

Dryers

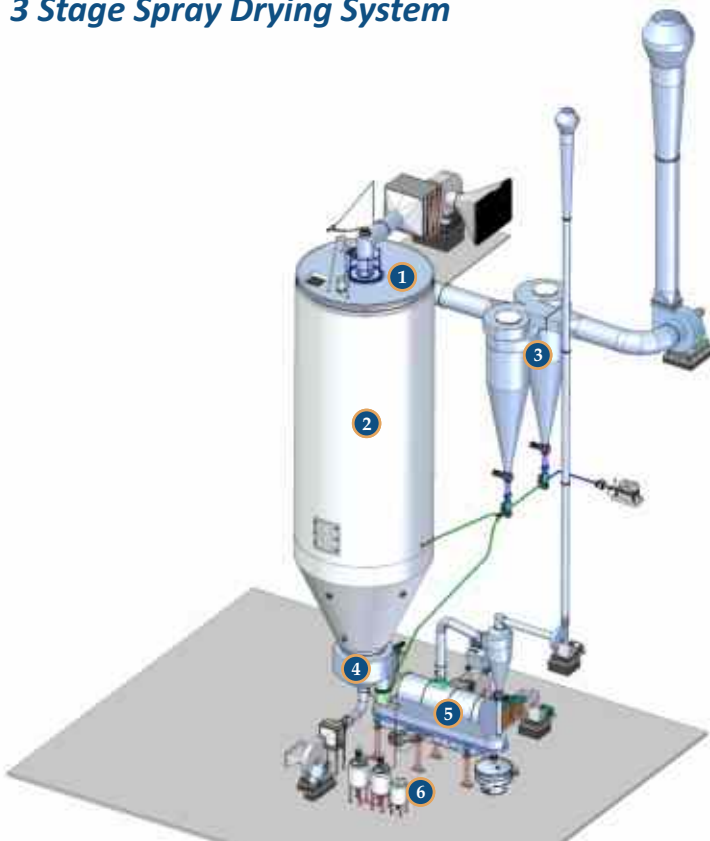
Industrial
to take care of all your
DRYING NEEDS



About Company

- The company was founded in 1977.
- The company provides customized turnkey projects & solutions to the industries, pertaining to food processing sector, dairy processing sector, fruit & vegetable processing sector, chemical industries and effluent treatment plants for various industries.
- It has client base in **42 countries**.
- ‘SSP’ is an ISO 9001:2008, and GMP certified company.
- “SSP” has **FOUR** manufacturing units with latest generation fabrication machines.
- ‘SSP’ has technically sound, highly skilled & experienced work force, numbering to **450+**.
- Supplied more than 400 Dryers round the globe.
- Proven Technology.
- Highly Energy Efficient Plants.
- Follow International Standards of Operation & Production.
- User’s friendly operation.

3 Stage Spray Drying System



- 1 High Pressure Nozzle System
- 2 Spray Dryer (1st Stage)
- 3 Twin Cyclone with Unique Fines Return System
- 4 Intermediate Fluid Bed Dryer (2nd Stage)
- 5 External Fluid Bed Dryer (3rd Stage)
- 6 Lecithination System

SSP’s Dryers

SSP offers most modern Drying Plants for Dairy, Food, Chemical and Pharmaceutical industries based on indigenously developed technology. As drying is an energy intensive process and dryers are expensive piece of equipment, SSP offers most economical dryers matching to specific requirement of client.

SSP supplies the following types of Dryers

SPRAY DRYER

SPIN FLASH DRYER

STEAM TUBE DRYER

VACUUM BAND DRYER

ROTARY DRYER

VERTICAL THIN FILM DRYER

FREEZE DRYER

TUMBLER / ROTARY VACUUM DRYER

FLUID BED DRYER

SOLAR DRYER



spray dryer

Spray Dryer

SSP Spray Dryers are relatively simple in operation which accept feed in fluid state and convert it into a dried particulate form by atomizing the fluid into a hot drying medium.

Atomization is done using high pressure nozzle, high pressure air, two fluid nozzles or centrifugal disc atomizer.

The heating of drying air can be through steam radiator or thermic fluid air heater according to the service conditions available.

Direct or indirect fired hot air generator through oil or gas according to fuel availability with client.

The unique **Fines Re-circulation System** produces highest quality of agglomerated powder.

Applications:

Milk Powder

Whey Powder

Ceramic Slurry

Magnesium Chloride

Molasses

Poly Aluminum Chloride

Enzymes

Catalysts

Calcium Chloride

Instant Tea

Instant Coffee

Ice Cream Mix Powder

Bakers Yeast

UF Resin

Fruit Juice Powder

Protein Hydrolysate

Egg Powder

Polyvinyl Acetate

Dyes

Detergent Powder

Herbal Products

and Lots of other products

Criteria for Selection:

Physical /Chemical properties of the product.

Production Capacity (Kg/Hr)

Initial Moisture Content and final moisture required.

Particle Size Distribution.

Temperature & Drying Characteristics.

Explosion & Toxicological Characteristics.

Basic Features of the System:

- Production of instant quality powder.
- Flexibility in Controlling Powder Quality.
- Negligible - deposition of Powder in Chamber.
- Less downtime for Maintenance.
- WINCH driven special CLEANING LIFT.
- EXPANDABLE up to 100% Capacity.

Developments:

- Spray dryer with Nozzle Atomization & Disc Atomization
- Modern Spray Dryer design with both types atomization to get desired quality of powder
- Instant WMP Powder (Lecithinated)
- No sticking in the drying chamber even with dairy whitener.

Freeze Dryer

Freeze dryer retains aroma, improves appearance and taste because freeze drying takes place at a low temperature which minimizes heat damage and retains volatile components (aroma). It also increases the shelf life of the dried product as compared to standard drying practices. Freeze-drying involves dehydration of food products at low temperature and pressure. As a result only the moisture is removed, leaving the molecular structure intact. The end product is light in weight with least or no change in volume. Worldwide freeze-drying technology is considered as the ultimate amongst all other dehydration methods. Hence this technique is currently being used for the production of instant coffee, instant tea, fruit pulp and other heat sensitive products.

Applications:

- Dehydration / Drying of food products.
- Instant Coffee Processing.



freeze dryer

Tumbler Dryer / Sterilizer

This type of dryers are mostly used in pharmaceutical companies. This is a batch type dryer heated by steam (Indirect). This dryer can also be used as a sterilizer. Recovery of solvent from powder is possible using such dryer.



tumbler dryer

Applications:

- Talcum Powder
- Pharma Powders/granules

Fluid Bed Dryer

Versatile Drying method (Batch or Continuous Type) used for drying for various types of solids efficiently. It can also reduce the energy requirement of a spray dryer plant when used as a second stage dryer for production of instant quality powders.

Fluid bed dryer comprises of a top fluidizing chamber & a bottom air distribution chamber separated by a specially designed perforated plate.

The feed of wet materials is dried by intimate contact with hot air when the material is in a fluidised state. A vibrating mechanism can be attached to give a forward motion cum agitation to the product at a controlled rate. It is also used as second stage dryer for many products.

Applications:

- | | | |
|---------------------|---------------------------|------------------|
| Milk Powder | Cheese Powder | Detergent Powder |
| Fruit Pellets | Dextrose | Salt (NaCl) |
| Agglomerated Powder | Sodium Perbonate | Herbal Powder |
| Sodium Sulphate | Different types of grains | |



fluid bed dryer

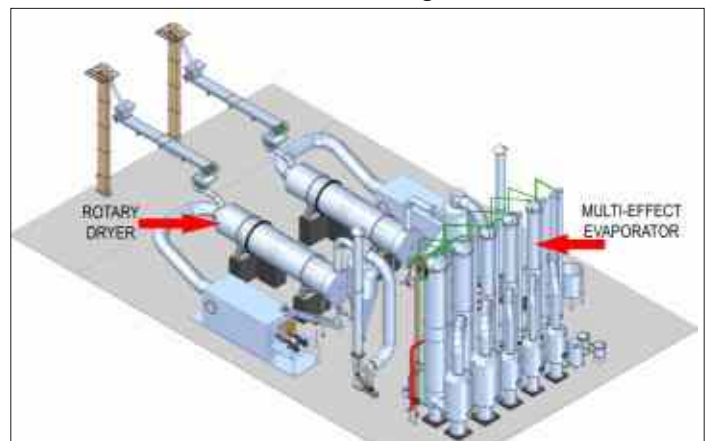
Rotary Dryer

In direct heat Rotary Dryers a continuous feed of wet particulate material is dried by contact with heated air, while being transported along the interior of a rotating cylinder / rotating shell acting as the conveying device and stirrer.

SSP offers Rotary Dryers in co-current (Parallel) and counter-current operation. In the former the wet material is exposed to the hottest air which enables heat sensitive or sticky material to be dried successfully. In counter-current operation dried material is exposed to the hottest air helping to achieve very low moisture content. The hot gas may enter at a very high temperature as high as 1600°C.

Applications:

- | | |
|--------------------|-------------------|
| Ammonium Sulphate | Citric Acid |
| China Clay | Mineral Sand |
| Sodium Sulphate | Effluents mixture |
| Coal dust and Coke | Saw dust |
| Mehndi/Henna | Bagasse. |



rotary dryer

Steam Tube Dryer

Steam tube dryer is one of the indirect heated rotary dryers, contain rotating shell, rows of steam tubes arranged in concentric circles and extended throughout the length of the dryer. Steam tubes are designed to transfer heat from steam to the material being dried. This is one of the most energy efficient dryers. The tubes and radial flights together serve to agitate the material and to provide required residence time.

Applications:

Grains Germs Fibres



steam tube dryer

Spin Flash Dryer

Spin Flash Dryer is ideal for drying of wet cake, slurry, paste which is normally difficult to dry in other dryers. The material is fed by screw feeder through a variable speed drive into the vertical drying chamber where it is heated by hot air and at the same time disintegrated by a specially designed disintegrator. The heating of air may be direct or indirect depending upon the application. The dry powder is collected through cyclone separator / bag filter or with combination of both.

Applications:

Amino Acid	Pigments	Starch
Palm Kernel	DCP	Gluten
Effluent	Bleach Clay	Organic Salt
H-Acid	Dye & Dye Intermediates	



spin flash dryer

Vacuum Band Dryer

It is best suited for continuous drying of temperature sensitive and sugar containing products at low temperature under vacuum conditions. The dryer consists of a vacuum chamber in which conveyer bands of food grade quality are arranged. The band passes over the hot plates heated internally by steam or hot water. Feed product is spread on the moving band and is dried as it moves on the hot plates. Dried product is obtained at the other end.

Applications:

Malted food	Extracts
Fruits & Vegetables	Gelatin
Pharmaceuticals	Beverage Mix
Enzymes.	



vacuum band dryer

Agitated Thin Film Dryer

This type of dryer is used for converting concentrated material to solid/semi solid form. This is designed with vacuum system / without vacuum system. Solvents/water is collected through condenser. Feed is pumped to heat exchanger where it is scrapped/agitated through series of multiple blades on the inner surface of a vertical shell and shell is heated by steam. Due to vigorous agitation the heat transfer is fast and slurry is converted to solid/semi-solid form.

Applications:

Effluent concentration and drying
solvent recovery and drying



agitated thin film dryer

Pilot Plant Facilities:

SSP has a full fledged R & D Centre recognized by the Department of Scientific & Industrial Research, Government of India with the following pilot plants to conduct trials of various applications.

Three Stage Spray Dryer (50 Kg/Hr W.E.)	Flash Dryer (2 Kg/Hr W.E.)
Fluid Bed Dryer (0.25 sqm)	Spin Flash Dryer
Spray Dryer (10 Kg/Hr)	Rotary Dryer
Agglomerator	Freeze Dryer

SSP PVT LIMITED

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