.boehm@rosler.com
+49 9533 / 924-280

Product management for mass finishing Quick and targeted response to market demands

Markets and their requirements are evolving ever more quickly! Therefore, as interface between market, company and products the central task of the product management for mass finishing is to react quickly to changing market conditions. This includes the timely identification and implementation of demand-based solutions and the constant optimization of products to extend their life cycle and, thus, create added value for our customers.

Nowadays manufacturing companies are confronted with significant challenges. These include the adaptation to new manufacturing technologies and materials, the realignment of complete industrial sectors, shorter product life cycles and the digital transformation of manufacturing processes. Stricter regulations for improved energy efficiency and climate protection pose additional cost challenges. To remain competitive in this environment requires flexible manufacturing solutions allowing the quick, targeted and cost-effective reaction to specific market requirements. To meet these challenges, per June 1, 2020 Rösler will establish a new department "Product Management" for its mass finishing division.

Constant in-depth observation and analysis of market requirements and specific customer demands will allow product management to recognize and assess market trends and changing market conditions more quickly. The systematic collection and evaluation of such information will provide a valuable data base. On the one hand, this will help product

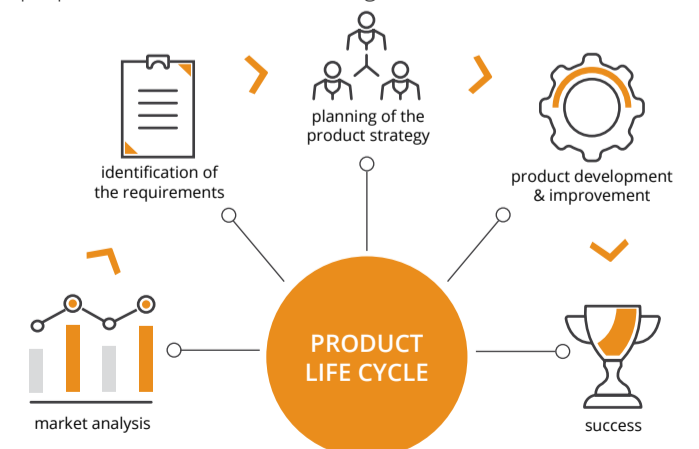
management, together with the respective technical and commercial departments, to define and develop new market-oriented products like machinery, automation solutions and consumables. On the other hand, the comprehensive know-how about specific markets will improve the quality of our communication with the customers.

During the product development phase product management will assume a control function to ensure that the new products will be available within the targeted time frame.

Together with the respective specialty departments product management will also be responsible for updating and optimising existing products. This ensures that our machinery is always equipped with the latest hard- and software allowing quick adaptation to changing technical requirements. Such an approach will also extend the product life cycle of our machinery and improve the cost-efficiency of capital expenditures.

With all these positive effects the product management for mass finishing will make a significant contribution towards our

vision for Rösler to become the world's best, most innovative and customer-orientated company in the field of surface preparation and surface finishing.



Your contact person:
Mr. Christian Höhn
Head of Product Management
Mass Finishing
c.hoehn@rosler.com
+49 9533 / 924-891

Your contact person:
Mr. Hans-Ulrich Jäckel
Head of Sales Department
Mass Finishing
h.jaekel@rosler.com
+49 9533 / 924-9975

Global R & D for mass finishing

Systematic research and development for tomorrow's mass finishing challenges

The capability to anticipate the finishing requirements of different markets and industries and to adapt quickly to these challenges is key to the success of a company. The new, global R & D department at Rösler is intended to do exactly that!

Mass finishing was initially developed for surface finishing of small, sturdy work pieces. But over the past years it has evolved into a technology that can do a lot more: Today there are practically no limits with regard to work piece size, work piece material, achievable finishing goals, repeatability of the processing results, process automation and digitization. With numerous innovations in the fields of equipment technology, process development, automation and consumables Rösler has made a significant contribution towards modernizing the mass finishing technology. To consolidate and further expand this leading position, Rösler has reorganized the company's research and development department to react more quickly to the global finishing needs.

Prepared for the finishing requirements of the future

The active involvement of all Rösler branches allows not only the recognition of various technological trends and finishing demands from various markets and industries.

It also helps to quickly and systematically react to these trends with new, individualized solutions. Utilization of the synergy between different Rösler locations will help us implementing project developments for our customers much more quickly and effectively.

Staying abreast of the changes in the manufacturing industry, new regulations, for example, in the medical field and in aerospace, or the latest environmental protection developments, is a major function of the global R & D department. Of course, equally important is the prompt reaction to all these changes with product improvements and new products. This also includes the development and introduction of new, respectively, optimized processes for meeting the requirements arising from changing manufacturing technologies. Another priority of the R & D department is the identification and integration of complementary processing technologies, which will help maintaining Rösler's role as a single source solutions provider.

Our goal is the development of future-orientated products and solutions, which allow our customers to

meet their finishing requirements for bulk goods and single work pieces in an effective and efficient manner. This will help them gaining a competitive edge in their respective markets.



Your contact person:
Mr. Rüdiger Böhm
Manager Global R & D
Mass Finishing
r.boehm@rosler.com
+49 9533 / 924-280

Service protects people and equipment

Regular maintenance: Precondition for equipment safety

Maintenance work conducted in regular intervals guarantees not only consistently good process results and a long equipment life, but it also plays an important role in equipment and work place safety. With a comprehensive, modular after-sales service package Rösler makes a significant contribution towards protecting people and equipment.

Production pressures and short delivery times are frequently the reason for urgent maintenance work on equipment like shot blast machines to be delayed or not done at all. This can quickly lead to deteriorating shot blasting results and a drastically reduced equipment life span due to increased wear. Moreover, deferred maintenance can also result in significantly lower equipment and work place safety.

More than the typical maintenance package

Many companies are utilizing their own, sometimes poorly trained, personnel for conducting maintenance activities. This is frequently the reason why some service work like controlling the airflow speeds in dust collectors, checking the connection and overall condition of hydraulic hoses and functional control of pneumatic components remains undone.

In order to adequately protect customer employees and equipment the Rösler service portfolio offers activities, which are going beyond the classical maintenance work and can only be conducted by specially trained service engineers equipped with the required tools. This makes also sure that the legally prescribed owner/operator obligations are fully met. The offered maintenance services include the regular review of electrical components in accordance with EN 6024 VDE 0113, the control of hydraulic and pneumatic equipment, a function test of the dust collectors per the hazardous materials standard (GefStv.) and BGR 121 and a risk assessment of all production tools according to the operational safety standards

Fire and explosion prevention in dry dust collectors

The risk posed by dust collectors is frequently gravely underestimated! The dust generated during shot blasting operations may appear harmless. But through self-ignition, in combination with oxygen, it can cause a fire or, even, an explosion. The specifications of the dust collectors supplied by Rösler are based on the information about the material(s) to be treated, as supplied by the customer, and the utilized blast media. These specifications are based on comprehensive experience in shot blasting applications and the Gestis data bank. However, after commissioning of the equipment, and each time different work pieces must be processed - whether they are new or just modified - a sample of the actual dust should be collected and analyzed. This measure ensures that based on the actual use of the shot blast machine no additional activities are required to prevent a fire or explosion. Protection against legionella in case of wet dust collectors

The 42. federal emission protection standard (BlmSchV) that took effect in 2017, prescribes measures to prevent a health hazard caused by legionella in systems that are using atomized air. Such systems are in particular wet dust collectors. The standard obliges the operators of such dust collectors to check them for legionella infection by regular tests and laboratory studies and document the results. Non-compliance can result in hefty fines.

A new dosing unit allows the automatic compliance with the defined operator obligations. In combination with a specially

developed additive RST-P1 this dosing unit maintains the pH value of the water in the dust collector at a consistently high alkaline level of pH > 10 and reliably prevents the creation of legionella. New wet dust collectors can be optionally equipped with this system. Existing dust collectors can be retrofitted with a stand-alone unit that can be used for wet collectors from different suppliers. This system also automatically records the pH value in the water tank.



Our service team will gladly assist you in resolving any processing and equipment issues and in complying with your legal operational obligations.

Your contact person:
Mr. Uwe Konitz
Service Manager
Blasting Technology
u.konitz@rosler.com
+49 9533 / 924-370

Blast equipment production for plastic de-flashing established in Untermerzbach Comprehensive equipment solutions for de-flashing of plastic components

After relocation of the Rösler shot blast equipment line for deflashing of plastic components from Switzerland to Untermerzbach, equipment production at the parent plant has resumed with promising results. For existing as well as new customers numerous projects for a variety of applications were already successfully concluded.

The positive reaction of existing and new customers to the relocation of our plastic de-flashing shot blast machinery production clearly proves that the relocation objective, namely taking advantage of the synergy potential for the benefit of our customers, has been fully achieved. Like with all our other business activities Rösler is also a competent system partner with this product line: Whether it requires initial processing trials in our fully equipped test center, process development and the engineering of customer-specific equipment concepts, in close cooperation with our customers, Rösler provides excellent technical and cost-efficient solutions. The application range covers the de-flashing of functional and decorative injection-molded components made from duroplast and filled thermoplast materials as well as pressed duroplast components. Perfectly adapted to the customer products and specifications like desired de-flashing results, through-put, automation, process monitoring and quality control, the Rösler product range offers compact manufacturing cells for single piece processing with satellite table, swing chamber & swing table as well as continuous belt machines. Rösler also offers systems for de-flashing of bulk goods. For acceleration of the blast media blast turbines, suction blast systems or a combination of both can be utilized. To be able to always offer the optimal blast media Rösler has been working exclusively for many years with a specialty media blast media manufacturer. This cooperation allows not only application-specific modifications but also the development of completely new blast media.

Our experts for plastic de-flashing are handling the electro-static challenges with specially developed anti-static compounds and the use of ionized air.

Solutions for the automotive industry

Since many plastic components are utilized in automobiles, for example parts for handling of fuel and for temperature management, the automotive industry is an important customer. In this context the increasing replacement of metallic parts with plastic components for weight reductions and, thus, the improvement of the CO2 footprint, plays a significant role. Electro-mobility, autonomous driving and the continuous miniaturization of electrical control and semi-conductor components, including sensors, pose new challenges. To protect them against mechanical, physical and thermal wear the components are frequently coated with duroplast materials. All these applications require perfect de-flashing and deburring as well as a high degree of cleanliness. Moreover, electro-static charges must be minimized.

Optically and haptically excellent characteristics

Visible components like switch covers, electric outlet inserts, components for electric steam irons or the handles of frying pans, parts for electrical power systems, electronics, and household appliances, are frequently processed in bulk batches. This requires not only efficient de-flashing results in a minimum of time but also gentle processing to ensure that the components are optically and haptically attractive.



Detail of work piece fixture

The special case of light metals

For various reasons shot blast machines designed for plastic de-flashing are increasingly utilized for de-flashing and deburring of components made from light metals like aluminum, magnesium and zinc die-castings. The relatively soft blast media does not damage or remove the protective oxide layer from the work piece surface. In addition, the soft media does not induce any stress into the work piece surface and, thus, prevents the warping of the components.

Your contact person:
Mr. Thomas Gundermann
Sales Department
Shot Blasting
t.gundermann@rosler.com
+49 9533 / 924-540

Your contact person:
Mr. Thomas Reber
Managing Director Rösler
Switzerland
t.reber@rosler.com
+41 62 738 55 20



From bulk material processing e.g. on a RMBC 1.1 S, to single part processing, e.g. on the RWS 1200, plastic deburring offers diverse solutions for almost all workpiece variants.



Components plastic pumps



Switch components

Standard shot blast equipment for a variety of applications Cost-efficient and high quality shot blasting solutions

When it comes to producing the required surface and technical characteristics of a wide range of finished and semi-finished goods, shot blasting is one of the key industrial product refinement technologies. For many of these applications cost-efficient standard shot blast equipment from Rösler will not only deliver the specified results but will also meet the capacity requirements.

Generating a competitive surface finish by shot blasting does not always call for the installation of complex, fully automated systems. Many quality and throughput demands can be fulfilled with inexpensive standard equipment. For an array of different shot blasting tasks Rösler offers a broad range of machinery that can be operated without the need for a foundation or pit. These machines can be used for all kinds of applications like de-sanding and descaling of castings and forgings, shot peening of automotive and truck components or blast cleaning and surface preparation in the steel trade industry.

High quality combined with process stability, cost efficiency and a long equipment life

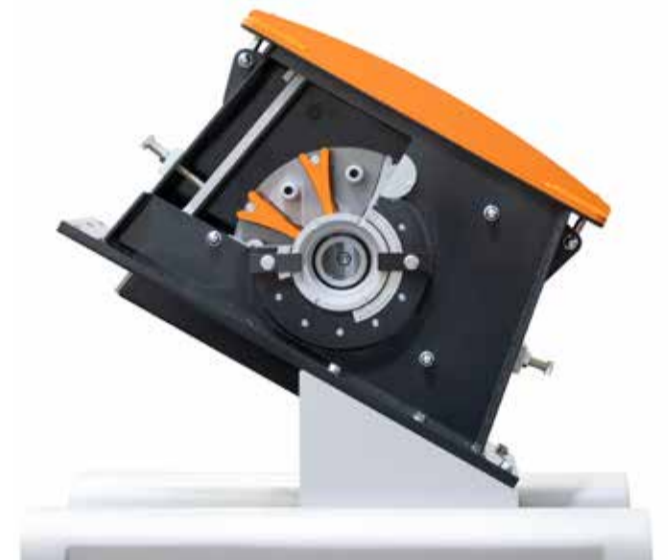
For Rösler the term "Standard" means the assembly of machines from standard components, available from stock or specially made, to meet the technical requirements of a given customer order. Flexible equipment modules make it possible to meet customer demands within a precisely defined technical framework and with surprisingly short delivery times. Rösler does not make any compromises with the turbine technology either. All standard machines are equipped with high performance Gamma turbines precisely adapted to the respective shot blasting task. These turbines, equipped with curved throwing blades in "Y" design, offer a blast performance that is up to 20 % higher than the

performance of conventional blast turbines. This results in 15 to 20 % shorter cycle times increasing not only the machine capacity but also reducing the personnel costs for shot blasting operations. Since by simply turning them around, both sides of the throwing blades can be utilized so that their uptime is practically doubled. Another feature of the Gamma turbines is that they require considerably less energy than conventional turbines.

The dust collector capacity is precisely matched to the size of the blast chamber. Moreover, the special air extraction system ensures that the processed work pieces are coming out of the shot blast machine perfectly clean. The blast media recycling and cleaning system is also engineered for a long equipment life. For example, the optimal media curtain in the air wash separator ensures the effective removal of dust and other contaminants from the media. This helps to reduce the media consumption and machine wear.

For heavy-duty blast cleaning jobs with a potentially high wear rate, like de-sanding of castings in foundries, Rösler offers versions of its standard equipment program that are specially designed to cope with such challenging operating conditions. Irrespective of machine size or technical configuration, the standard machines can be installed as plug and play units and quickly commissioned. Nearly all standard shot blast machines can be demonstrated "life" in the Rösler shot blast test center.

For the standard equipment range the manufacturer offers a warranty of three years, excluding wear parts and electrical components. The global Rösler service network is available for any maintenance and repair service for these machines.



At identical operating conditions the proven Rösler blast turbine technology produces consistent and repeatable blast results within shorter cycle times.

Your contact person:
Mr. Johannes Lindner
Head of Sales Department
Shot Blasting Technology
j.lindner@rosler.com
+49 9533 / 924-500

Your contact person:
Mr. Frank Möller
Managing Director
Shotblasting
f.moeller@rosler.com
+49 9533 / 924-240



With their small footprint and low overall height the standard models of the RHBE and RMBC shot blast machinery range are remarkably compact. Since they do not require a foundation pit, their installation is easy and cost-efficient.

Innovative E-mobility solutions Prepared for electric drive systems

Environmental and climate protection is not possible without alternative drive systems. In this respect battery driven electric motors and light-weight vehicle design play a dominant role. As a long-time, experienced and competent partner of the automotive industry Rösler offers numerous innovative solutions for the electric mobility.

The strategic reorientation of the automotive industry towards alternative drive systems goes along with numerous new and modified components. This applies not only to drive assemblies for hybrid and purely electric vehicles but also to the battery modules. Because of the increased use of light-weight materials, different manufacturing and assembly technologies, but also due to a continuously growing automation, the surface finishing requirements for these components are particularly strict, and they must be completely free of any burs. For quite a while the experts at Rösler in the fields of shot blasting, mass finishing and post processing of 3D printed components have been developing solutions for these specific finishing tasks.

Smart manufacturing cell for casting and shot blasting

For example, in close cooperation with renowned manufacturers of casting cells the company developed a solution that combines die-casting and shot blasting as well as work piece handling by robot into one fully automated system. Since this smart die-casting/shot blasting cell requires a production space of only a few square meters and requires no operator, it can be easily

integrated into a fully automated manufacturing line.

This innovative system for in-line die-casting, deburring and surface homogenization is already in use at various OEM's as well as suppliers of die-castings. One customer is FIASA. This company, located in Nanclares, Spain, manufactures, among other items, components made from different aluminum alloys for vehicles with BEV-, PHEV- und mHEV drive systems. After the die-casting process the robot removes the work piece and, after a brief cooling time, places it on a part-specific fixture in the swing chamber shot blast machine RWK 6-12-2. This machine can handle components with a length of up to 1,200 mm and a diameter of up to 600 mm. A key feature is that loading/unloading of the work pieces takes place during the shot blast process, thus minimizing idle equipment times.

For optimum handling of the FIASA work piece range the shot blast machine was equipped with two Gamma 300 blast turbines with a drive power of 11 kW each. Compared to conventional blast wheels these high-performance turbines, utilizing curved throwing blades in Y-design, achieve a 20 % higher blast performance with, at the same time, reduced energy consumption. The blast media flow rate amounts to 212 kg/minute. This media throughput in combination

with the higher blast performance results in surprisingly short cycle times. Their special Y-design permits the use of both sides of the throwing blades, practically doubling their usable life. A quick-change system allows quickly changing the throwing blades without having to remove the turbine from its housing. This feature, along with the use of both blade sides considerably extends the overall equipment uptimes.

Once the blast cycle is completed, the robot removes the work piece at the load/unload station and places it in a packaging unit.

Special turbine for aluminum blast media

To ensure quick and efficient blast cleaning with lighter aluminum blast media, the swing chamber shot blast machine can alternatively be equipped with high performance turbines with "C" shaped throwing blades.



Turbine technology of the swing chamber blast machine

This turbine was specifically developed for blast cleaning of aluminum work pieces with aluminum blast media. In order to handle the special operating conditions existing with aluminum media, it allows a considerably higher media throughput by volume. The lower bulk density of aluminum media requires a higher throwing speed to achieve optimal blast cleaning results. The Rösler C300A blast turbine fully meets these requirements.

At 3,000 RPM the C300A high performance turbine achieves a throwing speed of up to 75 m/s and a blast media flow rate of 90 liters/minute at surprisingly low operating costs. Under certain conditions a flow rate of 130 liters/minute is possible. Compared to other turbines available in the market the C 300 A produces a better blast pattern characterized by its extra length and a homogeneous blast media distribution. Based on the special turbine design the blast media consumption is about 10 % lower.

This newly developed turbine allows the customer using aluminum blast media instead of the usual steel media. This ensures that the work piece surface is not contaminated with other materials caused blast media residue. This helps prevent post-blast machining, which saves a considerable amount of costs.

Rösler swing chamber shot blast machines can be easily integrated into existing or new manufacturing lines. Fully automatic work piece loading & unloading minimizes costly non-productive times.



Your contact person:
Mr. Norman Peter
Sales Management
Shot Blasting Division Foundry & Forge
n.peter@rosler.com
+49 9533 / 924-659

Integrated solutions for the aerospace industry Evolving from equipment manufacturer to benchmark partner

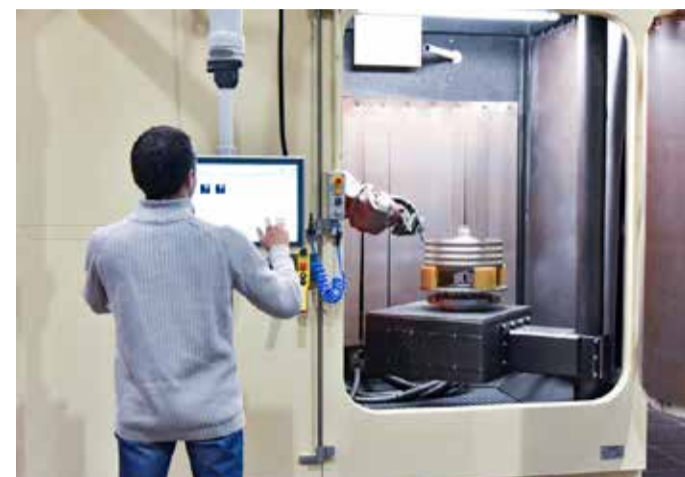
Nowadays aerospace customers are not only demanding first-class solutions, which are tailor-made to their exact requirements. They also expect a deep, industry-specific expert knowledge. Rösler France handles the numerous tasks arising from these challenges in its new department "Industrialization".

The aerospace industry is governed by stringent technical specifications and specific, highly detailed regulations. Compliance with these requirements poses special challenges to the companies who supply capital goods and other products. The industry prefers partners who possess a deep knowledge of the respective manufacturing technologies and are familiar with all regulations and the latest technical developments. As a matter of fact, the suppliers are expected to have the same technical knowhow and knowledge of the production methods as the customers. Rösler France has fulfilled these demands since the beginning.

With the creation of the new department "Industrialization" this branch, specializing in solutions for the aerospace industry, now went one step further. The team consists of experts with deep knowledge of process and automatization technologies and the aerospace industry. This integrated approach guarantees that all essential aerospace aspects are taken into consideration in the equipment concepts to make sure that

the end products are turn-key complete solutions. Therefore, the result is not just a piece of hardware but a system that is in total compliance with the latest aerospace regulations and fulfills all customer-specific requirements. Such an integrated approach includes also the pre-commissioning of equipment at our production facility under actual manufacturing conditions. This allows to quickly determine if the equipment and/or process require any further optimization.

Another important function of the department "Industrialization" is the training and qualification of the employees in internal and external manufacturing facilities of various aerospace companies. This ensures that irrespective of where components are manufactured by whom, they are always made in consideration of the technical level specified by the customers and with a consistently high quality.

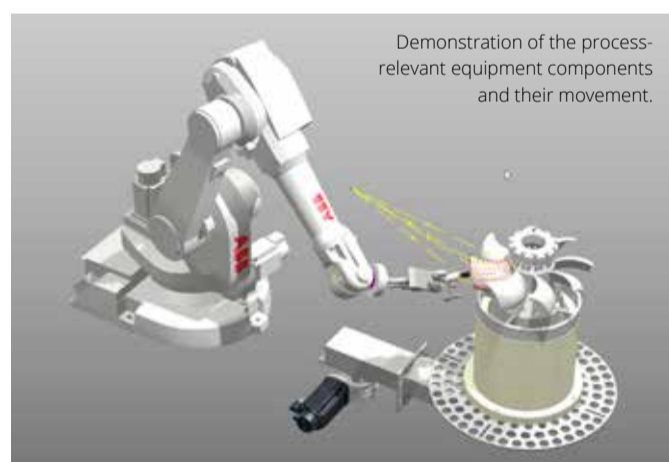


Fully automatic shot peening system with robot and computer process controls.

Your contact person:
Mr. Arnaud Solmon
Process specialist Rösler France
a.solmon@rosler.com
+33 677 / 566 842

Faster and more effective with Virtual Reality New possibilities – from the initial presentation to programming

Virtual Reality, in short VR, is rapidly gaining importance in the industrial sector. Rösler France is utilizing this technology for the development and optimization of customer-specific equipment and process solutions in a virtual environment.



Demonstration of the process-relevant equipment components and their movement.

is the control of automation components like robots. Of special importance in this context is the robot's "freedom of movement" in the blast chamber, and how it can reach all critical surface areas of the work pieces. Finally, the accessibility and size of maintenance doors can be checked to make sure that later on a service engineer can easily reach all critical equipment sections.

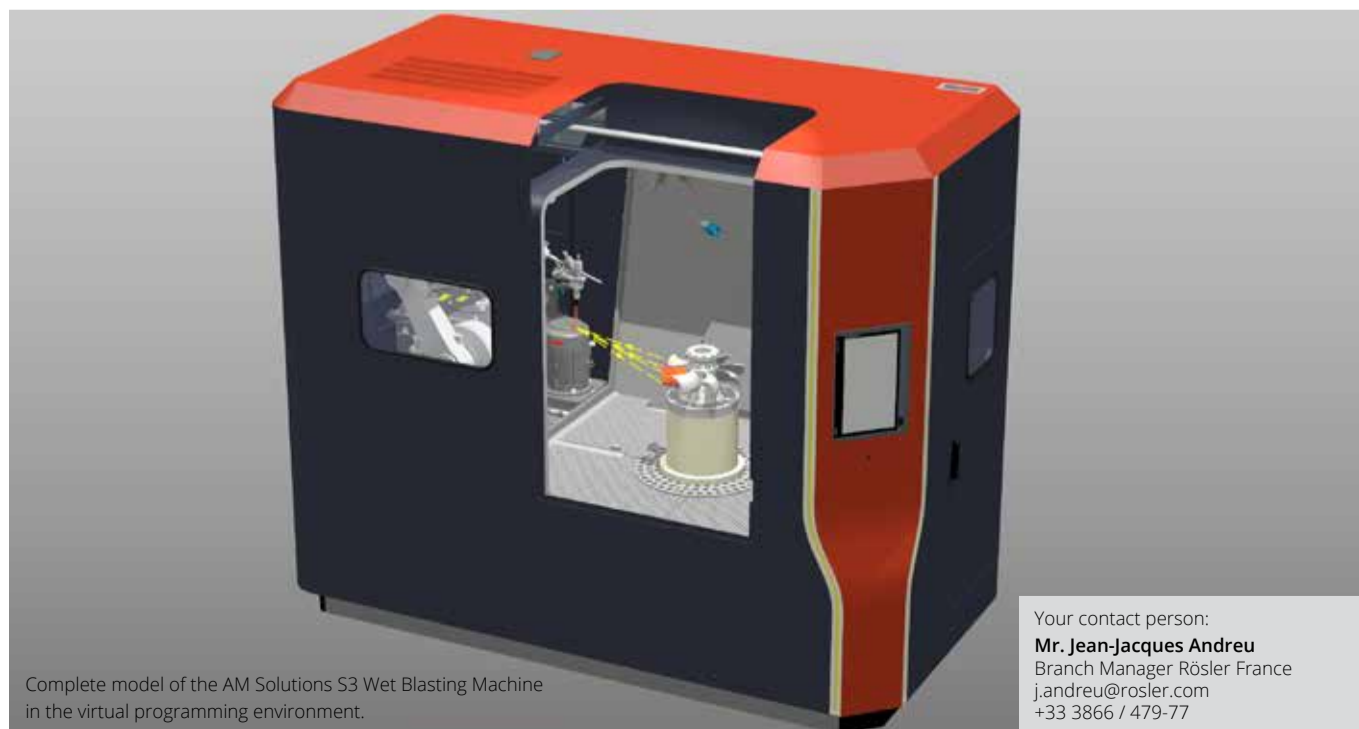
Rösler France uses VR also for developing work piece specific processing programs prior to the completion of the machine. In this respect the main focus is on all movements of the robot

and the blast nozzle position relative to the work piece surface areas that must be treated. The programs can be presented and discussed during a virtual meeting with the customers. This approach ensures that the treatment of the work pieces takes place in compliance with the customer requirements. The programs, developed offline, can be easily uploaded into the actual machine – irrespective of where the actual processing takes place. This ensures that manufacturing plants at different locations can run the respective process with identical parameters and the same, consistent results.

How can complex shot blasting systems and processes be presented to the customers in great detail already during the planning phase? Rösler France introduced Virtual Reality about two years ago to deal with this challenge.

The software allows to virtually view all details of the respective machine from the inside and outside in its actual dimensions, including components for process automation like robots. The machine can even be virtually integrated and operated in the manufacturing environment at the customer. The possibility to easily add and remove equipment components allows not only to evaluate the ergonomics and positioning of the components but also to explain the various equipment functions in great detail, like a rotary table. Equipment and component changes based on customer requests can also be easily implemented and demonstrated.

Another benefit of Virtual Reality is that already during the engineering phase the equipment design can be validated without any problems. For example, one important aspect



Complete model of the AM Solutions S3 Wet Blasting Machine in the virtual programming environment.

Your contact person:
Mr. Jean-Jacques Andreu
Branch Manager Rösler France
j.andreu@rosler.com
+33 3866 / 479-77

AM Solutions – 3D printing services

Handling the complete process chain for 3D printed components

Under the brand name AM Solutions the Rösler group has combined all its activities regarding additive manufacturing. Since September 2019 this also includes the newly founded company AM Solutions – 3D printing services located in Concorezzo, Italy. This service organization provides comprehensive support to customers for all aspects of 3D printing covering product design/ engineering, optimization of components for additive manufacturing, actual 3D printing services, post processing, machining, surface finishing and quality control.

More and more companies from different industrial sectors are utilizing additive manufacturing as a production method for volume production of standardized products. This has resulted in a steadily growing demand for 3D printed components and forces these companies to expand their value-added chain to prepare themselves for the future. AM Solutions has responded to this trend by establishing its latest division AM Solutions – 3D printing services. Staffed with experts familiar with all aspects of additive manufacturing, the company is able to support its customers in the development and implementation of innovative and optimized AM products with a unique, easily customizable solutions package along the entire additive manufacturing production chain.

The services of AM Solutions – 3D printing services start already with the product design and engineering. Ultra modern hard- and software combined with comprehensive know-how ensure that the design possibilities of the 3D print technology are fully exploited for the tasks presented by the customers. And it makes no difference, whether a component must be designed from scratch, or an already existing assembly must be re-designed for additive manufacturing. The services also include engineering validation as well as

the optimization of a product topology. The components made from various materials are printed on state-of-the-art printers. AM Solutions - 3D printing services also offers post-print machining services with experienced machinists and the latest machining equipment.

For post processing and surface finishing the company can offer a wide range of different technologies and processes available from the comprehensive product portfolio of AM Solutions – 3D post processing. This approach ensures that already during the design phase it can be determined, if a given surface finishing requirement can be met, or if a design change is necessary. The service range of 3D printing services also includes suitable quality control measures.

This unique service package along the complete AM production chain allows the customers a simple and risk-free entry into additive manufacturing. At the same time, with growing demand for

their AM products, the customers have the possibility to take over the complete process including design parameters and the respective equipment from AM Solutions – 3D printing services.



The newly founded company AM Solutions S.r.l., based in Italy, expand the existing offerings of AM Solutions, a brand of the Rösler Group, in the field of 3D post processing as a service provider for 3D printing solutions.

AM Solutions – 3D post processing

New test center underlines Rösler's commitment

The new, fully equipped test center for AM Solutions – 3D post processing offers ideal conditions for a forward-looking process and product development. The new test center features machinery that allows processing trials close to actual production conditions.

Recent innovative developments for the automatic post processing of 3D printed components have proven that AM Solutions – 3D post processing is here to stay. Further evidence of our commitment is that by June 2020 this division of the Rösler group will have its own test center at the location Memmelsdorf, Germany.

On an area of 400 square meters the new facility contains not only equipment from the portfolio of AM Solutions - 3D post processing like the models S1, S2, S3, M1, M2 und M3 but also machinery from its partners GPAINNOVA (DLyte 500 and DLyte 10.000) and PostProcess Technologies (DECI, DEMI and Rador). Moreover, the test center is also equipped with state-of-the-art hard- and software for the design/engineering, re-design, the topological optimization and the printing of metallic and plastic AM components.

This presents ideal conditions for the effective and efficient development and optimization of post processing processes of your components made by additive manufacturing including unpacking, removal of support structures and loose or sintered-on powder, but also component cleaning, surface smoothing, edge radiusing and, even high gloss polishing and the application of color dyes.

Another significant benefit of the new test center is that for the development of new and optimization of existing equipment, including the improvement of the corresponding consumables, this comprehensive equipment range will allow us taking into account all aspects of additive manufacturing.

This guarantees products and solutions that are perfectly adapted to individual applications and offer a high degree of productivity, process stability and repeatability of the processing results.



Our own test center at the location Memmelsdorf, Germany.

AM Solutions – 3D post processing

Innovative solutions for the consistent post processing of large batches of 3D printed components

With new equipment concepts for the automated post processing AM Solutions - 3D post processing and its partners are meeting the growing demands for improved surface finishes of 3D printed components.

With the rapidly growing utilization of additive manufacturing for volume production the surface finishing requirements for 3D printed components are becoming more challenging. This includes the usual, industry-specific prerequisites for process stability, result consistency and overall sustainability of the post processing operations. AM Solutions – 3D post processing, the division of AM Solutions specializing in post processing equipment for 3D printed components, has recently expanded its machinery range by various new developments.

The S2 model was developed for post processing of plastic components made by the powder bed fusion based 3D printing technology. Because of its fully automatic operation, including work piece handling, and short cycle times, one single machine can handle the removal of residual powder and/or surface homogenization of the output of several printers. Other machine features are the continuous cleaning and recycling of the blast media and the reclamation of re-usable powder.

The newly developed model S3 combines high productivity with the flexibility of robotic blast nozzle movement. With a fully automated and precisely monitored wet blasting operation this machine allows the removal of support structures and residual powder as well as surface homogenization of large, complex components made from metal or plastic.

With the M3 model AM Solutions – 3D post processing offers an innovative machine for gentle and, at the same time, intensive surface finishing that also allows reaching complex internal surface areas. This machine can handle multiple smaller work pieces or one single component measuring up to 650 mm in diameter.

The cost efficient, compact and easy to operate entry-level models S1 Basic and M1 Basic can be easily integrated into practically any production line. The S1 Basic can be utilized



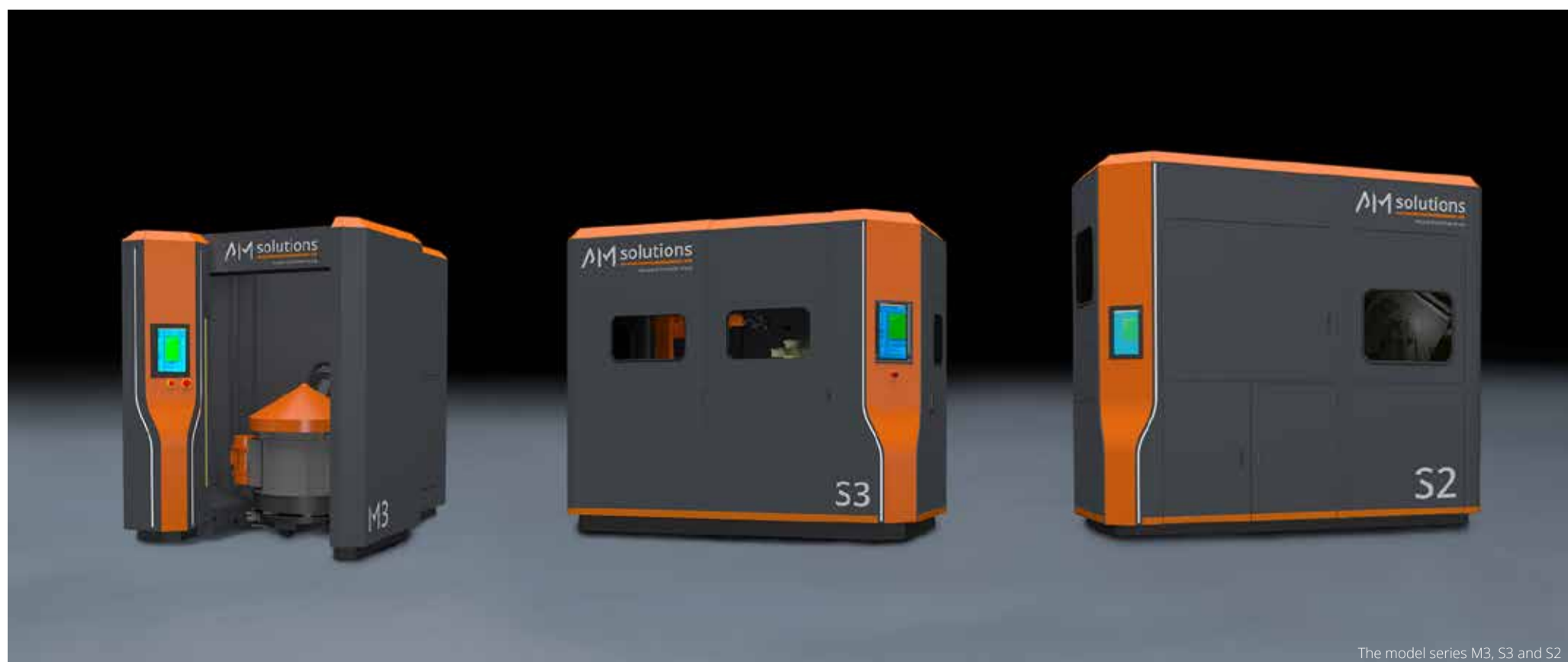
Our entry-level machines M1 Basic and S1 Basic

for powder removal and surface cleaning. This machine can handle a wide range of different blast media and offers various upgrade options, for example, the integration of a rotary table or rotary basket into the blast cabinet. The M1 Basic allows the surface smoothing and polishing of 3D printed components made from metal or plastic. This model is equipped with an integrated process water recycling system and suitable process control features.

The machinery portfolio of AM Solutions - 3D post processing is complemented by equipment solutions from specialized partner companies. This includes, among others, the new DLyte Pro 500 und DLyte 10,000 machines from GPAINNOVA. Another important partner is PostProcess Technologies who, for example, offers the fastest resin removal solution on SLA components available in the market. PostProcess was also the first supplier of software that allows the definition of algorithms and requirements for fully automatic post processing directly

from the original CAD and 3D print files. By the end of 2019 AM Solutions concluded a new cooperation agreement with Hewlett Packard. Main goal of this cooperation is the joint improvement and refinement of the automatic post processing of components printed with the Multi Jet Fusion technology.

Your contact person:
Mr. Manuel Laux
Head of AM Solutions
m.laux@rosler.com
+49 9533 / 924-9080



The model series M3, S3 and S2

Rösler Academy – effective learning in a relaxed atmosphere New classroom facility and expanded training program



Modern training rooms, the latest technology, an expanded training program with practical contents and specially trained and certified instructors: In the new home of the Rösler Academy everything is focused on successful knowledge transfer.

Little amenities like the parking lot adjacent to the new building of the Rösler Academy make sure that the journey to a training seminar can take place in a relaxed atmosphere. The digital guide in the entrance hall makes it easy for participants to quickly find the correct training room. Each one of the rooms is equipped with state-of-the-art communication and media technology. This makes the Rösler Academy not only one of the most innovative media centers in Germany, but combined with a comfortable room climate, stylish catering areas with excellent food it also contributes to an atmosphere that facilitates successful learning in customer seminars as well as in internal training programs.

On the occasion of the move into the new building by the middle of last year the training schedule was also expanded to meet the continuously growing demand. To also provide expert knowledge to our international customers a large portion of our mass finishing and shot blasting seminars, be it for different machine types, process water cleaning and recycling, specific processes like shot peening or equipment maintenance, are now being conducted in English language.

The new seminar „LM.5 Lean Administration“ within our training module lean management deals with the streamlining of administrative work processes. The fact

that the Lean Transformation project has been successfully implemented at the Rösler Oberflächentechnik GmbH is of particular advantage, because the trainers can provide comprehensive practical knowledge through their own daily experience. Moreover, the implementation of the applied lean management methods like, for example the 5S/3S method or shop floor management can be directly observed during guided tours of the company.

The training program was also augmented by the seminar „AM.1 Post Processing of 3D printed components“ which is offered in German and English. To achieve the best possible learning effect the number of students per seminar is limited to a maximum of 10 to 12 people. Of course, the central training center of the Rösler group also develops customer-specific training programs, which can be presented at the customer location or the Rösler Academy.

The Rösler expert trainers, certified by TÜV Rheinland, play a key role in the effective knowledge transfer to the participants. Besides being continuously trained in didactic methods, they also command extensive expert knowledge in the areas of mass finishing, shot blasting, lean management and additive manufacturing. As team members of the global market leader the trainers, with their practical know-how, understand exactly,

how processes must be developed and optimized and know, how to transfer this knowledge to the students. With modern didactic methods the trainers understand how to make the seminars interesting and entertaining and how to include each and every participant in the learning process. This, combined with up-to-date content, makes certain that the customers gain valuable knowledge that is directly applicable to their daily work.

Your contact person:
Ms. Anna Moschall
Head of Rösler Academy
a.moschall@rosler.com
+49 9533 / 924-9918



On 1,350 qm the new training facility of the Rösler Academy offers ideal conditions for an effective knowledge transfer.



The seminars of the Rösler Academy are characterized by their practical content and expert knowledge



Here you can learn more about us

Modern communication and media technology and generously laid out classrooms create a positive learning atmosphere.