

FLUID BED DRYER



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Fluid Bed Dryers are used to dry, wet granulated materials attained after the granulation process. The material is dried through the combination of (a) moisture diffusion from the inside of the granules and (b) the removal of moisture by forced - air convection. In this unit operation, the granulated material is fluidized by hot & dehumidified air to achieve efficient heat and mass transfer.

Fluid Bed Dryer is a batch operation in which the moist material is converted to a free flowing Fluidized state by means of an upward flowing hot air stream. During this process the entire surface of each particle is surrounded by hot air thus achieving a homogeneous distribution of temperature & thereby a rapid drying operation. The air is drawn through a blower fan from outside & passed through 3 stages of filtration (pre, fine & hepa) & heated with help of steam coils & or electric heaters. The air then flows upwards through the material inside the product container & absorbs the moisture from the material. The filter bags assembly mounted above the container & retarding chamber keeps the material caught up in the flow of air which subsequently fall back into the container, by means of the outlet air damper as installed in the outlet duct. The drying time depends on various factors such as physical properties of raw material, initial moisture content, type of moisture (free or inherent of water of crystallization) & the drying temperature.

There are three critical inlet air parameter's which affect the efficiency of the Process and Quality of the product:

- Temperature
- Humidity
- Air Flow Rate

The Fluid Bed Dryer cannot be used for drying liquids or pasty materials.



Retarding Chamber

During the FBD operation there is a tendency of generation of static electricity due to the agitation of material and the presence of steam & dust. However, the same is variable in quantity depending upon the material air velocity & the degree of dryness of product. The retarding chamber is provided to settle the heavier particles in the product container. Also, outside the retarding chamber antistatic probe assembly is provided to absorb static electricity and to discharge the same to the earthing cable.



Filter Bag & Sealing

The filter bag is sealed with the help of an inflatable gasket held inside a SS ring which is inserted into the lower end of the filter bag & sandwiched between the retarding chamber & the filter housing. The gasket material can be Silicon, Neoprene or EPDM Food Grade rubbers. The basic function for the sealing is to prevent the product from escaping into the outlet air.

Filter Bag Shaking Device

The device is used for the removal of fine particles from the Filter Bag & thereby avoid pressure drops across the filter. It consists of a wire rope & pulleys wherein one end of the wire rope is attached to a handle and the other end to the filter bags hanger. The filter hanger is held in place by the handle stopper & whenever the handle is released, jacked up & down the filter bag is compressed & stretched alternately. This operation can also be automated by means of a pneumatic cylinder.



Feature

Mono block construction - retarding chamber and filter bag chamber made in a single piece construction to enhance GMP & promote hygienic cleaning.

Solid Flow Sensor installed to detect leak on filter bags to avoid material loss & air contamination.

Intrinsically safe earthing arrangement.

Inlet air-filtration system with primary, secondary and 0.3 microns hepa filters.

Pneumatic lifting/locking for product container with retarding chamber.

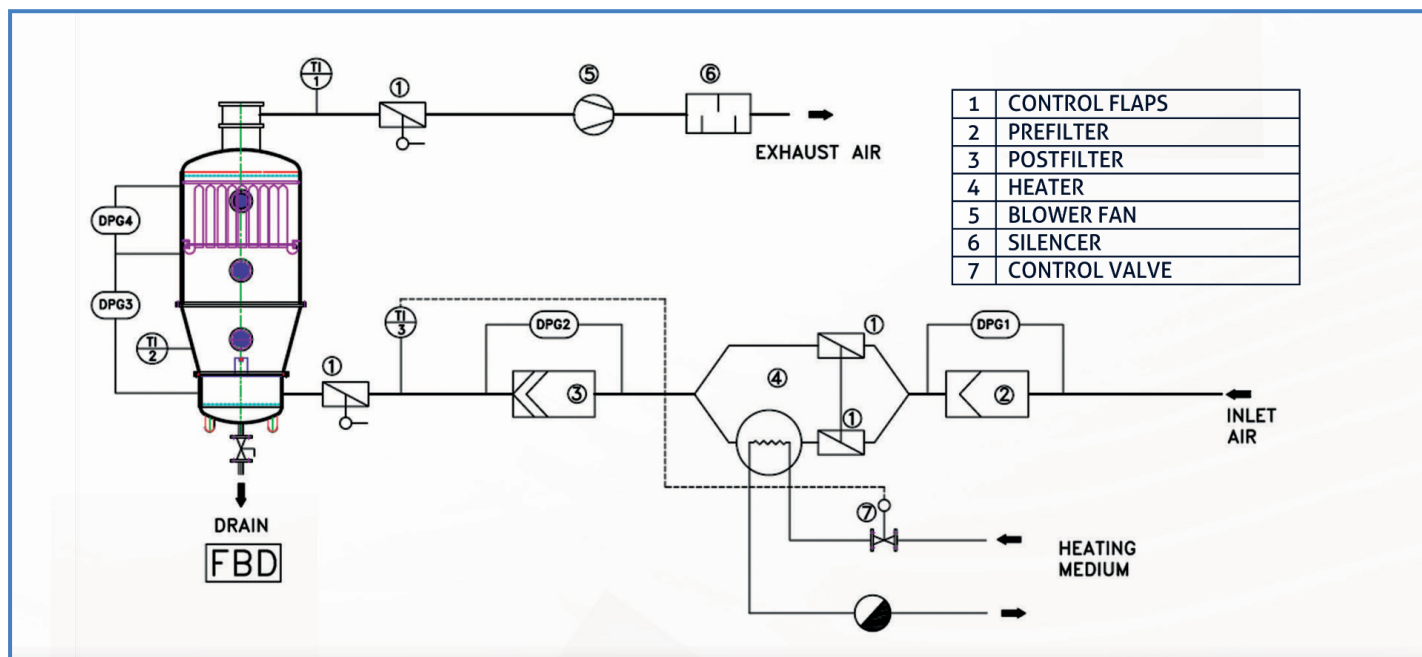
Fully Automatic Bag shaking.

Rear Chamber with heating coils and Inlet filter to be mounted in Technical Area (Remote Area).

Blower/Motor to be mounted in the Technical Area (Remote Area).

Inlet & Outlet dampers with pneumatic control valves.

PLC based control panels with Time Vs Temperature, Control Batch Programming & batch date printouts.



MODEL	SAP-10	SAP-30	SAP-60	SAP-120	SAP-150	SAP-200	SAP-250	SAP-300
Capacity in Kgs.	5 to 10 Kg.	30 Kg.	60 Kg.	120 Kg.	150 Kg.	200 Kg.	250 Kg.	300 Kg.
Shell ID in mm	450 mm	700 mm	850 mm	1000 mm	1100 mm	1350 mm	1500 mm	1500 mm
Total Volume of Product Container Working Volume - 70%	35 Ltrs. Gross	110 Ltrs. Gross	135 Ltrs. Gross	350 Ltrs. Gross	450 Ltrs. Gross	600 Ltrs. Gross	750 Ltrs. Gross	780 Ltrs. Gross
Blower Motor Rating in HP	3 HP	10 HP	10 HP	15 HP	15 HP	25 HP	30 HP	30 HP
Steam Consumption Kgs / hr.	97	130	162	194	194	194	194	194
Heating Capacity Kcal / hr.	49400	64000	82000	98000	110000	120000	120000	125000
Dimension (mm)	Length (L)	3200	3400	4000	4500	4700	5200	5300
	Height (H)	2000	2600	2800	3600	4000	4300	4500
	Width (W)	1000	1150	1200	1550	1650	1950	2050

UTILITIES REQUIRED

Minimum Steam Pressure bar (Kg / cm ²)	4 bar	4 bar	4 bar	4 bar	4 bar	4 bar	4 bar	4 bar
Compressed Air Pressure bar (Kg / cm ²)	4 bar	4 bar	4 bar	4 bar	4 bar	4 bar	4 bar	4 bar
Air - CFM	1500	2000	2500	3000	5100	6000	6000	7000



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