

# Spin Flash Dryer



## Performance Driven

Process Plants for : Paints, Resins,  
Minerals & Pigments.



**CHEMFILT**  
SINCE 1985

# PASTE OR CAKE TO FINE POWDER

If drying of pastes filter cakes and highly viscous liquids is your problem, CHEMFILT'S SPIN FLASH DRYER (SFD) offers a cost effective solution for obtaining a fine, deagglomerated, homogenous dry product in just one single step process.

Drying by CHEMFILT'S SFD is far superior to drying by any conventional dryers like contact dryers, band dryers, drum dryers where drying process is characterized by long process time and need of costly post processing such as milling and classification.

Its ability to handle even most viscous liquids makes it an attractive alternative to spray drying, for which, dilution is required to obtain a pumpable & sprayable feed for drying adding extra load of evaporation and hence more cost of energy.

Liquids	Solutions	SPRAY	SFD	FBD
	Concentrate			
	Slurry			
	Suspension			
Pastes	Pumpable	SPRAY	SFD	FBD
	Non Pumpable			
Filter Cakes	Cohesive	SPRAY	SFD	FBD
	Non Cohesive			
Powder	Particulate	SPRAY	SFD	FBD
	Granulates / Agglo			
	Powder			
DRYER TYPE		SPRAY	SFD	FBD

## CONSTRUCTION & CONFIGURATION

CHEMFILT'S SPIN FLASH DRYER, is not just the dryer but a full drying system-comprising of wet cake handling & feeding system, air heating system, three-in-one process section with milling, drying, classification and product collection system.

## Feeding System

The feeding comprises of feed hopper, lump breaker & twin feed screw feeder.

Generously sized, non-arching/clogging type Feed hopper receives filter cakes / paste of material, either manually or mechanically.

The lump breaker, which is separately driven and mounted over the feed nozzle of screw feeder, receives feed from feed hopper.

The Twin Screw feeder feeds the material to the drying chamber. A temperature controlled Variable Frequency Drive (VFD) controls the speed of the Feeder for uninterrupted regulated flow of the feed to the drying Chamber.

## Heating System

The SFD can accept any type of heating system for heating incoming air for drying i.e. indirectly fired systems like HGG or indirectly fired systems like HAG or Thermic fluid heater/Steam generator/ Hot water heater in combination with finned tube heat exchanger, depending upon the product to be dried.

Standard models include generously sized finned tube heat exchanger, optionally, however, the heat source, either Thermic fluid heater or steam generator or hot water generator of adequate heating capacity is excluded from CHEMFILT's scope of supply to give user a choice of using their own installed utility or to have it from vendor of their choice.

## Drying Chamber

This is the heart of the system, which integrates process of milling/size reduction to increase area for effective drying dispersion of material in hot air/gas and classification. The chamber consists of horizontal rotor with swing hammers revolving in vertical axis in heavy-duty bearings, housed in a water-cooled bearing housing, against a toothed stator.

The heated air generates a well-distributed airflow, which enters the drying chamber from the bottom, and solids are charged in the grinding zone. There is an intense, swirling internal flow pattern of product and drying air within the chamber, ensuring uniform drying.

The dried product and the spent gases exit the drying chamber through the classifier mounted at the top of the chamber.

## Classifier

The classifier separates lighter and heavier particles. Classifier allows the lighter particles to pass through and returns the heavier particles for further size reduction.

## Dry Product Collection & Exhaust Air Cleaning System.

The Dry Product Collection & Exhaust Air Cleaning System comprises of:

### Bag House :

Bag filter for separation of powder from the air is reverse pulse type self-cleaning air filter with no moving components. The bag house is in SS304 construction and the filter has adequate filtration cloth area for lower pressure drop. A programmable sequential timer controller is provided for continuous cleaning of bags online.

For hazardous materials such as Organic and Pharma products explosion barrier valves are provided on request. The exhaust air can be re-circulated to recover heat through heat recovery system in order to reduce drying cost.

### Exhauster :

A centrifugal exhaust fan is provided in M.S. construction with a self-cleaning type impeller, which is statically and dynamically balanced. Fan is coupled with an adequately rated totally enclosed fan cooled motor by belt drive. Capacity of the fan is designed for having the dust collection system just adjacent to dryer.

### Rotary Air Lock Valve :

Rotating air lock valve is provided at the bottom of air filter. The air lock valve has a shaft mounted geared motor and facility for online easy cleaning of the valve.

### Ducting :

Interconnecting ducting between the dryer & bag filter is SS304 construction. The duct should be as short as possible to reduce heat losses and condensation. The duct between blower and bag filter, heat exchanger and dryer will be of M.S.

### Control Panel

The control panel is made of powder-coated sheet metal fabrication.

The Control panel houses motor starter, switch fuse units, variable frequency drives, programmable logic controller and sequential controller for bag filter with indication lamps and controls.

Just

## ONE STEP PROCESS

### PROCESS APPLICATION:

- Dyestuffs/Pigments: Iron Oxides, Titanium Dioxide, Copper Pthalocyanine, Zinc Phosphates, and Organic & Inorganic Pigments.
- Ceramics: Silica, Bentonite, Kaolin.
- Organic Chemicals: Optical brighteners, Flame Retardant Polymers
- Inorganic Chemicals: Metal Carbonates and Hydroxides, Calcium Phosphates, Zeolites.
- Agrochemicals: Herbicides, Fungicides
- Waste products: Sludge Sediments
- Suitable for pharmaceutical and food industry

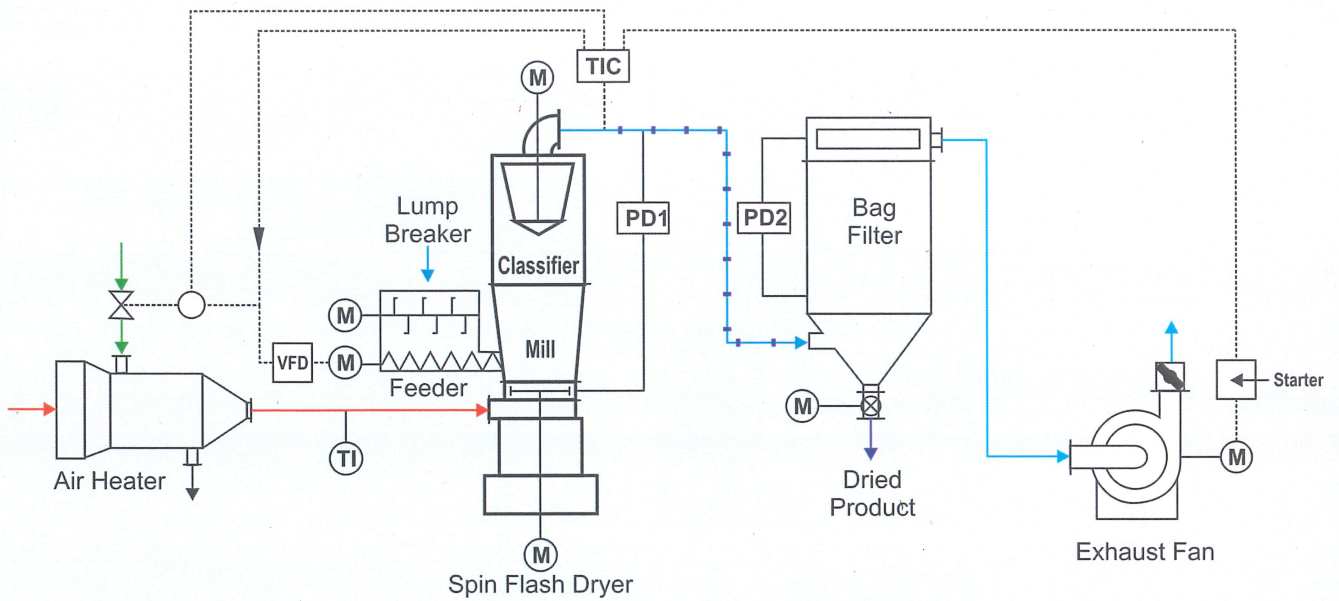
CHEMFILT has comprehensive pilot plant facility at V. U. Nagar for trial production run.

### ADVANTAGES:

The CHEMFILT'S SFD offers following main advantages :

- Ability to handle filter cakes, pastes and non-pumpable viscous liquids.
- Continuous operation.
- Compact design demanding less space.
- Effective heat & mass transfer rates.
- Easy to maintain with very low down time.
- Users friendly design.
- Drying of non-heat sensitive products at very high temperatures up to 250°C.
- Capacity to dry heat sensitive products at fairly low temperature.
- Entire operation under negative operating pressure ensuring 'dust free' i.e. 'product loss-free' operation.
- Choice of direct and indirect heating. Indirect heating with hot air generators or steam/thermic fluid heated finned tube heat exchanger giving choice of fuels to be used.





**System Instrumentation & Control**

**CHEMFILT's SFD are now available in wide range of sizes/models from small pilot unit to 2000 kgs/hr.**

MODEL	Unit	CF 0/ pilot	CF 1	CF 2	CF 3	CF 4	CF 5	CF 6
Water Evaporation	Kg/Hr.	50	100	200	500	800	1000	2000
Installed power	HP	42.00	73.00	83.00	125.00	220.00	262.00	400.00
Heat Source Capacity required	App. Kcal/Hr.	1,00,000	2,00,000	3,00,000	6,00,000	10,00,000	12,00,000	24,00,000

### DRYING SYSTEM CONTROLS :

The instrumentation and control diagram depicts the instruments and process variables available to ensure proper operations

#### Temperature Control:

P.I.D. based controller (TIC) is provided to maintain exit product temperature in very precise manner at preset value. The screw feeder is provided with VFD (A.C. drive) to feed the material very accurately into the system with varying amount depending upon 'feed back' of PID controller from outlet air temperature.

The temperature of the inlet air is controlled with the help of motorized / pneumatically operated control valve which is not included in standard scope of CHEMFILT supply.

#### Pressure Drop:

Provision to measure the pressure drop (PD1) across the dryer chamber and that (PD2) across Bag filter to monitor the operating condition of the dryer system.

#### Classifier Speed Control:

The classifying rotor speed is manually set by a VFD (A.C. drive) giving operation range from zero to maximum speed steplessly.



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