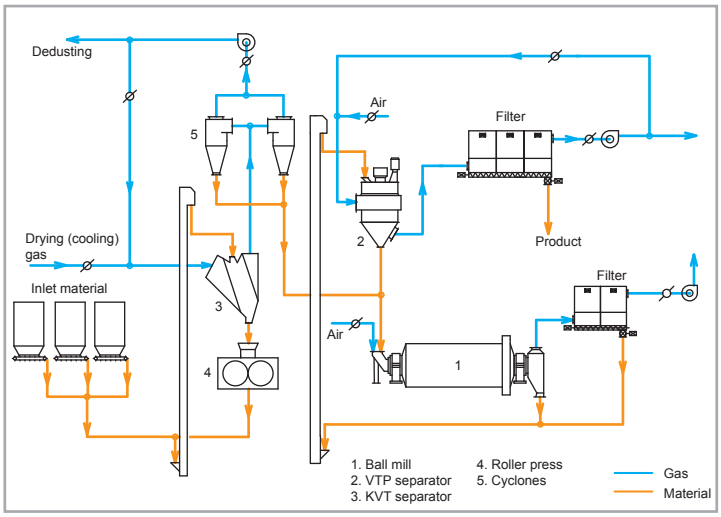
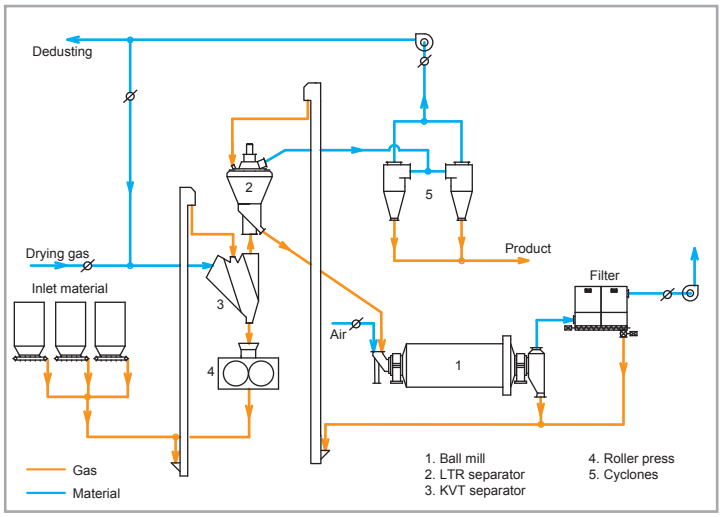
Sample arrangement of the KVT separator in grinding circuits



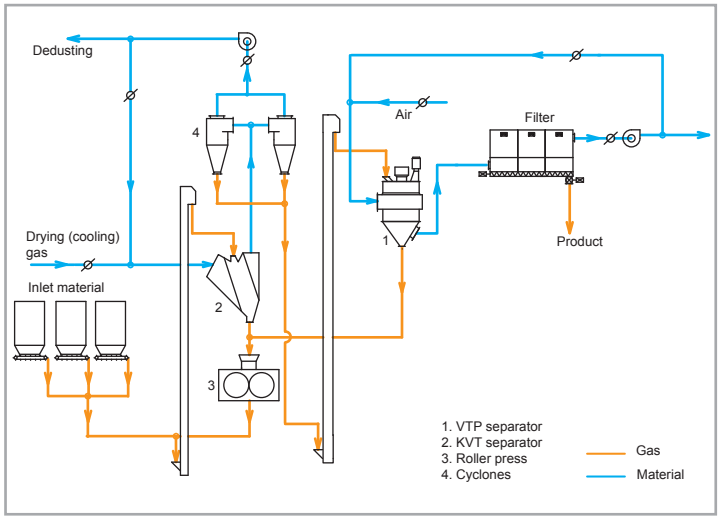
1st example:
Cement grinding plants - semi-finish system

In a pre-grinding circuit, the KVT separator is used for 1st stage sorting in conjunction with a roller press. Sorted material can be dried or cooled concurrently. The final grinding stage is accomplished in a closed circuit in conjunction with a ball mill and a dynamic VTP separator.



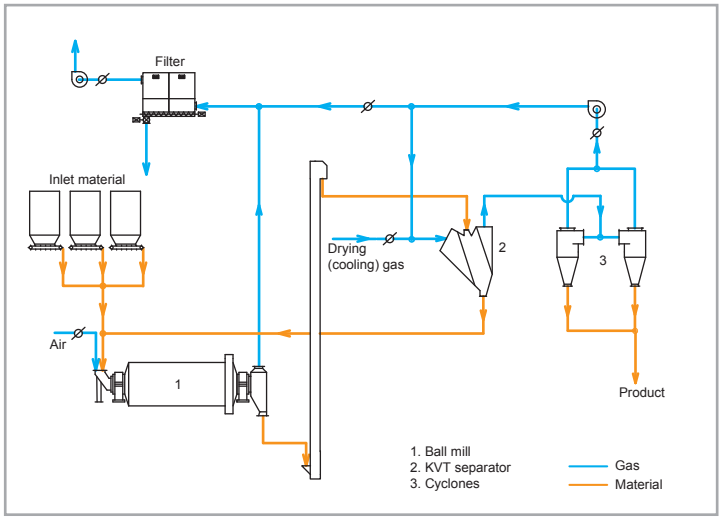
2nd example:
Cement grinding plant - semi-finish system

As a 1st stage sorting device for pre-grinding, the KVT separator is installed in conjunction with a roller press. Final grinding is accomplished in closed circuit with a ball mill and a dynamic LTR separator. The dynamic LTR separator is also used for 2nd stage sorting in a pre-grinding circuit.



3rd example:
Cement grinding plant - finish system

The material is ground to the desired fineness by a roller press. The flow sheet shows a two-stage sorting circuit arrangement with a roller press. In the 1st stage of sorting the roller press is arranged with a KVT separator. In the 2nd stage of sorting the roller press is arranged with a dynamic VTP separator.

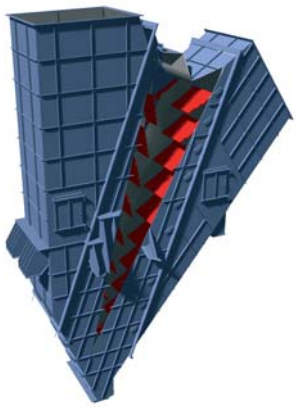


4th example:
Grinding plant for coarse grinding

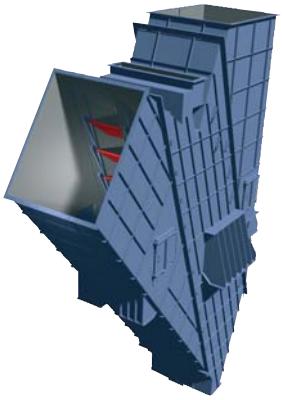
The flow sheet represents an arrangement of a grinding circuit for course materials. The KVT separator in this arranged in closed circuit with a ball mill. The final product, ground to the desired fineness ranging from 0.1 to 2 mm, is sorted and collected in cyclones for final separation of material from gas.

The specialists at PSP Engineering design and manufacture separators for application in all types of grinding, pre-grinding, and sorting circuits. Sorting parameters are studied and evaluated in the proprietary testing and simulation facility at PSP Engineering.

Above: Cascade air separator KVT 1800 as part of the 120 tph cement grinding plant at Qilianhan Cement, China. The photo shows the lower part of the separator with the coarse fraction discharge



Above and below:
3D models of the cascade air separator KVT



Separator application

The cascade air KVT separator supplied by PSP Engineering is a static air separator predominantly used in pre-grinding circuits of grinding plants with roller presses or similar equipment.

Characteristics of the cascade air KVT separator

- No movable parts
- Low cost of installation
- Negligible maintenance
- Pressure drop is approximately 50% of dynamic separators
- Suitable for high capacities utilizing a high material load up to 4 kg/m^3
- Sorted material can be effectively dried and cooled
- Suitable for abrasive material
- Wear parts are effectively protected against abrasion and can be easily replaced
- Lumps are disagglomerated

Design of the KVT separator

The separator KVT is made of rectangular cross-sections in a V-shaped longitudinal arrangement with three sections: A sorting gas inlet, a central built-in material inlet, and a gas outlet. The gas inlet and outlet are installed at the top part of the two outer sections. The coarse material fraction is discharged into the discharge hopper while the fine fraction is vented together with the air flow to the outlet. The center section accommodates the material inlet. The material inlet consists of two opposing rows of cascading and inclined partitions. These partitions consist of several plates and are seated in frames, which are connected to the housing of the separator.

These replaceable plates are designed for minimal wear according to the type of the material to be sorted.
The plates are made of wear-resistant steel and are equipped with hard-facing or basalt stiffened with steel bars. The separator housing is lined with basalt or DENSIT. The separator is designed so that the plate width does not exceed 1300 mm. The three sections are assembled and connected to the support structure. Manholes are installed on the side panels of the inlet and outlet sections for routine inspection and maintenance. An inspection port is also installed in the material discharge hopper.

Operating principle of the KVT separator

The material is guided to the center section of the separator and falls downward through the material inlet where it strikes against the cascading partition diaphragms. Lumps and large pieces disagglomorate upon striking. The fines fraction is picked up by gas and is carried through the outlet section while the coarse particles continue downward between the partitions and are further broken down into fines.

The fine material and gas are discharged from the upper outlet section into cyclones that separate the fines from the gas. The coarse fractions are collected in a discharging hopper in the lower part of the separator where they are returned for reprocessing. The sorting cut size is controlled by regulating the discharge fan. During the sorting process the material can be dried or cooled.