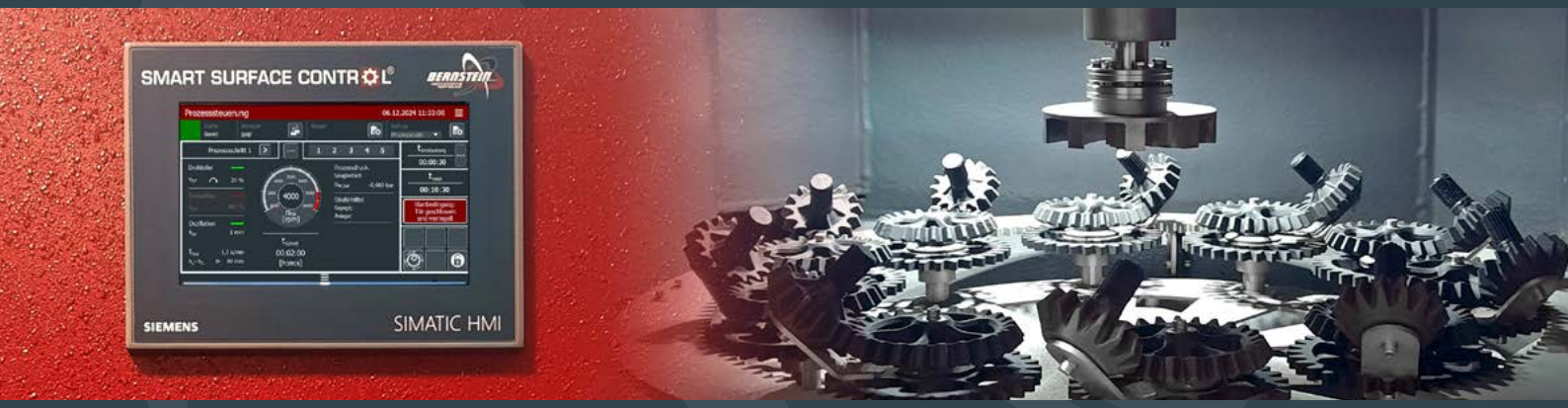
The revolution in blasting technology



Automatic blasting systems

TWISTER750 ®
TWISTER ®
TORNADO ®

UMWELT- UND KLIMAALLIANZ SACHSEN

90 % lower energy consumption

PERFECTLY BLASTED SURFACES

BERNSTEIN GmbH MECHANISCHE FERTIGUNG

Welcome to the age of smart surface treatment

With BMF blasting systems, you can enter a new dimension of precision and efficiency. With our innovative technologies, we will not only improve the quality and quantity of your production process, we will revolutionise it.

Discover our customised solutions that are specifically designed to increase your productivity and raise the quality of your end products to an unprecedented level.

The technology

Video about the function (Youtube)

The **blasting systems from BMF** are characterised by an extraordinarily precise blasting process. Processing is carried out without compressed air according to the blast wheel principle, in which the workpieces rotate on a satellite holder around a centrally arranged, speed-controlled **blast wheel** ① (optionally height-adjustable). This has a patented blade geometry that enables precise and efficient blasting.

The workpiece kinematics of the **workpiece carriers** ③ result from a superposition of swivelling and rotating movements, which ensures that the **workpieces** ② can be machined on all sides in just one clamping operation. This allows both geometrically simple and highly complex components to be blasted homogeneously and reproducibly, resulting in a uniform surface quality.

In addition, the **targeted adjustment of the blasting parameters** enables precise control of the blasting process - optionally supported by artificial intelligence.

Our systems are therefore ideally suited to the high demands of **series production**, as they guarantee **consistent quality and efficiency**.

Blasting systems from BMF

Depending on the space required and the size of your workpieces, you can choose between **three different system types**. In addition, these can be customised with **various equipment and options**, e.g. with a wide variety of (partly 3D-printed) workpiece holders.

Depending on the type of system, **up to 100 workpieces can be processed automatically per blasting cycle**. A **quick-change workpiece system** also enables time-saving loading and unloading of workpieces. The system technology enables **energy savings of up to 90 %** compared to conventional pressure blasting while maintaining **a consistently high surface quality**.

Thanks to gentle and low-wear abrasive handling (e.g. specially shaped blast wheel), **the blasting media can be used much longer and more effectively than in conventional systems**.

BERNSTEIN TWISTER 750

- entry into the world of automatic blasting systems
- compact dimensions
- up to 8 workpiece carriers with up to 10 workpiece holders each*
- 140 mm maximum workpiece diameter
- automatic extraction
- Smart Surface Control

* Optional equipment

BERNSTEIN TWISTER

- up to 10 workpiece carriers with up to 10 workpiece holders each*
- 140 mm maximum workpiece diameter
- automatic extraction system including abrasive recirculation* and automatic process pressure control*
- up to 5 different blasting steps possible
- blast wheel dynamically height-adjustable (oscillation)*, resulting in a larger blast area
- Smart Surface Control

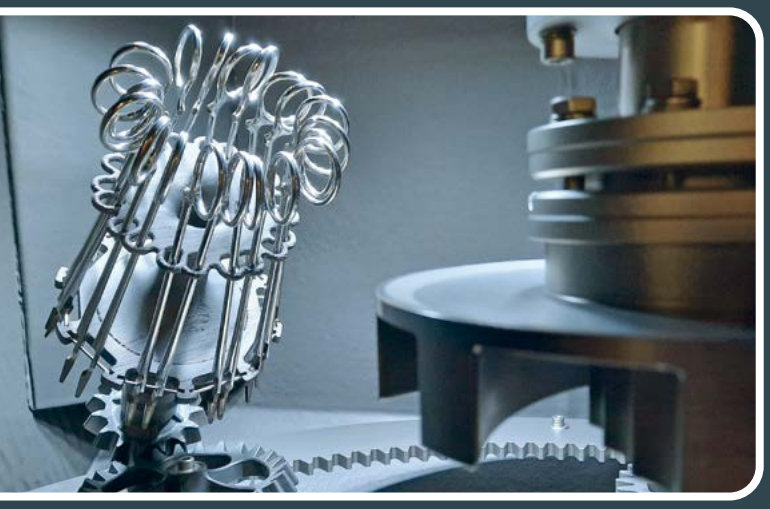
BERNSTEIN TORNADO

- Features like BMF TWISTER, but also suitable for larger workpieces
- 250 mm maximum workpiece diameter

Advantages of all systems:

- without compressed air
- fully automatic
- intuitive operation
- energy efficient
- resource saving
- reproducible results
- lasting times of <3 sec/part (per part for 100 parts/job)

Wide range of applications



Workpieces in a BMF TWISTER blasting system on a 3D-printed workpiece carrier

With their **unique and pioneering technology**, our blasting systems offer **a wide range of flexible applications**, for example in the following industries:

- **Automotive**
- **Aerospace**
- **Medical technology**
- **Luxury goods/jewellery**
- **Defence**
- **Retrofit**
- **Mechanical and plant engineering**
- **Post-process for 3D-printed parts**

The right blasting media

The use of different blasting media creates a unique interplay of shape and structure on the workpiece surface, which is significantly influenced by the specific geometry of the blasting media grains. The 'round' and 'angular' properties in particular play a decisive role here.
While angular blasting media creates a surface with steep, striking contours that result in a matt appearance, round grains create gentle, crater-like indentations that reflect the light more strongly and therefore produce a higher gloss. A combination of both types of blasting media creates a complex, layered surface appearance that is both visually appealing and functionally advantageous.

The choice of abrasive therefore not only influences the **aesthetic appearance**, but also optimises functional aspects such as **adhesion and lubricant absorption** in order to maximise the performance and efficiency of the processed material.

We have many years of experience in handling blasting media, so that we can support you in **selecting the right blasting media**.

Examples of blasted parts

Efficient and intuitive operation

The choice of the right **blasting parameters** forms a crucial basis for the blasting result. After all, they are **important influencing factors that need to be carefully harmonised**.

Thanks to our many years of experience and the support of an **AI-based analysis process**, we can define precise beam parameters (SSC) to achieve optimum results.

In our **in-house test lab**, practical **test runs** can be realised on the blasting systems with different blasting media and process parameters - **ideally also with your workpieces**.

Please feel free to arrange an individual consultation with us.

The desired blasting parameters are entered quickly and easily on a touch panel

Important blasting parameters (overview)

Blasting time: defines when the surface is fully processed.

Grain size and wheel speed: determine the roughness of the surface.

Grain geometry: determines the appearance (matt/glossy).

Workpiece rotation: is useful if a workpiece consists of several or complex surfaces (e.g. a cube).

Serves to avoid blasting shadows, which occur again and again when blasting by hand.

Therefore a blasting system from BMF

Quality: results without beam shadows with consistently high quality and exact reproducibility thanks to Smart Surface Control including AI.

Quantity: with the ability to process up to 100 workpieces simultaneously, you can significantly increase your productivity.

Sustainability: the economical use of consumables and the lower wear and tear combined with a higher parts throughput compared to conventional system technology lead to a considerable reduction in environmental pollution.

Economy/efficiency: No compressed air and low labour costs thanks to the fully automatic blasting process make our systems a cost-efficient solution for your production (**energy savings of up to 90 %**).

SMART SURFACE CONTROL®

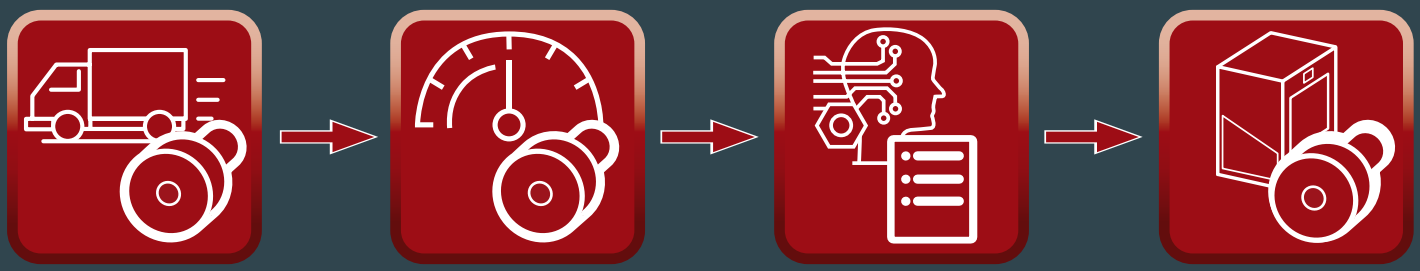
The final work step within a process often determines whether a component fulfils all requirements and is therefore ready for use. With the innovative systems from BMF, an **automated solution** is available for the first time to specifically influence the surface properties of components or to determine them before processing.

The pioneering **SMART SURFACE CONTROL** technology makes it possible to precisely **programme both the optical and physical properties of surfaces**. This means that the entire production process can be optimised to achieve the desired surface quality.

An **AI-supported analysis** of reference workpieces that have already been blasted helps to determine the ideal blasting parameters depending on the material to be processed.

This ensures **consistently high-quality and reproducible blasting results**.

Determine blasting parameters and document them in a recipe



You supply us with your sample workpiece with the surface structure you require.

We use our high-precision measuring and camera technology to record the parameters of the surface structure.

AI-supported determination helps to create a recipe with the appropriate blasting parameters, which can be stored in a database.

Configured with the appropriate recipe, workpieces can be processed in our or your blasting system.

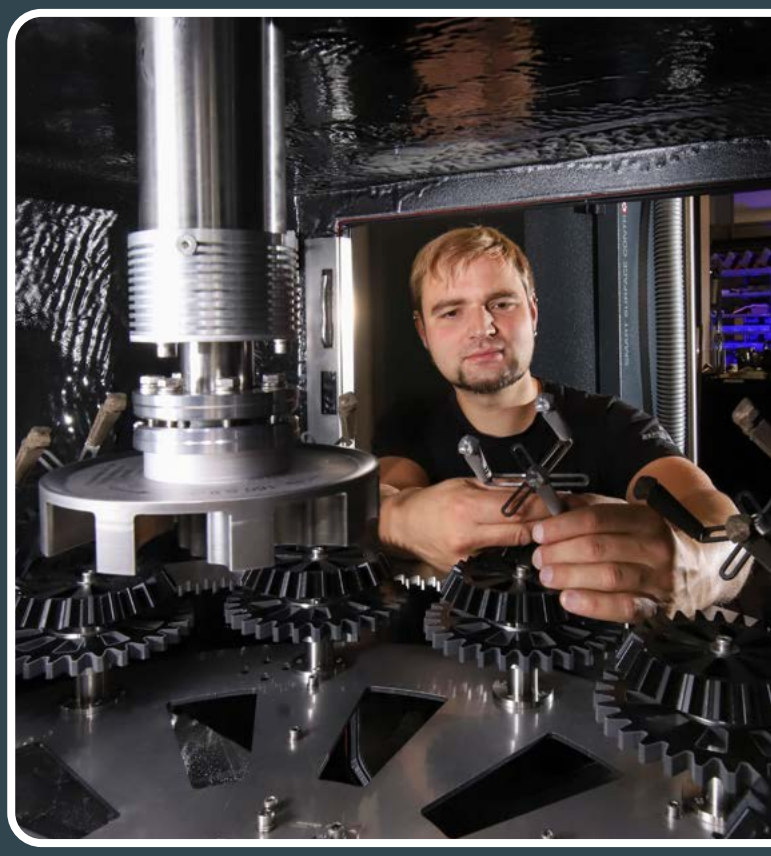
Service and maintenance

Of course, our high-performance blasting systems also need to be maintained. Depending on the utilisation profile, wear parts must be replaced regularly. Both maintenance and the replacement of wear parts should always be carried out at the specified intervals in order to guarantee the performance of the blasting systems.

All service and repair work must always be carried out in accordance with the manufacturer's specifications. If necessary, wearing parts and some other components can be replaced by appropriately trained specialist personnel.

We offer you appropriate **service and support concepts** as well as **training** in the operation and maintenance of a blasting system.

Software updates and error analyses can be carried out via **remote maintenance access**.



3D print your own spare parts

We offer **3D printing technology** to match our systems, on which we use numerous 3D-printed parts. This allows you to 3D print spare and wear parts for your blasting system yourself based on data from **DIGITALSOURCE (spare parts catalogue in a cloud)**.

This enables you to significantly **reduce both the procurement times and the costs for spare parts** - a significant contribution to realising high availability of your system and thus extremely low downtimes.

The 3D printer can also be used for your **own 3D printing jobs**.

Further information

Please contact us if you would like to know more about our systems or have any questions. But we can also advise you individually.

In our **in-house test lab**, we are able to carry out **blasting tests on your components** and thus jointly define the optimum blasting parameters.

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How to find us

Navigate directly to BMF

PERFECTLY BLASTED SURFACES

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