

Fluidised Bed Dryers and Coolers

Our *Fluidised Beds* are in widespread use throughout the process industries for drying, cooling and calcining of powders, crystals and granules.

Materials processed in a *Fluidised Bed Dryer* or *Cooler* float on a cushion of air or gas. The hot or cold air is supplied to the bed through a special perforated distributor plate and flows through the layer (or bed) of solids at a velocity sufficient to support the weight of particles in a fluidised state. Bubbles form and collapse within the fluidised bed of material promoting intense particle movement. In this state, the solids behave like a free-flowing boiling liquid. Very high heat and mass transfer values are obtained as a result of the intimate contact with the solids and differential velocities between individual particles and the fluidising gas.

The design of the distributor plate ensures that the fluidising gas is evenly distributed across the area of the bed. The gas velocity is such that only the very fine material fraction is carried over to the dust collection equipment. A high turndown ratio of production capacity is possible and fluctuations of the feed rate are easily absorbed. In most cases there are no moving parts in contact with the product.

Fluidised Beds can also be built with:

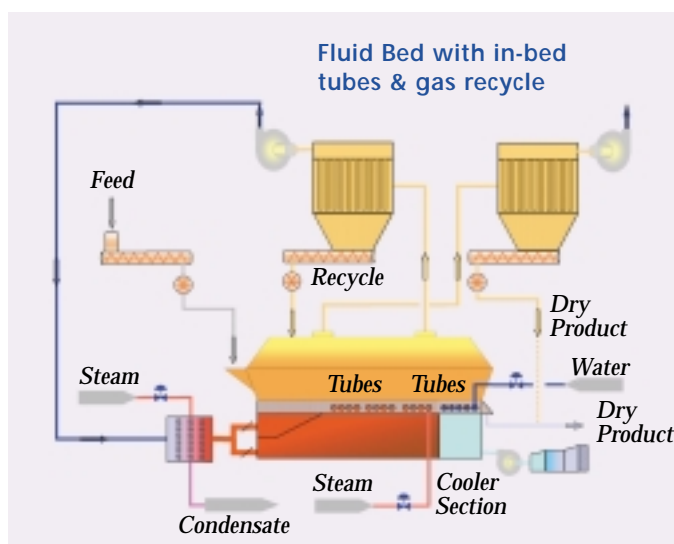
- drying and cooling zones in the same unit
- multiple stages for drying and conditioning of heat sensitive materials
- exhaust gas recycle, either between sections or full recycle when, for example, toxic materials are processed.



Vibrating fluid bed dryer for cooked grains



Fluid bed cooler for sugar incorporating cooling tubes



Two fluid bed dryer/coolers for sand



Combined fluid bed dryer/cooler for minerals



High temperature fluid bed calciner with integral contact fluid bed cooler for catalyst

Contact Tubes

A deep *fluidised bed* fitted with contact tubes offers significant improvements in three key areas: emissions, plant size and operating costs. Up to 90% of the heat can be supplied (drying) or removed (cooling) by the steam or fluid circulating through the tubes. The result is an enormous reduction in airflow compared with the typical standard *fluidised bed* plant. Contact fluidised beds are best suited to non-cohesive materials.

Vibrating Beds

Many materials begin at or pass through a sticky, softening or cohesive phase during processing. *Vibrating beds* are extremely effective in keeping the material in a live fluidised state during this transitory phase. They are also suitable for materials which have a wider particle distribution.

Stirred Beds

Where materials at the feed point are particularly sticky, a rotating agitator can be incorporated within the first drying section of the bed. This slow moving device serves to gently agitate the wet material, encouraging even fluidisation and eliminating 'rat-holing' without causing particle degradation.

High Temperature Fluid Beds

A range of thermal processing systems is also available for the uniform heat treatment and cleaning of metallic parts, reclamation of foundry sands, de-coating of recyclable scrap materials and calcination. While the operating principle is generally similar to our standard static fluid beds, in many cases it is the heat transfer medium, at temperatures up to 1200°C, that is fluidised rather than the product. The bed has a high thermal capacity which ensures accurate temperature control and a rapid uniform heat treatment of the product.

