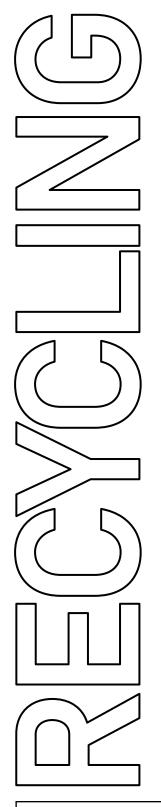
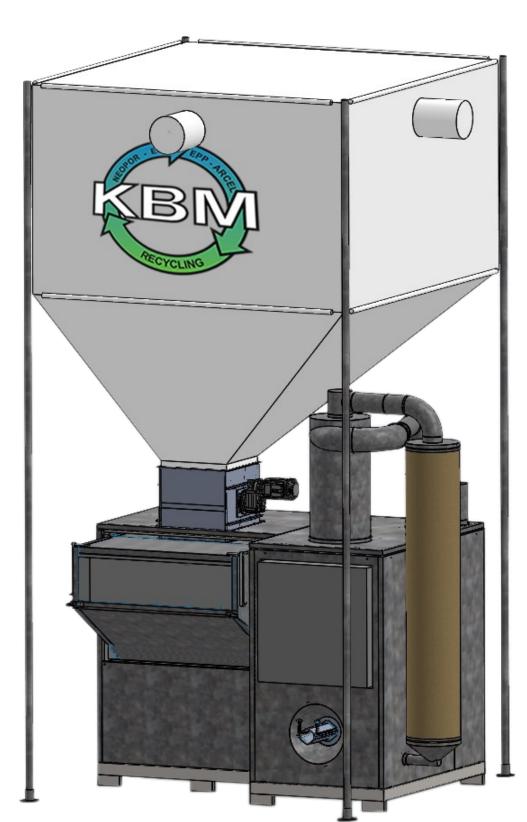
RECYCLING SYSTEMS | PRODUCT RANGE

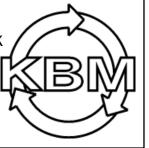


EPS | EPP | EPE | ARCEL | NEOPOR





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THE STORY OF KBM

A FAMILY COMPANY IN THE EPS INDUSTRY SINCE 1971

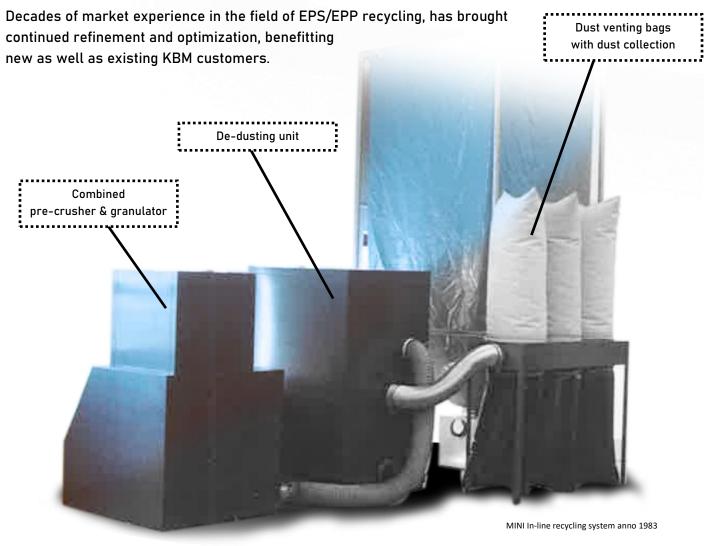


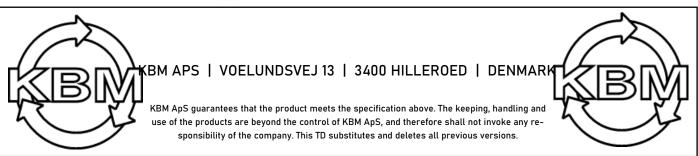
The principle remains the same: Unbeatable quality and efficiency in EPS/EPP recycling.

An approximately 35 year old KBM MINI RECYCLING system - still in operation.

Back in time KBM supplied machines with the characteristic blue coating, but since the early 00's all systems have been supplied in galvanized steel for better protection during handling

and improved life time.





THE STORY OF KBM







KBM ApS was founded in 1971

by the late Mr. Kjeld Bentzen and is today run by his son Mr. Michael Bentzen. Since the beginning, the company has been supplying the EPS industry with high quality machinery.

A few years later in 1975, the Injektorking Vario Injectors for EPS were developed, and in 1978 KBM

developed the first real recycling plant for EPS; later the same systems were developed to be used for EPP and EPE.

Over the years, KBM has designed recycling systems for companies of all sizes in the moulding industry. Combined crushers/compactors to handle post-consumer products of EPS, and mixing/metering systems have also been added to the line of products.

Still not convinced? Contact us for arranging a visit at our demo facility. You can also contact us for a trial with INJEKTORKING injectors for a full mould and experience the true benefits in real time operation at your own plant.



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OVERVIEW RECYCLING



FROM IN-A-BOX SOLUTIONS TO IN-LINE SYSTEMS

The specifications for all	MICRO	MINI	MAXI	MINI	MAXI	JUMB0
recycling systems are	IN-A-BOX	IN-A-BOX	IN-A-BOX	INLINE	INLINE	INLINE
based on recycling of EPS				SYSTEM	SYSTEM	SYSTEM

Capacity

SHAPE MOULDING Granulated and dedusted EPS material on 6mm screen	2-3 m³/h	6-8 m³/h	10-12 m³/h	6-8 m³/h	10-12 m³/h	15-20 m³/h
	70-105 ft³ /h	210-280 ft³ /h	350-420 ft³ /h	210-280 ft³ /h	350-420 ft³ /h	630-700 ft³ /h
BLOCK MOULDING Granulated and dedusted EPS material on 10mm screen	4-6 m³/h	9-10 m³/h	18-20 m³/h	9-10 m ³ /h	18-20 m³/h	35-40 m³/h
	140-210 ft³ /h	315-350 ft³ /h	630-700 ft³ /h	315-350 ft ³ /h	630-700 ft³ /h	1225-1400 ft³ /h
HIGH DENSITY MOULDING Granulated and dedusted EPP material or high density EPS	20-50 kg/h 44-110 Lbs/h	50-100 kg/h 110-220 Lbs/h	100-160 kg/h 220-350 Lbs/h	50-100 kg/h 110-220 Lbs/h	100-160 kg/h 220-350 Lbs/h	N/A

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Hopper opening	780x400mm	900x600mm	1400x600mm	900x600mm	1400x600mm	1800x800mm
Pre-crusher/granulator	30x15"	36x24"	56x24"	36x24"	56x24"	72x31"
Granulator screen surface	0,2 m ²	0,9 m²	1,4 m ²	0,9 m ²	1,4 m ²	2,4 m ²
	2 ft ²	9,7 ft ²	15 ft ²	9,7 ft ²	15 ft²	26 ft ²
Floor space required	5 m²	6 m ²	16 m²	12 m²	16 m²	40 m²
	52 ft ²	65 ft ²	160 ft ²	120 ft ²	160 ft ²	400 ft ²

Electrical load

	·					
Standard EPS	11,5 kW	19 kW	36 kW	19 kW	36 kW	50 kW
EPP or high density EPS	14,5 kW	32 kW	53 kW	32 kW	53 kW	57kW



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May be required or optional depending on customer requirement Recommendation but other combinations can be applied

SYSTEM CONFIGURATION



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SYSTEM CONFIGURATION

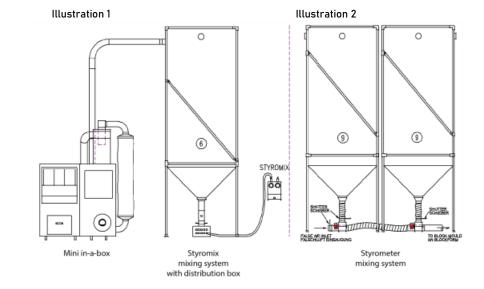


In-a-box systems
Micro-in-a-box, Mini-in-a-box and
Maxi-in-a-box

Complete integrated systems with optional separate pre-crusher, heavy-parts filter and feeding silo. Can be equipped with any mixing system

Illustration 1 features a Mini-in-a-box transferring recycled material to a silo with a ditribution box connected with Styromix 3 system.

Illustration 2 features Styrometer mixing system.

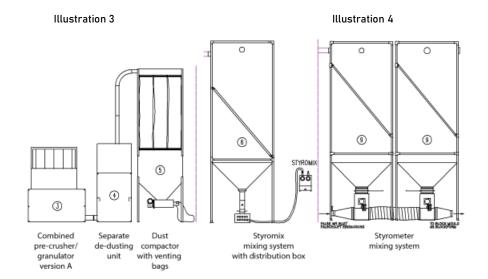


In-line systems with combined precrusher/granulator MINI + MAXI systems

In-line systems with combined precrusher/granulator, de-dusting unit, dust compacting and mixing system.

Illustration 3 features a combined precrusher/granulator A version, with de-dusting unit and dust compactor with venting bags. Illustration 4 features Styromix with distribution box and Styrometer mixing systems.

mixing systems.



In-line systems with separate pre-crusher and granulator

MINI + MAXI + JUMBO systems

In-line systems with separate pre-crusher and granulator, heavy-parts filter, de-dusting unit, dust compacting and mixing system.

Illustration 5 features a separate pre-crusher, heavy-parts filter granulator D version, de-dusting unit, dust compactor

with cyclone and Styrometer

Separate Heavy-parts Material Granulator Separate Dust compactor Styrometer

version D

de-dusting

unit

with cyclone

mixing system

transport

filter

Pre-crusher

MICRO-IN-A-BOX

COMPLETE RECYCLING SYSTEM - 5 M3/HOUR CAPACITY



Brand name A complete system to conv	ert moulded EPS/EPP/
KBM MICRO-IN-A-BOX EPE/NEOPOR/ARCEL packa	
rials into individual beads r	
virgin beads to mould new	products.
Material Cabinet is made of galvaniz	ed steel.
Density range Standard EPS version < 35-	-40 Kg/m³ (< 2,2-2.5 lb/ft³)
High density version (HD) <	70 Kg/m³ (< 7.5 lb/ft³)
Capacity by volume	
(Granulated EPS)	
6mm screen 2-3 m³ per hour (70-105 ft³	/hour)
8mm screen 3,5-5 m³ per hour (120-175 m²)	
10mm screen 4-6 m³ per hour (140-210 ft ³	³/hour)
Capacity weight (EPP+HD EPS) 20-50 Kg/m³ per hour (44-	110 lb/hour)
5mm screen	
Screen surface 0.18 m² (1.8 ft²)	
Space required 5 m ² (52 ft ²)	
(without optional pre-crusher)	
Measurements L x W x H	
Fully mounted 2.2 x 1.9 x 3.7 m (87x75x146'	100
Dismounted for transport 2.2 x 1.9 x 2.35 m (87x75x93	")
Hopper inlet height (from floor) 1600 mm (63")	
	* · · · · · · · · · · · · · · · · · · ·
Silo for pre-crushed material 2.4 x 1.8 x 6 m (96x72x240")	a tittett
installed on top of the system (14 m^3)	1
Storage silo (optional) Any size available	
Pipe connections 160 mm (6")	
Hopper opening 780 x 400 mm (30x15")	

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Min. 85-95%

Max 5-15%

Max 1%

KBM ApS guarantees that the product meets the specification above. The keeping, handling and use of the products are beyond the control of KBM ApS, and therefore shall not invoke any responsibility of the company. This TD substitutes and deletes all previous versions.



Estimated conserved material

Dust content after processing

Extracted dust & particles

MICRO-IN-A-BOX

COMPLETE RECYCLING SYSTEM - 5 M3/HOUR CAPACITY



The KBM MICRO-IN-A-BOX complete recycling system is suited for processing EPS/EPP/EPE/NEOPOR/ARCEL. The system is available in 2 versions.

Standard version: Densities < 35-40 kg/m³ HD version: Densities < 70 kg/m³ The only system on the market (together with the KBM Mini-in-a-box and the KBM Maxi-in-a-box), where pre-crushing, granulation and dust separation are build into one unit. In Dust cyclone unit addition, the system can be delivered with built-in dust compactor. The system is perfectly suited for moulders with a limited production, or moulders wanting a separate recycling process for Hose venting unit e.g. colored or graphite modified materials. Exit to storage silo Hopper: 780x400mm De-dusting unit inside Granulator inside Noise level 70-75 dB(A) (in operation) Electrical load (With dust compactor) EPS version: 11,5 kW (13 kW) EPP version: 14,5 kW (16 kW) 2200 mm Voltage: 3x400V/50Hz, 3x480V/60Hz Pre-crusher inside **Dust compactor** (Other voltages available) (Optional)

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MICRO-IN-A-BOX







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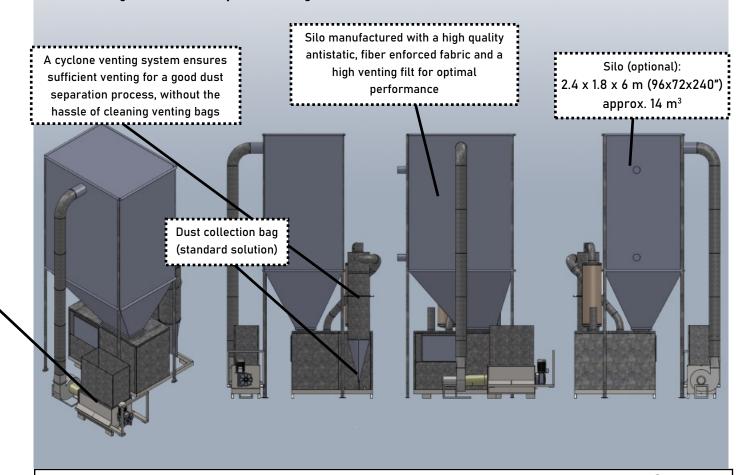
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MICRO-IN-A-BOX





- Investing in a KBM recycling system, enables you to gain a 85-95% value on your EPS/EPP scrap material.
- High mixing ratios: Add op to 10-20% of recycled material into shape moulding applications and 20-50% in block moulding without de-mixing problems.
- The system generates individual beads from the scrap moulded parts, dust free and ready to be re-inserted into your production.
- A unique design of the granulator and a special process limit the amount of dust and particles to a mere 5-15%
- Very easy installation: Only connect the power and ducting to the silo and pre-crusher. The system
 can easily be moved around with a forklift, providing great flexibility.
- An efficient dust separation ensures there are very few production stops, due to problems with blocking of core vents in your moulding machines.



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MINI-IN-A-BOX

COMPLETE RECYCLING SYSTEM - 10 M³/HOUR CAPACITY



Brand name:	A complete system to convert moulded EP	S/EPP/	
KBM MINI-IN-A-BOX	EPE/NEOPOR/ARCEL packaging and insula	ntion mate-	
	rials into individual beads ready to be mixe	ed with	
	virgin beads to mould new products.		
Material	Cabinet is made of galvanized steel.		
Density range	Standard EPS version < 35-40 Kg/m³ (< 2.2	-2.5 lb/ft ³)	
	High density version (HD) < 100-120 Kg/m³ lb/ft³)	(<6.2-7.5	
Capacity by volume (Granulated EP	S)		
6mm screen	6-8 m³ per hour (210-280 ft³ /hour)		
10mm screen	9-10 m³ per hour (315-350 ft³ /hour)		
12mm screen	12-13 m³ per hour (420-455 ft³ /hour)		
Capacity weight (EPP + HD EPS)			
6mm screen	50-100 Kg/m³ per hour (130-220 lb/hour)		
Screen surface	0.9 m ² (9.7 ft ²)		
Space required	6 m ² (65 ft ²)		
(without optional pre-crusher)			
Measurements L x W x H			
Fully mounted	2.73 x 2.23 x 3.56 m (108x88x140")		
Dismounted for transport	2.23 x 2.23 x 2.23 m (88x88x88")		
Silo for pre-crushed material	2.85 x 3 x 6 m (114x120x240") - (19 m³)	•	Recycled EPP & EPS. ushed, granulated and de-
installed on top of the system	, , , , ,		ed - ready to be reused
(optional)		i	in your production
Storage silo (optional)	Any size available		, ,
Pipe connections	160 mm (6")		
Hopper opening	900 x 600 mm (36x24")		
Estimated conserved material	Min. 93-95%		
Extracted dust & particles	Max 5-7%	Sec. (1)	
Dust content after processing	Max 1%	for	S. S. S. S. S. S.



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MINI-IN-A-BOX

COMPLETE RECYCLING SYSTEM - 10 M3/HOUR CAPACITY



The KBM MINI-IN-A-BOX complete recycling system is suited for processing EPS/EPP/EPE/NEOPOR/ARCEL. The system is available in 2 versions.

Standard version: Densities < 35-40 kg/m³ HD version: Densities < 100-120 kg/m³



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MINI-IN-A-BOX

COMPLETE RECYCLING SYSTEM - 10 M3/HOUR CAPACITY



The KBM MINI-IN-A-BOX is build with a dust compactor as standard.

After de-dusting the granulated material, the dust is conveyned to the dust compactor.

The obtained compacted density is 150-300 kg/m 3 (9-18lbs/ft 3)





The hopper (and the cabinet) are sound insulated and covered with galvanized steel plates. The hopper is equipped with a strong plastic curtain for easy input of scrap. The low side of the hopper (yellow) is equipped with a safety string, which, in order to avoid any accidents, stops the machine if activated.

MINI-IN-A-BOX VERSION C

is build with a cell-wheel on top, for metering pre-crushed material. It feeds from a silo with pre-crushed material on top.

Suited for plants where you have external pre-crushers located in different locations. You can still feed the Mini-in-a-box manually from the side .





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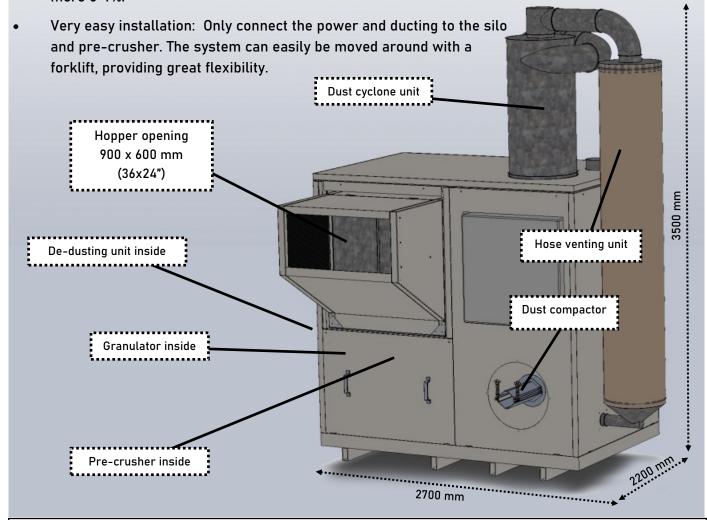


MINI-IN-A-BOX



COMPLETE RECYCLING SYSTEM - 10 M3/HOUR CAPACITY

- Investing in a KBM recycling system, enables you to regain > 90% value on your EPS/EPP scrap material.
- High mixing ratios: Add op to 10-20% of recycled material into shape moulding applications and 20-50% in block moulding without de-mixing problems.
- The system generates individual beads from the scrap moulded parts, dust free and ready to be re-inserted into your production.
- A unique design of the granulator and a special proces limit the amount of dust and particles to a mere 5-7%.



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MAXI-IN-A-BOX

COMPLETE RECYCLING SYSTEM - 20 M3/HOUR CAPACITY



The KBM MAXI-IN-A-BOX complete recycling system is suited for processing EPS/EPP/EPE/NEOPOR/ARCEL. The system is available in 2 versions.

Standard version: Densities < 35-40 kg/m³ HD version: Densities < 100-120 kg/m³

The only system on the market (together with KBM Micro-in-a-box and KBM Mini-in-a-box), where pre-crushing, granulation and dust separation are build into one unit. In addition, the system comes with a built-in dust compactor. The system is perfectly suited for both small and large shape moulders, as well as medium sized block moulding plants, or moulders wanting a separate recycling process for e.g. colored or graphite modified materials.



MAXI-IN-A-BOX



COMPLETE RECYCLING SYSTEM - 20 M³/HOUR CAPACITY

Brand name: KBM MAXI-IN-A-BOX	A complete system to convert moulded EPS/EPP/EPE/NEOPOR/ARCEL packaging and insulation materials into individual beads ready to be mixed with virgin beads to mould new products.
Material	Cabinet is made of galvanized steel.
Density range	Standard EPS version < 35-40 Kg/m³ (< 2.2-2.5 lb/ft³) High density version (HD) < 100-120 Kg/m³ (<6.2-7.5 lb/ft³)
Capacity by volume (Granulated EPS)	
6mm screen	10-12 m³ per hour (350-420 ft³ /hour)
10mm screen	18-20 m³ per hour (630-700 ft³ /hour)
Capacity weight (EPP + HD EPS)	
6mm screen	100-160 Kg/m³ per hour (220-350 lb/hour)
Screen surface	1.4 m ² (15 ft ²)
Space required (without optional pre-crusher)	16 m² (160 ft²)
Measurements L x W x H	
Fully mounted	3.45 x 2.23 x 3.56 m (136x88x140")
Dismounted for transport	2.95 x 2.23 x 2.23 m (116x88x88")
Silo for pre-crushed material installed on top of the system (optional)	2.85 x 3 x 6 m (114x120x240") - (19 m³)
Storage silo (optional)	Any size available
Pipe connections	160 mm (6")
Hopper opening	1400 x 600 mm (56x24")
Estimated conserved material	Min. 93-95%
Extracted dust & particles	Max 5-7%
Dust content after processing	Max 1%



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sponsibility of the company. This TD substitutes and deletes all previous versions.

MAXI-IN-A-BOX

COMPLETE RECYCLING SYSTEM - 20 M3/HOUR CAPACITY



The hopper (and the cabinet) are sound insulated and covered with galvanized steel plates. The hopper is equipped with a strong plastic curtain for easy input of scrap. The low side of the hopper (yellow) is equipped with a safety string, which, in order to avoid any accidents, stops the machine if activated.



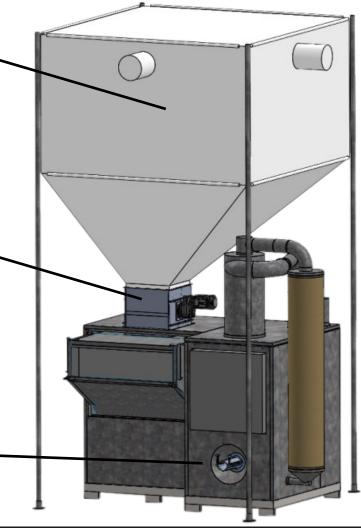
Feeding silo ensures consistent and accurate dosing of precrushed material into the granulator.

MAXI-IN-A-BOX VERSION C

is build with a cell-wheel on top, for metering pre-crushed material. It feeds from a silo with pre-crushed material on top.

Suited for plants where you have external pre-crushers located in different locations. You can still feed the Maxi-in-a-box manually from the side .

The KBM MAXI-IN-A-BOX is delivered with an in-built dust compactor as standard. After de-dusting the granulated material - the dust is conveyned to the dust compactor. The obtained compacted density is 150-300 kg/m³ (9-18lbs/ft³)





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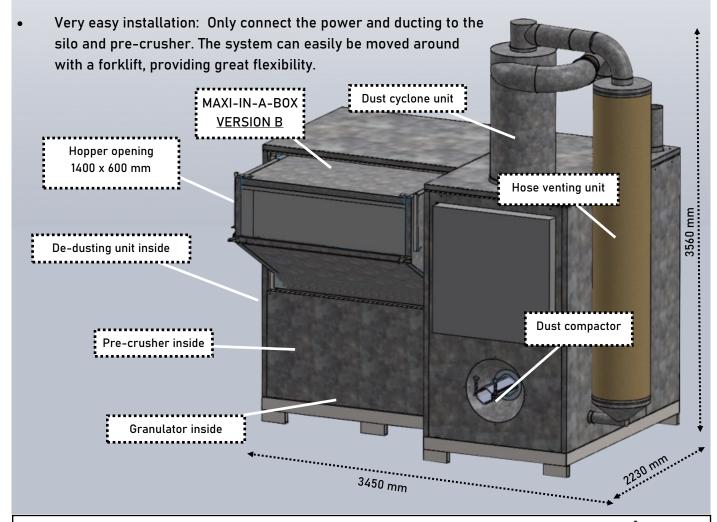


MAXI-IN-A-BOX

KBM

COMPLETE RECYCLING SYSTEM - 20 M3/HOUR CAPACITY

- Investing in a KBM recycling system, enables you to regain > 90% value on your EPS/EPP scrap material.
- High mixing ratios: Add up to 10-20% of recycled material into shape moulding applications and 20-50% in block moulding without de-mixing problems.
- The system generates individual beads from the scrap moulded parts, dust free and ready to be re-inserted into your production.
- A unique design of the granulator and a special proces limit the amount of dust and particles to a mere 5-7%.



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MINI RECYCLING IN-LINE COMPLETE RECYCLING SYSTEM - 10 M3/HOUR CAPACITY



Since the first completely integrated recycling concept for reusing EPS materials was developed in 1978, we have supplied more than 500 complete recycling plants world-wide, solving recycling problems and brought substantial savings to our customers production.

The KBM MINI recycling plant for EPS and EPP is suitable for small/medium shape moulding and small block moulding operations. Thanks to the two step/double chamber system and the large screen surface and granulation chamber, the MINI plant processes waste products, cut-offs from cutting lines and even used EPS and EPP/EPE mouldings, into high quality recycled material with a minimal content of dust.



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Extracted dust & particles

Dust content after processing

MINI RECYCLING IN-LINE

Max 5-7%

Max 1%





Brand name: KBM MINI RECYCLING PLANT	A complete system with individual units, for converting moulded EPS/EPP/EPE/NEOPOR/ARCEL packaging a lation materials into individual beads ready to be mix virgin beads to mould new products.	and insu-
Material	Cabinets are made of galvanized steel.	
Density range	Standard EPS version < 35-40 Kg/m³ (< 2.2-2.5 lb/ft³) High density version (HD) < 100-120 Kg/m³ (< 6.2-7.5 lb/ft³))
Capacity by volume		
(Granulated EPS)		
6mm screen	6-8 m³ per hour (210-280 ft³ /hour)	
10mm screen	9-10 m³ per hour (315-350 ft³ /hour)	
12mm screen	12-13 m³ per hour (420-455 ft³ /hour)	
Capacity weight HD+EPP		
6mm screen	50-100 Kg/m³ per hour (130-220 lb/hour)	
Screen surface	0,9 m ² (9,7 ft ²)	
Space required	Approx. 12 m ² (120 ft ²)	
Measurements L x W x H		MINI version I
Pre-crusher/Granulator (1)	1.4x1.1x2.5 m(55x44x100")	6 "
Dust separating unit (2)	1.2x1.1x2.5 m(48x44x100")	
Dust compactor (3)	1.6x0.6x5.1 m (64x24x204")	
Storage silo	Any size available	
Pipe connections	160 mm (6")	
Hopper opening	900 x 600 mm (36x24")	
Estimated conserved material	Min. 93-95%	

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MINI RECYCLING IN-LINE



COMPLETE RECYCLING SYSTEM - 10 M3/HOUR CAPACITY

The recycled EPS and EPP material can be reused in shape

moulding productions in a ratio of at least 10 -20 % without any

perceptible visual nor physical change in the product quality.

For block moulding 20-50 % can be added.

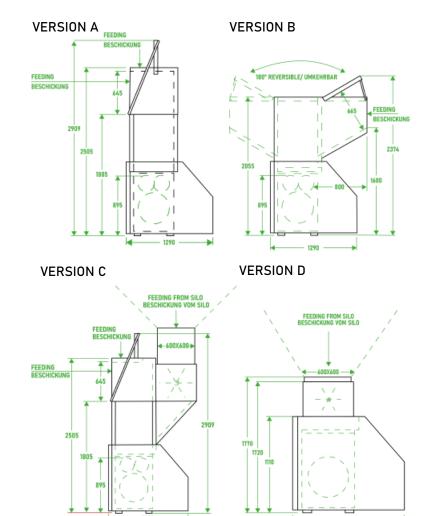
As the material is broken down to homogeneous, individual beads

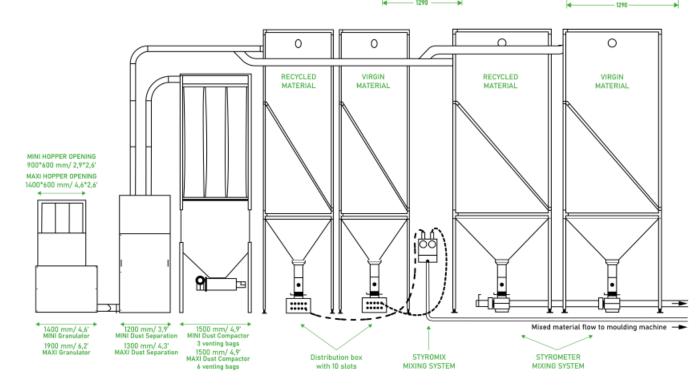
which mix perfectly with new pre-expanded beads, it consequently

minimizes the uneven density distribution in the silos and thus in the block. Blocking of core vents, due to dust and lumps in the material, often causes hot wire cutting problems and thus unwanted surface appearances on the final insulation sheets.

The KBM MINI recycling plant consists of one combined pre-crushing and granulating unit (1), and a separate dust separating unit (2). Both units are sound insulated. After recycling the material, it's blown into a storage silo (6), a big bag made of antistatic fabric with a steel frame for easy assembling.

The dust is blown into the dust compactor (5), with air venting filter bags. The dust is collected in the lower part and is compacted into a octagonal rod with a density of 150-300 Kg/m³ (9-18 lbs/ft³).





MINI RECYCLING IN-LINE



COMPLETE RECYCLING SYSTEM - 10 M3/HOUR CAPACITY

Brand name: KBM MINI RECYCLING PLANT Electrical load **EPS** version **EPP+HD EPS version** Pre-crusher/granulator 13,2 kW 26,0 kW Dust separating unit 4,0 kW 4,0 kW **Dust compactor** 1,5 kW 2,2 kW See chapter with Styrometer/Styromix See chapter with mixing units mixing units Voltage 3x400 V/50 Hz 3x400 V/50 Hz or other Voltages or other Voltages 3 hose venting bags De-dusting unit Combined Pre-crusher/ Granulator **Dust compactor** Version A

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Hopper opening 900 x 600 mm (36x24")

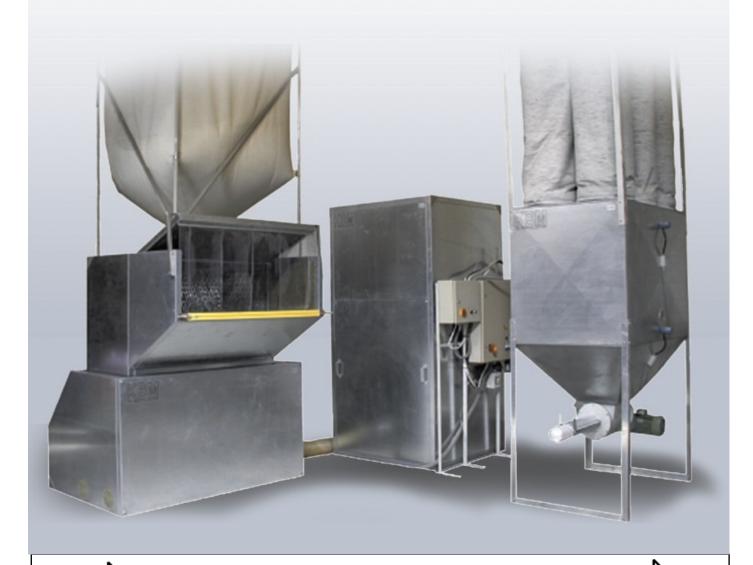


MAXI RECYCLING IN-LINE COMPLETE RECYCLING SYSTEM - 20 M3/HOUR CAPACITY



Since the first completely integrated recycling concept for reusing EPS materials was developed in 1978, we have supplied more than 500 complete recycling plants world-wide, solving recycling problems and brought substantial savings to our customers production.

The KBM MAXI recycling plant for EPS and EPP is suitable for large shape moulding and block moulding operations. Thanks to the two step/double chamber system and the large screen surface and granulation chamber, the MAXI plant processes waste products, cut-offs from cutting lines and even used EPS and EPP/EPE mouldings, into high quality recycled material with a minimal content of dust.



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MAXI RECYCLING IN-LINE





Brand name: KBM MAXI RECYCLING PLANT	A complete system with individual ting moulded EPS/EPP/EPE/NEOP packaging and insulation materials beads ready to be mixed with virginew products.	OR/ARCEL s into individual	
Material	Cabinets are made of sound insula steel.	ted galvanized	
Density range	Standard EPS version < 35-40 Kg/ EPP+High density (HD) < 80-100 Kg		
Capacity by volume (Granulated EPS)			
6mm screen	10-12 m³ per hour (350-420 ft³ /hou	ır)	
10mm screen	18-20 m³ per hour (630-700 ft³ /ho	ur)	
Capacity weight EPP + HD EPS			
6mm screen	100-160 Kg/m³ per hour (220-350 l	b/hour)	
Screen surface	1,4 m² (15 ft²)		
Space required	Approx. 16 m ² (160 ft ²)		
Measurements L x W x H			
Pre-crusher/Granulator (3)	1.9x1.3x2.5 m(76x52x100")	· · · · · · · · · · · · · · · · · · ·	
Dust separating unit (4)	1.3x1.2x2.7 m(52x48x108")	Recycled EPP & EP	
Dust compactor (5)	1.6x1.1x5.1 m (64x24x204")	Pre-crushed, granulated	
Storage silo	Any size available	dusted - ready to be re	
Pipe connections	160 mm (6")	in your production	
Hopper opening	1400 x 600 mm (56x24")		••••
Estimated conserved material	Min. 93-95%		
Extracted dust & particles	Max 5-7%		
Dust content after processing	Max 1%	/	

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MAXI RECYCLING IN-LINE





The recycled EPS and EPP material can be reused in shape

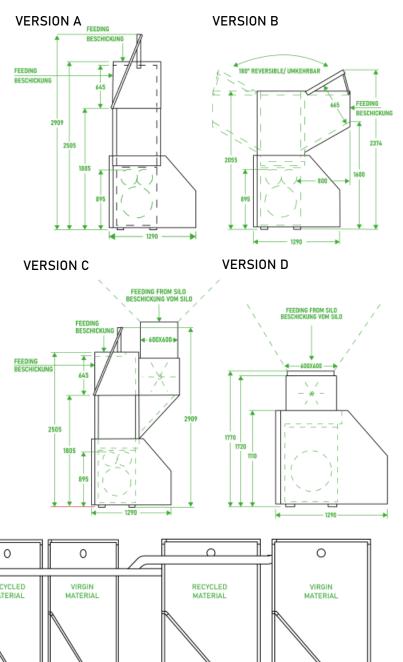
moulding productions in a ratio of at least 10 -20 % without any

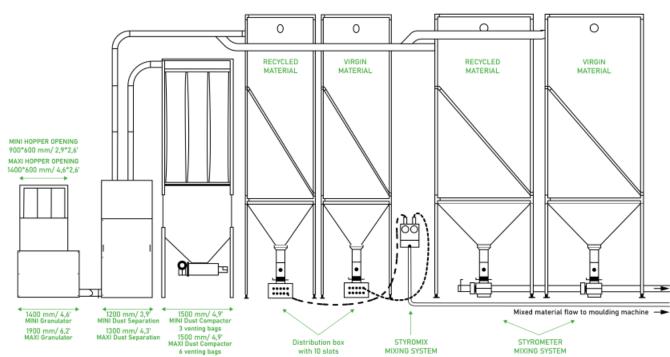
perceptible visual nor physical change in the product quality.

For block moulding 20-50 % can be added.

As the material is broken down to homogeneous, individual beads which mix perfectly with new pre-expanded beads, it consequently minimizes the uneven density distribution in the silos and thus in the block. Blocking of core vents, due to dust and lumps in the material, often causes hot wire cutting problems and thus unwanted surface appearances on the final insulation sheets.

The KBM MAXI recycling plant consists of one combined pre-crushing and granulating unit (3), and a separate dust separating unit (4). Both units are sound insulated. After recycling the material, it's blown into a storage silo (6), a big bag made of antistatic fabric with a steel frame for easy assembling.





MAXI RECYCLING IN-LINE



COMPLETE RECYCLING SYSTEM - 20 M3/HOUR CAPACITY

Brand name:	
KBM MAXI REC	YCLING PLANT

Electrical load EPS version EPP + HD EPS version

Pre-crusher/granulator 26,0 kW 43,0 kW

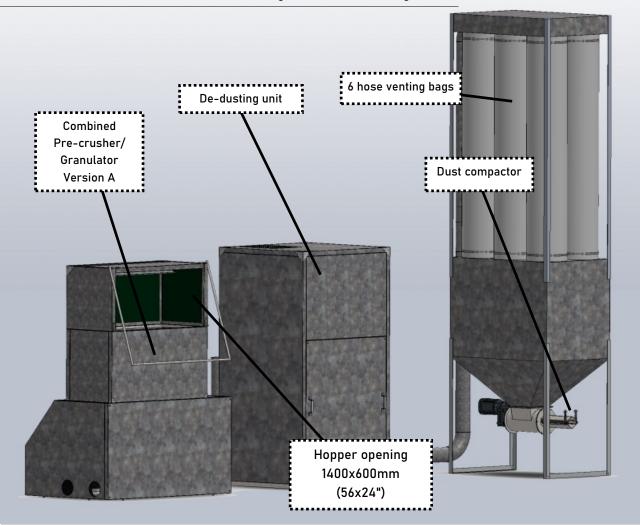
Dust separating unit 7,0 kW 7,0 kW

Dust compactor 2,2 kW 2,2 kW

Styrometer/Styromix See page 36 See page 36

Voltage 3x400 V/50 Hz 3x400 V/50 Hz

or other Voltages or other Voltages



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JUMBO RECYCLING IN-LINE COMPLETE RECYCLING SYSTEM - 40 M3/HOUR CAPACITY



Since the first completely integrated recycling concept for reusing EPS materials was developed in 1978, we have supplied more than 500 complete recycling plants world-wide, solving recycling problems and brought substantial savings to our customers production.

The KBM JUMBO recycling plant for EPS and EPP is suitable for the large block moulding operations. Thanks to the two step/double chamber system and the large screen surface and granulation chamber, the JUMBO plant



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JUMBO RECYCLING IN-LINE





Brand name: KBM JUMBO RECYCLING PLANT	A complete system with indivudual unimoulded EPS/NEOPOR insulation mate beads ready to be mixed with virgin be products.	rials into individual	
Material	Cabinets are made of sound insulated	galvanized steel.	
Density range	Standard EPS version < 35-40 Kg/m³ (< 2.2-2.5 lb/ft³) High density version (HD) < 60-70 kg/m³ ((< 3.8-4.4 lb/ft³)		
Capacity by volume (Granulated EPS)			
6mm screen	18-20 m³ per hour (630-700 ft³ /hour)		
8mm screen	25-30 m³ per hour (875-1050 ft³ /hour)		
10mm screen	35-40 m³ per hour (1225-1400 ft³ /hour		
Screen surface	2 x 1,2 m ² (26 ft ²)		
Space required	Approx. 30-40 m ² (160 ft ²)		
Measurements L x W x H			
Granulator (1)	2.1x1.4x1.9 m(84x56x76")		
Dust separating unit (2)	1.8x1.2x2.7 m(72x48x108")		
Dust compactor (3)	1.2x1.2x5.1 m (48x48x204")		
Storage silo	Any size available	· · · · · · · · · · · · · · · · · · ·	
Pipe connections (Granulated)	160/200 mm (6")	Recycled EPP & EPS.	
Pipe connections (Pre-crushed)	250 mm (6")	Pre-crushed, granulated and de- dusted - ready to be re-used	
Hopper opening(JUMBO PRE-	1800 x 800 mm (72x32")	in your production	
CRUSHER)		÷	
Estimated conserved material	Min. 93-95%		
Extracted dust & particles	Max 5-7%		
Dust content after processing	Max 1%		
			



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JUMBO RECYCLING IN-LINE

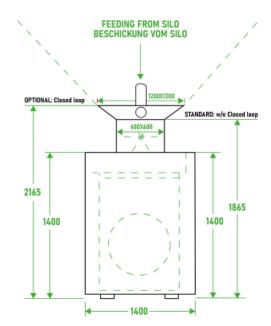


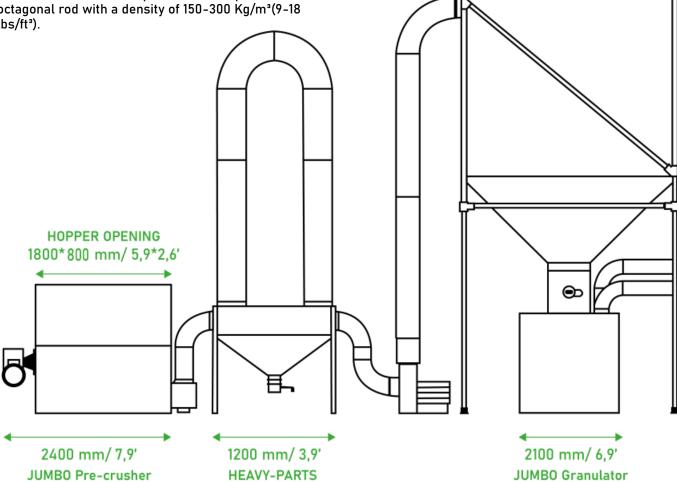


The recycled EPS material can be reused in shape moulding productions in a ratio of at least 10-20 percent without any perceptible visual nor physical change in the product quality. For block moulding 20-50 percent can be added.

As the material is broken down to homogeneous, individual beads which mix perfectly with new preexpanded beads, it consequently minimizes the uneven density distribution in the silos and thus in the block. Blocking of core vents, due to dust and lumps in the material, often causes hot wire cutting problems and thus unwanted surface appearances on the final insulation sheets.

The KBM JUMBO recycling plant consists of one separate pre-crusher, one granulating unit, and a separate dust separating unit. The units are sound insulated. After recycling the material, it's blown into a storage silo, a big bag made of antistatic fabric with a steel frame for easy assembling. The dust is blown into the dust compactor, with air venting filter bags. The dust is collected in the lower part and is compacted into a octagonal rod with a density of 150-300 Kg/m³(9-18 lbs/ft³).





SEPARATOR

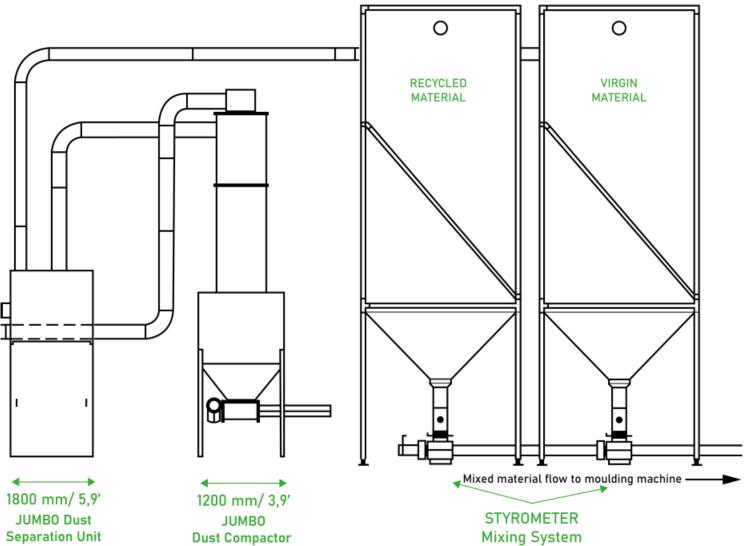
JUMBO RECYCLING IN-LINE



COMPLETE RECYCLING SYSTEM - 40 M3/HOUR CAPACITY

Brand name: KBM JUMBO RECYCLING PLANT				
Electrical load	EPS version	HD EPS version		
Metering unit/granulator	32,0 kW	39,0 kW		
Dust separating unit	14,4 kW	14,4 kW		
Dust compactor	4,0 kW	4,0 kW		
Styrometer/Styromix	See page 36			
Voltage	3x400 V/50 Hz or other Voltages			





STYPARATOR SYSTEM



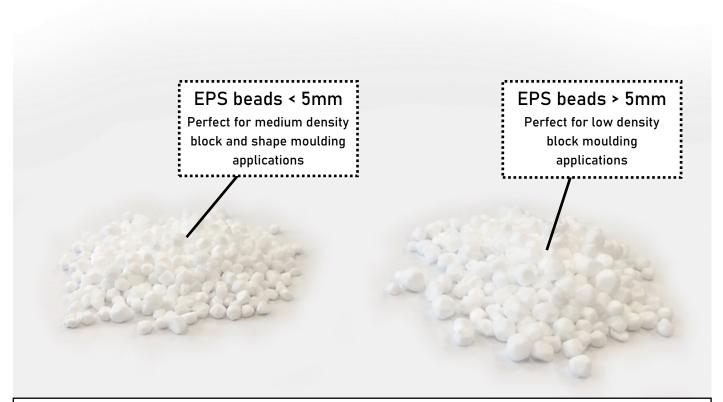
COMPLETE RECYCLING SYSTEM - 5-40 M3/HOUR CAPACITY

THE KBM STYPARATOR separates large EPS beads from smaller beads, before removing subsequently the fine dust, enabling you to extract two midrange bead densities from your granulated EPS.

The STYPARATOR runs a double screening process, separating the beads by size passing them through different screen sizes. The screening into two mean bead sizes provides typically two mean bead densities, which is highly beneficial for EPS moulders who work with high volumes in the density range of 10-20 kg/m³. This statement may vary depending on the material introduced.

The STYPARATOR can be placed directly in line with a pre-crusher/granulator or take granulated beads from a storage silo with a cell wheel feeding.

It is beneficial to use a granulator screen with large holes for block material and a screen with smaller holes for shape moulding material. Separating beads by size allows you, more efficiently, to recycle your EPS scrap and thus to lower your production costs. Due to a large variety in material composition, a 100% separation cannot be guaranteed.



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STYPARATOR SYSTEM



COMPLETE RECYCLING SYSTEM - 5-40 M3/HOUR CAPACITY

The STYPARATOR system can be build into existing KBM recycling systems or delivered as a complete new system. It is ideal for medium to large EPS moulding plants, offering an improved density control in productions with mixed virgin and recycled material.

Brand name: KBM STYPARATOR	STYPARATOR MICRO	STYPARATOR MINI	STYPARATOR MAXI	STYPARATOR JUMBO
Capacity	5 m³/hour	10 m³/hour	20 m³/hour	40 m³/hour
	(175 lbs/ft³)	(350 lbs/ft³)	(700 lbs/ft³)	(1400 lbs/ft³)
MINI/MAXI GRANULATO VERSION A	OR \	STYPAR screenir separates the 5mm (other s are available) the dust &	ng unit beads below creen sizes and extracts	

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PRE-CRUSHERS

HEAVY DUTY PRE-CRUSHERS WITH HIGH CAPACITY



KBM offers 3 separate pre-crushers with or without an optional heavy parts separator. All pre-crushers are designed with slowly rotating breaker arms in order to keep the created dust at a minimum. The purpose of our pre-crushers is to crush EPS or EPP scrap down to a size of approx. 25-100 mm (1-4 inches), preparing the scrap for being conveyed by a blower to your KBM recycling plant. The pre-crushing in larger pieces reduces the creation of dust.

STYROCRUSHER XL

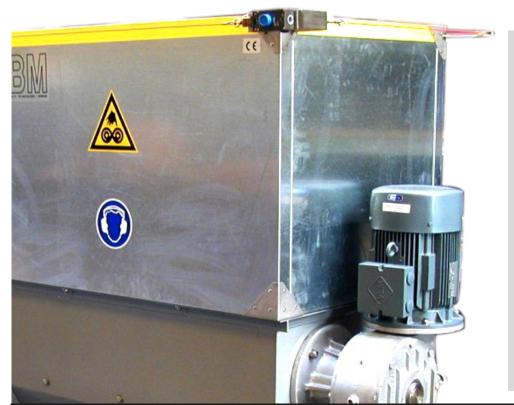
The StyroCrusher MAXI XL is a low-cost large pre-crusher. It's ideal as a satellite-crusher placable in different locations at your plant, or as a pre-crusher for larger EPS/EPP parts to be recycled on smaller recycling systems.

MAXI PRE-CRUSHER

The MAXI pre-crusher will grind all kinds of shape- and block materials and is sufficient for most shape- and block moulders.

JUMBO PRE-CRUSHER

The JUMBO is designed for pre crushing very large quantities of scrap and/or very large shape or block parts, and offers a very high capacity.



The MAXI and JUMBO pre-crushers are designed to separate and collect metal parts, stones and other very heavy parts which may find their way to the hopper. These heavy parts are collected in the bottom of the machine and can be removed through an easily accessible opening.

In order to collect parts of wood, plastic and other parts as well, before they reach the blower, our heavy particle separator, which is placed between the pre-crusher and the blower for pre-crushed material is recommendable.

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PRE-CRUSHERS

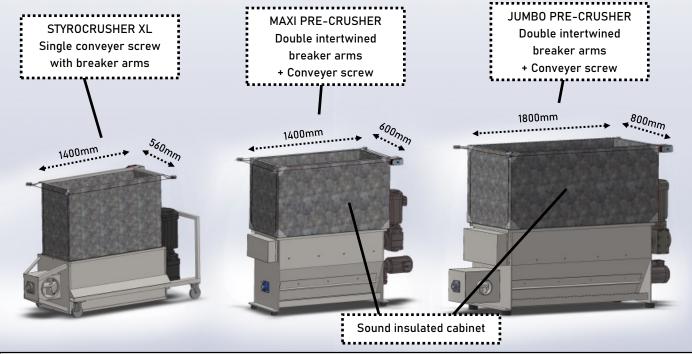




Brand name	STYROCRUSHER XL	MAXI PRE-CRUSHER	JUMBO PRE-CRUSHER
Measurements			
Hopper opening	1400 x 560 mm (4'8"x1'10")	1400 x 600 mm (4'8"x2")	1800 x 800 mm (5'11"x2"8")
Length ¹	2400mm (7'10")	1900mm (6'3")	2400mm (7'11")
Width ¹	900mm (3'0")	800mm (2'8")	1100mm (3'7")
Height ²	1600mm (5'3")	1800mm (5'11")	1800mm (5'11")
Capacity	8 - 10 m³/hour	25 - 30 m³/hour	60 - 100 m³/hour
	280 - 350 ft³/hour	880 - 1060 ft³/hour	2100 - 3500 ft³/hour
Max density std. version	40 - 60 g/l	35 - 40 g/l	35 - 40 g/l
Max density HD version ³	N/A	50 - 100 g/l	50 - 80 g/l
Electrical load			
Pre-crusher	5,5 kW	6,2 ² kW	11,2² kW
Blower	2,2 kW	2,2 kW	5,5 kW

¹ Measurements without blower.

³ Maximum density range depending on scrap characteristics



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² Incl. built-in conveyor screw under pre-crusher

CONVEYORS

INCREASE YOUR PRODUCTIVITY



KBM offers custom designed conveyors for your EPS recycling production. Optimize your processes and free labour for other more important tasks. Our conveyors can be customized to meet your exact needs.

Contact us for more information and pricing.

Conveyers are optimal in combination with all our pre-crusher models:

STYROCRUSHER XL

The StyroCrusher MAXI XL is a low-cost large pre-crusher. It's ideal as a satellite-crusher placable in different locations at your plant, or as a pre-crusher for larger EPS/EPP parts to be recycled on smaller recycling systems.

MAXI PRE-CRUSHER

The MAXI pre-crusher will grind all kinds of shape- and block materials and is sufficient for most shape- and block moulders.

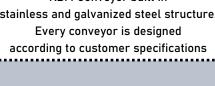
JUMBO PRE-CRUSHER

The JUMBO is designed for pre crushing very large quantities of scrap and/or very large shape or block parts, and offers a very high capacity.

KBM Conveyor built in stainless and galvanized steel structure. Every conveyor is designed



supplied in custom made size and configuration depending on your type of waste



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CONVEYORS







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HEAVY-PARTS-SEPARATOR







Collected concrete waste after pre
-crushing in a KBM pre-crusher.
The material is collected in the
bottom of the pre-crusher

<u>KBM HEAVY-PARTS-SEPARATOR</u> is a necessity for any moulder who is obliged to collect EPS waste from construction sites.

The used EPS is often contaminated with dirt, plaster, concrete, nails etc. which makes it impossible to re-use for producing new blocks for insulation sheets.



With the HEAVY-PARTS-SEPARATOR in connection with a KBM recycling system, the obtained purity of the EPS waste is nearly 99%, and it can as such be reused similarly to cut-offs from block cutting lines.

The HEAVY-PARTS-SEPARATOR is a low cost add-on to an existing KBM system.



Collected EPS waste that was screened out in the HEAVY-PARTS SEPARATOR. The waste is easily collected in the bottom of the filter

After pre-crushing, Heavy-partsseparator, granulation and de-dusting. Ready to mix with virgin EPS

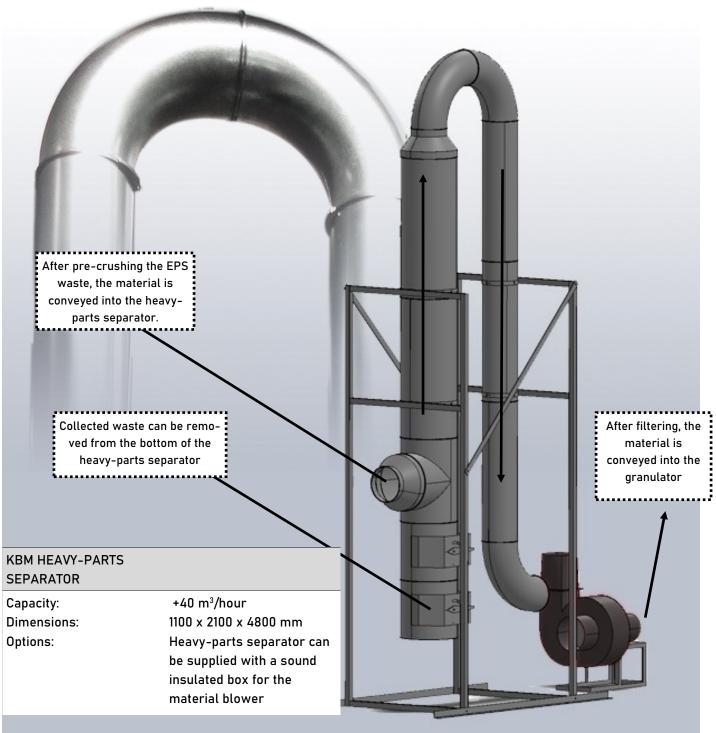




HEAVY-PARTS-SEPARATOR



RE-USE EPS WASTE FROM CONSTRUCTION SITES



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GRANULATORS





Brand name: KBM GRANULATOR	Capacity
MAXI HOPPER VERSION D This is a stand-alone granulator requiring separat pre-crushing.	Up to 20 m³/hour granulate Build with a cell wheel on top of the granulator, f ment below a feeding silo.
MAXI HOPPER VERSION E This is a stand-alone granulator requiring separat pre-crushing.	Up to 20 m³/hour Build with a cell wheel beside the granulator. This version offers the possibility of a bigger feeding silo capacity compa- red to version D.
	Cell wheel for rrect metering of preshed material from silo
	JUMBO GRANULATOR VERSION D Funnel for placing feeding silo on top
Brand name: KBM GRANULATOR	apacity
VERSION D This is a stand-alone granulator requiring sepa-	to to 20 m³/hour (MAXI) to to 40 m³/hour (JUMBO) tranulate uild with a cell wheel on p of the granulator, for pla- are also available as MIN versions with capacity up 10 m³/hour!

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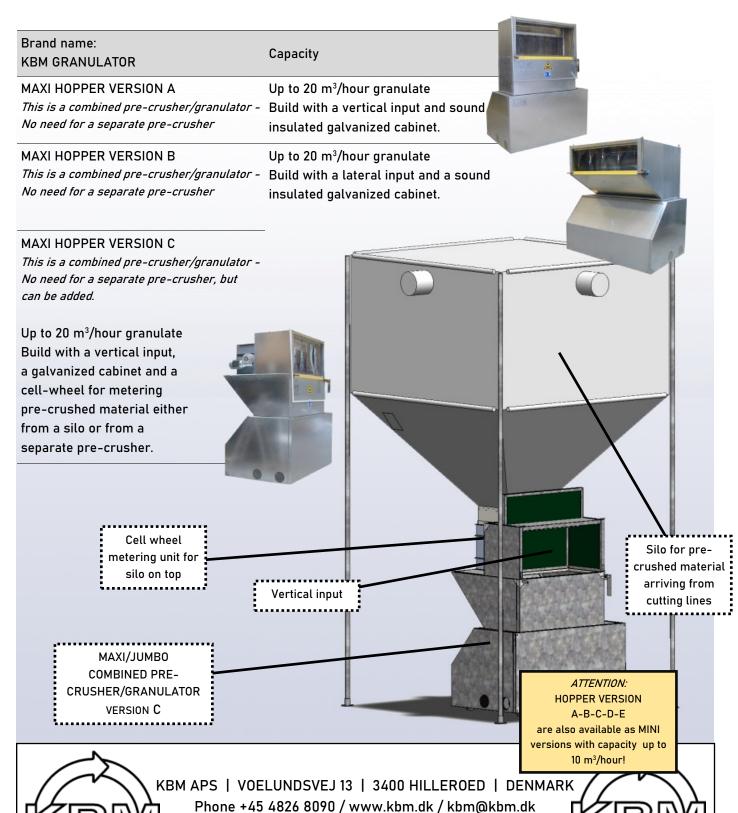


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GRANULATORS

CONVERT PRE-CRUSHED EPS/EPP INTO SINGLE BEADS





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DUST SEPARATION UNITS



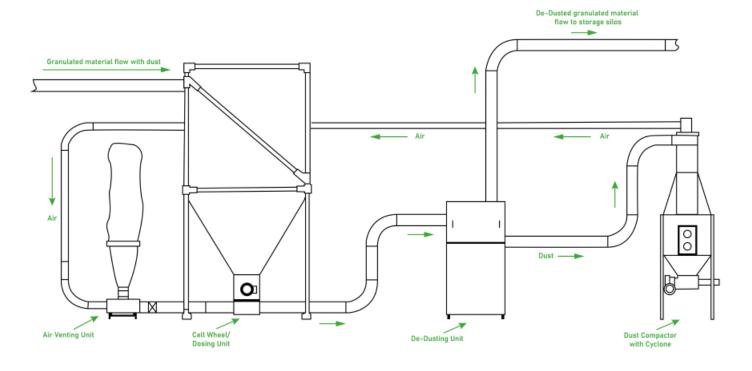
KBM DE-DUSTERS INCREASE QUALITY AND PRODUCTIVITY

Traditionally, de-dusting has been used to prepare foam materials from granulation/grinding - to ensure that it was possible to mix with new beads before the moulding process.

KBM has supplied these solutions since 1978 and has developed different equipment to refine this process in order to obtain the optimal de-dusting quality.

Today, it is often necessary to de-dust in other steps of the moulding process. The raw material (virgin beads) is often full of small particles and fine dust, and it is very important that these particles are removed before the moulding process.

PRINCIPLE FOR MINI/MAXI/JUMBO SYSTEM



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DUST SEPARATION UNITS

KBM

KBM DE-DUSTERS INCREASE QUALITY AND PRODUCTIVITY

De-dusting is essential to:

- Increase the quality of the moulded pieces (shape moulding or block moulding).
- Avoid production stops caused by dust sticking to the moulds and resulting in heavy maintenance
- Increase the rate of recycled material that can be added and re-used.

For many years KBM has been manufacturing the MINI, MAXI and JUMBO recycling systems with vacuum de-dusters. These products have capacities of 10 m³/h, 18-20m³/h and 35-40 m³/h. Lately, a larger version, JUMBO+, was developed to give 50-60 m³/h. This unit has now been developed further into the GIGANT 120 and GIGANT 240 with capacities of 100-120 m³/h and 200-240 m³/h for the large block moulds.

As the capacity can variate from 10m³/h up to 240m³/h, KBM is able to supply de-dusting for all purposes. Recycled or virgin - or after the mixing process.

To keep the quality and efficiency high and maintenance of the de-dusting systems at a minimum, KBM has developed a cyclone venting system for the extracted dust. The cyclone removes the dust from the de-dusting air.

The collected dust is compacted to avoid large volumes of waste. The air is returned in a "closed loop" and re-used in the system instead of being vented through filter bags which requires a lot of maintenance.

Brand name	M³/Hour	cf³/Hour
MINI	8-10	280-350
MAXI	18-20	630-700
MAXI+	25-30	875-1050
JUMB0	35-40	1225-1400
JUMBO+	50-60	1750-2100
GIGANT 120	100-120	3500-4200
GIGANT 240	200-240	7000-8400





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KBM METERING SYSTEMS



STYROMIX 3 FOR SHAPE MOULDING PLANTS

Brand name: KBM STYROMIX 3

The KBM STYROMIX System is designed to obtain a more accurate metering and mixing of recycled EPS or EPP materials with virgin EPS or EPP beads. It can be mounted directly before each individual moulding machine, (either close to each machine - or near the silos). The STYROMIX System starts mixing whenever there is vacuum from a moulding machine. The STYROMIX System is suitable for EPS or EPP granulated and dust extracted material and since the mixing takes place directly before the material reaches the hopper on the moulding machines, the de-mixing of the mixture is minimized or even eliminated compared to mixing after the pre-expander.

Data: Dimensions Mixing ratios

Throughput per unit 100 L/Min Length 435mm (17") 0 - 100% in 1%

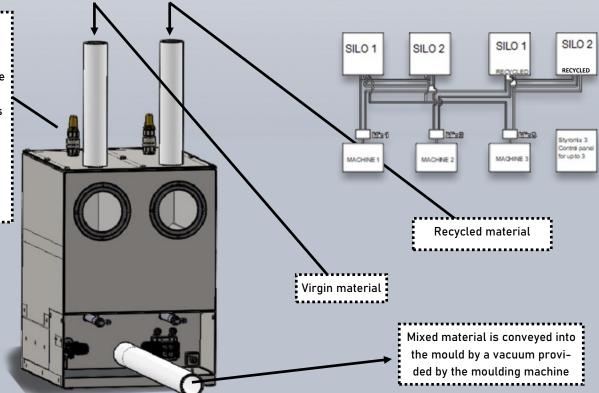
Compressed air 5 bar Width 390mm (16") Mixing ratio is

Hose connection ID 400mm (1,5") or 500mm (2") Height 680mm (27")

O - 100% in 1% steps.

Mixing ratio is set via the control panel. The control panel operates up to 3 units.

STYROMIX 3
is placed by
the storage
silos or by the
moulding
machine. It is
activated by
the vacuum
from the
moulding
machine



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KBM METERING SYSTEMS

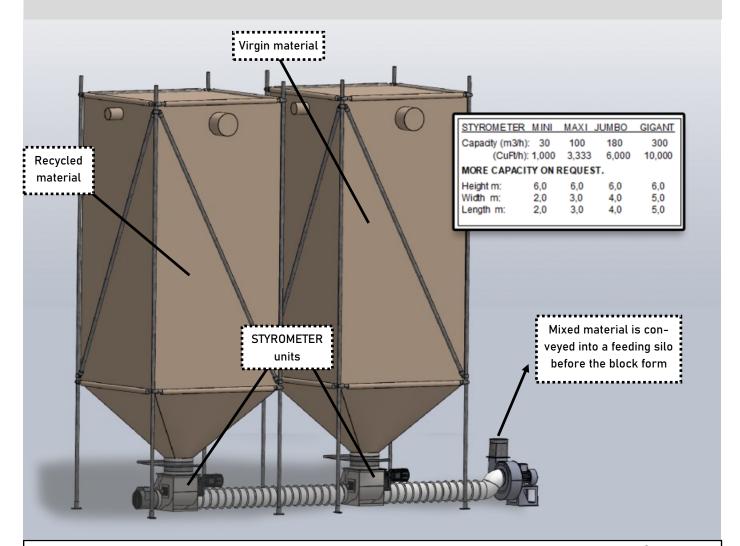


STYROMETER FOR BLOCK MOULDING PLANTS

Brand name:

KBM STYROMETER

The KBM STYROMETER System is designed to meter and mix the recycled and new material together right before the block mould in order to minimize de-mixing. Each silo contains one material e.g. recycled and virgin material. The speed of the cell wheels (airlocks) is steplessly adjustable from 1% to 100% with one mutual potentiometer to set the required mixing ratio from 1—99%. It is also possible to program a number of pre-set ratios (5%, 10%, 15%, etc.) to simplify the settings. The cell wheel (airlock) principle ensures an accurate mixing/metering independently of the pressure in the silos which are refilled by a blower. The system can also be delivered for existing silos.



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KBM METERING SYSTEMS



STYROFEEDER FOR SHAPE & BLOCK MOULDING PLANTS

Brand name: KBM STYR0FEEDER	The metering-mixing units have a stepless variable adjustment of the volume, enabling the recycled material to be mixed with the virgin material, arriving from the storage silos in a pre-set ratio.	Capacity/ Duct size:
STYROFEEDER 160 EPS	Metering-mixing unit for EPS block material for mixing the recycled material with the virgin material from the storage silos before the block mould.	10-12 m3/time (350-420 ft3/h)
STYROFEEDER 160 EPP	Metering-mixing unit for EPP material for mixing the recycled material with the virgin material from the storage silos before the prepressurizing tank.	Ø160mm (6")
STYROFEEDER 250 EPS	Metering-mixing unit for EPS block material for mixing the recycled material with the virgin material from the storage silos before the block mould.	30-40 m3/time (1050-1400 ft3/ h)
STYROFEEDER 250 EPP	Metering-mixing unit for EPP material for mixing the recycled material with the virgin material from the storage silos before the prepressurizing tank.	Ø250mm (10")
Recycled EPP beads	Recycled EPP beads	
Bigbag with virgin EPP beads	accu	Block mould ATTENTION: nand for obtaining a very urate mixing requires the systems!

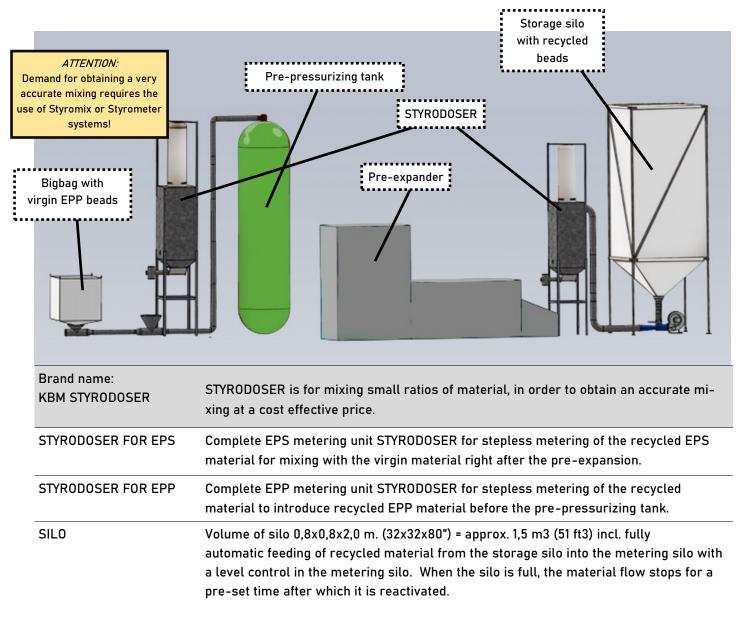
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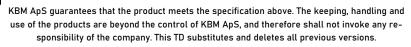
KBM METERING SYSTEMS



STYRODOSER FOR SHAPE & BLOCK MOULDING PLANTS



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DUST COMPACTORS





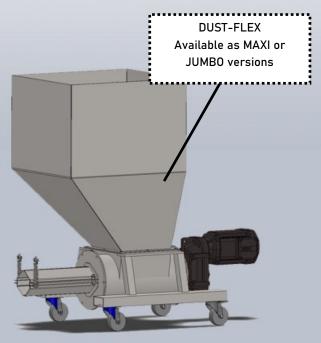
The KBM dust compactors offer many production advantages in terms of easy handling of dust from EPS/EPP/EPE, Arcel, or Neopor. The KBM dust compactors reduce the volume of dust 20-30 times.

The KBM dust compactor reduces the costs of the dust disposal. The KBM dust compactor improves the environment of the dust handling location in the production. Opposite to using plastic bags for collection, no dust is flying around since there are no change of bags.

The basic dust compactor is available in four different sizes: The MINI, the MAXI, the JUMBO and the GIGANT.

The basic KBM dust compactor can be equipped for multiple applications:

- One use would be as part of a recycling system where the machine is used as a combined air venting unit and dust compactor. It will be equipped with a small storage silo with venting bags or with a cyclone for the KBM closed air circuit system, which reduces maintenance of venting bags to almost zero.
- Another would be as part of a recycling system where it's placed under a larger dust collection silo from a recycling system. It can also be placed underneath a large silo where milling dust is collected.



Applied as a separate mobile compactor unit (Dust-Flex)

The dust is collected in the part just above the compactor and is compacted into a rod with a density of 150-300 Kg/m³ (9-18 lbs/ft³).

The KBM dust compactor can be used in a large number of ways in combination with any production line where dust occurs.

The dust compactors also form parts of KBM's large program of recycling plants and equipment for the EPS/EPP/EPE/ARCEL/NEOPOR foam industries.

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DUST COMPACTORS

EASY HANDLING OF COLLECTED DUST FROM RECYCLING

Capacity/hour EPS: (measured with EPS dust) Cyclone with blower for conveying dust to external dust compactor

Capacity/hour EPS: (Performed with EPS dust)

MINI dust compactor: $0.75-1 \text{ m}^{\circ} (25-35 \text{ ft}^{\circ})$

MAXI dust compactor: 1-1.5 m³ (35-50 ft³)

JUMBO dust compactor: 1.5-3 m³ (50-100 ft³)

GIGANT dust compactor: 9-14 m³ (315-490 ft³)

(Performed with EPS dust from a KBM recycling system.)

Capacity measured in weight is depending on the

volume capacity given above.

Dimension of the compacted material:

MINI dust compactor: 100x100mm (4"x4")
MAXI dust compactor: 100x100mm (4"x4")
JUMBO dust compactor: 150x150mm (6"x6")
GIGANT dust compactor: 270x270mm (11"x11")

Space required ca. 2-5 m² (20-50 Ft³)

Measurements: L x W x H

MINI with 3 venting bags: 1.5x0.5x5.1 m (59x20x201")

MAXI with 6 venting bags: 1.5x1.0x5.1 m (59x40x201")

JUMBO with 9 venting bags: 1.5x1.5x5.2m (59x59x205")

MAXI with cyclone venting: 1.2x1.2x4.8 (48x48x189")

JUMBO with cyclone venting: 1.2x1.2x5.4 (48x48x213")

DUST-FLEX MAXI: 1.3x0.6x1.3 (51x24x51")
DUST-FLEX JUMBO: 1.9x0.6x1.3 (75x24x51")

Pipe connections:

MINI or MAXI dust compactors 160 mm (6")

JUMBO dust compactors 200 mm (8")

Electrical load: EPS EPP

MINI dust compactor: 1.5 Kw 1.5 Kw

MAXI dust compactor: 2.2 Kw 2.2 Kw

JUMBO dust compactor: 4.0 Kw 4.0 Kw

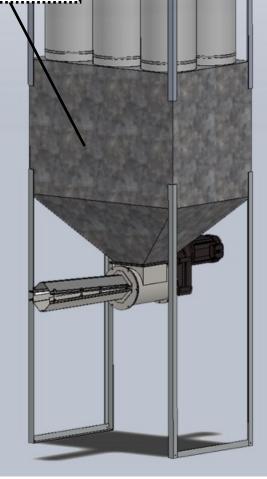
GIGANT dust compactor: 7.5 Kw 7.5 Kw

Voltage:

3x400V/50Hz, 3x480V/60Hz or other voltages.

KBM DUST COMPACTOR
with venting hoses
available in
4 capacity versions







STORAGE SILOS KBM STORAGE SILOS ARE DESIGNED FOR ANY NEED

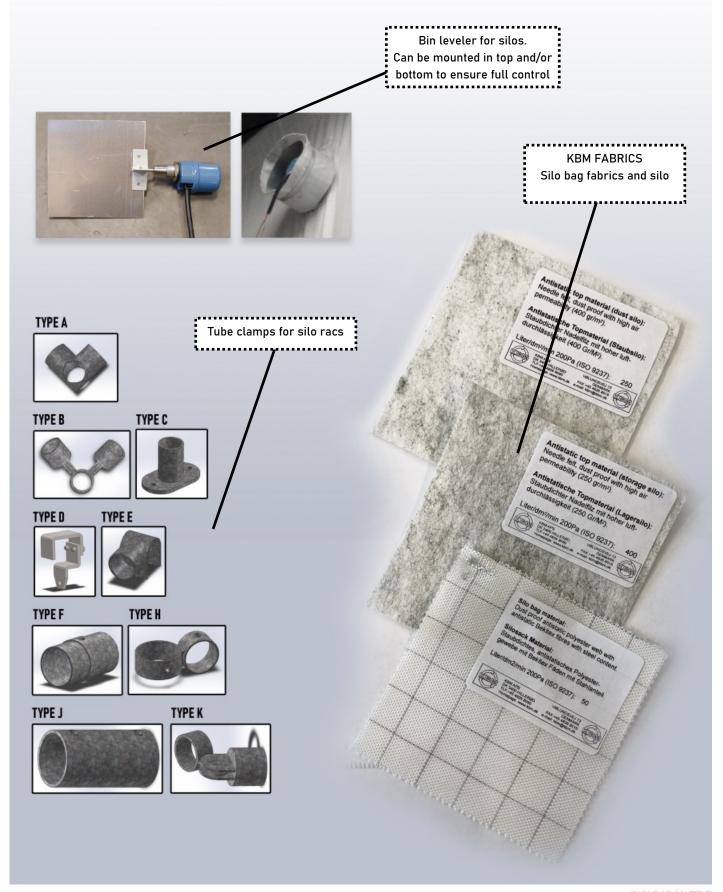
Brand name: KBM SILO	KBM builds high quality storage silos for EPS, EPP, Arcel, Neopor etc. We supply custom sized silos in different fabrics and solid approved galvanized steel rack guaranteeing a long life time.	
SILO BAG MATERIAL	Dust proof antistastic polyester web with antistatic fibers with steel content. Liter/dm x min 200Pa (IS09237):50	
FILTER MATERIAL	Antistatic needle felt, dust proof with high air permeability. Liter/dm x min 200Pa (ISO 9237):250 or 400	
RACK	1½" galvanized steel pipes.	
1/		



STORAGE SILOS



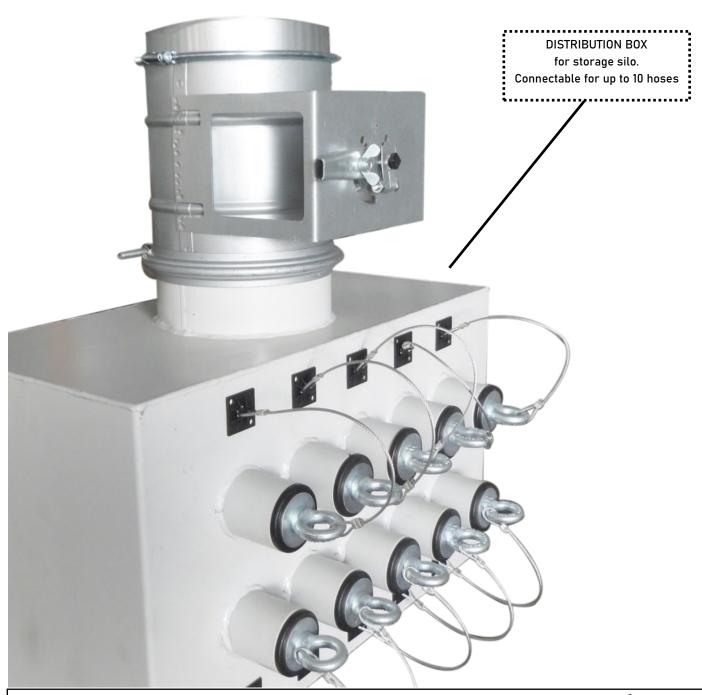
KBM STORAGE SILOS ARE DESIGNED FOR ANY NEED



SILO EQUIPMENT







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SILO EQUIPMENT

DAMPERS/SHUTTERS AND DISTRIBUTION BOXES



KBM Silo Components

MANUAL shutter for storage silos

Item No. 23600.xx

Built in galvanized steel. Available in many different sizes with various dimensions.

Complete set consists of:

- 1 x Reduction
- 1 x Manual damper
- 1 x T-pipe with 3 clamps
- 2 x Fittings for floor fixing

PNEUMATIC shutter for storage silos

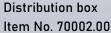
Item No. 23600.10

Built in galvanized steel. Available in many different sizes with various dimensions.

Complete set consists of:

- 1x Reduction
- 1 x Sliding damper (pneumatic)
- 1 x Manual damper for regulating material flow
- 1 x T-pipe with 3 clamps
- 2 x Fittings for floor fixing





Connectable for up to 10 hoses simultaneously.

Constructed in coated steel and mountable below any storage silo.

Complete set consists of:

1 x Pipe 160 mm \emptyset with manual damper for adjusting the material flow

1 x Distribution box with 10 outlet connections 10 x Plugs

Outlet stubs: $50 \text{mm } \emptyset \text{ (OD)}/46 \text{mm } \emptyset \text{(ID)}.$



KBM MOBILE SILOS

KBM

DESIGNED FOR FLEXIBLE HANDLING, TRANSPORT AND COMPATIBLE WITH KBM RECYCLING SYSTEMS

Brand name:

KBM MOBILE SILO

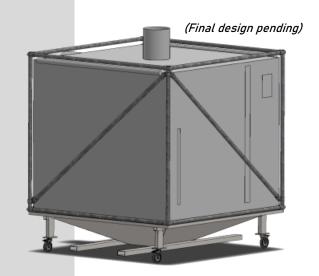
Designed to optimize the use of the cargo space on a truck.

Outer dimensions : 2.4 x 2.4 x 2.4 m Volume : Approx. 9 m³

Made of needle felt air venting on sides and top. Bottom cone is build with coated steel sheets incl. 2" rack made of galvanized pipes with tube-clamps. Build with large lockable wheels for an easy and safe mobility.

The main inlet pipe is used for both filling and emptying the silo. Equipped with fork pipes for easy loading/unloading on truck.

A full truck load can hold up to 5 silos.



KBM FOLDABLE SILO

Height in use : 2.6 m (8.5')
During filling : 3.9 m (12.8')

Outer dimensions : 1.6 x 2.1 m (5.3' x 6.9')

(unfolded in use)

Outer dimensions : 0.4 x 3.7 m (1.3' x 12.1')

(folded for storage)

Volume : 4 m³ (140 ft³)

Made of antistatic, dust proof polyester fabric and needle felt air venting top. Incl. 1" rack made of galvanized pipes with tube-clamps on lockable wheels.

Special measurements available.





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STYROFILLER

EASY AND FAST FILLING OF BAGS AND FURNITURE

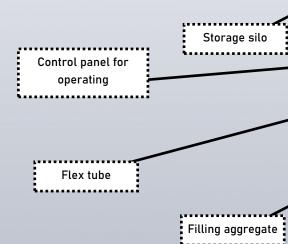




The KBM Styrofiller for furniture filling can fill bean bags with EPS beads (Virgin or regrind) as well as similar foam materials. The KBM Styrofiller is designed to effectively fill bags with EPS material.

Easy and fast adjustment of the volume for each batch. Can also be used to fill a fixed volume of beads into plastic bags.

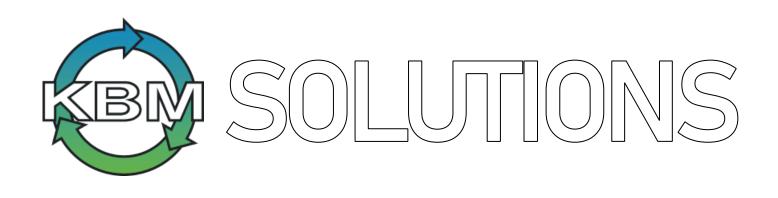
Contact us for more information.



Adjust the
volume by
pulling the filling
aggreate up/
down

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RECYCLING SYSTEMS SILOS COMPACTORS

MIXING SYSTEMS



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KBM ApS guarantees that the product meets the specification above. The keeping, handling and use of the products are beyond the control of KBM ApS, and therefore shall not invoke any responsibility of the company. This TD substitutes and deletes all previous versions.

