

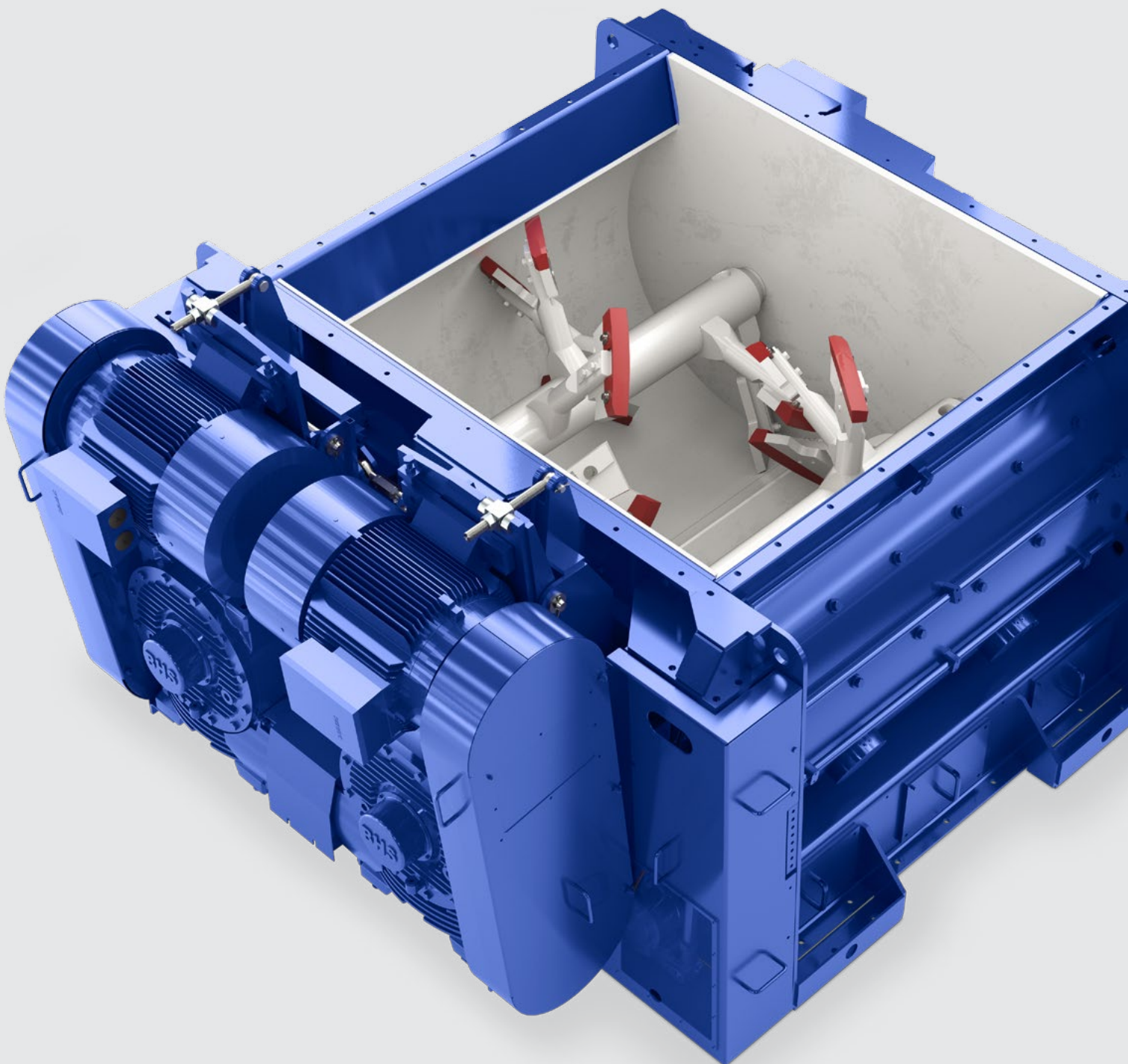
DMX

Dry Powder Batch Mixer

The benchmark in mixing technology

BHS
SONTHOFEN

TRANSFORMING
MATERIALS
INTO VALUE



Headquarters of BHS-Sonthofen in Germany



TRANSFORMING MATERIALS INTO VALUE

BHS
SONTHOFEN



The company

BHS-Sonthofen is an owner-operated group of companies in the field of machinery and plant engineering based in Sonthofen, Germany. The company offers technical solutions for mechanical process technology, concentrating primarily on mixing, crushing, recycling and filtration. BHS-Sonthofen has a global presence with more than 400 employees and several subsidiaries.

Over 130 years of experience in mixing technology

BHS-Sonthofen invented the twin-shaft batch mixer back in 1888 and has been systematically upgrading the design ever since. Today, BHS has a broad product range of batch and continuous mixing systems that cater to numerous applications. Based on this expertise, the DMX series of twin-shaft batch mixers has been specially developed to meet the particular requirements of mixing dry materials.

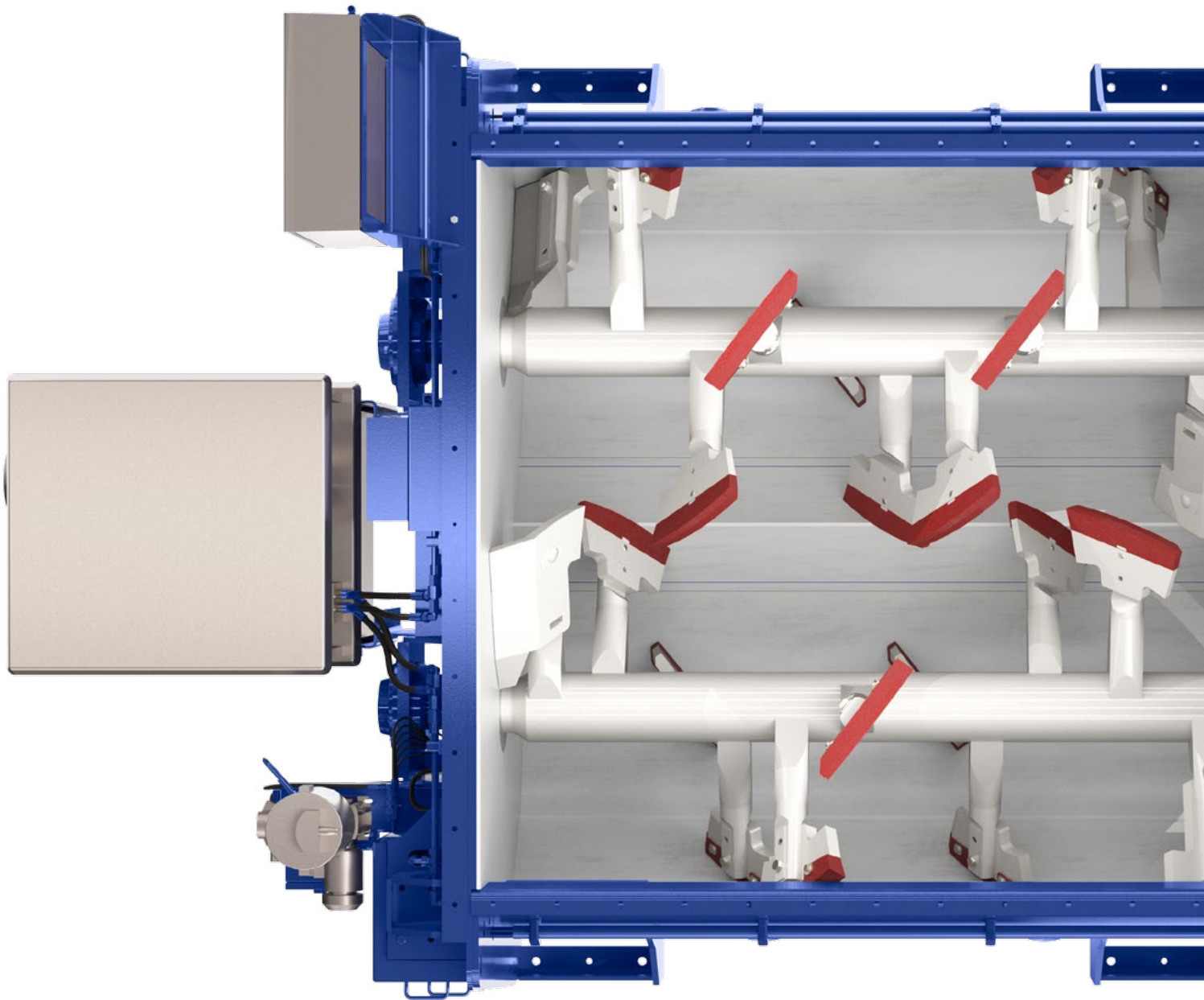
Global service

The BHS technical customer service and warehouses on four continents keep spare parts for all machine types on stock to deliver fast and reliable service around the world.

www.bhs-sonthofen.com

BHS Dry Powder Batch Mixer (DMX)

Twin-shaft mixing technology is suitable for all formulas and offers a wide range of benefits. The mixing procedure has a significant effect on the quality of the mixture produced and the economic efficiency of the production process.



Generating valuable products

Consistent and reliable mixing results

Thanks to a proven design and arrangement of the mixing tools, you will achieve consistent, homogenous mixtures batch after batch in less time.

Advantages of the twin-shaft principle

Compared with single-shaft mixers, twin-shaft mixing technology offers significantly better mixing within short mixing cycles. The sophisticated mixing mechanism based on directed three-dimensional mixing movement means that the mixer speed can be much slower compared to single-shaft or intensive mixers, while still producing a better mixing effect.

Gentle processing of the mixture

The special spiral-blade mixing mechanism and a gentle material transport, combined with the generation of high relative movements of every single particle, ensure that sensitive components in the material to be mixed, such as perlite, styrofoam or expanded concrete, are mixed very gently. As a result, the grain structure of all batch ingredients is preserved.

Superior machine technology

Compact design

Since twin-shaft batch mixers can be filled to a considerably higher level in comparison with other mixer systems, they generate the same throughput in a more compact design. The small dimensions of DMX series mixers makes them ideal for building new plants. Moreover, in case of retrofit and plant modifications in existing installations, a mixer with higher performance can be installed in the same available space.

Maintenance-friendly and robust design

Our machines are characterized by a sturdy, durable and compact design, providing easy access for maintenance work.

Residue-free DMX emptying

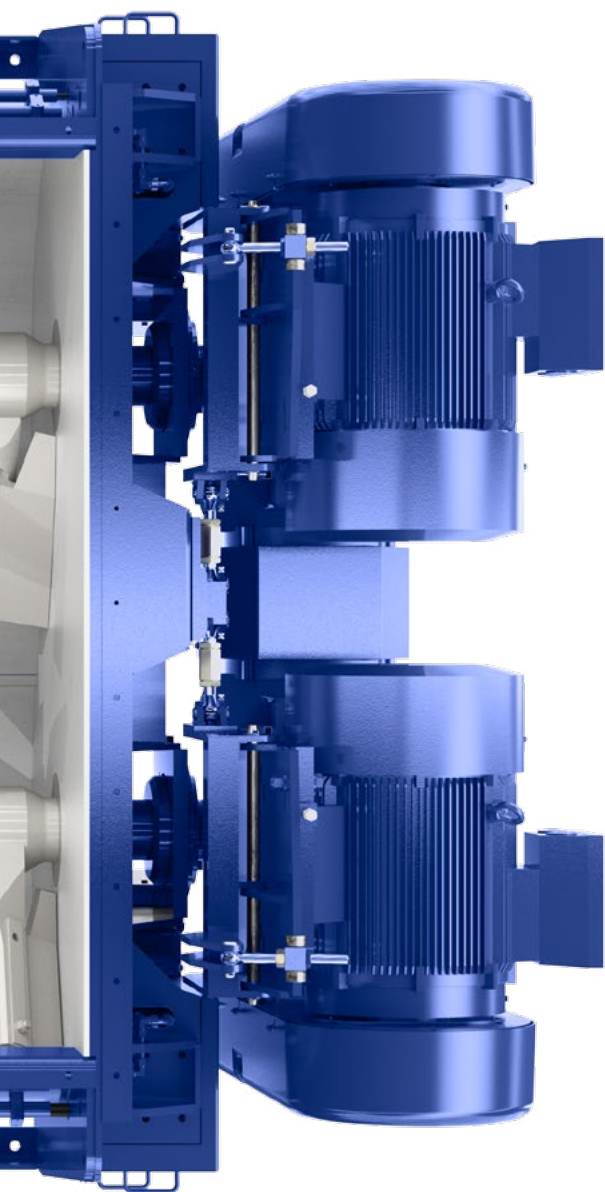
The mixer is residue-free emptied by means of two large water-tight and torsion-resistant discharge door flaps.

Residue-free DMX Monogate emptying

Residue-free emptying is carried out using a massive, water-tight rotary valve.

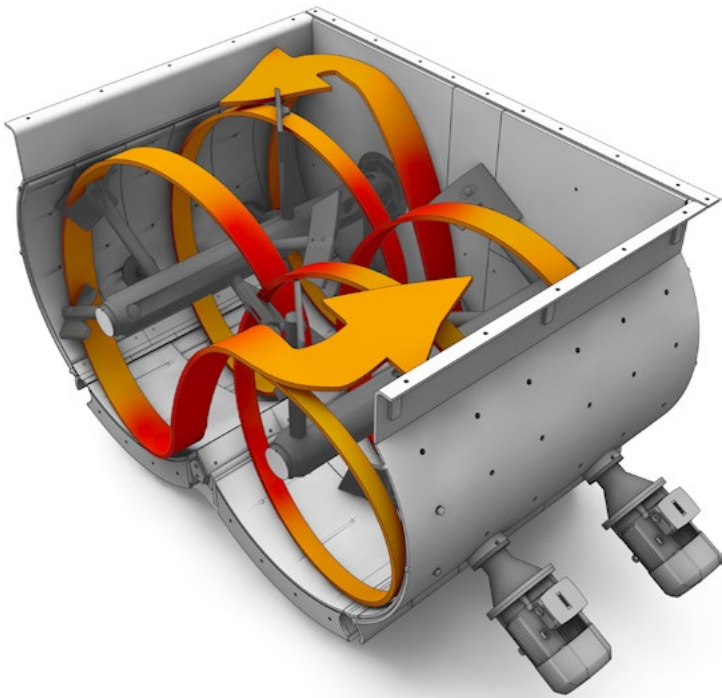
Minimal wear

The compact design and high filling level minimize the ratio of wearing surfaces to batch volume.



ADVANTAGES OF THE THREE-DIMENSIONAL MIXING CONCEPT

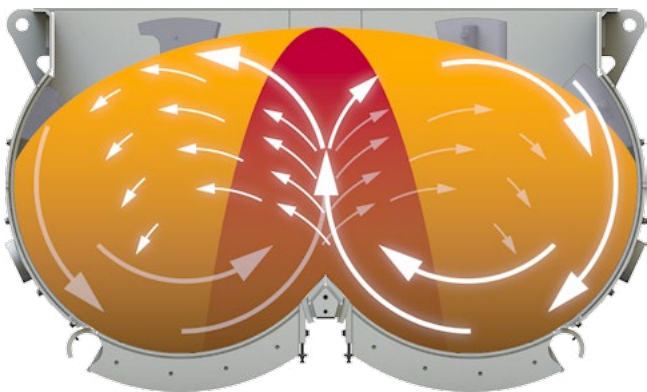
Unlike single-shaft systems, which move the mixture to the center of the machine, the three-dimensional mixing concept of the twin-shaft batch mixer produces a more intensive exchange of materials, leading to short mixing times while consuming less energy.



Operating principle: Interrupted spiral mixing tools

BHS spiral mixing tools

- » Mixing tools arranged on each mixing shaft in the form of an interrupted spiral
- » Two counter-rotating mixing shafts with the mixing tools overlapping in the longitudinal center of the mixer
- » Counter blades positioned at the ends of the shafts
- » Moderate circumferential speed of the mixing blades



Operating principle: movement of the mixture

Mixing concept

- » Generation of a circular three-dimensional movement pattern for rapid mixture of the entire batch ingredients
- » Intense material exchange in the turbulent overlap zone of the two mixing circuits
- » Optimal conversion of the energy input into intensive relative movements of the mixture
- » Total volume of material is always included in the mixing process

MODIFICATION OF MIXING PLANTS

We have years of experience and comprehensive expertise when it comes to retrofitting existing mixing plants. The Dry Powder Batch Mixer is ideal when retrofitting in tight spaces thanks, to its compact design. As an added benefit, the use of a high-performance Dry Powder Batch Mixer can significantly increase the throughput rate of the plant. Installing a mixer with a higher performance and bigger capacity as well as adjusting the weighing system, dosing and control system can make the plant substantially more competitive.



Installation of a new DMX 2600 Dry Powder Batch Mixer with dual flaps to modernize an existing dry powder factory.

SOPHISTICATED AND PROVEN DRIVE TECHNOLOGY

High level of operational reliability, energy efficiency and durability

Gearbox ¹

BHS worm gears boast maximum operational reliability and a long service life, even under extreme loads. The gearboxes are slipped on the mixing shafts without rigid connection to the mixing trough. The selected material pairing allows BHS worm gearbox to compensate the load changes that occur each time the mixer is filled.

Electric motor ²

Our twin-shaft batch mixers are equipped exclusively with high-quality motors. They are specifically designed for the load cycles generated.

V-belt drive ³

The power is transferred via v-belt drives. Positioning the v-belt drives on the outside of the drive provides good accessibility when performing maintenance work.

Torque support ⁴

The adjustable torque support is used for the alignment of the gearboxes. It also allows the gearbox to be fastened to the mixing trough without pressure, avoiding unnecessary loads on the gearbox toothing. This special feature is an essential prerequisite for achieving a long gearbox life.

Synchronous coupling ⁵

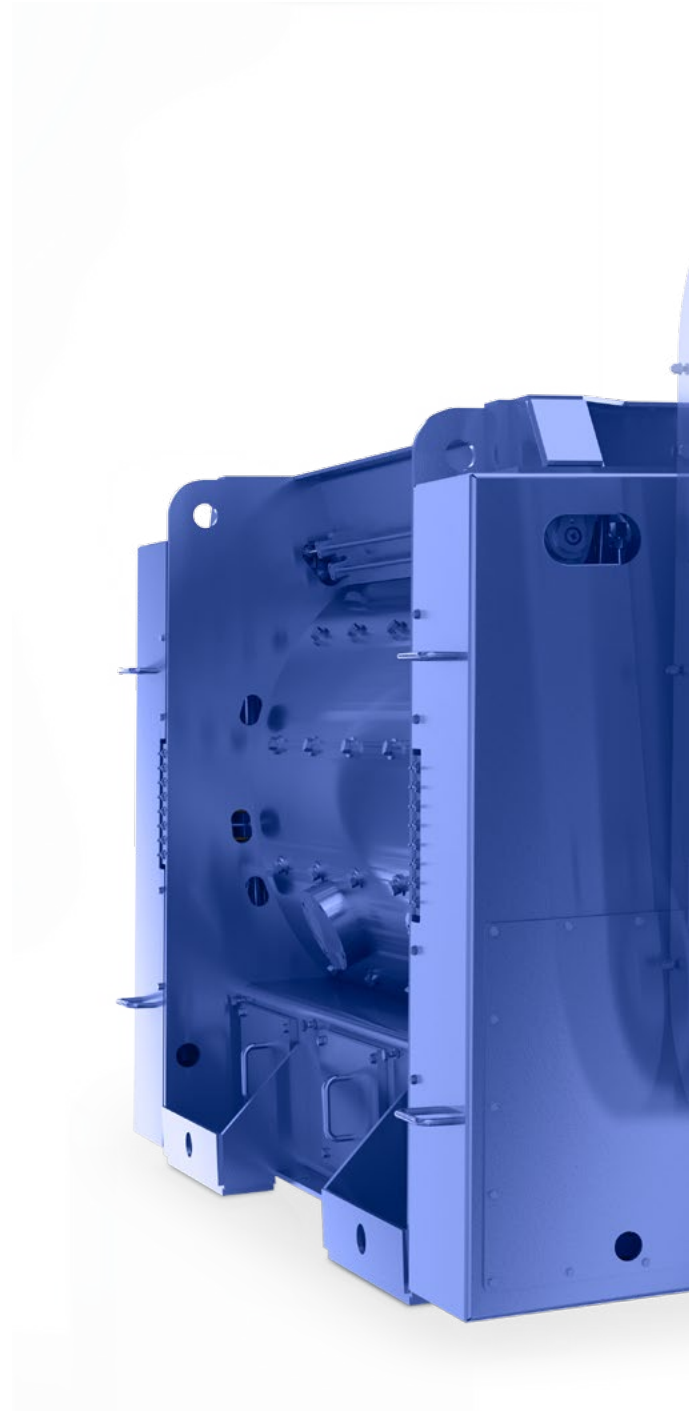
A low-maintenance elastic coupling is installed between the gearboxes to synchronize the two mixer shafts.

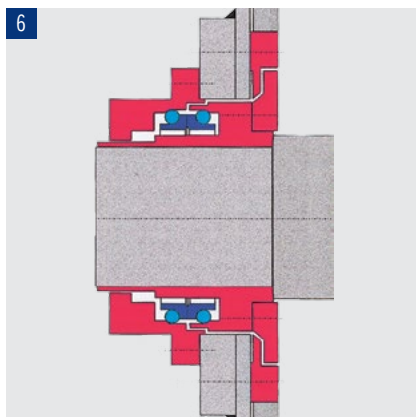
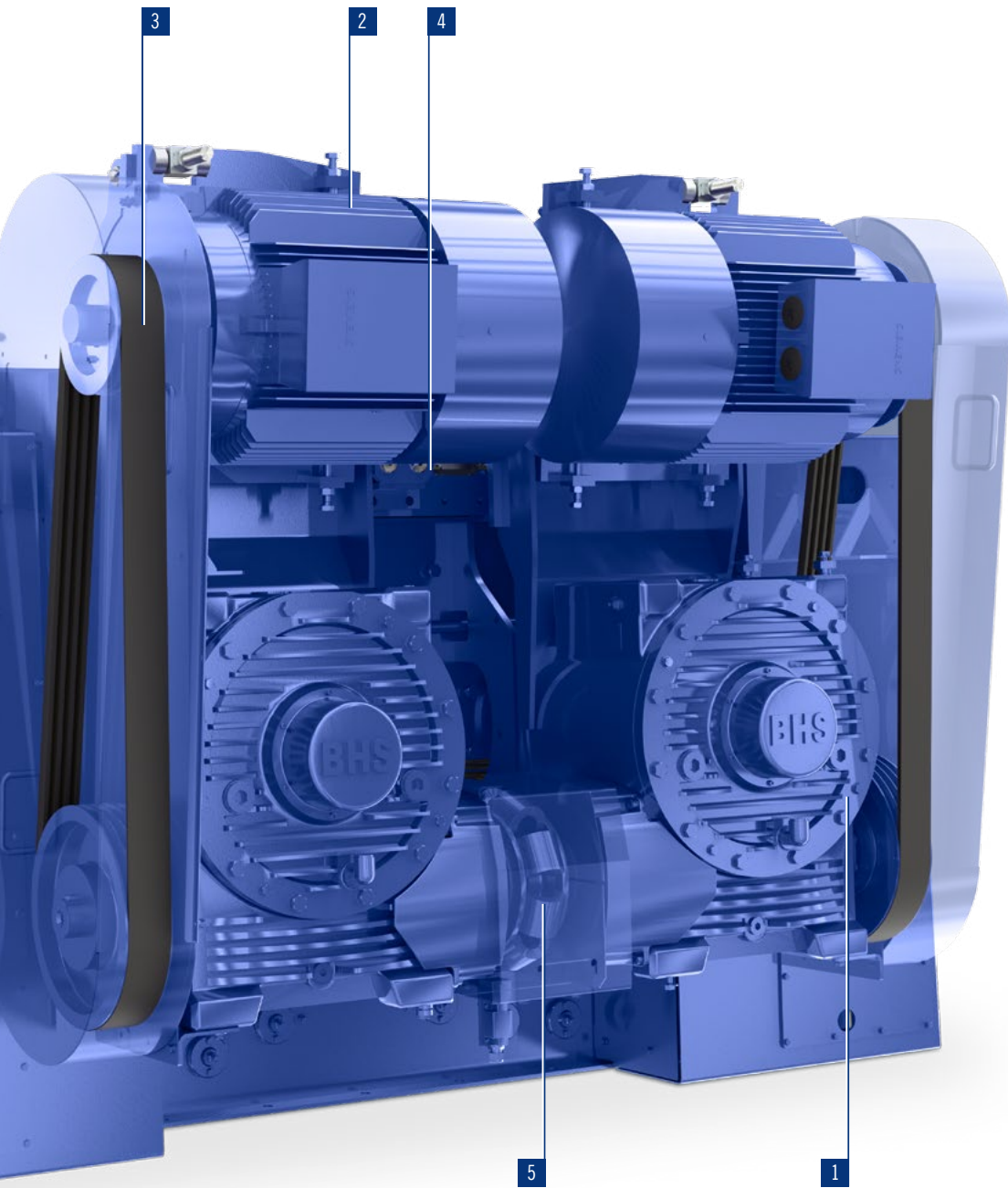
Shaft seals ⁶ and shaft bearings ⁷

The mixer shafts are reliably sealed with axial face seals. The shaft bearings are mounted on bearing lanterns and are located separated from the shaft seals. This significantly increases the operational reliability of the mixer shaft bearings.

Fluid coupling (optional)

The hydrodynamic fluid coupling prevents both mechanical and electrical load peaks. In case of unstable electricity supply conditions it is recommended. Alternatively, the mixer can be operated via a frequency converter or soft-start devices.



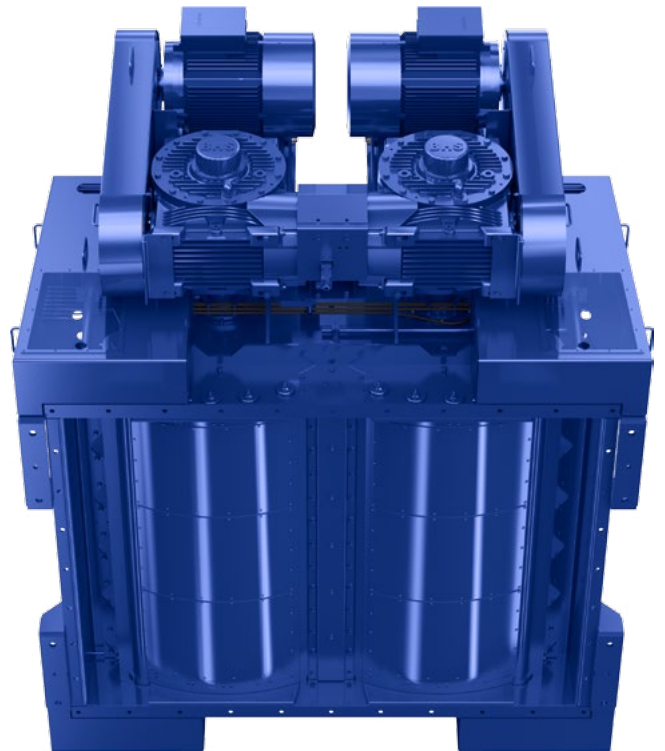


MIXER DISCHARGE

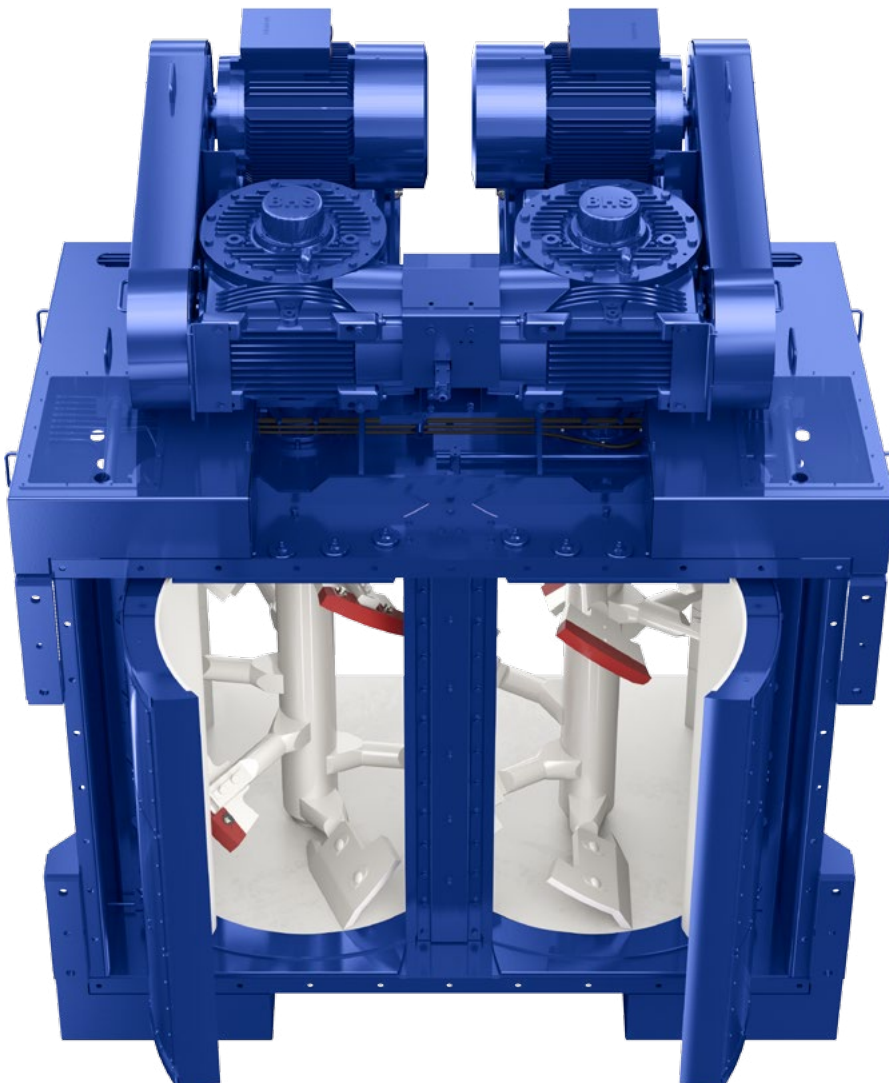
Solutions and versions tailored to the needs

Design features of DMX discharge door flaps

- » Residue-free discharge through large dual door flaps
- » Discharge door flaps arranged over the entire length and width of the trough
- » Solid and machined welded construction
- » Reliable and readjustable door seals, 100 mm high
- » Deflector design all around and spring-loaded on the lateral side.
- » Hydraulic operation



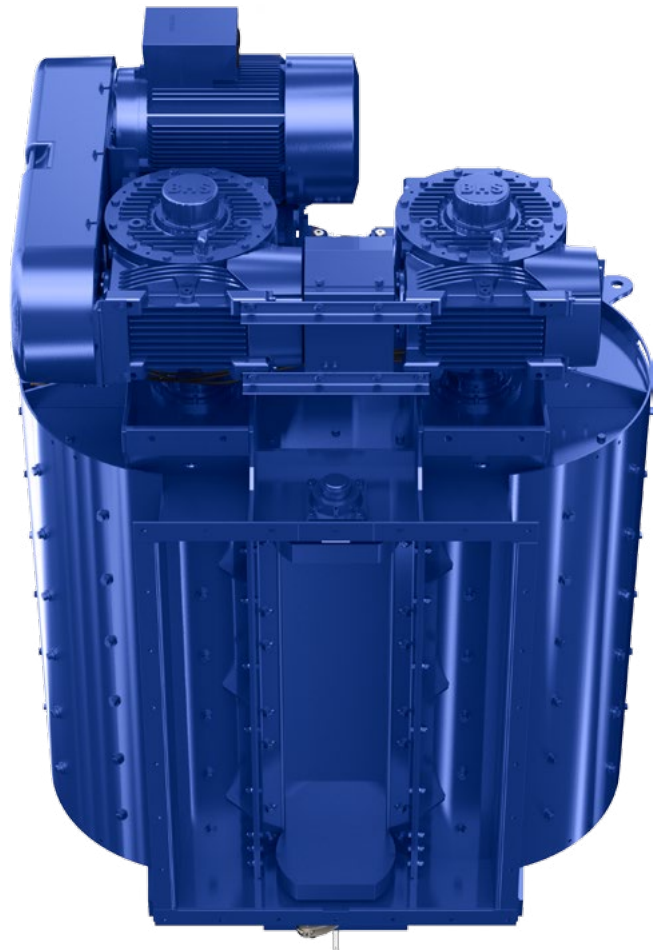
DMX 2600 with dual flaps closed



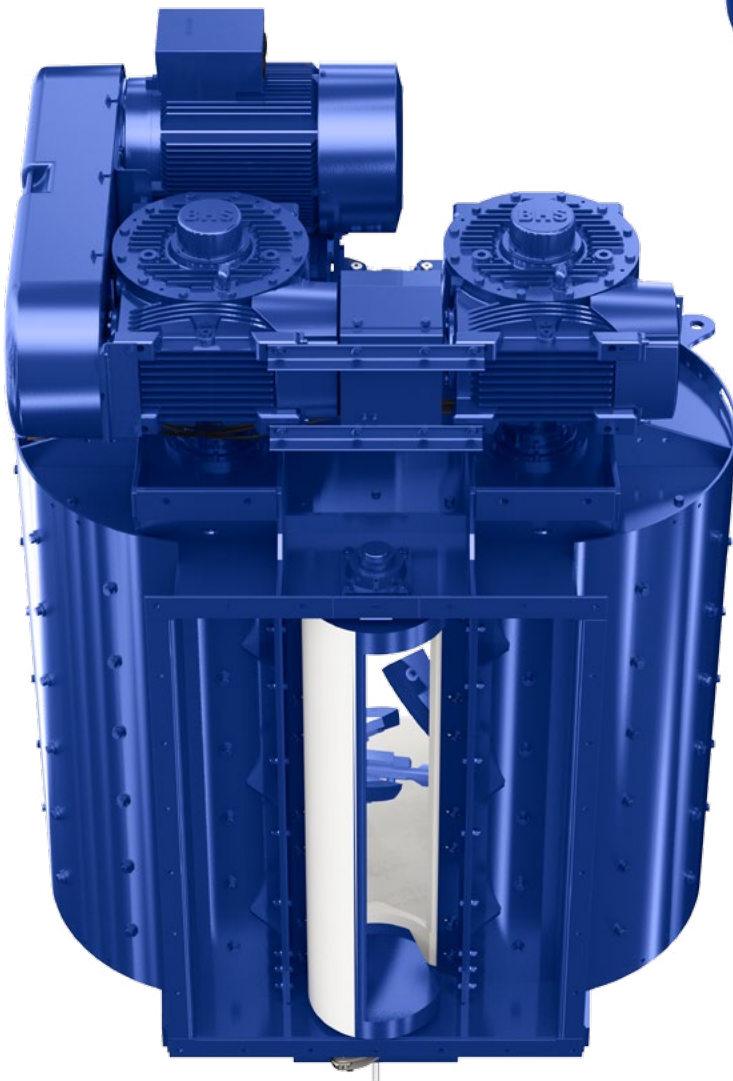
DMX 2600 with dual flaps open

DMX Monogate discharge gate design features

- » Rotary gate arranged over the entire length of the trough
- » Solid and machined design
- » Reliable and readjustable seals
- » Pneumatically or hydraulically operated



DMX 2600 Monogate with discharge gate closed



DMX 2600 Monogate with discharge gate open

Mixing trough cover ¹

The dust-proofed mixing trough cover is equipped with large maintenance hatches that are opened with the aid of gas springs. A wide range of optional custom connections for feeding, venting or color and fiber addition are available upon request. Dust can be successfully removed via airbags or an active filter.

Electrical terminal box ²

If required, all electrical wiring can be bundled in a terminal box for easy installation.

Air compensation pipe ³

Air compensation pipes are used to compensate the pressure fluctuations between the surge bin and the mixer.

Periphery

Drawing on a wealth of experience in the planning and construction of special plants, retrofits and plant extensions, BHS is able to supply the entire periphery, from weighing technology through to entire mixing stations.

Mixer wear lining

Depending on the abrasiveness of the mixture, various liner variants are available for the mixer (steel, stainless steel or high-carbon steel). Every mixer wear lining is at least 12 mm thick and screwed in from the outside.

Dust-proof surge bin

Surge bins, individually adapted to plant requirements, can be designed and supplied for collecting the mixture and for transfer the mixture to the downstream conveyor systems. Moreover, 'round corners' facilitate residue-free emptying.

Sampling

Depending on the specific requirements, different sampling devices are available with either pneumatic or hydraulic actuation. These are installed on the longitudinal side of the trough. Alternatively, the sample can be filled into an automated sampling carousel or a conventional container.





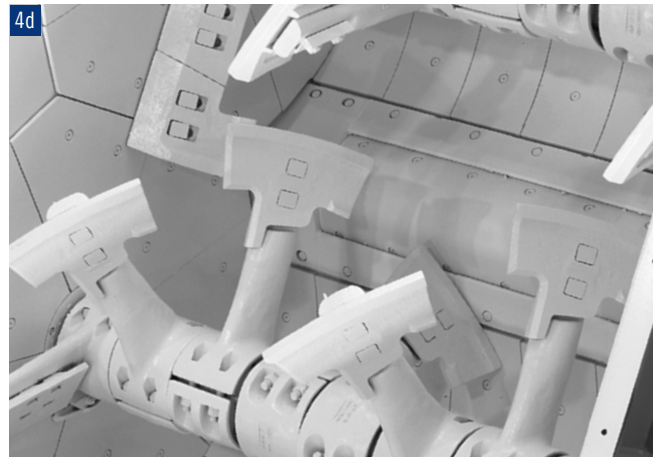
4a Smooth mixing tool with steel blades for materials with a density of $<1.4 \text{ t/m}^3$.



4b Smooth mixing tool with steel blades for materials with a density of $>1.4 \text{ t/m}^3$.



4c Smooth mixing tool with plastic tips for materials with a density of $>1.4 \text{ t/m}^3$



4d Mixing tools in chilled chrome cast iron design

Mixing tools ⁴

The mixing tools, based on our spiral-blade mixing mechanism, are adapted to the material density, the abrasiveness of the batch ingredients and the need for residue-free emptying. All versions are attached exclusively with screws. All blades are adjustable.

Agitators ⁵

The mixer can be equipped with agitators along the longitudinal side of the trough for the purpose of disintegration undesired agglomerations. They are very efficient due to the high filling level of the mixer, as they are in constant contact with the circulating mixture.



LUBRICATION SYSTEMS

Efficient and reliable supply of lubricants

Air Sealing monitoring **1**

A monitoring unit can send a signal to the plant control as part of the monitoring process for the compressed air supply to the four inner axial face seals. The current operating state is also displayed visually.

Fully automatic central lubrication **2**

The lubrication points of the four external seals, the four mixer bearings and the four seals on the flap axes are automatically supplied with grease via a PLC controller and by means of a progressive distributor. The operating states recorded by the PLC central lubrication control can be transmitted to the plant control for visualization.

Temperature measurement

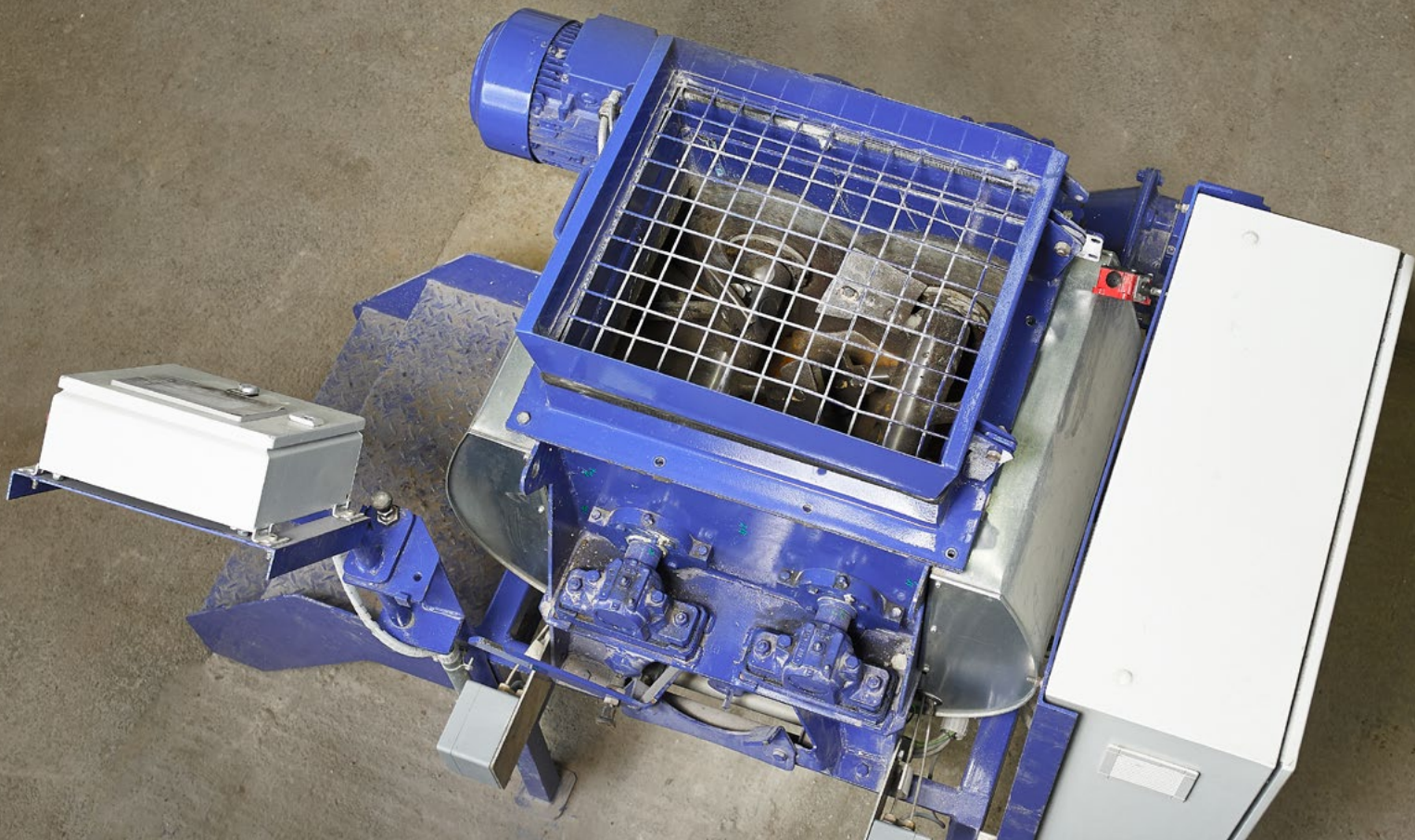
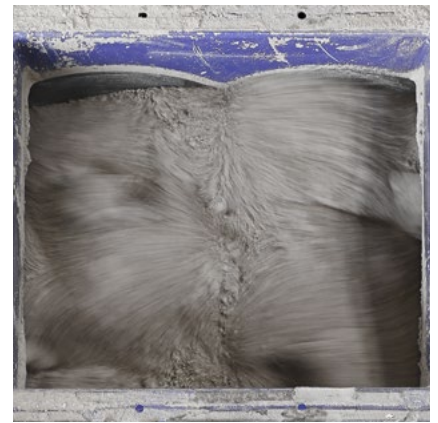
BHS Dry Powder Batch Mixers can be equipped with measurement devices from any major manufacturer to measure the temperature of the mixture and/or v-belts.



TESTS GIVE CERTAINTY

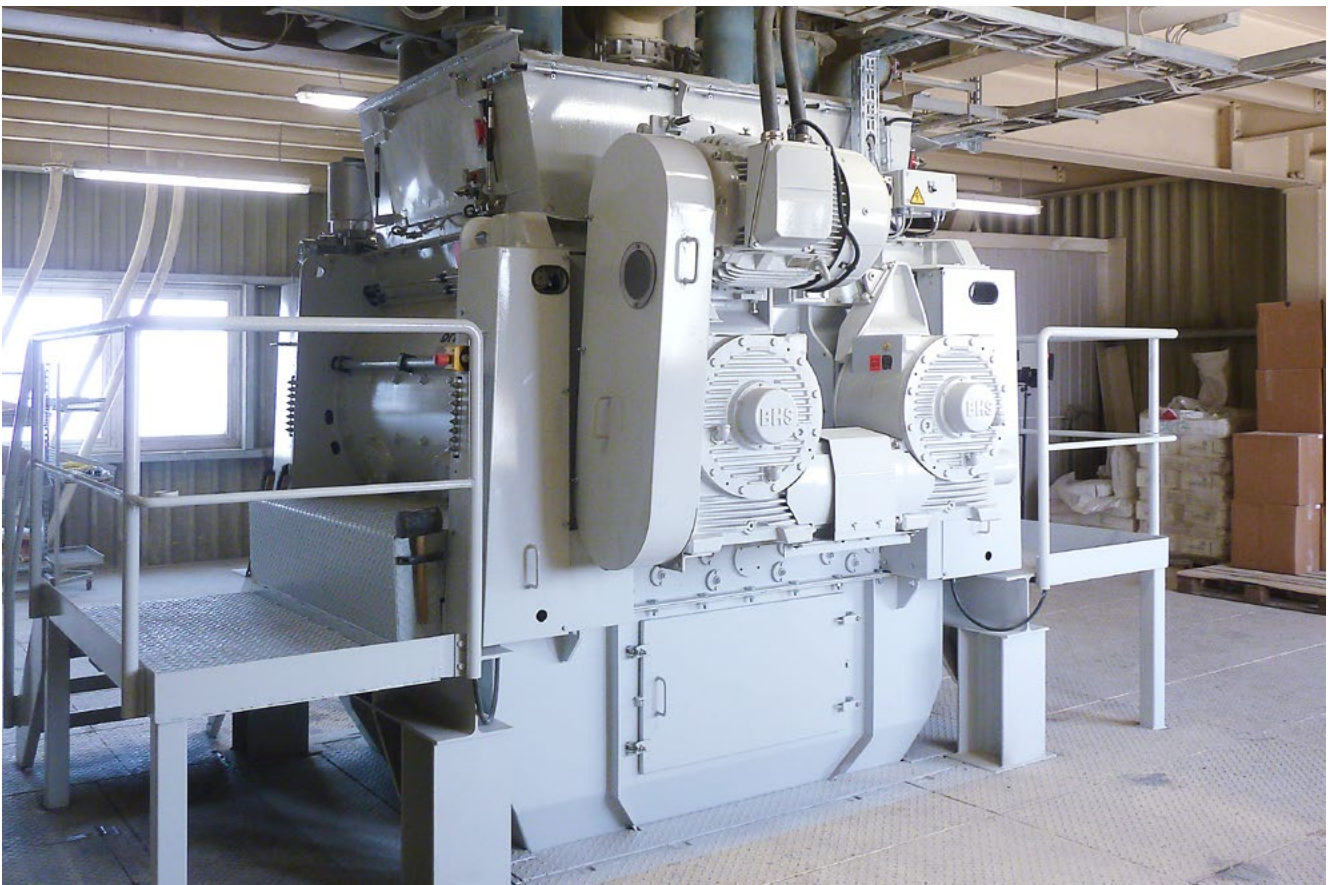
BHS offers customers the opportunity to run mixing tests with their own specific materials at the BHS technical center in Sonthofen, Germany. We are happy to advise and assist you.

During the mixing process, the entire mixture is in motion in the laboratory mixer.

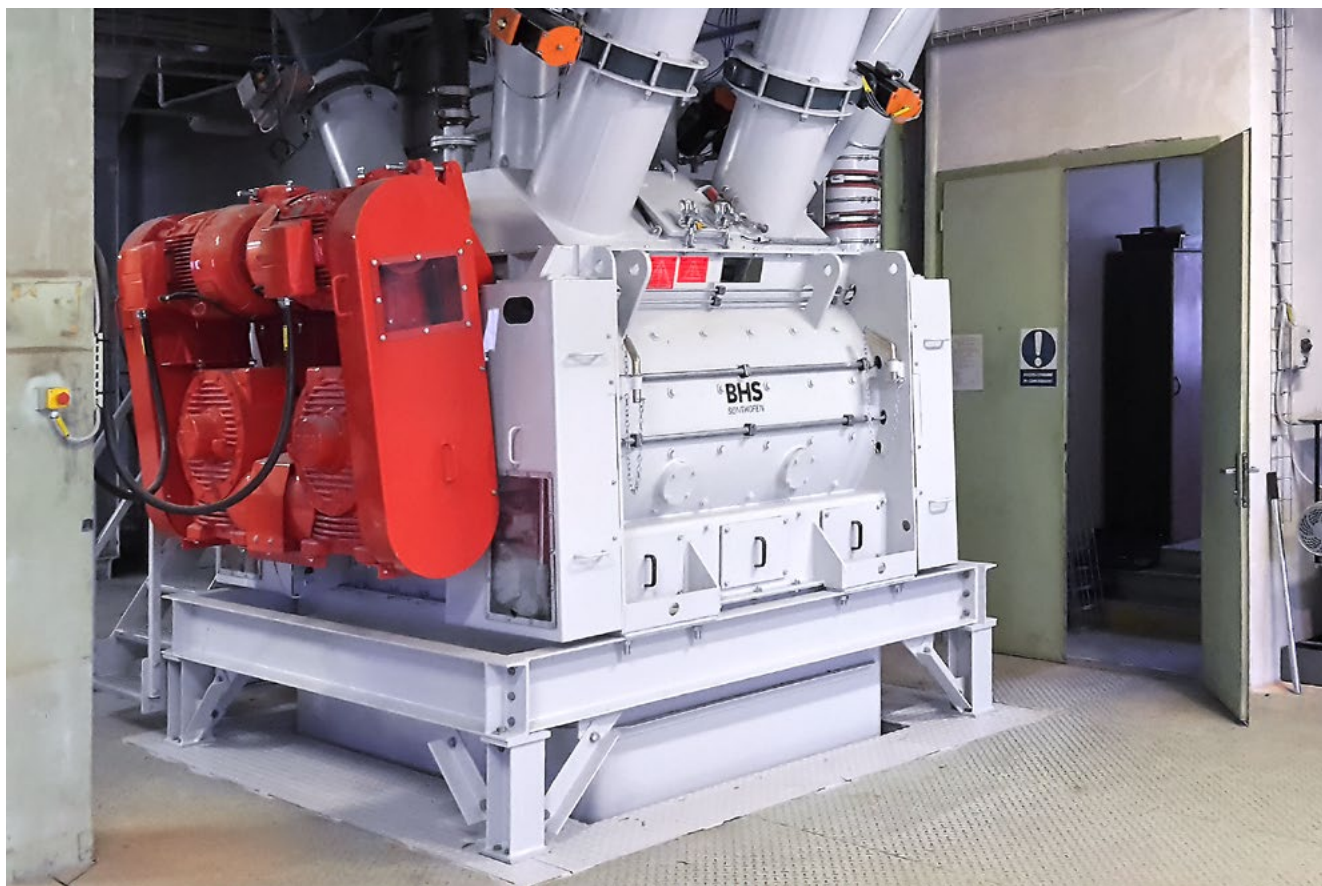




Dry Powder Batch Mixer DMX 4900 with hinged maintenance platforms.



Dry Powder Batch Mixer DMX 2600 with dual flaps.



Dry Powder Batch Mixer DMX 2600 with dual flaps.



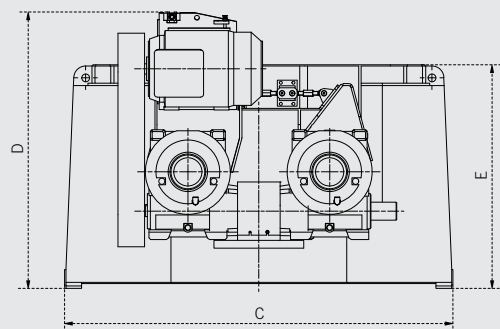
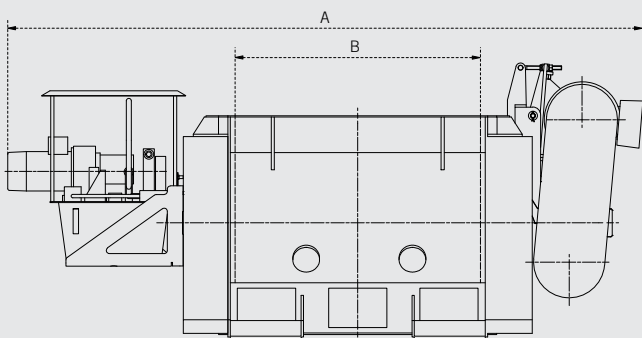
Dry Powder Batch Mixer DMX 2600 Monogate.

Performance data (standard designs)

Type	Effective volume	Throughput rate		Drive		Processed particle size
		90-second cycle time	150-second cycle time	from	to	
DMX 1200 DMX 1200 MG	1,050 l	42 m ³ /h	25 m ³ /h	1 × 15 kW	1 × 37 kW	0–8 mm
DMX 1700 DMX 1700 MG	1,500 l	60 m ³ /h	36 m ³ /h	1 × 22 kW	1 × 55 kW	0–12 mm
DMX 2200 DMX 2200 MG	2,000 l	80 m ³ /h	48 m ³ /h	1 × 22 kW	2 × 30 kW	0–12 mm
DMX 2600 DMX 2600 MG	2,300 l	92 m ³ /h	55 m ³ /h	1 × 30 kW	2 × 37 kW	0–12 mm
DMX 3600 DMX 3600 MG	3,200 l	128 m ³ /h	77 m ³ /h	1 × 37 kW	2 × 65 kW	0–16 mm
DMX 4900 DMX 4900 MG	4,400 l	176 m ³ /h	106 m ³ /h	1 × 65 kW	2 × 75 kW	0–16 mm
DMX 5500 DMX 5500 MG	4,950 l	198 m ³ /h	119 m ³ /h	1 × 75 kW	2 × 80 kW	0–16 mm
DMX 6500 DMX 6500 MG	5,900 l	236 m ³ /h	142 m ³ /h	2 × 37 kW	2 × 90 kW	0–16 mm
DMX 7300 ²⁾ DMX 7300 MG ²⁾	6,600 l	264 m ³ /h	158 m ³ /h	2 × 45 kW	4 × 75 kW	0–16 mm

DMX dimensions and weights (standard designs)

Type	A	B	C	D	E	Weight
DMX 1200	2,500 mm ¹⁾	1,330 mm	2,060 mm	1,400 mm	1,130 mm	5,000 kg
DMX 1700	3,720 mm	1,300 mm	2,470 mm	1,800 mm	1,420 mm	6,800 kg
DMX 2200	3,720 mm	1,300 mm	2,470 mm	1,830 mm	1,420 mm	7,500 kg
DMX 2600	4,010 mm	1,565 mm	2,470 mm	1,830 mm	1,420 mm	8,600 kg
DMX 3600	4,070 mm	1,530 mm	3,000 mm	1,990 mm	1,580 mm	11,700 kg
DMX 4900	4,900 mm	2,290 mm	3,000 mm	2,120 mm	1,580 mm	15,000 kg
DMX 5500	4,900 mm	2,290 mm	3,000 mm	2,150 mm	1,580 mm	15,500 kg
DMX 6500	4,600 mm	2,310 mm	3,340 mm	2,200 mm	1,850 mm	18,000 kg
DMX 7300 ²⁾	4,850 mm	2,310 mm	3,340 mm	2,280 mm	1,850 mm	18,500 kg



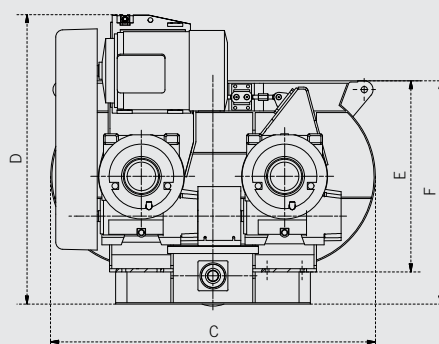
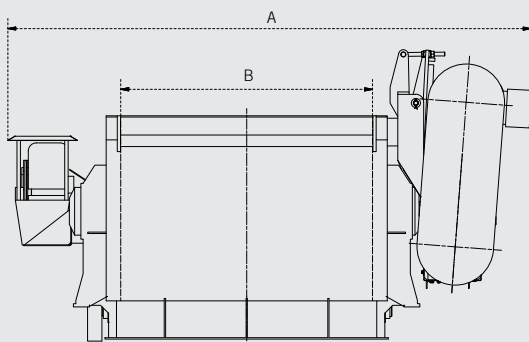
¹⁾ Without hydraulic aggregate on the mixer (placed separately). Agitators drive power: 5.5 kW per unit (maximum six units depending on machine size).

²⁾ Dimensions and weights deviate for 4X drive.

Performance data for other materials available on request. All specifications apply to the standard design. Technical specifications for customized designs may differ from the data provided here. All technical specifications are subject to change due to continuous development. Subject to change without notice.

DMX Monogate dimensions and weights (standard designs)

Type	A	B	C	D	E	F	Weight
DMX 1200 MG	2,670 mm ²⁾	1,330 mm	1,550 mm	1,470 mm	1,000 mm	1,200 mm	3,500 kg
DMX 1700 MG	3,000 mm	1,300 mm	2,040 mm	1,855 mm	1,200 mm	1,400 mm	5,600 kg
DMX 2200 MG	3,000 mm	1,300 mm	2,040 mm	1,900 mm	1,200 mm	1,400 mm	5,750 kg
DMX 2600 MG	3,250 mm	1,565 mm	2,040 mm	1,940 mm	1,200 mm	1,400 mm	6,200 kg
DMX 3600 MG	3,260 mm	1,530 mm	2,470 mm	2,040 mm	1,400 mm	1,640 mm	8,800 kg
DMX 4900 MG	4,180 mm	2,290 mm	2,470 mm	2,080 mm	1,400 mm	1,640 mm	11,400 kg
DMX 5500 MG	4,180 mm	2,290 mm	2,470 mm	2,110 mm	1,400 mm	1,640 mm	11,700 kg
DMX 6500 MG	4,670 mm	2,310 mm	2,855 mm	2,400 mm	1,650 mm	1,890 mm	15,700 kg
DMX 7300 MG ²⁾	4,670 mm	2,310 mm	2,855 mm	2,400 mm	1,650 mm	1,890 mm	16,000 kg



BHS AREAS OF EXPERTISE



MIXING
TECHNOLOGY



CRUSHING
TECHNOLOGY



RECYCLING
TECHNOLOGY



FILTRATION
TECHNOLOGY

