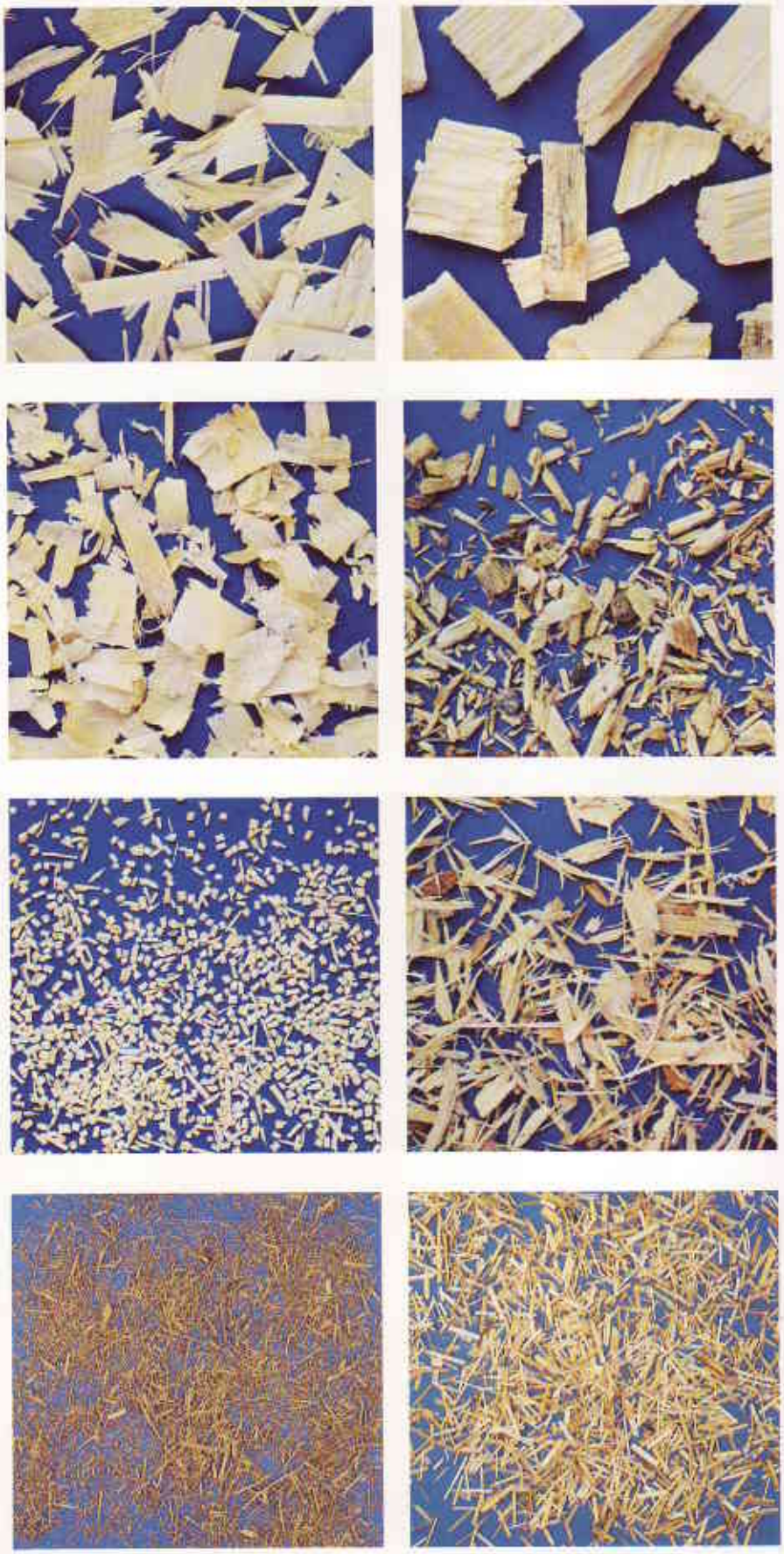
Pallmann PSKM Double Stream Mill.

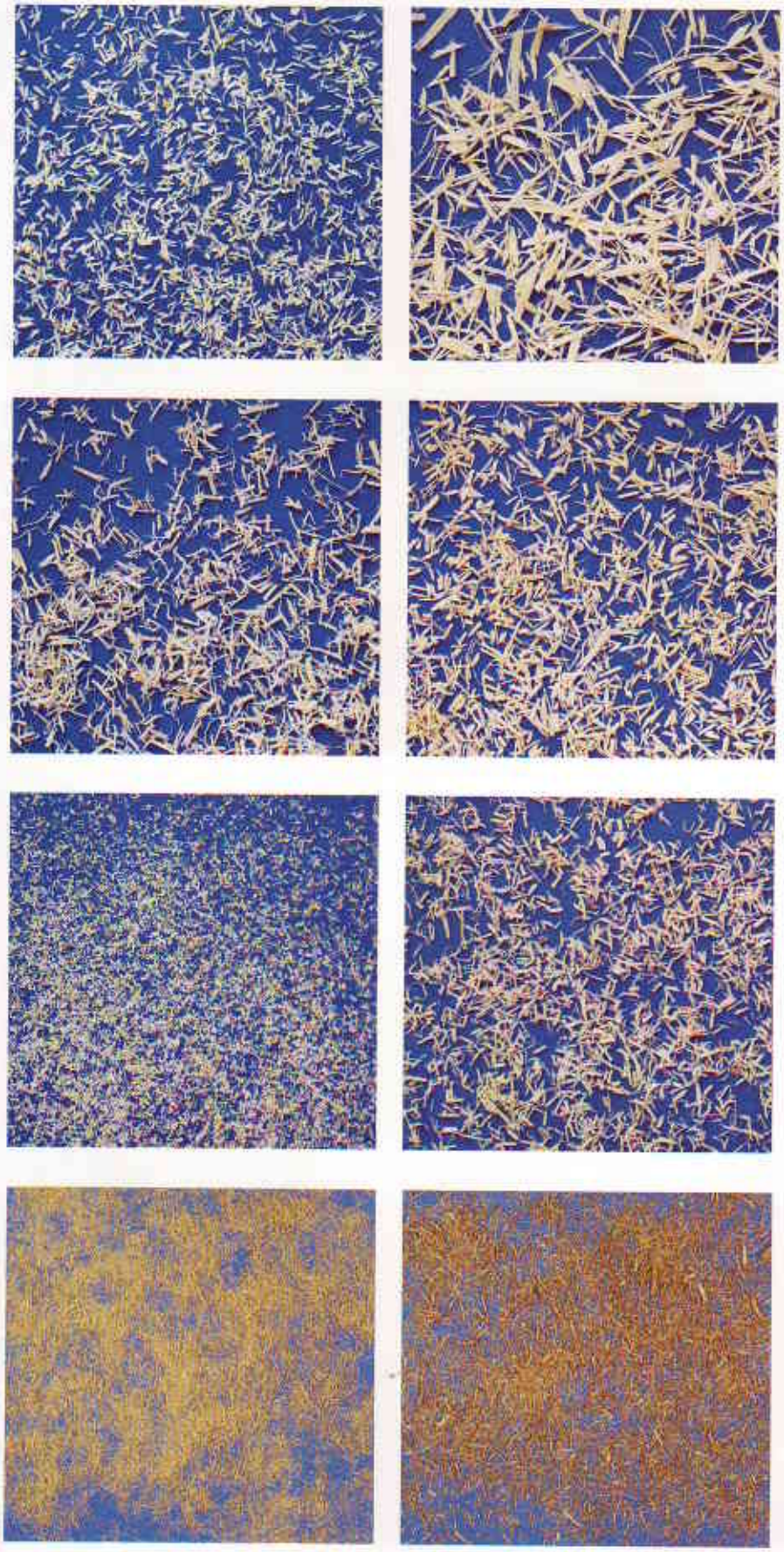
PALLMANN

TOP PERFORMANCE IN SIZE REDUCTION

Homogeneous, finest particles from different Feed Materials.

Surface layer flakes are the basis for finest quality particle boards and better sales opportunities. The prerequisite for the production of high quality board is a uniform, thin flake material with a low percentage of dust and coarse particles.
Because of their ideal, slender shape, PSKM fine flakes are preferably used for smooth surfaces of three- or multiple layer and homogeneous particle boards.
The outstanding glueing and spreading qualities give the particle board its high bending strength and guarantee a homogeneous fine surface which is especially well suited for further overlays. The PSKM flake is economically produced from planer shavings, milling flakes and saw dust as well as from precrushed particle board off-cuts and coarse particles from the air sifter. Of course, flakes from the knife ring or from drum flakers and chips can be used just as well.





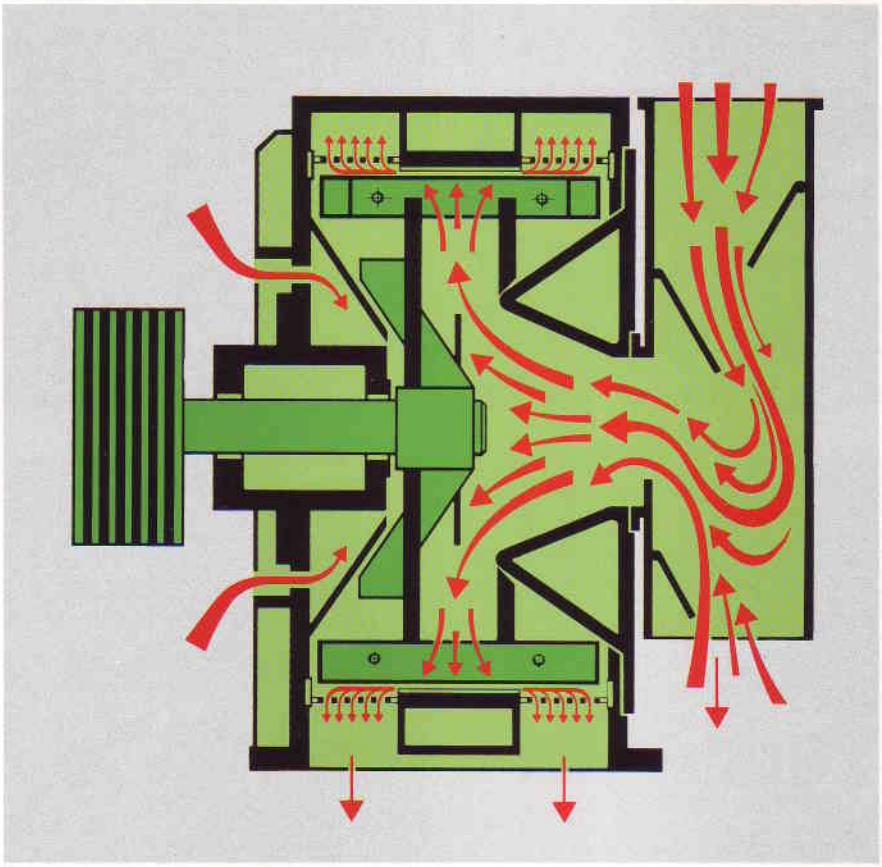
From all well-known annual plants such as bagasse, miscantus, cotton stalks, hemp stalks, corn and rice straw, etc. the double stream mill PSKM produces a fibrous raw material to be used for the production of boards. For many years several hundred Pallmann double stream mills have been in continuous three-shift opertion in particle board plants all over the world. The experience gained in practical operation has lead to continuous improvements of the design of this well proven machine. Today the double stream mill PSKM is the standard machine for economical preparation of surface material in board plants all over the world.

Picture: Page 2 Feed material
Picture: Page 3 Finished product

Pallmann PSKM, a superior System. Grinding and Sifting in a single Operation.

Material flow in the Pallmann double stream mill PSKM:

With the Pallmann double stream mill the feed material is reduced through a new, pioneering principle. The fan effect of a multiple wing impeller pulls the feed material centrally into the grinding chamber passing through a special feed chute designed as a gravity separator for heavy material. An especially designed material guiding cone distributes the material evenly on the periphery and the entire width of the grinding track. The impeller, rotating at high speed, produces high air turbulence between the impeller wear plates and the serrated profile of the grinding track. The double stream guides the feed material through this one of intensive turbulence in axial direction or in the cross stream depending on the profile used on the grinding track. The material is reduced in the high velocity air stream by repeated impact onto the impeller wear plates and the grinding track profile. Through the air guide and within the flow channels of the grinding track a cross-stream sifting is achieved. Discharging of finished product takes place only after the dragging force of the air exceeds the kinetic rebound energy applied to the particles. In the area of this actual flow the percentage of mechanical friction is extremely small resulting in an extended service life of impeller wear plates and refining elements.



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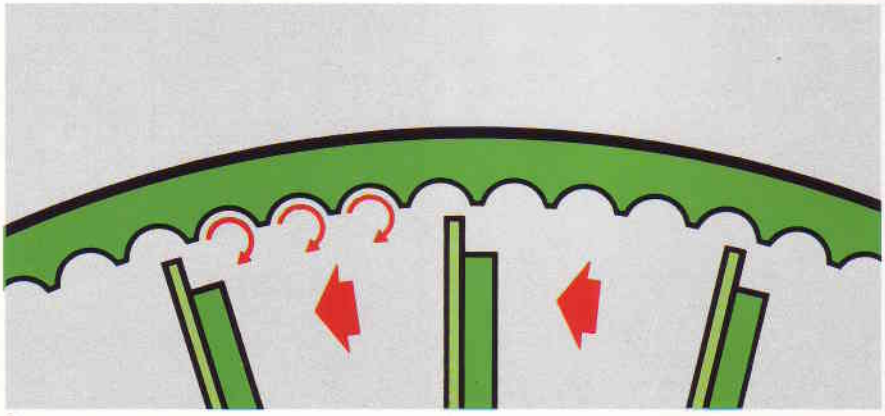

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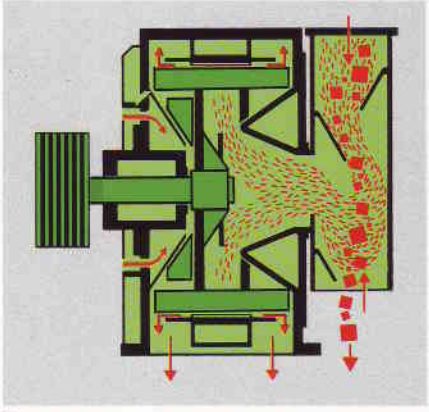

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Picture 1: Material flow in the double stream mill PSKM
Picture 2: Size reduction on the grinding track by high turbulent air in a cross stream.
Picture 3: Gravity separator feed chute for separation of tramp heavy material

Standard grinding track equipped with V-grooved ledges and screen rings.

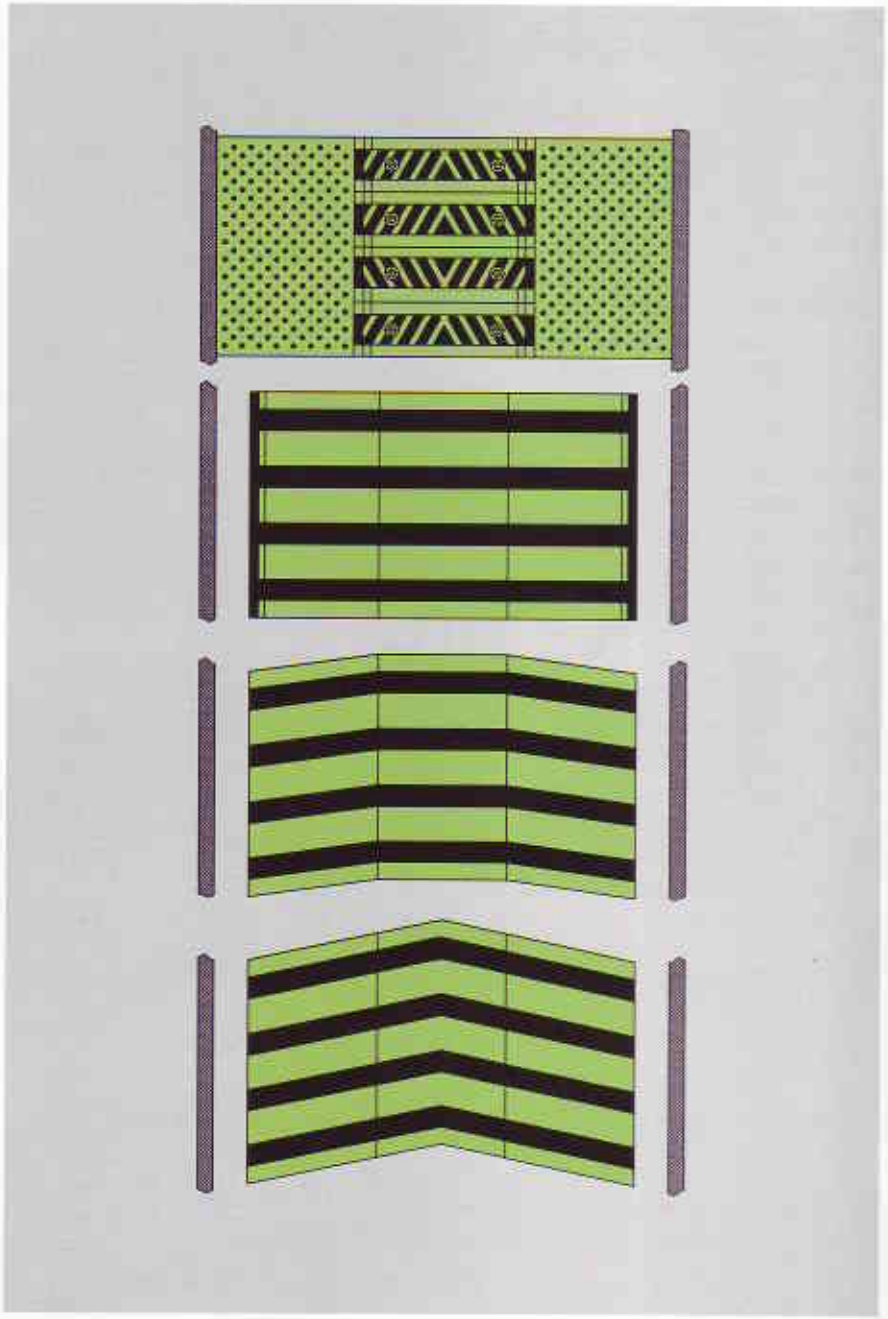
For the preparation of screen overs or rejects from the air grader into high quality surface material the PSKM double stream mill typically will be equipped with the above grinding track configuration.

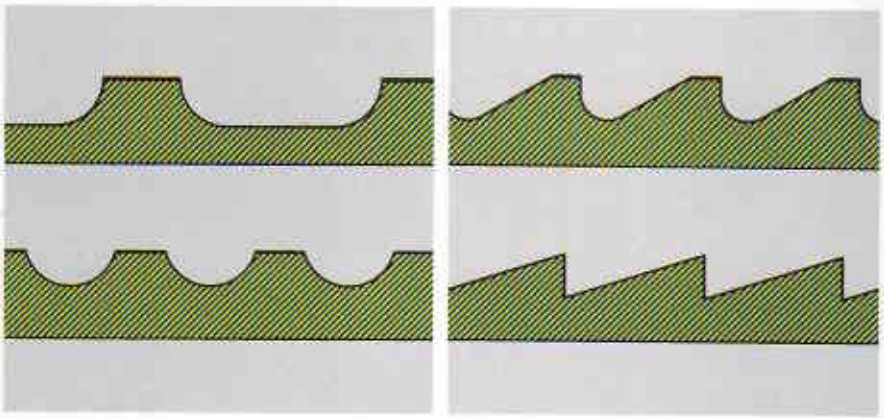
Wide grinding tracks without screen rings.

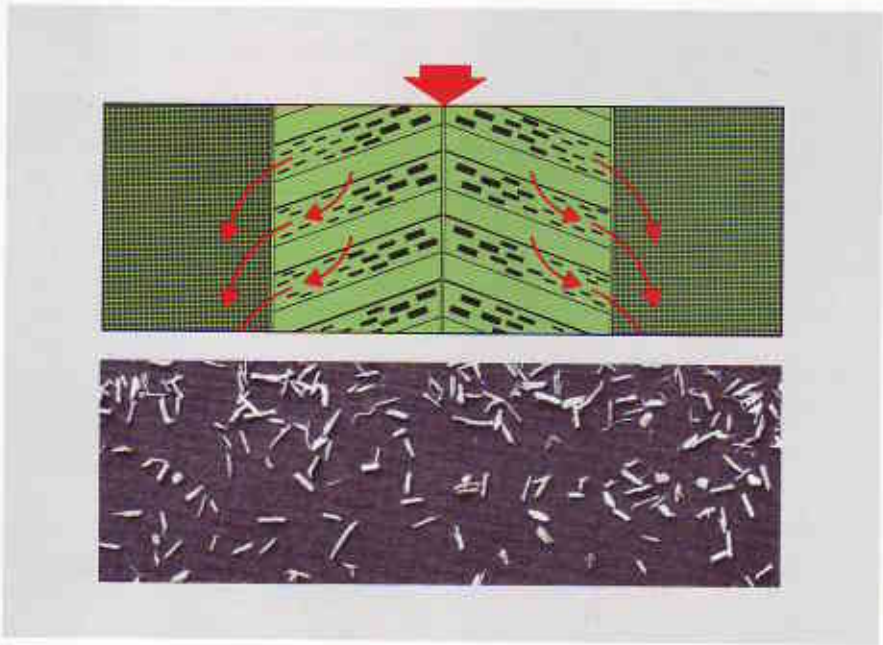
Special wide grinding tracks are used for coarse and fine preparation of moist and dry materials. A variety of different grinding track profiles is available which can be bolted down onto the grinding track under different angles depending on the requested finished product characteristics. The wide grinding track is divided in three equal sections where the individual refining elements are bolted onto allowing easy adjustment of the total grinding track profile to changing feed material conditions or finished product requirements.

Different grinding profiles for each requirement.

Size reduction is done exclusively on the central grinding track which is insensitive to wear. The screen rings at both sides of the grinding track give large size flakes their final shape, and work as a subsequent sifter. The finished product is of uniform size and can be used directly in production without additional sifting.

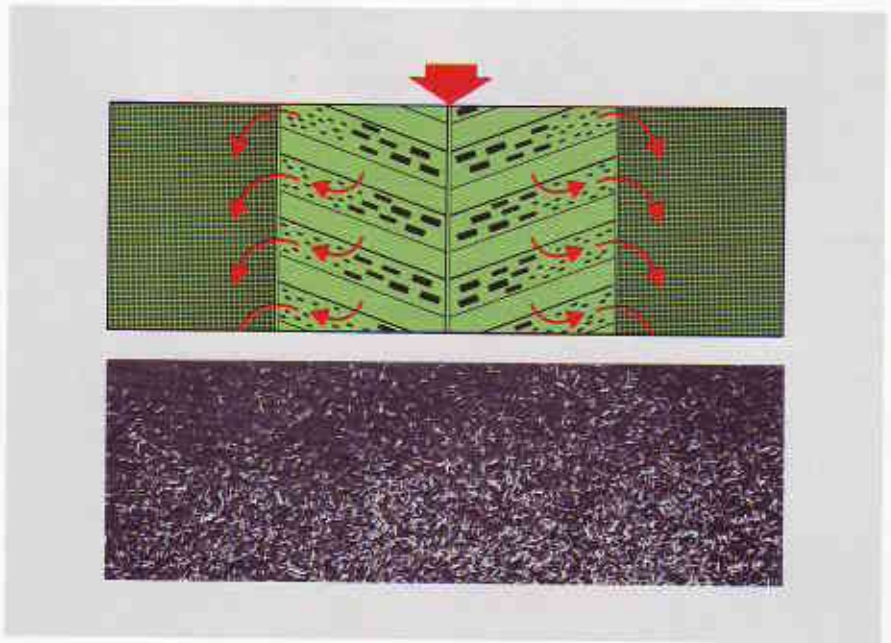






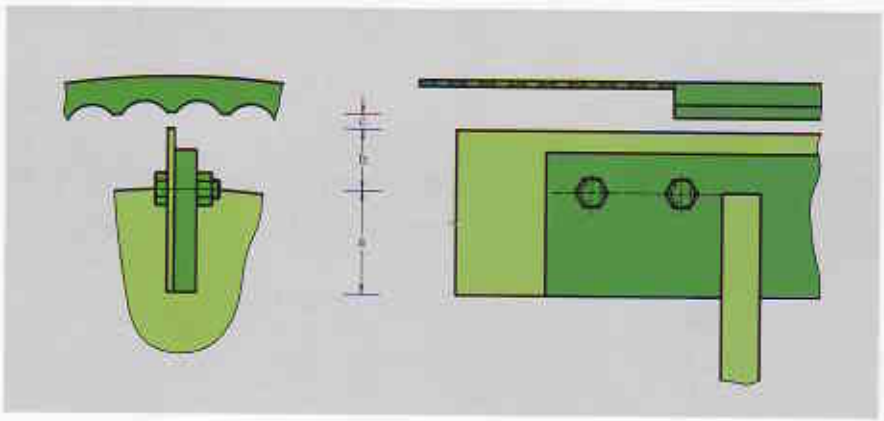
Example: Out of the V.

The optimum relation between dimensions of grinding track and screen surface, width of the impeller wear plates and installed motor power results in a large throughput capacity and high grinding efficiency of the Pallmann double stream mill, combined with a minimum specific power requirement. Besides the low cost for wear parts due to the specific type of size reduction, these are the main factors for the economical preparation of homogeneous surface particles, using the proved size reduction principle of the Pallmann double stream mill. Working out of the V means reduction of the retention time of the feed material on the central grinding track resulting in a coarser finished product.



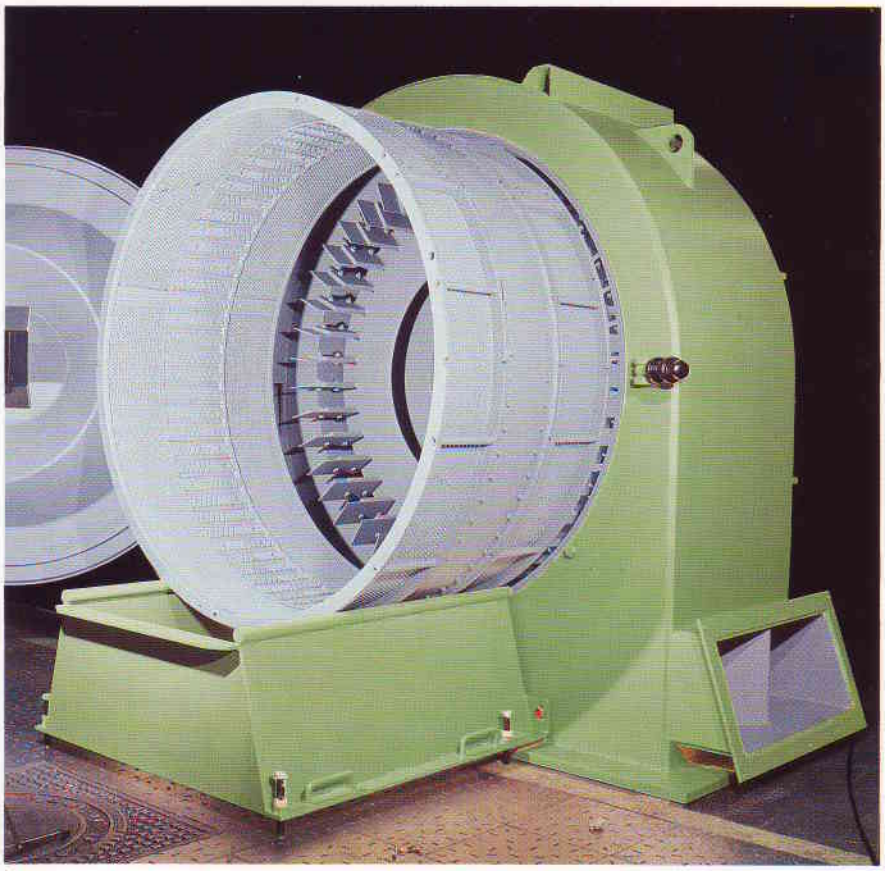
Example: Into the V.

Immediately after the feed material has been reduced on the grinding track the fine particles are discharged through relatively coarse screen rings positioned on each side of the grinding track just by the air flow generated by the fast rotating impeller. Through adjustment of the air flow, selection of the grinding track profile and selection of the mesh size of the screen rings, the degree of preparation can be controlled as desired. These adjusting possibilities allow easy adaptation of the Pallmann double stream mill to the surface material quality required for an engineered particle board.



Adjustment of Fineness:

By changing the height of the wear plates (dimension b) the distance to the grinding track can be adjusted (dimension c) as per requirement. Standard c-distances are 2, 4, 6, 8 and 10 mm.



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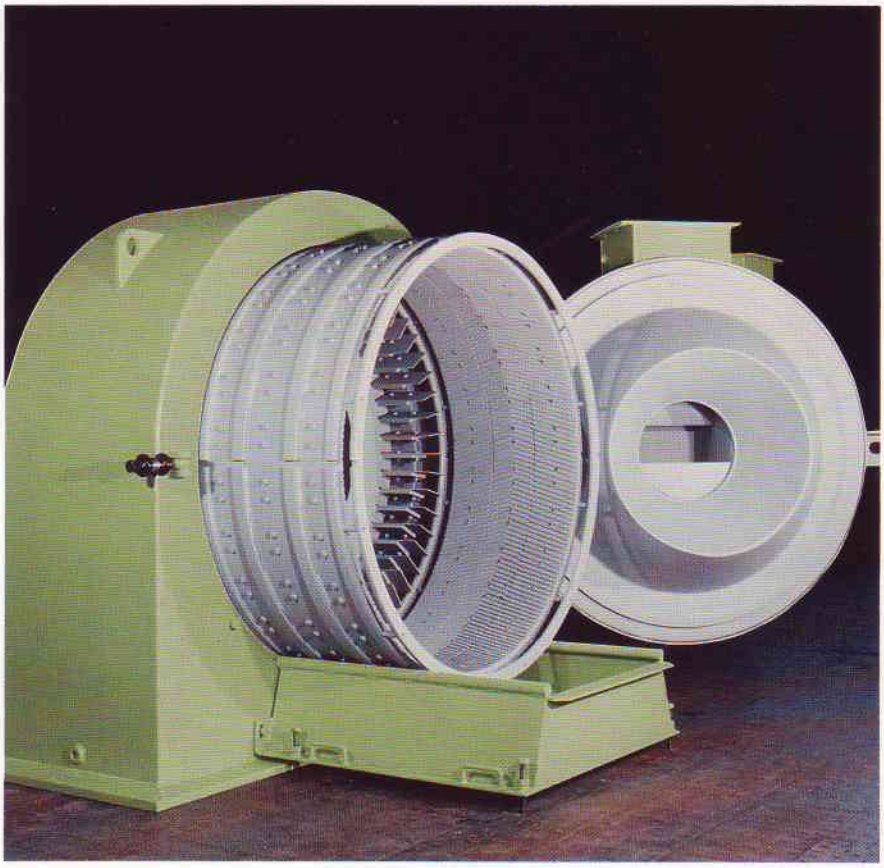

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Compact and sturdy – for long, trouble-free operation.

Pallmann double stream mill PSKM are build for tough around-the-clock operation. Heavy, thick walled machine housings in fabricated design and a generously dimensioned bearing and drive arrangement guarantee smooth operation and a long service life. The bearing and drive system is flanged to the machine housing and can be easily exchanged as a compact premounted unit. The rotor is carefully stress relieved and electrodynamically balanced for smooth vibration-free operation. The grinding chamber is easily accessible through a large front door. As a standard item our scope of supply includes a slide to easily remove the grinding ring from the machine to the front. Additional lifting devices and dismantling of the impeller are not needed. Downtime for maintenance is essentially reduced because of this option for easy and quick changing of wear parts.

The double stream mill PSKM is supplied in its standard version with finished product discharge straight downward. A special housing design with integrated product collecting box and lateral product discharge is available too. This option allows installation of the machine without any additional support frame or costly concrete foundation and pit.

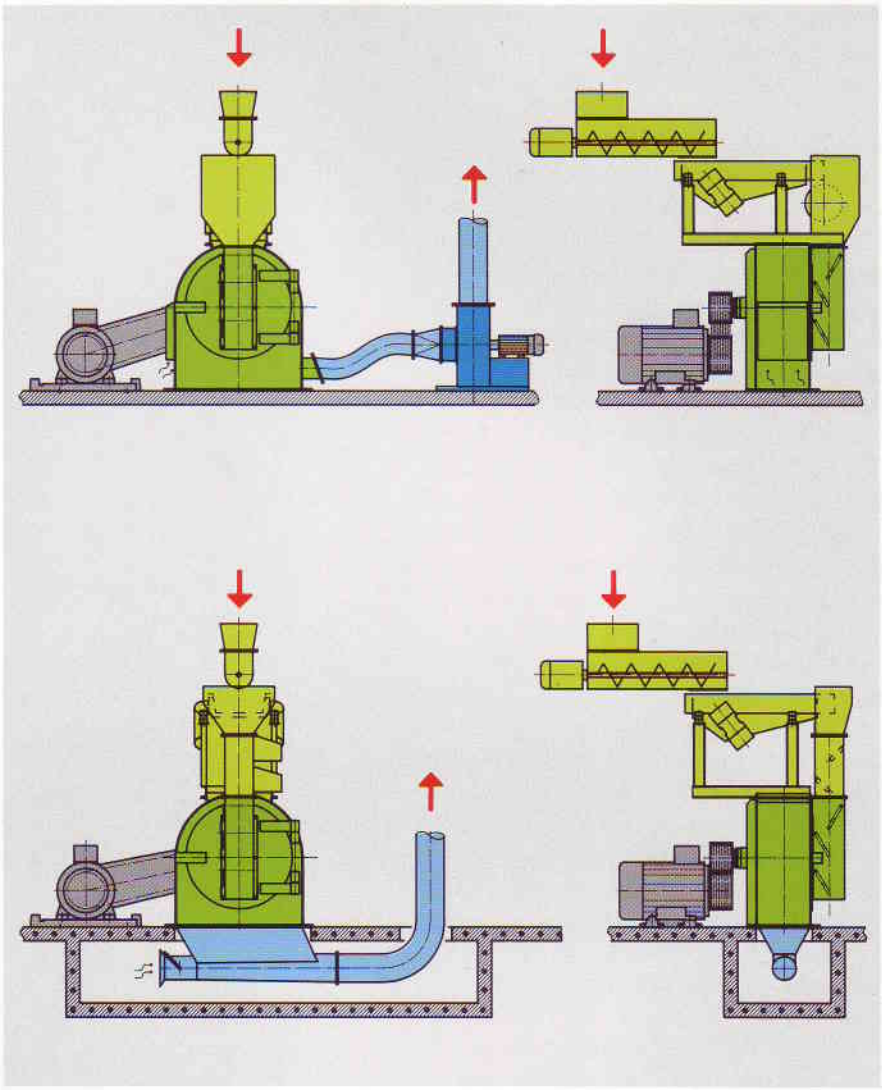
Picture 1: Double stream mill with lateral finished product discharge, grinding ring with V-grooved ledges and screen rings, placed in front of the machine

Picture 2: PSKM standard version, equipped with wide grinding track, discharge straight downward

Pallmann PSKM – Examples for Installations.

Proper installation guarantees optimum machine efficiency.

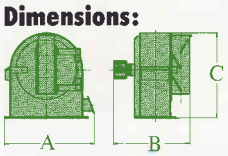
Double stream mills PSKM should always be fed by vibratory feeders in order to make sure that a uniform feed rate and optimum use of the installed electric power can be achieved. Between the vibrofeeder and the gravity separator feed chute of the mill it is recommended to install either a self-cleaning drum magnet or the Pallmann standard cascade feed chute with integrated drawer type permanent plate magnets which can be cleaned in regular intervals during operation. The air flow generated by the double stream mill should be picked up by a pneumatic discharge system at least while working with dry feed materials. The double stream mill can be installed either on a flat concrete floor if lateral product discharge has been chosen, on a steel frame or on concrete foundations with discharge pit if you decide for the standard design with product discharge straight downward.

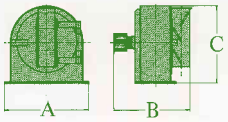


Type		PSKM 6-350	PSKM 8-460	PSKM 10-530	PSKM 12-600	PSKM 14-660	PSKM 15-720
Diameter of the Grinding Track	mm	600	800	1000	1200	1400	1500
Width of the Grinding Track	mm	120	150	180	210	230	250
Width of the Screen Ring	mm	2 x 100	2 x 140	2 x 160	2 x 180	2 x 200	2 x 220
Approx. Net Weight without Motor	appr. kg	650	1200	1800	2800	3800	4700
Required Shipping Space	appr. m^3	1,0	1,8	3,5	5,5	8,0	11,0
Recommended Motor	kW	55-75	90-110	132-200	200-315	250-400	315-500
Airflow through machine	appr. m^3/h*	4500	6000	7800	9000	12000	15000

* for 3.0 mm Conidur-Screen

Dimensions:



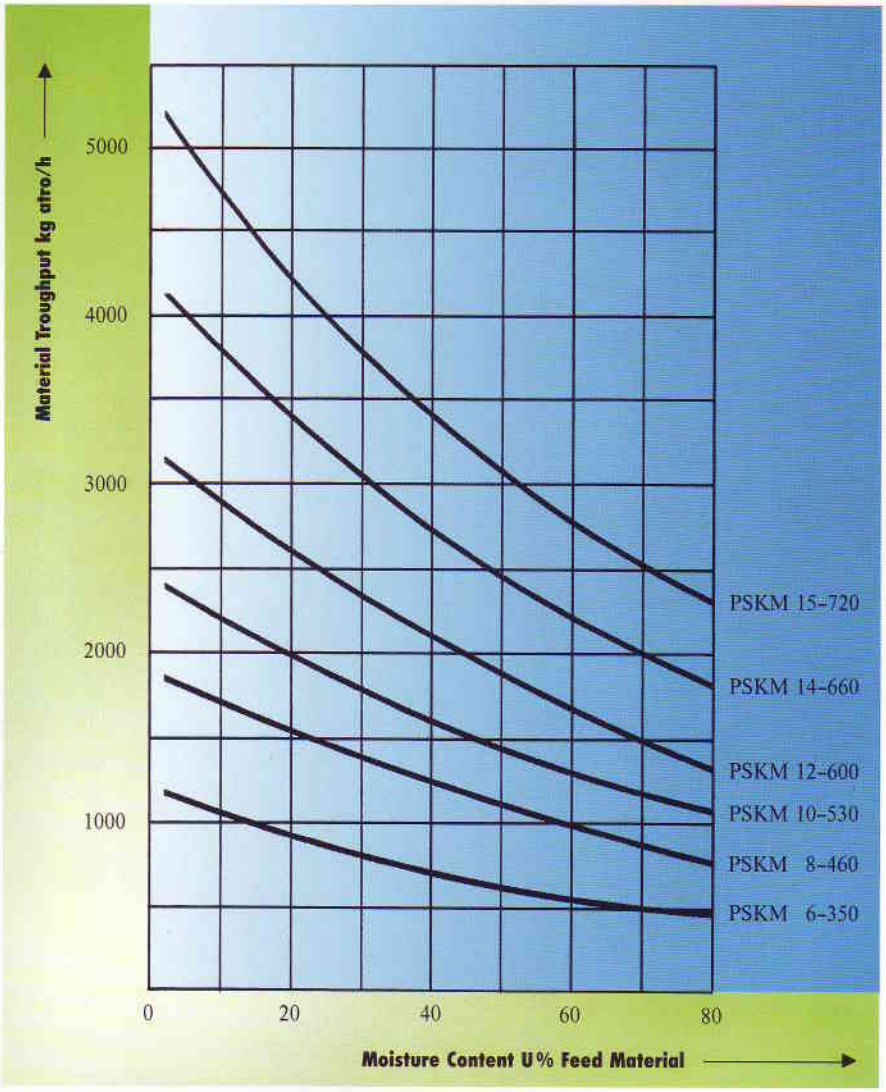


PSKM standard version

A	1060	1300	1590	1840	2150	2300
B	900	1120	1400	1550	1820	1930
C	900	1160	1435	1710	1940	2115

PSKM special design with lateral finished discharge product

A	1125	1370	1705	1985	2270	2430
B	900	1120	1400	1550	1820	1930
C	1040	1270	1590	1810	2060	2215



Pallmann PSKM Performance Diagram depending on moisture content of wood.

The througput rate depends on the moisture content of the wood, the width of the screen rings, the species of wood, the shape of the feed material (see adjustment factors a, b, c). In addition, when determining the throughput rate, the required fineness of the reduced material, depending on the grinding track profile, is important. The table shown has been made up for coniferous flat flakes, a V-grooved grinding profile and 3 mm conidur screens. The figures shown are approximate figures only. In case of any doubt we recommend free of charge performance trials with your original feed material in our modern research and development center. Tests will be done on production size equipment only and will deliver to you reliable data.

Adjustment Factors:

a) for screen width		Factor
Conidur	4,0 mm	1,8–2,0
Conidur	3,5 mm	1,3–1,5
Conidur	3,0 mm	1,0
Conidur	2,5 mm	0,9
Conidur	2,0 mm	0,8
Conidur	1,5 mm	0,7
Conidur	1,0 mm	0,6
Slotted screen	2x20 mm	0,9
Slotted screen	3x30 mm	1,1–1,2
Slotted screen	4x40 mm	1,3–1,5

b) for type of wood	Factor
poplar	0,7
alder, light pine wood	0,8
spruce, fir, pine	1,0
beech, birch, oak	1,2

c) for shape of the feeding flake	Factor
flat flakes	1,0
sawmill flakes	1,1
planer shavings	0,8–0,9
splinters	0,7–0,8
veneer waste, pre-chipped	0,6–0,7
chips, approx. 25 mm	0,5–0,6

Example:

Moisture Content:	u = 40%
Screen Mesh Size:	2,0 Conidur (factor 0,8)
Type of Wood:	Beech (factor = 1,2)
Flake Shape:	Sawmill flakes (factor = 1,1)
PSKM 14-660 Table Value:	2700 kg atro/h at u = 40%
2700 kg atro/h x 0,8 x 1,2 x 1,1 =	2860 kg atro/h