

SEPOL® high-efficiency separator.



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Technologies

Polysius



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SEPOL® high-efficiency separator.

More than 100 % separation is not possible.

Requirements

The higher the demands placed on the quality of the ground material and the lower the desired energy requirement of the grinding process, the more important is the efficiency of the separator.

High availability, high selectivity, low specific energy consumption, simultaneous product separation, cooling and drying, short amortisation period and relatively low capital expenditure — these requirements are all met by the SEPOL® high-efficiency separator.

Fields of application

SEPOL® high-efficiency separators are installed in grinding plants equipped with tube mills, roller mills and high-pressure grinding rolls. The fact that over 500 SEPOL® separators are installed all around the world confirms the universal acceptance of this separator concept.

Also for plant conversions and modernisation projects with limited space conditions, the SEPOL® separator has proven an ideal solution, thanks to its modular design and flexible arrangement capability. Depending on the application, three different versions are available: the SEPOL®-SV, the SEPOL®-LM and the SEPOL®-RM.

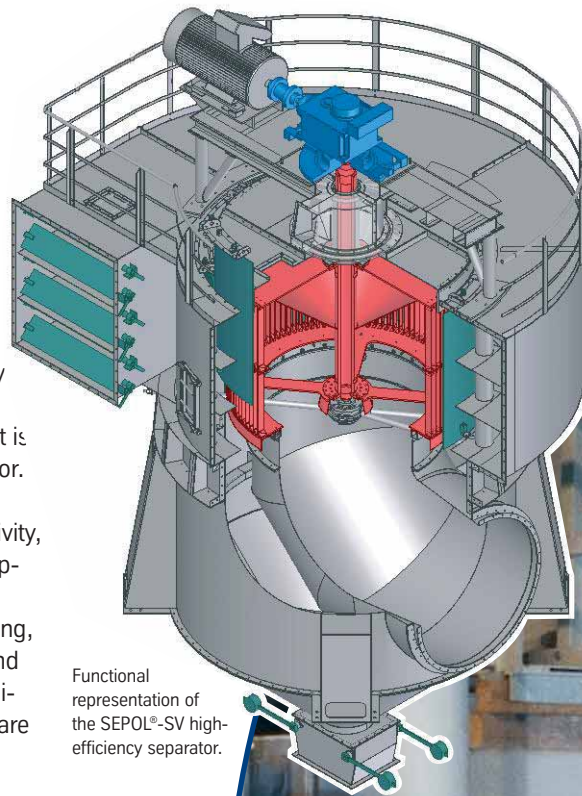
Process technology

The SEPOL® can be adapted to the individual feed material by adjustment of the centrifugal and flow forces. The proven Tromp curve slope is extremely steep and the resultant sure separation into fine and coarse material allows maximum utilisation of the grinding plant's

capacity, thus ensuring outstanding economy of operation.

The fineness and the granulometric composition of the finished material can be infinitely varied over a large range, primarily by altering the rotor speed and secondarily by controlling the separating air flow rate.

The air flow rate required for the separation process is minimal, which enables small

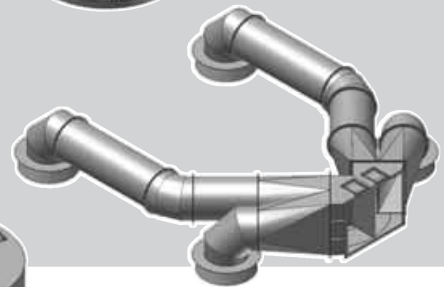
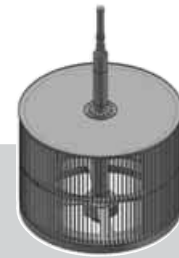
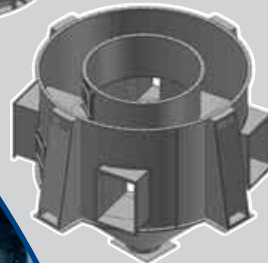
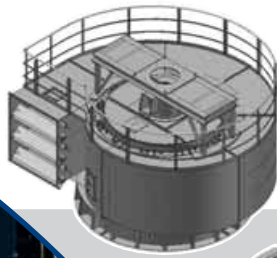


Functional representation of the SEPOL®-SV high-efficiency separator.



Assembled separator cage of a SEPOL®-SV high-efficiency separator.



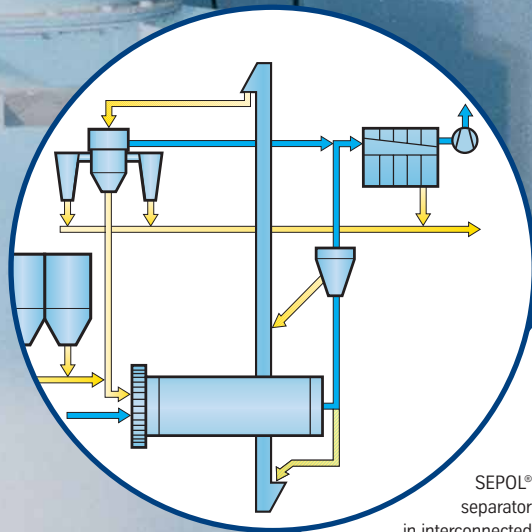


dimensioning of the auxiliary units.

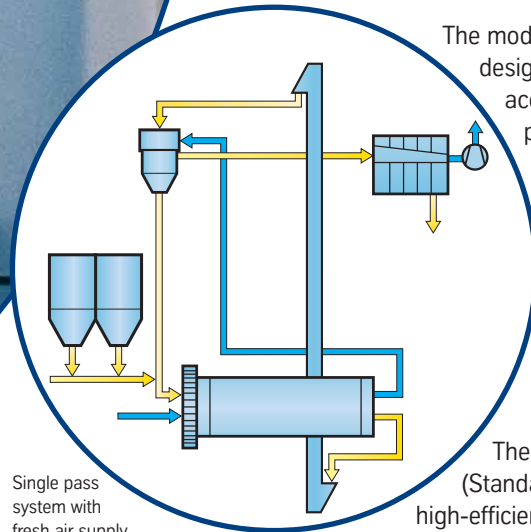
The excellent operating results of installed separators, which – depending on the respective application – differ in their type of construction but do not differ in their effective principle of functioning, clearly prove the advantages of the SEPOL® concept.

Wear protection and maintenance

As a machine standard, all surfaces of the SEPOL® that come into contact with the material being separated are protected by wear-resistant materials. Even if highly abrasive materials are to be separated, various special linings ensure high service lives.



SEPOL® separator in interconnected operation, equipped with cyclones for fines collection.



SEPOL® Single pass system with fresh air supply. The fine material is collected in a filter.

The modular separator design permits good access to all components. This is a further crucial factor for achieving high availability.

SEPOL®-SV high-efficiency separator

The SEPOL®-SV (Standard Version) high-efficiency separator is an integral part of Polysius grinding plants equipped with tube mills. Its exact design features depend on the grinding process. If working in interconnected operation, the

The surfaces of the separator that come into contact with highly abrasive materials are protected by special wear protection linings.

SEPOL®-SV high-efficiency separator with two fines collection cyclones.

The newly-developed rotor seal brings improved sealing and lower wear.



SEPOL®-SV is equipped with fine material collection cyclones. Depending on the application, one of two variants is selected:

- the extremely compact SEPOL®-SV with cyclones flange-mounted directly onto the housing (for new plants) or
- the SEPOL®-SV with separately installed cyclones (for conversions).

In both cases, a relatively small filter dedusts the separator.

The modular construction permits a flexible arrangement, so that the needs of every conceivable application are met with optimum space

The single pass version of the SEPOL®-SV is used if the product is exclusively cooled with fresh air. In this arrangement there are no fine material collection cyclones. The fines are collected in a filter. The advantages of this design version are reduced fitting dimensions and good product cooling without a separate fines cooler.

The central material feed ensures uniform material distribution and thus achieves effective utilisation of the separation area.

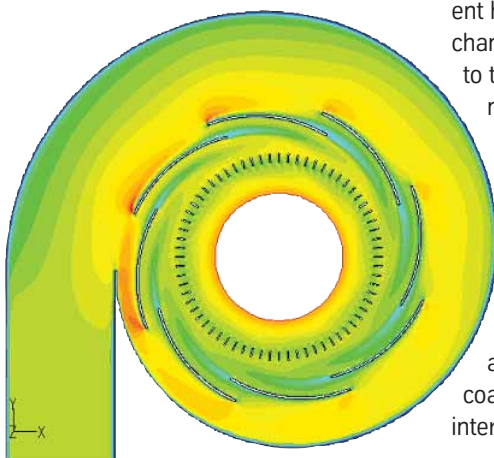
The separating air stream is produced by an external fan and fed to the separating chamber through a spiral-shaped duct. The volume of separating air flowing into the different height sectors of the separating chamber can be optimally adjusted to the respective conditions by means of adjusting flaps. The material is separated into fine and coarse material in the separating chamber due to the action of gravitational and airflow forces. Guide vanes at the outlet of the spiral maintain the swirl of the air stream. Rotor blades prevent coarse material from entering the interior of the rotor.

The coarse material falls into the grit cone and is returned to the grinding process. The fines are carried by the separating air into the interior of the rotor, are sucked downwards and then carried to the fines collectors (cyclones). Utilisation of the force of

gravity significantly reduces the energy requirement of the machine. The dedusted separating air stream is returned to the fan.

The fine material can also be collected in a filter. This alternative is advantageous if both mill exhaust air and fresh air are used or if the material being separated is cooled by fresh air.

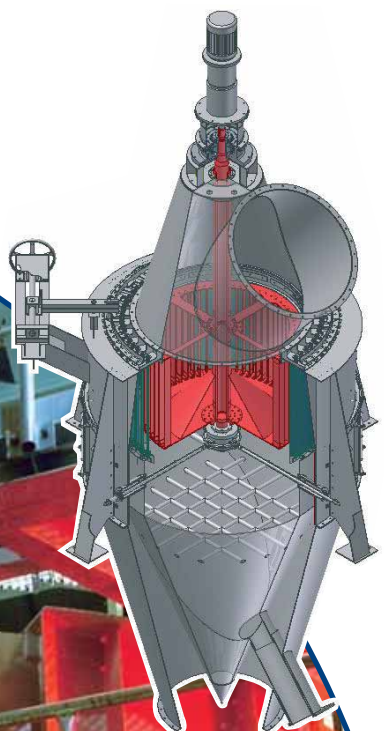
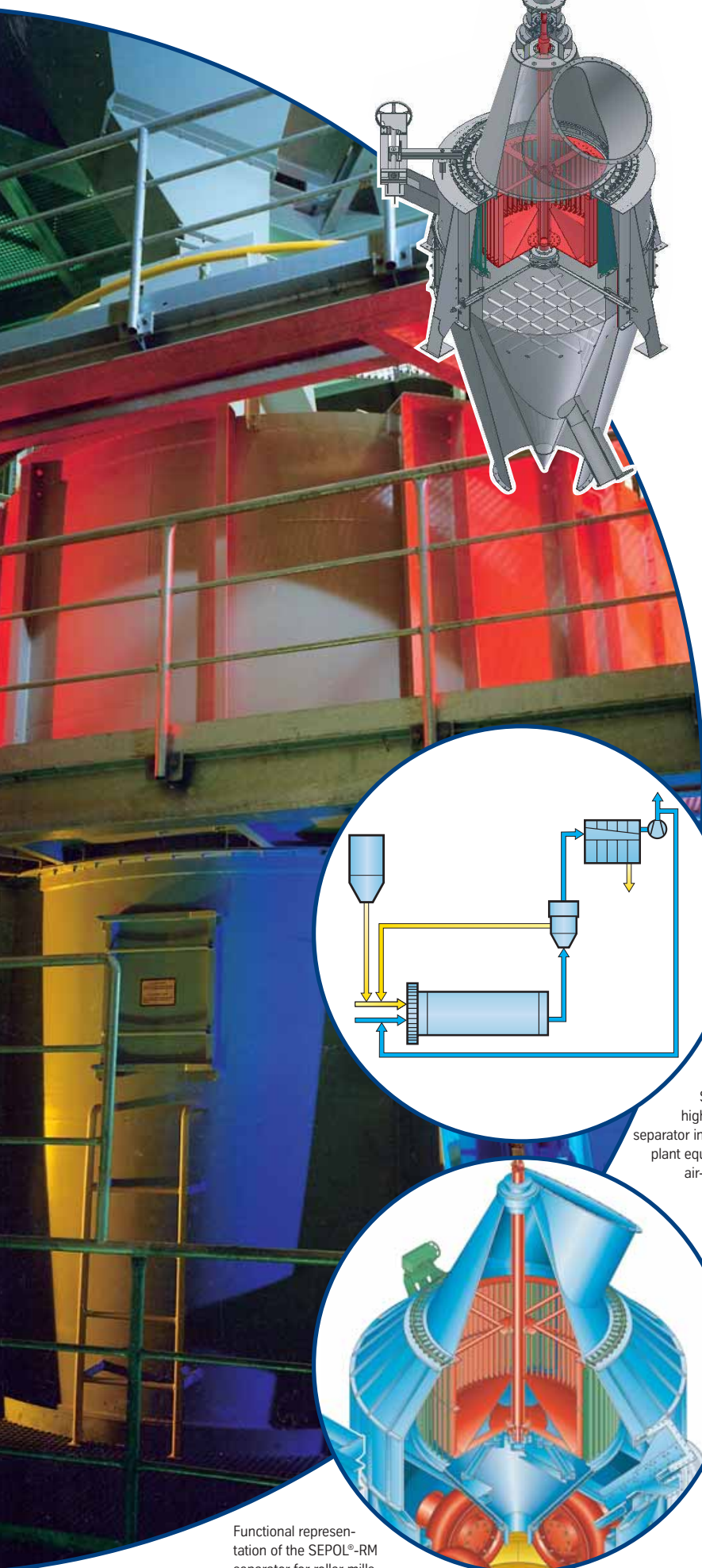
Different construction sizes are available to suit the various applications.



Optimum air distribution due to curved guide vanes.

utilisation. The material can be cooled by an additional fresh air supply. In this case, the filter has to be correspondingly larger.

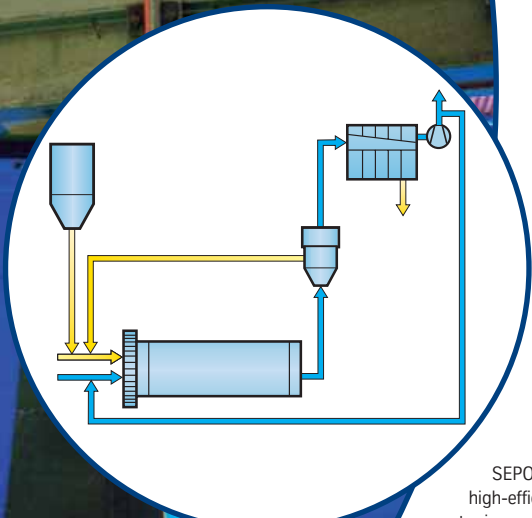
SEPOL®-SV	Housing area, rotor [m ²]	Separating air flow rate [m ³ /h]
130	3.6	44,000
155	5.0	63,000
170	6.0	77,000
185	7.1	89,000
200	8.4	105,000
215	9.7	121,000
230	11.1	138,000
250	13.1	164,000
270	15.3	191,000
290	17.6	220,000
310	20.2	253,000
330	22.8	285,000
350	25.6	320,000
380	30.2	380,000



SEPOL®-LM high-efficiency separator

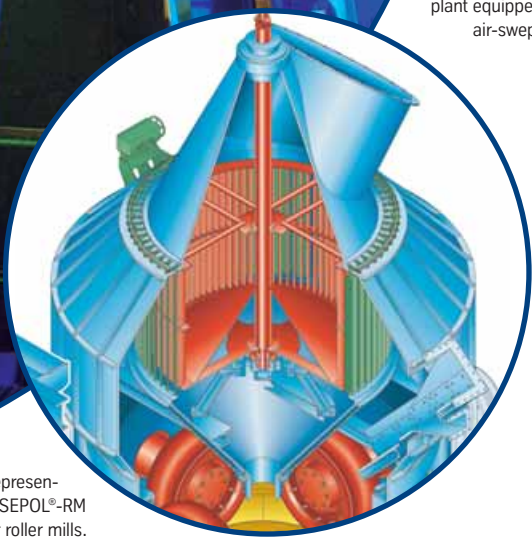
The SEPOL®-LM high-efficiency separator is used in combination with air-swept mills. The ground material discharged from the mill in an air stream is fed to the separator from below. Guide vanes that are centrally adjustable from outside the machine impart the air swirl that is needed for the separation process. The cage rotor separates the finished material from the grit, which is then returned to the mill via the grit cone of the separator.

In the optional version »Rotor with distributing plate«, external recirculated mill material is additionally fed to the SEPOL®-LM by a bucket elevator. Entering at the top of the separator, this material falls onto the distributing plate on the rotor cover disc and is then dispersed through the separating chamber.



SEPOL®-LM high-efficiency separator in a grinding plant equipped with air-swept mill.

SEPOL®-LM	Housing area, rotor [m ²]	Separating air flow rate [m ³ /h]
110	2.5	32,000
130	3.6	44,000
155	5.0	63,000
170	6.0	77,000
185	7.1	89,000
200	8.4	105,000
215	9.7	121,000
230	11.1	138,000
250	13.1	164,000
270	15.3	191,000
290	17.6	220,000
310	20.2	253,000
330	22.8	285,000
350	25.6	320,000
380	30.2	380,000
410	35.2	440,000
440	40.5	506,000
480	48.3	603,000
520	56.7	709,000
560	65.6	820,000
610	78.0	975,000



Functional representation of the SEPOL®-RM separator for roller mills.

SEPOL®-RM high-efficiency separator

In Polysius roller mills, including the QUADROPOL®, the SEPOL®-RM high-efficiency separator is a standard component for all grinding applications, whether coal, limestone, granulated blast furnace slag or cement. The SEPOL®-RM is integrated into the mill housing.