



FBD

Fluid Bed Dryer

Standard Model



GMP Model

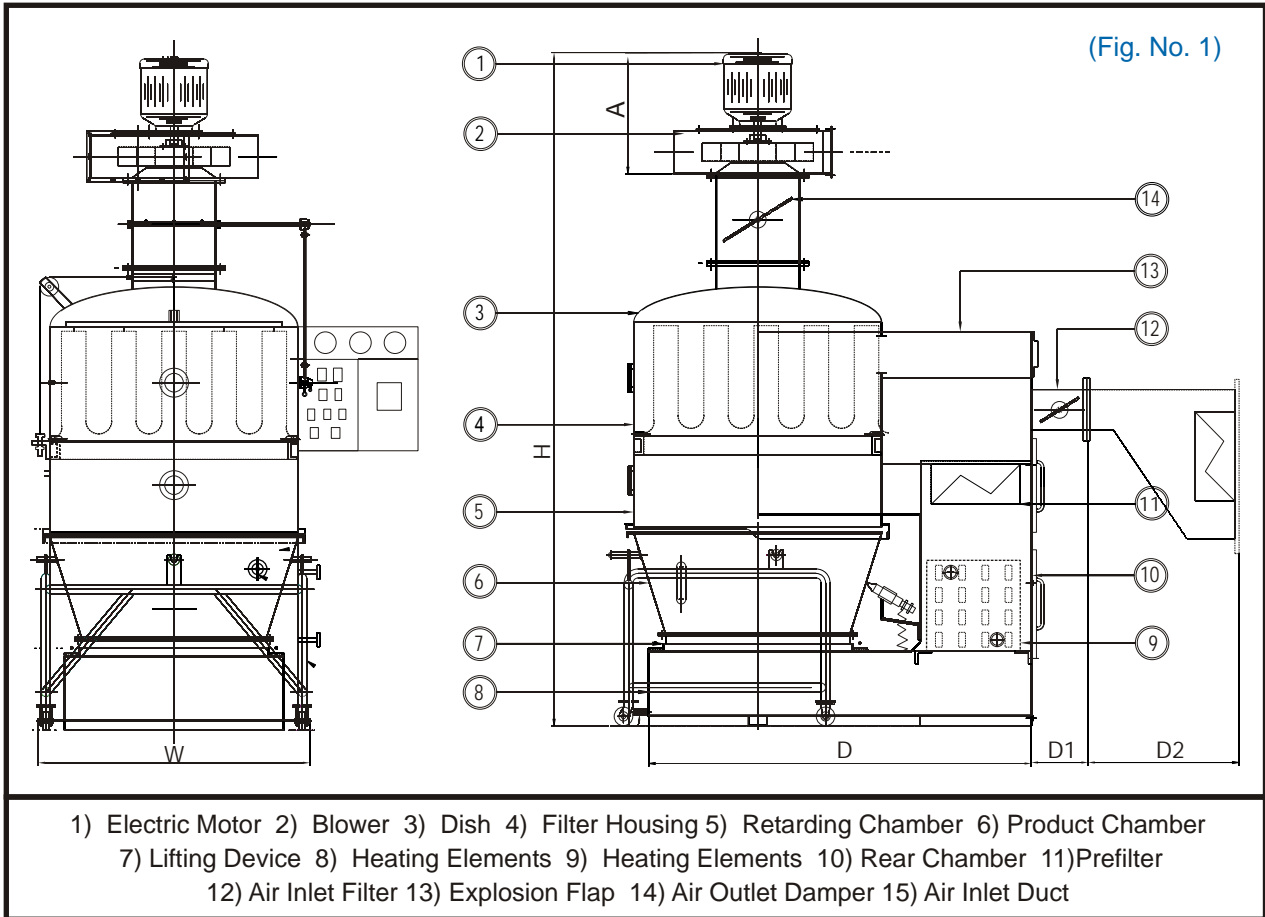


Outstanding Features:

- Quick and Uniform Drying
- Water of crystallisation can be Extracted Quickly
- Most Energy Efficient Drying
- Application Possible In All Kinds Of Drying and Roasting Processes
- Low Drying Cost
- Comparatively Low Drying Temperature
- Simple and Easy Operation
- Almost Zero Maintenance

FLUIDISED BED DRYERS

DESCRIPTION : FLUIDISED BED DRYING is an advanced method of drying wet/semiwet solids. Unlike in tray drying, every solid particle is floating in the HOT STREAM OF AIR which is blown from down to up creating material layer in fluidised state. Due to this, almost every wet particle directly receives the heat energy from hot air. This results in uniform and quick drying. The trolley is used for loading the wet material and unloading the dry material. This process also saves precious production time and human energy. Due to this time saving and quality drying, these dryers have increasing demand wherever drying is desired. These dryers have popular demand in PHARMACEUTICALS, FOODS, DYESTUFFS, STARCH, STEARATES etc. FLUIDISED BED DRYER is a drying equipment having simple operation and construction.



CONSTRUCTION

FLUID BED DRYER is an assembly of -

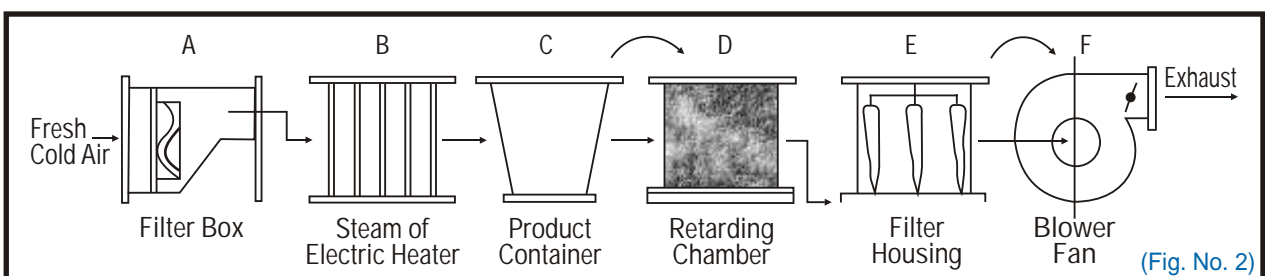
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|---|----------------------|
| 1) Cold Air filter | 6) Top Cover |
| 2) Air Heater (Steam/Hot Oil/Electric/Oil Fired Indirect) | 7) Induced Draft Fan |
| 3) Material feed trolley with inspection port hole and mesh | 8) Trolley Stand |
| 4) Fluidising chamber | 9) Duct |
| 5) Filter bag chamber | 10) Control Panel |

The components which are in contact with the material are selected or chosen as per requirement, those parts are,

- 11) Material feed trolley 12) Fluidising chamber

All other parts can be selected or chosen as desired by the USER.

INTERNAL FLOW DIAGRAM



OPERATION

INDUCED DRAFT FAN creates a draft inside the equipment. The air flow created by the fan is forced through the bed of wet solids to be dried. This air flow/velocity is adjusted according to the density of the material such that the FLUIDISED BED is created. The cold air enters through the filter to get cleaned and then made to blow over STEAM / HOT OIL / ELECTRICAL / OIL FIRED Heat Exchangers / Radiators. The air picks up adequate temperature which is controlled through temperature controller. The wet solids while in fluidised state are in suspension with HOT STREAM OF AIR and thereby quick drying is achieved. Due to constant fresh hot air supply, high vapour pressure difference can be achieved between wet solid particles and the hot air stream. This contributes positively for quick drying.

After the air is passed through the bed, the light particles those may be present in fluidised bed try to get carried over with the air flow. Hence, the set of FILTER BAGS is provided to filter those flying light particles and the clean air is exhausted through the I.D. (Induced Draft) fan. This filter bag assembly is provided with the Automatic / Manual shaking arrangements.

After the adequate drying is over, the temperature of exhaust starts rising and this is the indication of batch getting over.

This batch time strictly depends on - a) Moisture content (Bound and Unbound). b) Hygroscopic nature of the material. c) Water holding capacity of the material d) Particle size. e) Overall Chemistry of the product. Due to so many parameters the batch time for each product varies and is decided individually. However, fluidised bed drying has all superior features over tray ovens and conventional dryers.

TYPES OF AIR HEATING

- ▶ **STEAM HEATING** : The heat is transferred to the air through Steam Radiator (Heat Exchanger). The desired temperature can be maintained by controlling steam pressure by P.R.V. or by controlling steam flow by Motorised / Pneumatic Valve or by steam Solenoid Valve.
- ▶ **THERMIC FLUID HEATING** : The heat is transferred to the air through Thermic Fluid Radiator. The desired temperature can be maintained by controlling the Hot Thermic Fluid flow by Motorised / Pneumatically operated Valve.
- ▶ **ELECTRICAL HEATING** : The heat is transferred to the air through Electrical Finned / Strip Heaters. The desired temperature can be maintained by controlling the power ON-OFF by Thermostat.
- ▶ **OIL FIRED HOT AIR GENERATOR (INDIRECT TYPE)** : In this system, the heat is transferred to the air by Oil fired indirect type Heat Exchanger. The desired temperature can be controlled by maintaining the burner in ON-OFF condition. This results in high ENERGY SAVING and is widely use where higher temperature levels are required. Very short DRYING TIME can be achieved through this type of heating.

OUR OTHER PRODUCTS RANGE

- ▶▶ **e-STEAM / STEAMPACK - (NON-IBR)** FOUR PASS OIL/GAS FIRED FULLY AUTOMATIC NON-IBR STEAM BOILERS (100 kg/hr TO 1000 kg/hr)
- ▶▶ **FLUIDTHERM** - THREE PASS OIL/GAS FIRED FULLY AUTOMATIC THERMIC FLUID HEATERS (50000 kcal/hr TO 2500000 kcal/hr)
- ▶▶ **AIRPACK** - OIL/GAS FIRED FULLY AUTOMATIC HOT AIR GENERATORS (25000 kcal/hr TO 2000000 kcal/hr)
- ▶▶ **STEAMPACK - (IBR)** THREE PASS OIL/GAS FIRED FULLY AUTOMATIC SMOKE TUBE TYPE IBR STEAM BOILERS (1000 kg/hr TO 15000 kg/hr)
- ▶▶ **STBC** - THREE PASS COAL/AGROWASTE FIRED FULLY AUTOMATIC SMOKE TUBE INTERNAL FURNACE TYPE IBR STEAM BOILERS (750 kg/hr TO 6000 kg/hr)
- ▶▶ **AFEF** - COAL/AGROWASTE FIRED FULLY AUTOMATIC SMOKE TUBE EXTERNAL FURNACE TYPE IBR STEAM BOILERS (750 kg/hr TO 10000 kg/hr AND ABOVE)
- ▶▶ **AQUAWARM - A** THREE PASS COIL TYPE OIL/GAS FIRED PRESSURISED/NON PRESSURISED HOT WATER GENERATORS (50000 kcal/hr TO 2500000 kcal/hr AND ABOVE)
- ▶▶ **AQUAWARM - B** SMOKE TUBE SHELL AND TUBE TYPE HOT WATER GENERATORS (25000 kcal/hr TO 2500000 kcal/hr AND ABOVE)
- ▶▶ **STEAMOBILE** - MINIATURE OIL/GAS FIRED FULLY AUTOMATIC NON-IBR STEAM BOILERS (25 kg/hr TO 75 kg/hr)
- ▶▶ **AQUASOFT** - PACKAGED UP FLOW WATER SOFTENER
- ▶▶ **FLAMELITE** - OIL/GAS FIRED FULLY AUTOMATIC HIGHLY EFFICIENT BURNERS

WE ALSO DESIGN, MANUFACTURE AND SUPPLY - SHELL AND TUBE HEAT EXCHANGERS, IBR/NON-IBR TYPE WASTE HEAT RECOVERY SYSTEMS, SPRAY DRYERS, SPRAY COOLERS, CONCENTRATORS, THIN FILM EVAPORATORS, FALLING FILM EVAPORATORS, AGITATED BATCH REACTION KETTLES, PYROLYSIS REACTORS, ROTARY VACUUM DRYERS AND ALLIED PROCESS HEATING EQUIPMENTS.

TECHNICAL SPECIFICATIONS

MODEL	FBD-5	FBD-15	FBD-30	FBD-60	FBD-120	FBD-200	FBD-250	FBD-350	FBD-500
Container Volume (liters)	15	50	100	220	450	600	725	900	1460
Batch Size (kgs) Subject to Bulk Density	5 - 7	15 - 20	30-40	60-75	120-140	200-225	250-280	350-380	500-525
Drying Temperature (°C)									
Steam Heating	40-130								
Thermic Fluid Heating / Hot Air Generator	60-250								
Electrical Heating	40-150								

OVERALL DIMENSIONS (In mm) (Please refer to Fig. 1)

MODEL	FBD-5	FBD-15	FBD-30	FBD-60	FBD-120	FBD-200	FBD-250	FBD-350	FBD-500
H	1200	2325	2650	3125	3565	3650	3770	4000	4400
A	400	400	450	625	700	700	725	725	750
D	750	1050	1160	1575	1875	2065	2150	2405	2585
D1	100	125	200	200	200	250	250	200	200
D2	300	300	400	700	1100	1100	1100	1100	1200
W	750	850	1000	1100	1600	1600	1600	1900	1900

PILOT TRIAL FACILITY

Pilot model for conducting running trial is available.

We manufacture standard as well as GMP models. Specific designs to suit specific requirements can be manufactured.

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In view of our constant endeavors to improve the quality of our products, we reserve the rights to alter or change the specifications without prior notice.

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