

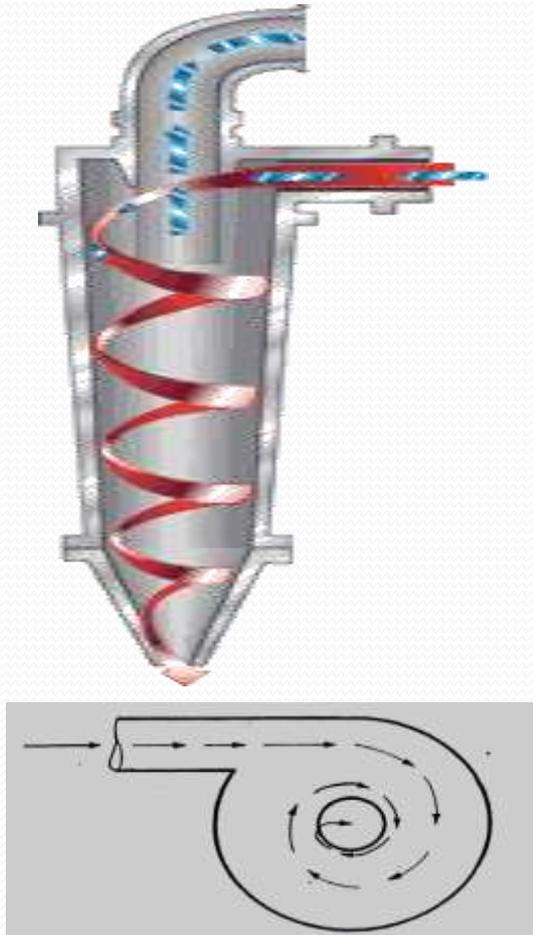
Construction and working of cyclone separator

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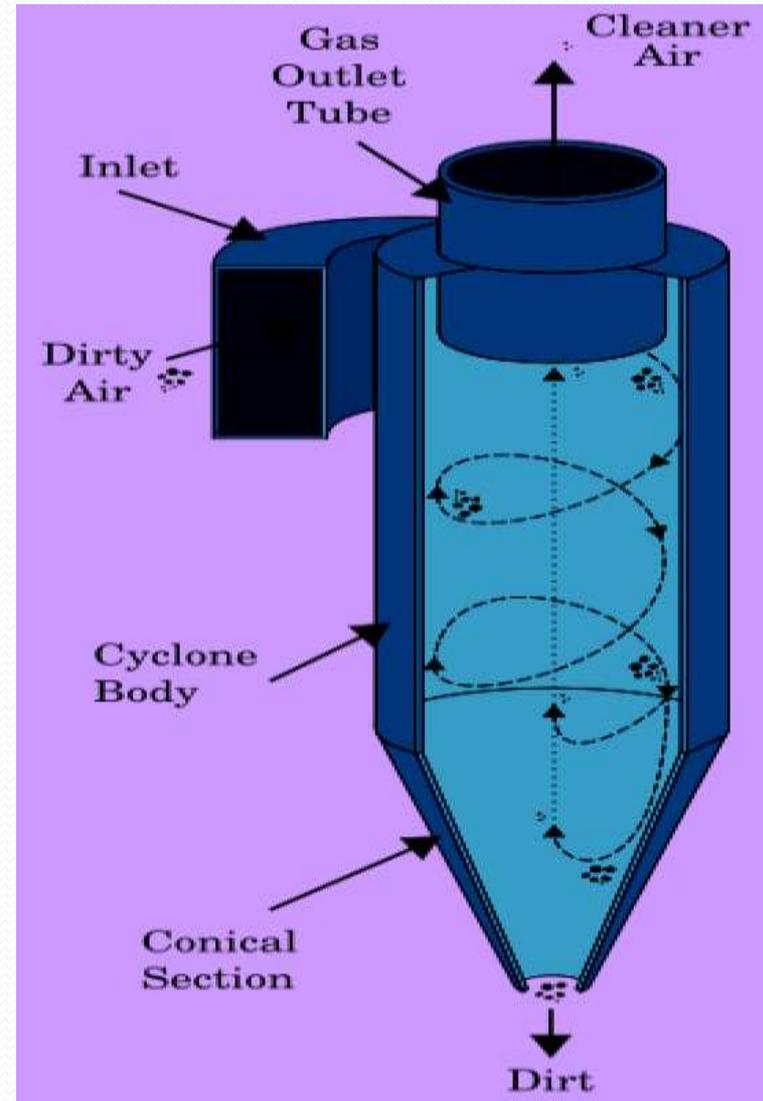
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CYCLONE SEPARATOR



Cyclone separator



Principle

- In cyclone separator, the centrifugal force is used to separate solids from fluids.
- The separation depends not only on the particle size but also on density of particles.
- Hence depending on the fluid velocity, the cyclone separator can be used to separate all types of particles or to remove only coarse particles and allow fine particles to be carried through with the fluid.

Construction

- It consists of a cylindrical vessel with a conical base.
- In the upper part of the vessel is fitted with a tangential inlet and a fluid outlet and at the base it is fitted with solid outlet.

Working

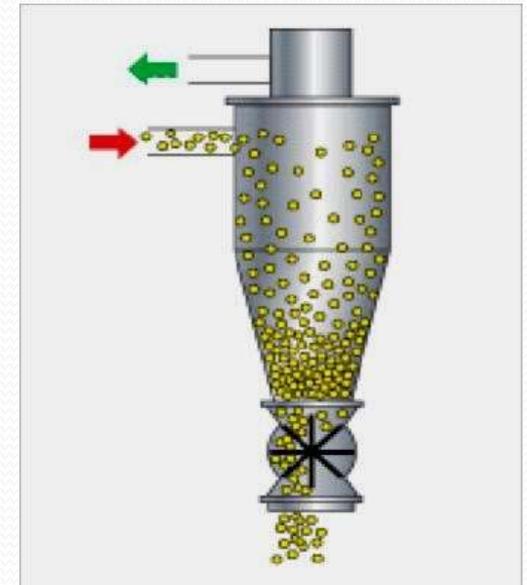
- The suspension of a solid in gas (usually air) is introduced tangentially at a very high velocity, so that rotary movement takes place within the vessel.
- The fluid is removed from a central outlet at the top. The rotatory flow within the cyclone separator causes the particles to be acted on by centrifugal force.
- The solids are thrown out to the walls, thereafter it falls to the conical base and discharged out through solids outlet.

Uses

Cyclone separators are used to separate the suspension of a solid in a gas (air). It can be used with liquid suspensions of solids.

AIR SEPARATOR

Principle It works on the same principle as that of cyclon separator. But in this case the air movement is obtained by means of rotating disc and blades. To improve the separation, the stationary blades are used. By controlling these blades and the speed of rotation, it is possible to vary the size at which separation occurs.



Construction

- It consists of a cylindrical vessel with a conical base.
- In the upper part of the separator the vessel is fitted with feed inlet, and at the base there are two outlets, one for fine particles and other for heavy particles.
- The rotating disc and rotating blades are attached to the central shaft, to produce air movement.

Working

- The sample powder is passed through the feed inlet, which falls on the rotating disc.
- The rotating blades are attached to the same shaft. These produce a current of air as shown by the arrows.
- The fine particles are picked up and are carried into space, where air velocity is sufficiently reduced.
- The fine particles are dropped and ultimately collected at an outlet meant for fine particles. The heavy particles which fall downward are removed at an outlet meant for heavy particles.

Uses

Air separator is often attached to the ball mill or hammer mill to separate and return oversized particles for further size reduction



THANK YOU