

RPMV & RPMX

Rotor impact mill

The ball shaper for the recycling industry

BHS
SONTHOFEN

TRANSFORMING
MATERIALS
INTO VALUE



Office building at BHS-Sonthofen



TRANSFORMING MATERIALS INTO VALUE

BHS
SONTHOFEN



The company

BHS-Sonthofen is an owner-operated group of companies in the machinery and plant engineering sector, based in Sonthofen, Germany. We offer technical solutions for mechanical process engineering with its focus on mixing, crushing, recycling, and filtering. With more than 300 employees and several subsidiaries, BHS-Sonthofen has a global presence.

Over 100 years of experience in crushing technology

We built the first crushers a good 100 years ago for the rock and stone industry. In addition to targeted crushing, this market demands robust, low-wear mechanical engineering and favorable operating costs. On the basis of our experience in this field, we developed crushing machines for recycling technology during the 1990s. Today, we see ourselves as a technically innovative problem-solver and an experienced system supplier for all recycling tasks.

Crushing trials at the BHS technical center

With its own technical center in Sonthofen, BHS offers customers the opportunity of carrying out crushing trials with the customer's own materials on our machines on a production scale.

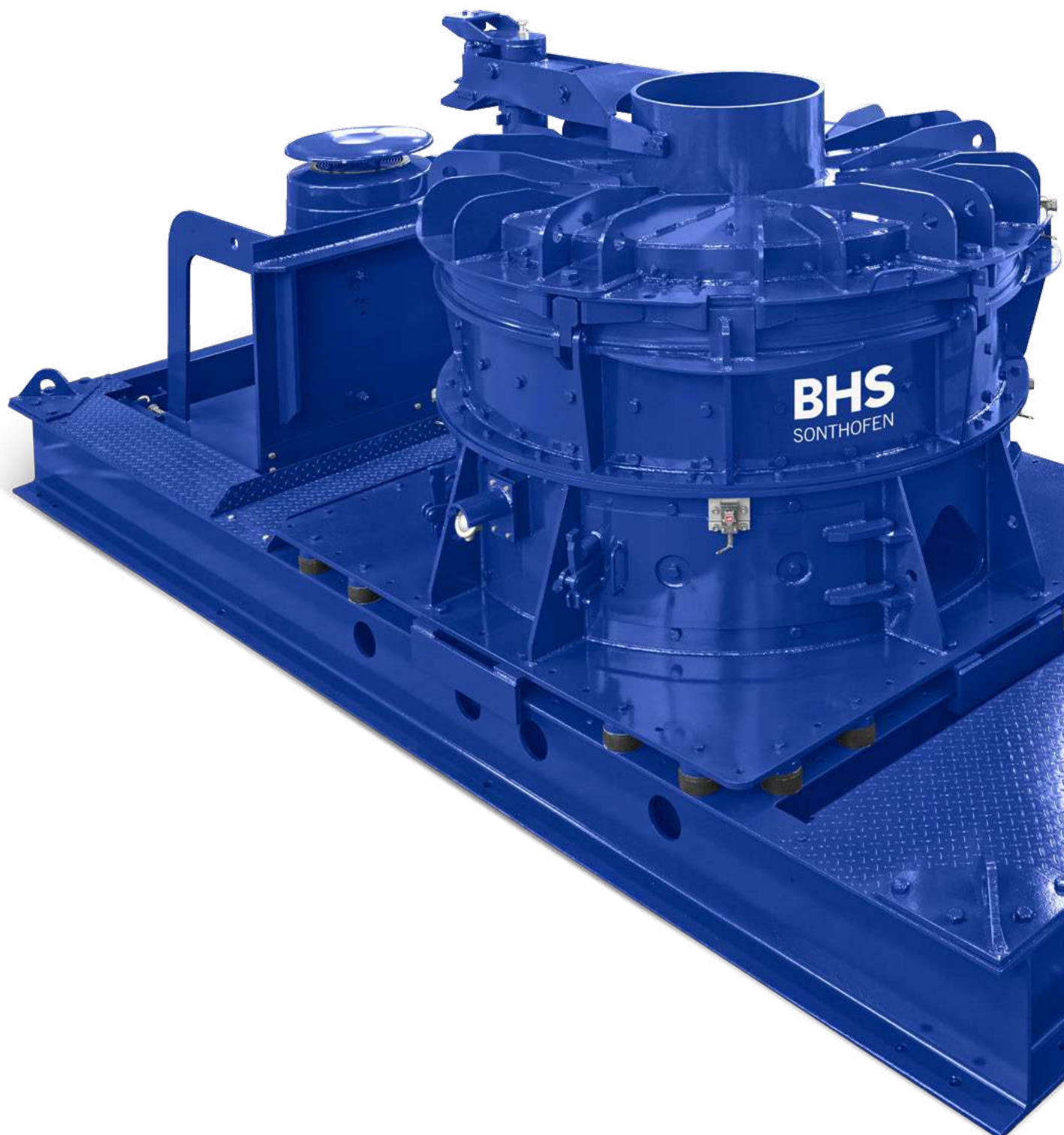
Global service

Our technical customer service and a large spare parts warehouse for all established machine types – including older machines – allows BHS to ensure fast and reliable service around the world.

www.bhs-sonthofen.com

BHS rotor impact mill

The BHS rotor impact mill is a high-performance crusher with a vertical shaft for use in the recycling industry. The unique impeller rotor in conjunction with the toothed anvil ring provides intensive processing of the infeed good. Composite parts are selectively crushed and separated, entangled materials are separated out, and brittle-hard materials are crushed extremely intensively. Metals are also shaped into balls and cleaned.



Unique crushing principle

The impeller rotor of the BHS rotor impact mill is the only one of its kind in the world. The circumferential speed of the rotor generates centrifugal forces. They bring about a high level of energy input into feed stock, which is then intensively processed by impact and shear forces with the help of the crushing tools. The rotation creates a practically permanent gap between the tips of the horseshoe-shaped hammers and the anvil ring. Once the material is small enough to fit through this gap, it leaves the working chamber.

A sound investment for the future

Since the gap between the horseshoe-shaped hammers and the anvil ring is adjustable and the circumferential speed of the rotor is variable, the BHS rotor impact mill can be used flexibly for the widest variety of tasks. It also effectively processes fine off-spec particle sizes and is therefore an efficient, technology resistant solution.

Selective crushing

Brittle materials, such as glass and mineral matter, are finely crushed or pulverized by the impact and shear forces in the rotor impact mill.

Shaping metals into balls

Ductile materials are shaped into balls as a result of the intense treatment between the horseshoe-shaped hammers and the fixed anvil ring.

Separation of composite materials

Materials with a variety of properties are separated and metals cleaned as a result of the high stresses applied. As a result, e.g. the plastic coating can be removed from the wires in cable recycling.

Machine adjustment

The machine can be adjusted in line with your requirements in an optimum manner using the rotor speed and the adjustable annular gap. Conversion is really easy.

Easy maintenance and high availability levels

All parts of the machine that are exposed to stress are protected by wear parts that are easily exchangeable. The materials of the wear parts are optimized for the specific usage.

Plug and play unit

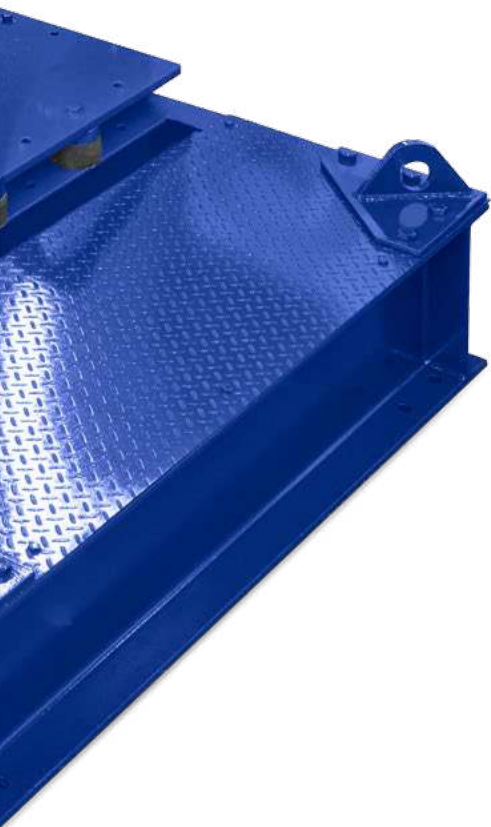
The machine and drive train are mounted on a base frame as a unit that is ready for installation. A large, hydraulically lifting lid that pivots through 360° enables unimpeded access.

Reliable lubrication

The BHS rotor impact mill is delivered with recirculating oil lubrication with cooling and integrated monitoring. This enables low-maintenance, safe operation.

Vibration absorption

The rubber spring elements between the base frame and the machine absorb vibrations generated during operation and keep them away from the supporting structure. Prohibited vibrations are registered by an electronic vibration monitor and result in the shut down of the machine.

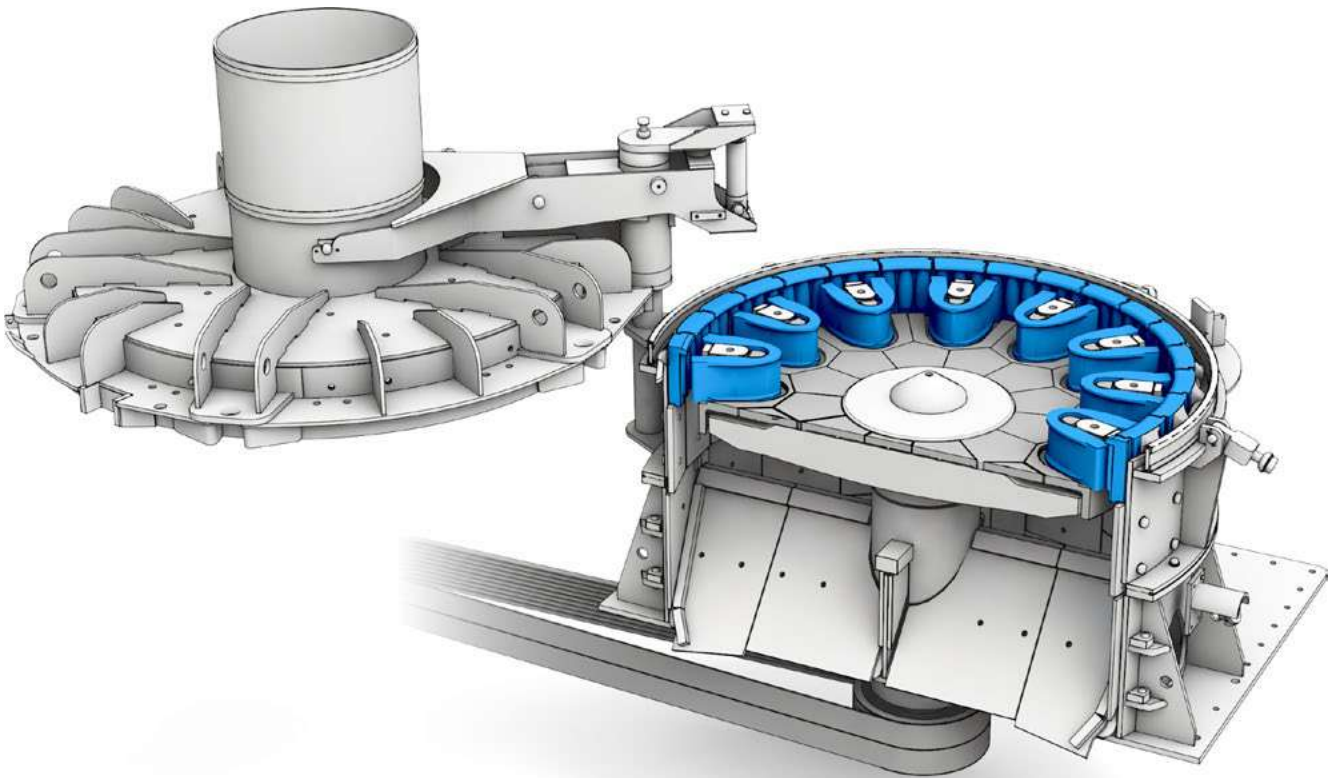


Rotor impact mill available in two models

The RPMV is a rotor impact mill for the recycling industry. The ball shaper, which has proven itself for many years in the widest variety of applications in the recycling industry, sets a new milestone with the RPMX. The RPMX rotor impact mill is a turbo-ball shaper. Used for the reclamation of valuable materials from fine fractions containing metal, such as stainless steel and cable strands. These had previously been considered problematic.

RPMV rotor impact mill – the ball shaper

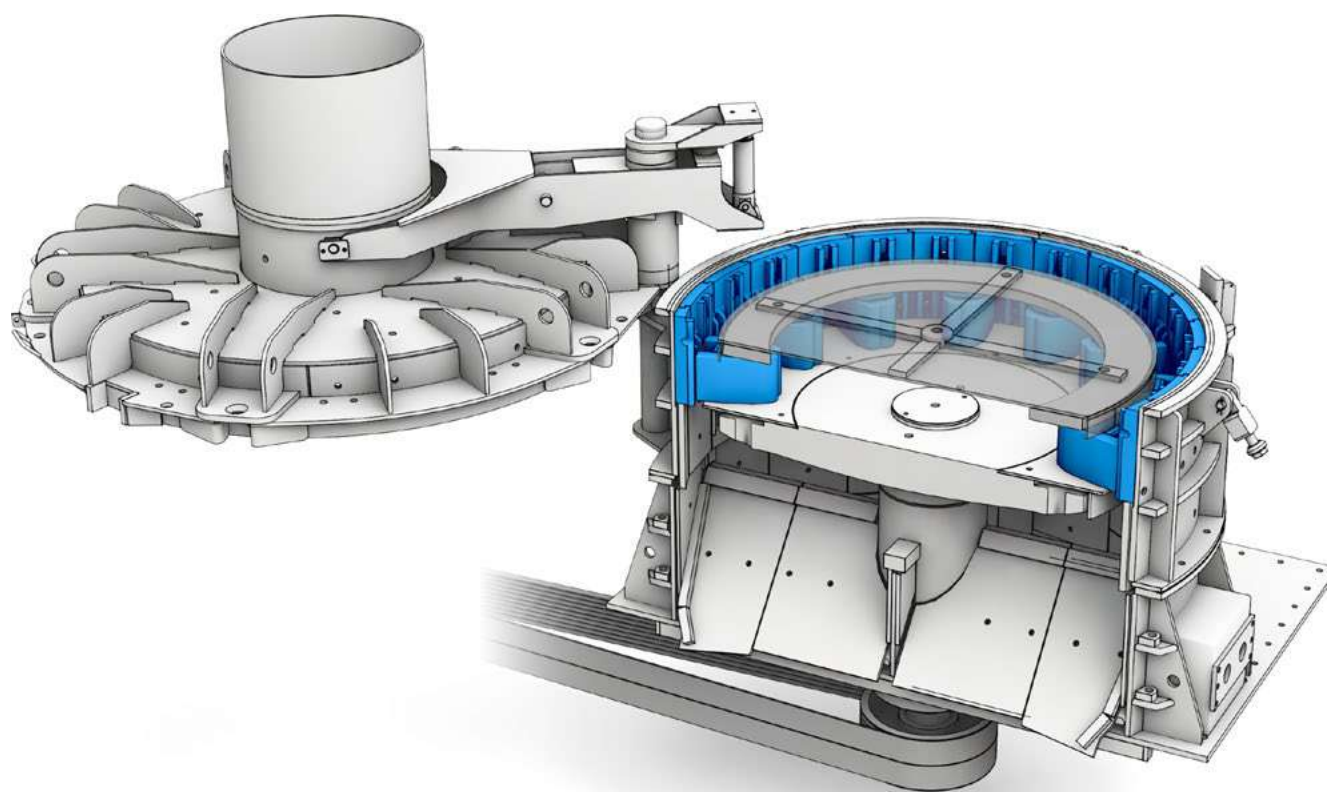
The RPMV has proven itself in separating composites, crushing brittle components and shaping metals into balls with grain sizes from 5 to 30 mm.



RPMV rotor impact mill

RPMX rotor impact mill – the turbo-ball shaper

A higher circumferential speed and the considerably smaller grinding gap are characteristic for the RPMX. It is therefore the ideal machine for the ball shaping and separation of composite parts with grain sizes from 0 to 15 mm.



RPMX rotor impact mill with rotor cover plate

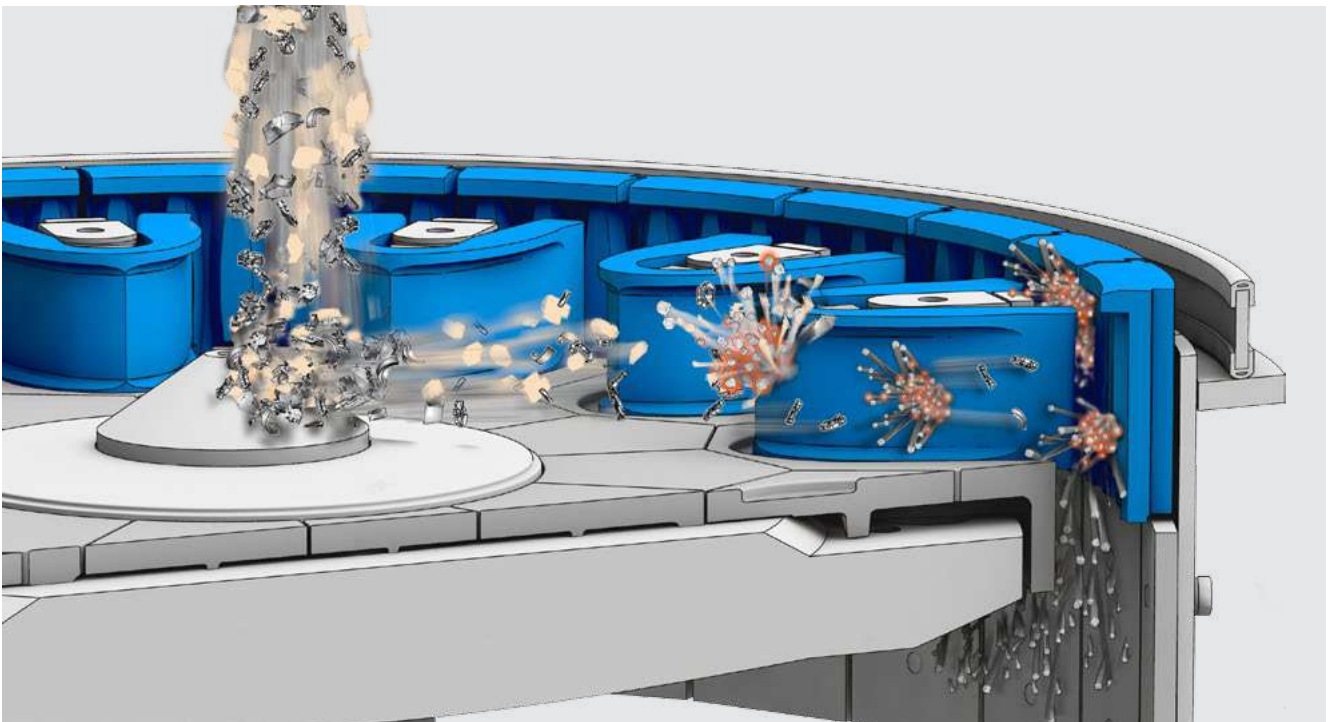
Functional description

RPMV rotor impact mill – the ball shaper

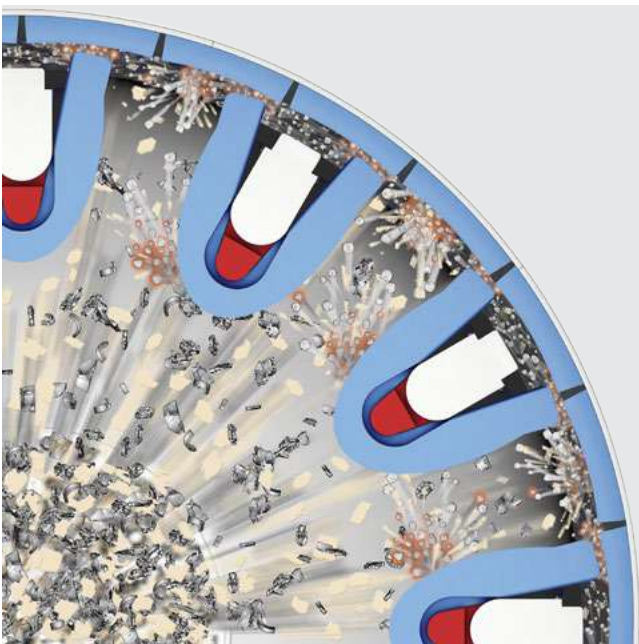
The infeed material is supplied to the center of the work chamber from above. When it hits the rotor, it is accelerated outwards by centrifugal forces, struck by the horseshoe-shaped impact hammers and propelled against the anvil ring. Intense impact and shear crushing takes place in the grinding gap during the process. The material subsequently leaves the working chamber and falls downwards through the two discharge chutes.

RPMX rotor impact mill – the turbo-ball shaper

The material is selectively transported into the gap between the anvil ring and hammer from above by means of the rotor cover plate. In this way, the complete height of the grinding gap is used, this results in a longer exposure time and a higher stress frequency. An intense ball shaping effect is obtained in combination with a high circumferential speed, a narrow grinding gap of 4 to 6 mm and a specially toothed anvil ring.



Functional principle of the RPMV (side view)



Functional principle of the RPMV (plan view)

Advantages of the rotor

Exchangeability of the crushing tools

The anvil ring elements are suspended on the mill housing (RPMV) or bolted on (RPMX). The horseshoe-shaped impact hammers lie on the rotor and are held against the rotor journal by centrifugal force. Both the anvil ring and the impact hammers can be replaced easily.

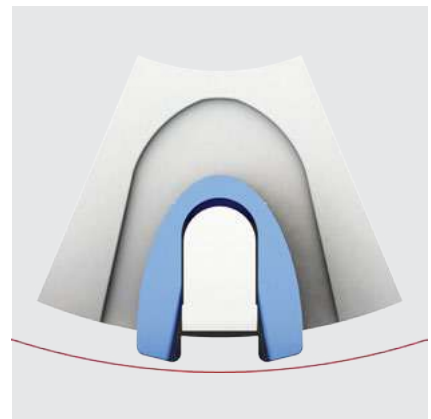
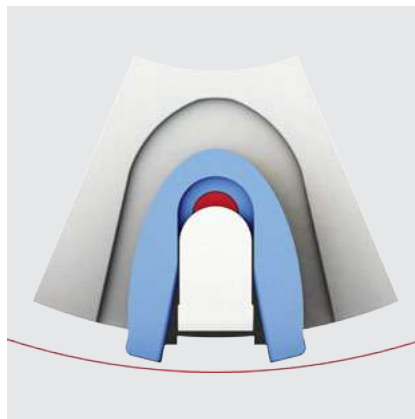
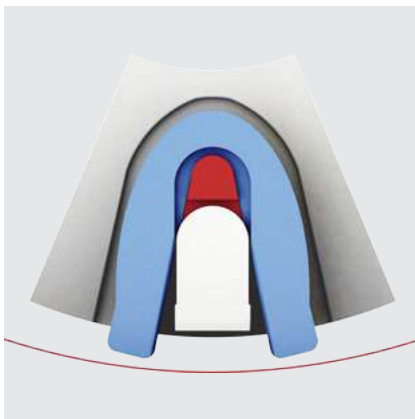
Adjustment of gap

A set of interchangeable spacers enable the annular gap to be adjusted. As wear on the impact hammers progresses, the gap width can be adjusted by means of the exchange of spacers. (Available in different sizes shown in red in the graphic).

Optimization of service life

The rotor can be reversed, thus enabling even usage to both sides of the impact hammers.

Spacers after advancing wear



Usage areas

Metal composites

Separation of metal composites and pre-crushed ferrous and non-ferrous metals such as cans, window profiles, shredded electronic waste, and shredder heavy fractions

Ductile metals

Cleaning and shaping of ductile metals into balls

Brittle-hard materials

Crushing of brittle-hard materials in order to separate from composites, e.g. remnants of glass in window profiles and ceramic remnants on metal parts

Electrical and electronic waste

Liberation of composites used in electrical components, such as assembled and disassembled printed circuit boards, switches, connectors, and other plastic-metal composites

Plastic composites

Separation of composites of hard and soft plastics

Slag

Treatment of waste incineration/foundry/steel mill/saltcake, slags, dross in order to release and clean the metals

Shredder fractions

Separation of entangled materials such as shredder light fractions

Cables and strands

Release and shaping of non-ferrous metals into balls

Application examples



Ball-shaped aluminum



Mixed metal fraction



Cables and strands cleaned and shaped into balls



Plastic fraction from E-scrap



Recycling plant for the fine preparation of shredder residue fractions with RPMV 1513 in Finland



Recycling plant for the fine preparation of shredder residue fractions with RPMV 1513 in Holland

Electro-hydraulic lid opening

An optional electro-hydraulic actuation is available for fast opening of the machine lid for maintenance and inspection purposes.

Electrical installation in terminal box

If required, all electrical lines can be brought together in a terminal box in an assembly-friendly manner.

Intensive cooling

If there are high ambient temperatures or if the temperature of the infeed material is relatively high, a lubrication oil system with a larger storage volume and an increased cooling performance can be supplied.

Air cannon

To reduce the caking in the discharge area, the mill can be fitted with air cannons if required.

Crane

The use of a crane is recommended for exchanging wear parts.

Control system

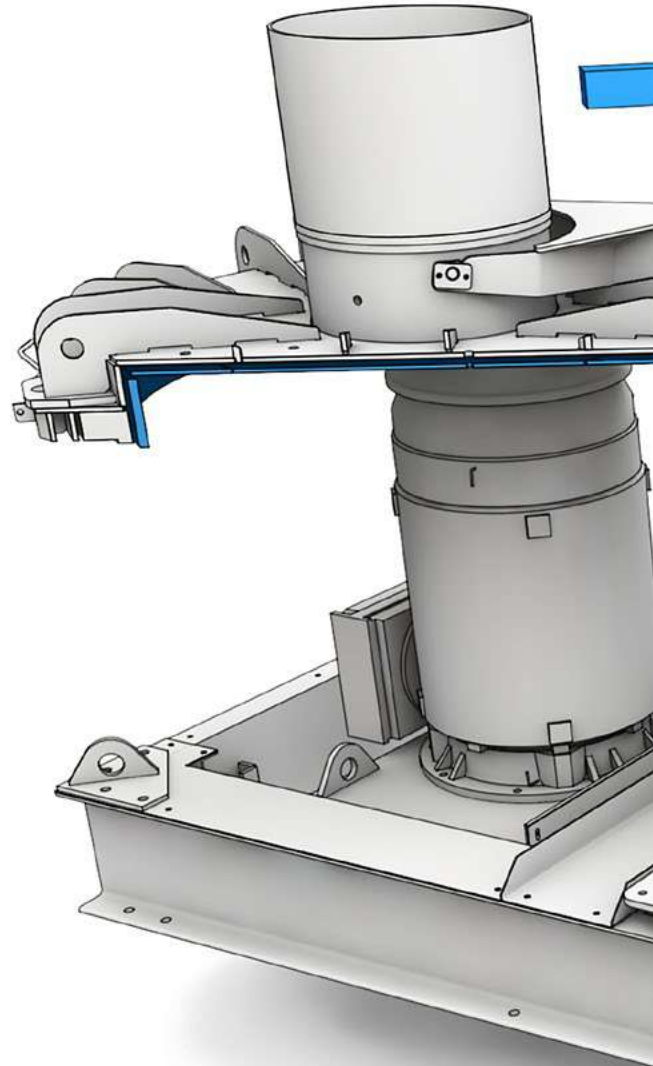
As an alternative to integration in the system controller, the machine can be delivered with a PLC control (including a touch panel) and – if necessary – with a frequency inverter to provide independent operation of the machine and the monitoring of its functions. Additional system components can be integrated into the machine control system, such as feed and discharge systems, dust removal, sorting units, and so on.

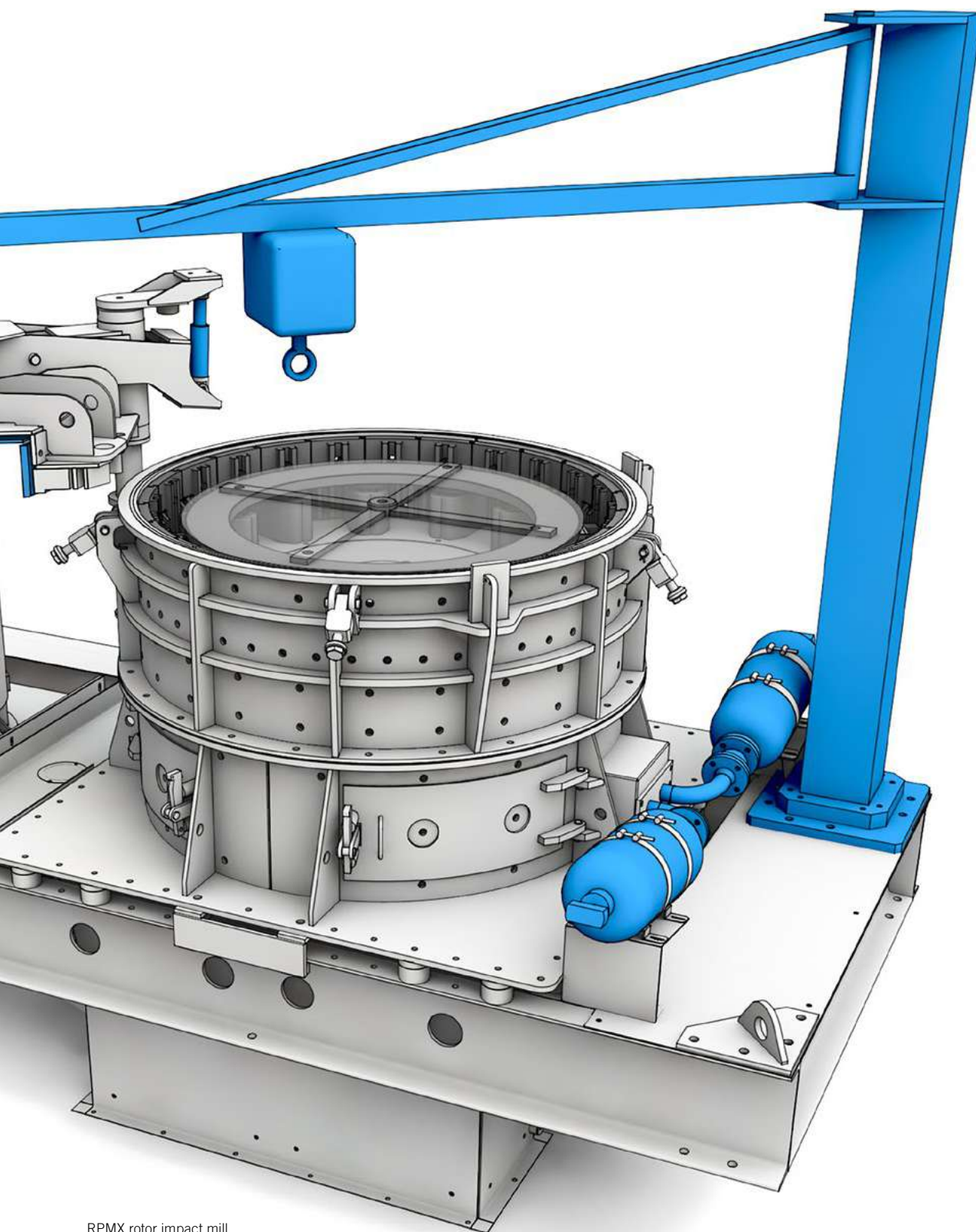
Steel construction

To supplement the machine, we offer standard solutions for steel construction – consisting of supports, a platform, banisters, and steps. We can also provide custom solutions.

Plant technology

We are happy to offer complete system solutions that include the following, for example: Steel construction, silo and metering systems, feed and discharge technology, classifying and sorting systems, and dust capture systems. The plant technology is planned in accordance with your circumstances and is closely coordinated with you.





RPMX rotor impact mill

Tests produce certainty

At our company premises in Sonthofen, we operate a test facility on a large technical scale. All of our crushing machines are installed there. The crushed material can be separated into fractions using a screen or overbelt magnet.

We can carry out treatment trials with your infeed material using this plant. Various machine parameters can be tested. A box feeder is available for larger quantities of feed stock.

All test results are gathered, documented, and analyzed in accordance with jointly agreed criteria.

BHS technical center in Sonthofen for customer-specific trials



Performance data

Type	Rotor diameter x height	Number of hammers	Circumferential speed (max.)	Drive power (max.)
RPMV 0813	850 x 135 mm	6 pcs	65 m/s	75 kW
RPMV 1113	1,150 x 135 mm	8 pcs	70 m/s	132 kW
RPMV 1513	1,500 x 135 mm	12 pcs	70 m/s	200 kW
RPMX 1116	1,150 x 160 mm	8 pcs	90 m/s	315 kW
RPMX 1516	1,500 x 160 mm	12 pcs	90 m/s	315 kW

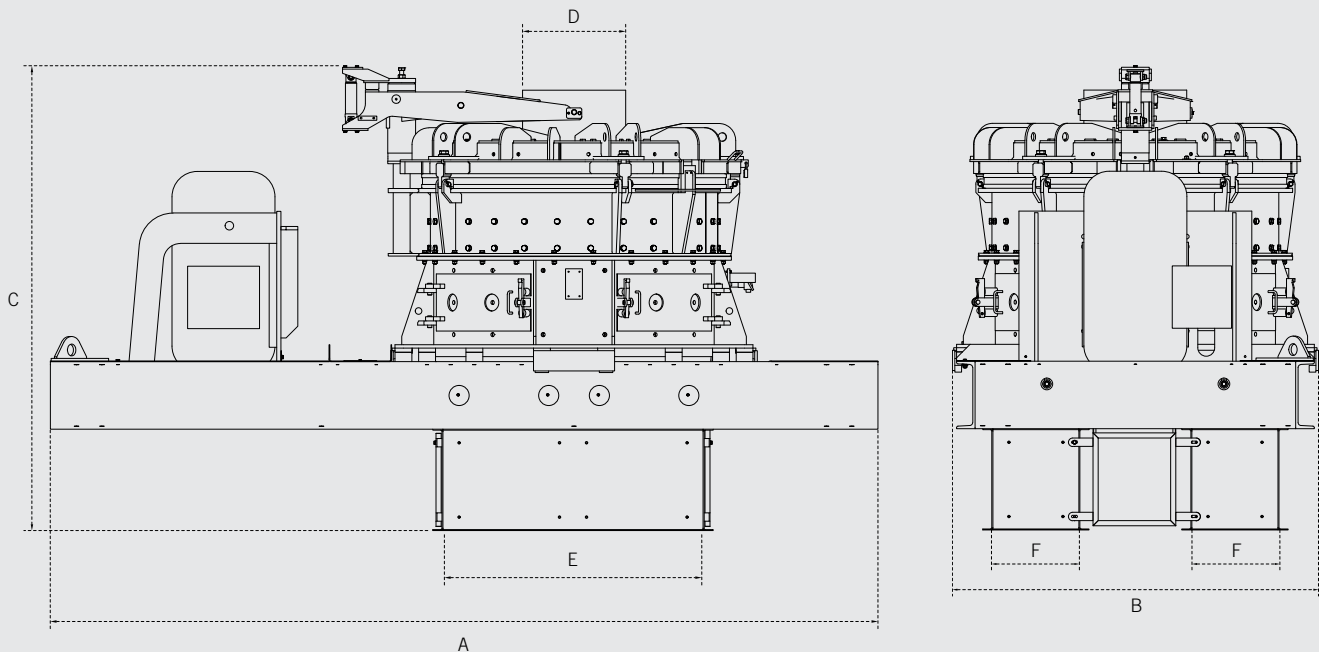
Dimensions and weights

Type	A	B	C	D	E	F	Weight ¹⁾
RPMV 0813	2,800 mm / 3,100 mm ²⁾	1,270 mm	1,975 mm	219 mm	770 mm	2 x 210 mm	4,400 kg
RPMV 1113	4,600 mm	2,000 mm	2,700 mm	406 mm	1,300 mm	2 x 430 mm	7,700 kg
RPMV 1513	4,900 mm	2,120 mm	2,740 mm	610 mm	1,540 mm	2 x 500 mm	12,000 kg
RPMX 1116	4,600 mm	2,000 mm	2,790 mm	406 mm	1,300 mm	2 x 430 mm	8,500 kg
RPMX 1516	4,900 mm	2,120 mm	2,850 mm	610 mm	1,540 mm	2 x 500 mm	12,800 kg

¹⁾ Weight specifications for standard designs without motor and accessories.

²⁾ Depending on drive power.

All specified data relates to the standard design.
 Technical data for customer-specific designs can differ from the specified data.
 All technical data is subject to development.
 We reserve the right to make changes at any time.



BHS AREAS OF COMPETENCE



MIXING
TECHNOLOGY



CRUSHING
TECHNOLOGY



RECYCLING
TECHNOLOGY



FILTRATION
TECHNOLOGY

