



**FOOD & BIOTECH
ENGINEERS (INDIA) PVT. LTD.**

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www.foodandbiotech.com





ABOUT OUR COMPANY

FOOD AND BIOTECH ENGINEERS INDIA PRIVATE LIMITED are Designers, Consultants, Manufacturers, Suppliers of Dairy and Food Processing Equipments such as Evaporators and Dryers, Storage Tanks, Pressure Vessels and Heat Exchangers. We cater to equipments and machinery needs of Fruit and Vegetable Processing Industry, Malt and Maize/Starch Products Industry, Herbal and Biotechnology Industry, Chemical and Pharmaceutical Industry and Sugar/Distillery Sector.

We are specialize in concept to commissioning turnkey solutions in all above fields and believe in customer-centric approach to project execution. We integrate various industrial services like Mechanical Works, Industrial Electricals and Process Automation to give our clients a one-stop solution. **We are ISO 9001: 2015, ISO 45001:2018 and ISO 14001: 2015 certified Company.**

Inspired by our desire and ability to contribute and encouraged by market needs and subsequent positive consumer response, We at FOOD AND BIOTECH ENGINEERS INDIA PVT. LIMITED started out as Dairy Equipment Manufacturers in 1991 based out of NCR.

Over the years, impeccably led and guided by our top management, supported by competent teams of devoted engineers and technical professionals and backed by state-of-the-art infrastructure and facilities for development and manufacturing, we have diversified and established ourselves as Designers, Consultants, Manufacturers and Suppliers of:

- ▶ Milk Processing Plants, Evaporators, Various type of Dryers and Food Processing Solutions, Storage Tanks, Pressure Vessels and Heat Exchangers
- ▶ Maize and Starch Processing Plants.
- ▶ Fruit Processing Plants.
- ▶ White and Brown Malted Foods Manufacturing Equipments, Nutraceuticals and Health Care Products Industry.
- ▶ Various Machinery for Herbal, Pharmaceutical and Biotechnology Industry.
- ▶ Water Treatment Schemes and Membrane Processing Solutions.
- ▶ Zero Discharge Schemes for Sugar Industry and Distilleries.

We have earned ourselves reputation for energy efficient designs, cost effective technical solutions, time-bound deliveries, competent project execution and lifelong technical service support.

As our relationship with our clients is based on mutual trust and synergy, we are preferred choice of clients for Concept to Commissioning and Turnkey Solutions.

As a result of cost effective and energy efficient designs of our equipments and we have been exporting plants to USA, Russia, Australia, Poland, South Africa, Uganda, Nepal adhering to exacting standards of international business.

RALLI OY of Finland, renowned consultants in Evaporation Technology are our technical collaborators.

With a substantial chunk of our business in exports, we have been earning valuable foreign exchange for the country.

FBE is proud to have generated employment opportunities for about 1000 people.

OUR FOUNDER

Mr. R.P. Singh is the founder, promoter, Managing Director and CEO of Food and Biotech Engineers India Pvt. Limited.

Mr. Singh earned a Bachelor's degree in Technology and Masters degree in Engineering and has gained profound experience in processing technologies and plant maintenance before venturing out on his entrepreneurial journey.



With his uncanny grasp of problem solving and technical design, lucid vision of customer-centered enterprise, remarkable leadership ability and tenacity of purpose flawless acumen for business and benevolent attitude, he has turned FBE into an organization with a name to reckon with.

Articulating his deep practical experience for benefit of industry and future students, he has authored a Handbook of Processing, Evaporation and Drying Technology

Mr. R.P. Singh has been awarded with Udyog Patra from Institute of Trade and Industrial Development, Delhi for SELF – MADE INDUSTRIES, Rajiv Gandhi Shiromani Award by H.E Shri Syed Sibtey Razi Governor of Jharkhand and business sphere award.

ABOUT OUR COMPANY

CODES AND STANDARDS FOLLOWED FOR FABRICATION OF EVAPORATOR, VESSELS & OTHER EQUIPMENTS

PRESSURE VESSELS :	ASME Code Section VIII Div. 1 – 2007 edition ASME Code Section II -2007 edition for material ASME Code Section V – 2007 edition for non-destructive examinations. ASME Code Section IX – 2007 edition for welding qualifications. ASME – 16.5 -1996 edition for steel pipe flange and flange fittings.
TANKS :	IS 803
CENTRIFUGAL MONO - BLOCK PUMP :	3 - A standard.
PERFORMANCE TESTING OF VACUUM PUMPS :	BS 1571 - Part 2
MECHANICAL SEAL :	API 682
MECHANICAL SEAL GASKET MATERIAL :	USFDA 21 CFR 177. 2600/API682

QUALITY CONTROL SYSTEM - THE QUALITY CONTROL SYSTEM COMPRISES OF THE FOLLOWING COMPONENTS:

01. Authority and Responsibility.
02. Drawing , Deigning Calculations & Specification Control
03. Material Control
04. Examination and Inspection Program
05. Correction of Nonconformities.
06. Welding
07. Nondestructive Examination
08. Calibration of Measurement and Test Equipments
09. Records Retention
10. Inspection of Vessels and Vessel Parts

CODES AND STANDARDS FOLLOWED FOR FABRICATION OF EVAPORATOR (FOR EUROPEAN COUNTRIES)

PRESSURE VESSELS :	<p>Directive: PED 97/23/EC</p> <p>EN-13445 : 2002 (Part 1 -5) For Unfired pressure vessel</p> <p>Part-1: General</p> <p>Part-2: Materials</p> <p>Part-3: Design</p> <p>Part-4: Fabrication</p> <p>Part-5: Inspection and Testing</p> <p>EN 571-1: 1997, EN 1290: 1998, EN1435: 1997, EN 462-1:1994, EN 462-2:1994, ISO 3452-2:2006 for non destructive testing.</p> <p>EN 1092 -1: 2001 for flanges and their joints, circular flanges for pipes, valves, fitting and accessories, PN designated.</p> <p>EN ISO 15614-1: 2004 for specification and qualification of welding procedure for metallic material.</p>
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SCOPE OF BUSINESS

DAIRY SECTOR	HERBAL EXTRACTS	STARCH PLANT
<ul style="list-style-type: none"> ➤ Turnkey supplies of Milk processing plant ➤ UHT PLANT ➤ Turnkey supplies of Evaporators ➤ Turnkey supplies of Spray dryers, (Nozzle type, disc atomizer type) ➤ Fluidized bed dryer ➤ Paneer making plant ➤ Butter churn ➤ Continuous khoa making plant ➤ Malted milk food plant ➤ Ice cream plant ➤ Casein, lactose & Whey processing plant ➤ Cheese plant 	<ul style="list-style-type: none"> ➤ Wiped film evaporator ➤ Rotary/vertical extractor ➤ Distillation column ➤ Vacuum tray dryer ➤ Inert gas dryer 	<ul style="list-style-type: none"> ➤ Maltodextrin production plant from Rice ➤ Glucose plant
EFFLUENT TREATMENT PLANT		
<ul style="list-style-type: none"> ➤ Industrial /distillery effluent treatment plant 		

ABOUT OUR COMPANY



FOOD, FRUIT & NEUTRACEUTICA SECTOR

- Tomato juice & Tomato powder plant
- Orange juice / lemon juice plant
- Pectin powder plant
- Lemonin oil extract plant
- Citrus powder plant
- Malt Extract Powder Plant

OTHER EQUIPMENTS

- Milk Silo
- Butter Churn
- Butter melting system
- Road Milk Tanker
- Screw Conveyor
- Rotary Valve
- Blowthrough Valve
- Steam radiator
- Disc Atomizer
- 10-25 kg Butter packing machine
- Twin shaft mixer
- Turbo Blender
- Paddle mixer
- Cone mixer
- Ribbon Blender
- Sigma Mixer
- Mixer with turbine agitator at bottom and paddle stirrer at top
- Finger Stirrer with baffles
- Cheese kettle
- CIP spray nozzle (Rotary type, turbine type)
- Triple concentric tubular heater
- Sifter
- Mist type Jet condenser
- Retractable CIP nozzle
- Bottle Sterilizer

INDUSTRIAL EVAPORATORS

Removal of wastewater and thereby concentrating useful solids available in any liquid product is a necessity in many processes such as: Dairy, fruit juices, starch, malt, sugar, chemicals, paper & pulp and other similar industries. In most of these applications, the concentrated liquid is further processed into non crystallizing syrups such as fruit juices, malt extract, high extract, high fructose corn syrup etc. all these applications, therefore involve evaporation of large quantities of wastewater from their initial feed stock.

For few of these products, particularly in dairy/ fruit juice/ malt, the evaporation demands a very special care to ensure that the original properties of the products such as flavor, taste and color are retained even after evaporation and no degradation of the production of the products such as flavor, taste and color are retained even after evaporation and no degradation of the production of the product takes place.

- ▶ Agitated Thin Film Evaporators
- ▶ Batch Type Evaporator
- ▶ Falling Film Evaporators
- ▶ Forced Recirculation Evaporators
- ▶ Scrapped Surface Evaporator
- ▶ Wipe Film Evaporator



AGITATED THIN FILM EVAPORATORS



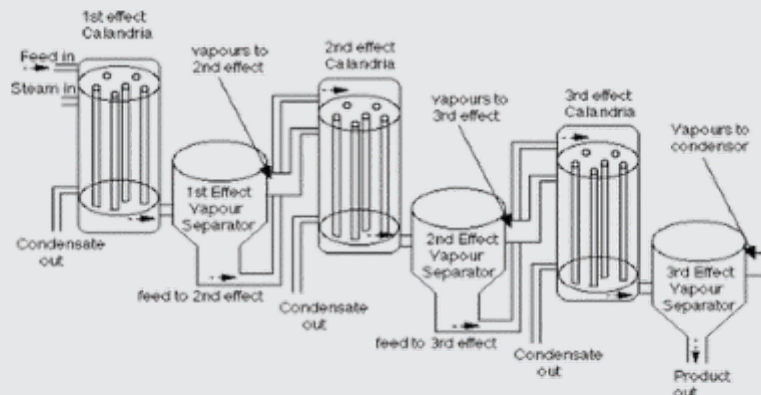
Agitated Thin Film Evaporators are extensively demanded in processing units to condensate the water vapors in various kinds of polymer based materials. Our complete range of these evaporators are manufactured using pristine quality components and pioneering techniques in conformity with international quality standards. Moreover, these evaporators are utilized to separate the mixture of liquids having various boiling points. These are also used to enhance the concentration of liquids. Agitated Thin Film Evaporators offered by us are highly praised among our clients for their low maintenance needs, long service life, and low power consumption features.

AGITATED THIN FILM EVAPORATORS

- High heat transfer coefficient.
- Less residence time.

BATCH TYPE EVAPORATOR

Based in Palwal, Haryana, we are a 1998 established company actively indulged in manufacturing and supplying excellent quality Batch Type Evaporator. It is highly demanded in the market and best suited in starch industries for heat sensitive products like protein extract, herbal extract, fruit syrups, pharmaceuticals and any other high viscosity products. It is well engineered and fabricated at our state-of-the-art facility using top notch quality raw materials and latest innovative techniques. Offered Batch Type Evaporator is highly praised and demanded among our clients for its numerous qualities like high performance, negligible maintenance, trouble free functionality, and prolonged service life.



BATCH TYPE EVAPORATOR

FBE design two types of batch evaporator

- Scrapped Surface Evaporator
- Wiped film evaporator.

APPLICATION

- Malt mix slurry
- Tomato paste
- Mango pulp paste
- Sugar Syrup
- Herbal extract
- Starch

FALLING FILM EVAPORATORS

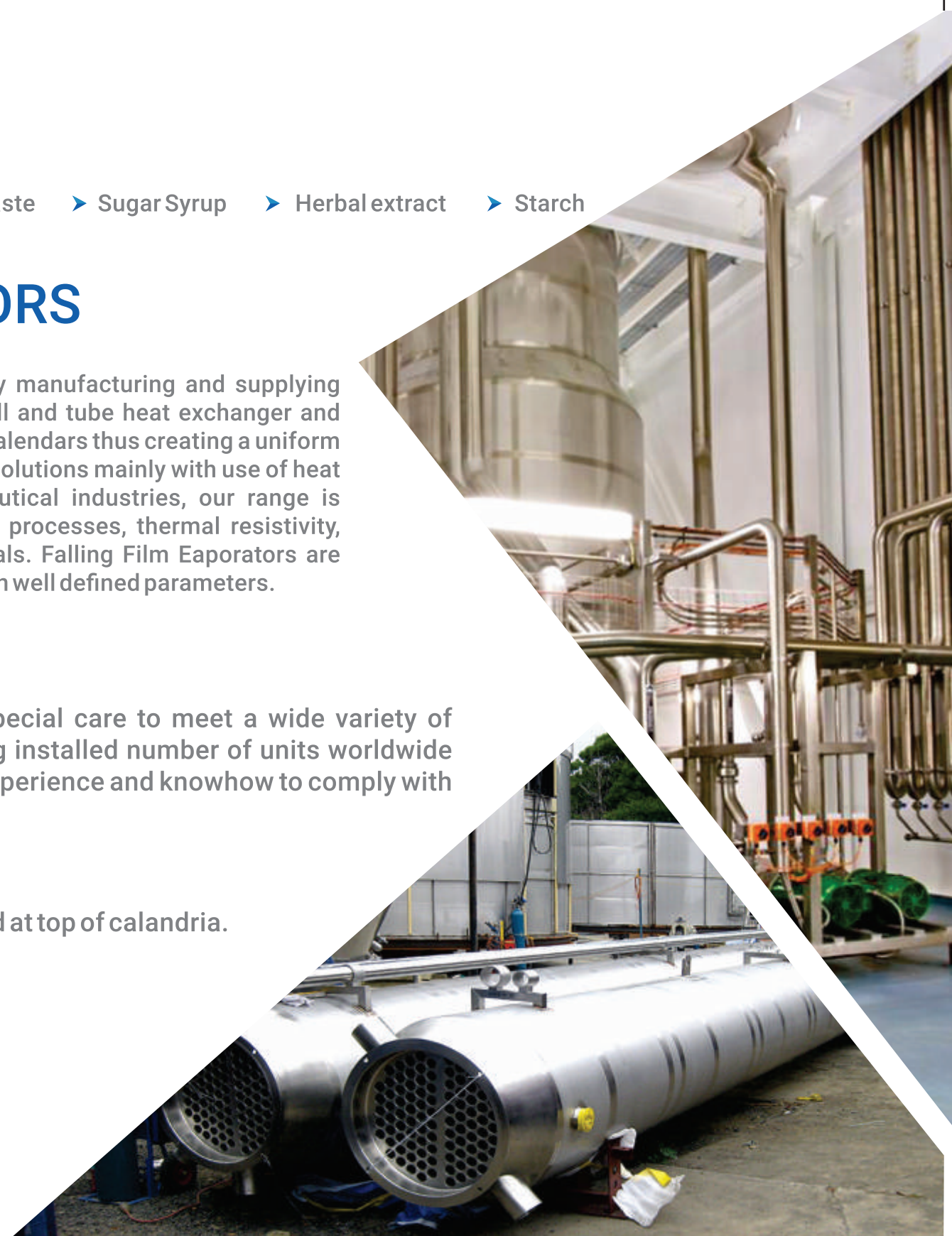
We have been serving our respected clients since 1998 by manufacturing and supplying excellent quality Falling Film Evaporators. They have a shell and tube heat exchanger and liquid in these systems is distributed and fed inside tubes of calendars thus creating a uniform film. Offered evaporators are mostly used for concentrating solutions mainly with use of heat sensitive components. Widely used in various pharmaceutical industries, our range is appreciated for numerous attributes like easy evaporation processes, thermal resistivity, trouble free operation and high resistance against chemicals. Falling Film Evaporators are delivered to our clients after proper checking and inspection on well defined parameters.

DESCRIPTION

Falling film evaporators are designed by FBE with special care to meet a wide variety of specifications and duties of the final products. Having installed number of units worldwide during the last decade, FBE has acquired substantial experience and knowhow to comply with customer

SALIENT FEATURES OF FALLING FILM EVAPORATOR

- Liquid distribution is through distributor plates placed at top of calandria.
- The film is going with gravity.
- Thinner film formation throughout the tubes.
- Shorter product contact time.
- Concentration of highly-sensitive materials.
- Can be operated at much lower del T.



- The lower ΔT is favorable to vapor recompression and consequently the energy consumption is low.
- Concentration level can be achieved upto 45% TS.
Useful for the concentration of milk, fruit juice, malt etc.

FBE DESIGNED FALLING FILM EVAPORATORS, ESPECIALLY FOR DAIRY INDUSTRY FEATURE ITEMS SUCH AS

- Adjustable and controllable direct contact heat treatment units.
- Shortest possible residence time.
- Special design to prevent bacteriological growth including thermophiles.
- Special design of liquid distribution systems to ensure correct tube coverage.

FORCED RECIRCULATION EVAPORATORS

Ever since our establishment in 1998, we are actively indulged in manufacturing and supplying excellent quality Forced Recirculation Evaporators. These are highly cherished by clients for their optimum performance and durability. In these evaporators, water is distributed in tubes like a fine film layer on surface of tubes. Due to less wetting in surface and scaling, fouling materials will form a layer of insoluble scale that reduces its evaporation capacity. There is no boiling on calandria and only heating takes place in it. Boiling happens in vapor separator and concentration without scaling is achieved. Forced Recirculation Evaporators can be availed from us at reasonable price in a promised time frame.

FORCED RECIRCULATION EVAPORATORS

- High heat transfer co-efficient.
- Suitable for medium solid concentration.



SCRAPPED SURFACE EVAPORATOR

Backed by our diligent employees and rich industrial experience, we have managed to become one of the leading manufacturers and suppliers of Scrapped Surface Evaporator. It comprises of an upright cylindrical vessel with a vertical rotor shaft extending concentrically within that vessel. There is an inlet pipe which supplies liquid to be evaporated to a distributor which then spreads that liquid around the inner wall of vessel. After that, a series of wiper assemblies carried by rotor shaft below the distributor serves for creation of a thin liquid film on vessel's inner wall. We deliver our complete range of Scrapped Surface Evaporator after thorough checking and inspection on varying parameters.

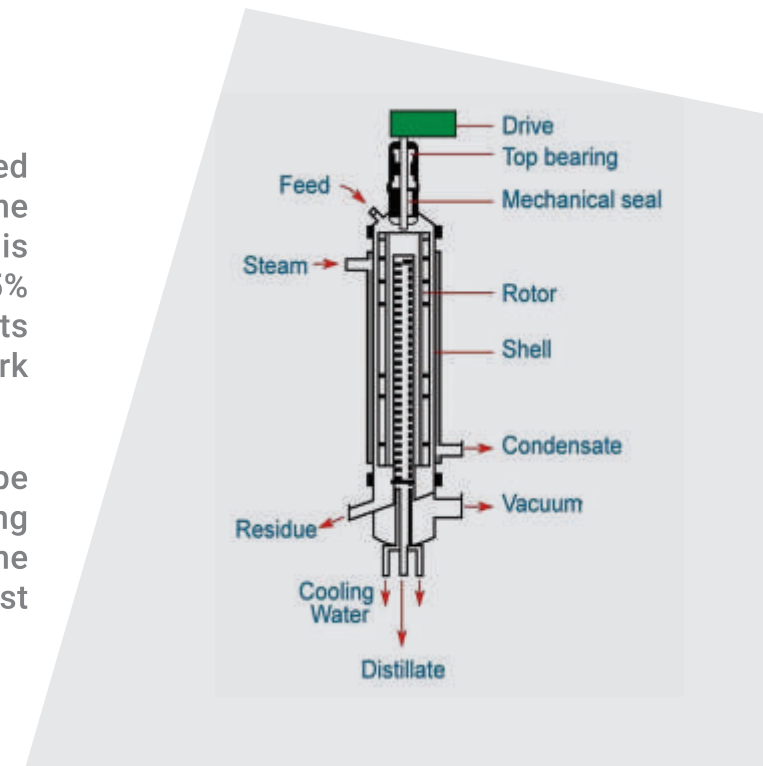
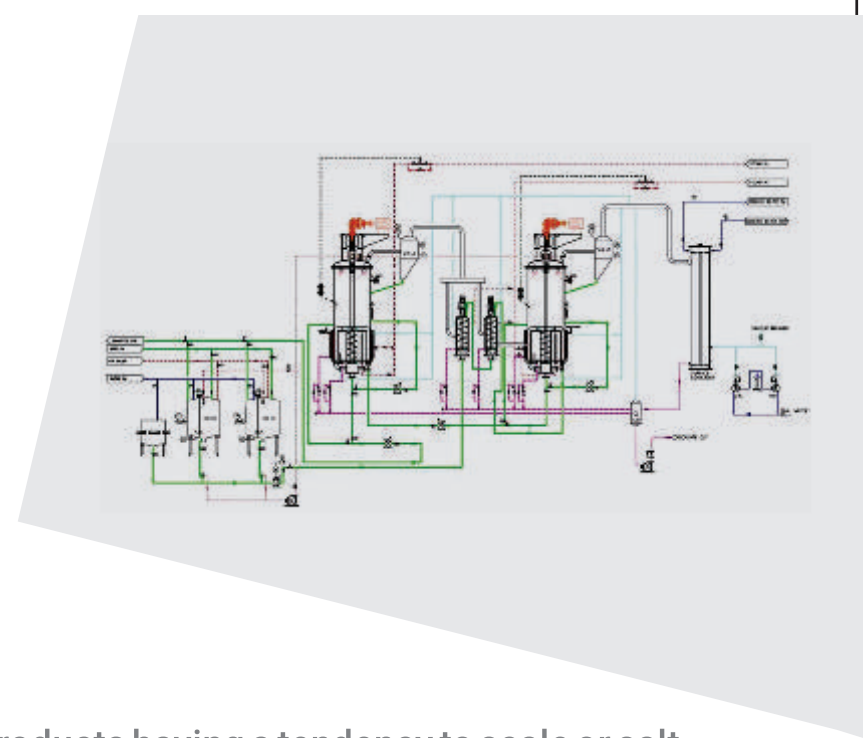
SCRAPPED SURFACE EVAPORATOR

It is usually selected for products which are highly viscous or in paste /syrup forms products having a tendency to scale or salt out during evaporation can also be handled in this evaporator. The rotating blades of this evaporators ensure that no material stays on the heat transfer surface for long duration thus preventing thermal degradation. The liquid flow can be bottom to top or top to bottom. This flow pattern depends on the fluid properties, chances of scale or crystal formation. This system can be used along with the falling film or forced circulation evaporators as last finisher stage.

WIPE FILM EVAPORATOR

With a vision to be a pioneer in our domain and establish ourselves as a brand, we are actively indulged in manufacturing and supplying excellent quality Wipe Film Evaporator. It is considered as one of the best equipment for continuous processing of viscous, heat-sensitive and fouling materials. This equipment is able to handle a broad array of feed compositions that can range between 1% to over 95% concentration Offered Wipe Film Evaporator is highly appreciated and demanded among our clients for its low maintenance requirements, sturdy structure, excellent operational life, and ability to work continuously.

We are one of the reliable & trusted organizations engaged in offering our clients a wide array of Wipe Film Evaporator. These are designed and machined in line with the specified industry standards using certified quality raw materials and components. Our Wipe Film Evaporators are widely used for the concentration of herbal extracts under high vacuum with specially designed condenser for least solvent loss. We ensure prompt delivery of these evaporators at minimal market prices.



With a vision to be a pioneer in our domain and establish ourselves as a brand, we are actively indulged in manufacturing and supplying excellent quality Liquid Milk Processing Plant. It is highly appreciated among our respected clients for its superior functioning, flawless performance, high durability, and many other qualities. This plant is immensely used in food industry for processing. Provided plant is manufactured using optimum quality components and advanced technology at our state-of-the-art facility. It is widely used in dairy industries for making different types of milk and milk products like cream, butter, ghee, milk shake powder, yogurt, and baby products. We deliver Liquid Milk Processing Plant after proper checking and inspection on well-defined parameters.

FOOD & BIOTECH ENGINEERS (INDIA) PVT. LTD is offering their customer with pocket friendly milk and processing plants. We design our products with high grade raw material. These are appropriate for small dairy firm and give best results. Their is different section for each product and all products functioning take place at a same time. This increase the productivity rate of the firm. Features like low energy consumption, less

manpower requirement, innovative technology, low maintenance easy to use make these products function well. These milk processing plants have best quality evaporator and dryer to remove the undesirable consistency of water. Further, make the food items last long and keep safe from spoiling it.

PROCESSING PLANTS

- ▶ Automatic Ghee Boiler Machine
- ▶ Butter Churn
- ▶ Mini Dairy
- ▶ Paneer Press Machine
- ▶ Weigh Bowl



MINI DAIRY

Established in 1998, we are a Palwal Haryana based company engaged in manufacturing and supplying excellent quality Mini Dairy. These Dairy plant has no capacity limitations or restrictions due to unique features incorporating low pressure components. has various capacities available and can be filled in the storage tanks as per the cylinder filling. Further, these plants run on automated PLC controlled systems and are easy to use. Mini Dairy is widely known for its sturdy construction, effective cooling capacity, low power consumption and excellent performance. Our expert's team of professionals endeavor hard to attain the utmost satisfactions of clients by offering them premium quality products within a committed time frame.

We proffer our clients with an advanced range of Mini Dairy. These are made using premium grade materials and latest machines in order to ensure highest quality standards. Known for their easy of operation, compact design, non-corrosive surface finish and longer service life. Used in diverse industry segments, these are delivered within the stipulated time frame at pocket friendly prices.

DESCRIPTION

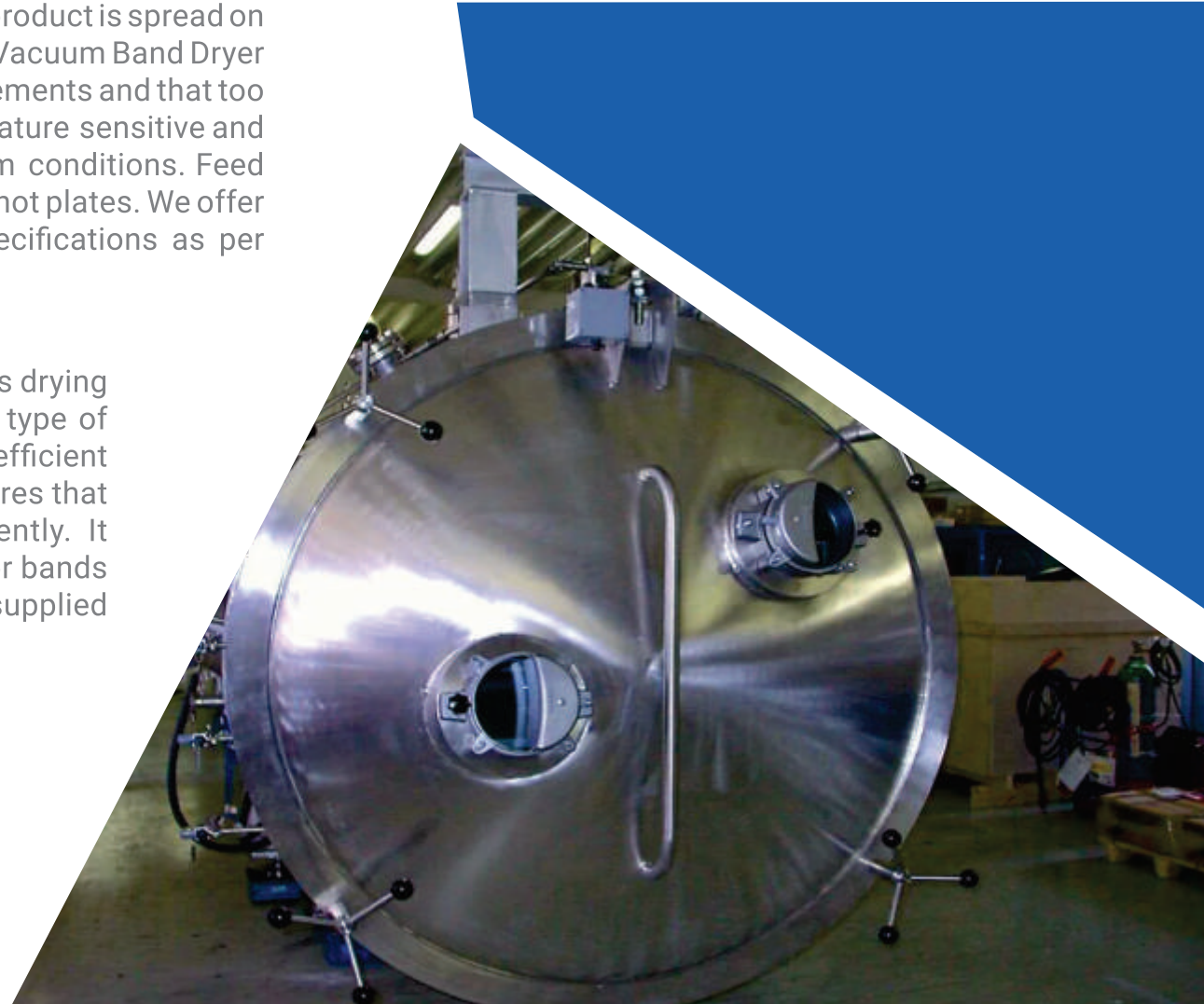
Mini Dairy are especially suitable for drying of adhesive products that dry in falling rate periods and tend to agglomerate. The product is pumped to a special extruder discharging directly into the path of high speed rotating dis integrator beaters. The dis integrator is continuously swept with hot air borne recycled material flowing through the dryer for a second pass. Most water is removed in and immediately above the dis integrator. The final drying takes place in ring shaped duct. This reduce the natural stickiness of the product and prevents material build up within the dryer.



VACUUM BAND DRYER

Based in Palwal, Haryana, we are a 1998 established company engaged in manufacturing and supplying excellent quality Vacuum Band Dryer. It is manufactured using optimum quality components and cutting-edge technology as per international standards. This dryer is widely used in food processing, cement, pharmaceutical and chemical industries for drying purposes. It is best suited for continuous drying of temperature sensitive and sugar containing products at low temperature under vacuum conditions. Feed product is spread on moving band and is dried as it moves on hot plates. We offer Vacuum Band Dryer in different models and technical specifications as per requirements and that too at reasonable rates. It is best suited for continuous drying of temperature sensitive and sugar containing products at low temperature under vacuum conditions. Feed product is spread on moving band and is dried as it moves on hot plates. We offer Vacuum Band Dryer in different models and technical specifications as per requirements and that too at reasonable rates.

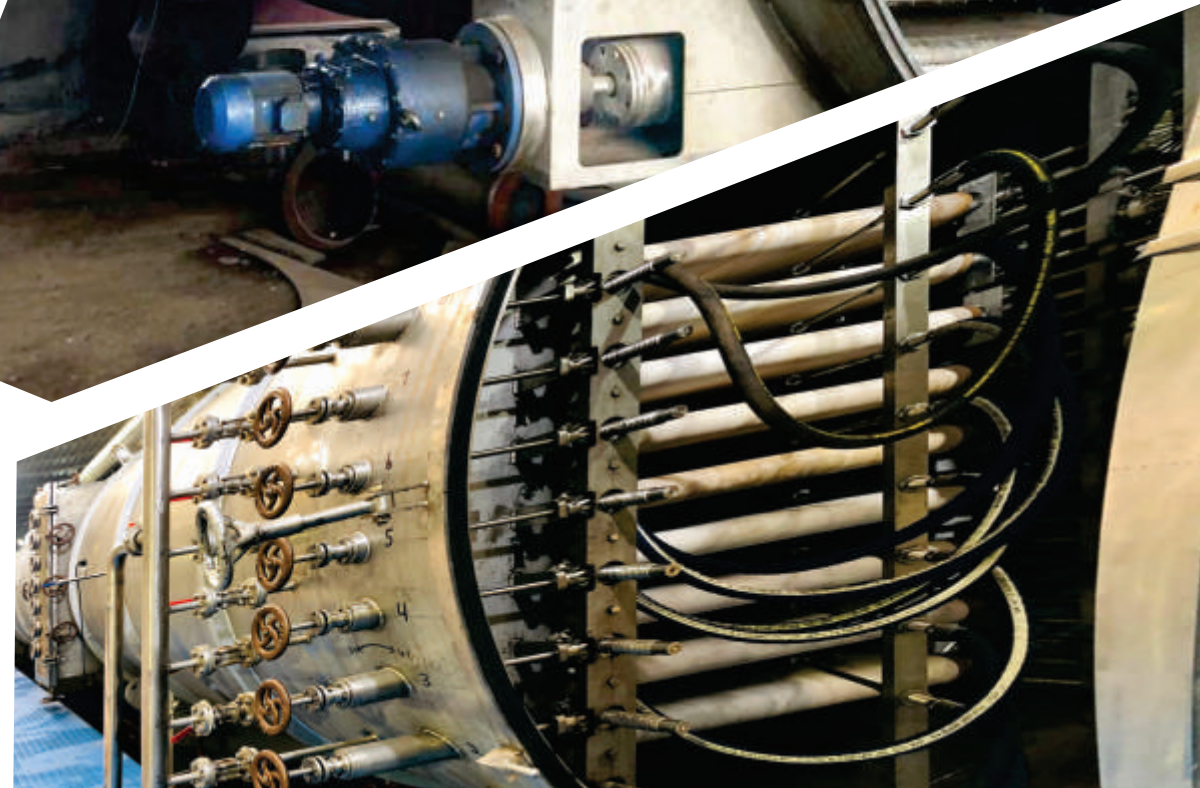
Vacuum Band dryer are especially efficient for the continuous drying of temperature sensitive products. The vacuum inside this type of dryer lowers the aggregate level for evaporation so that efficient drying can be accomplished at lower temperature. This ensures that sensitive foodstuffs can be dried very gently and efficiently. It comprises a vacuum chamber housing a number of conveyor bands which pass over platens heated by steam. These units are supplied with a range of capacities



APPLICATION

- Malted Milk drying
- Fruit juice concentrate drying
- Herbal extracts drying
- Lumpy products & granulates drying

FBE designs and supply malted milk plant. Malted milk food is the product obtained by mixing Milk with malt extract and cereal grain. The paste formed is evaporated and vacuum dried to manufacture malted milk powder. The scrapped type evaporator with specially designed agitator shall be used to concentrate the product upto 70-80% TS then it is dried in Vacuum Band dryer.



SPRAY DRYER

In the wide range of equipment we offer our customer with more efficient dryers. Our professional team design all equipment with innovative technology keeping all the hygiene point in their mind. We deal with different types of dryers like fluidized bed, rotary vacuum, spray, vacuum band etc. It remove water efficiently which help in creating the desirable flavor and color of the product. Due to its hygienic technique it prevent the growth of microorganism and keep it safe form spoiling. It is suitable for every agro, pharmaceutical, Herbal and food processing industries. The motor use in these products are design with the capacity to intake heavy load which make it user friendly. The features like corrosion free, easy to use, long-lasting make these dryers work more efficient.

For the past 20 years, we have been serving our respected clients by manufacturing and supplying excellent quality Spray Dryer. It is widely used for preparation of dry powder from a fluid or slurry by speedily hot gas drying technique. The moisture from liquid is completely eliminated to form powder. These dryers offer an easy installation and are quite simple to operate. They are generally used in food and pharmaceutical industries. Offered Spray Dryer completes the drying process within seconds without any flavor loss. They create powder of accurate particle size with overall quality. We offer these dryers in different models and technical specifications as per requirements and that too at market leading rates.

DESCRIPTION

Spray drying is transformation of feed from a fluid state into dried particulate form by spraying the feed into a hot drying medium. It is a continuous particle-processing drying operation. The feed can be a solution, suspension, dispersion, emulsion or slip. The dried product can be in the form of powders, granules, or agglomerates.



Feed is finely atomized and is introduced in the drying chamber along with hot air. The mixture of atomized feed and hot air moves towards the air exhaust of drying chamber. The time taken by this mixture to travel upto air exhaust is called as residence time of drying. During this residence time, the feed droplets loose its moisture to the hot air and are converted into dry powder particles. The dry powder falling on to the conical portion of drying chamber slides down to bottom of drying chamber with the assistance of vibrators/knockers and is collected in collection bag/bottle through the rotary valve located at the bottom of drying chamber.

The air leaving the drying chamber entrains some of the dry powder which is recovered in the cyclone separator and collected through rotary airlock. The air leaving the cyclone separator still has traces of dry powder, which is further recovered by scrubbing in wet scrubber or passing it through bag filter. Air from cyclone or bag house is sucked by induced draft fan

APPLICATION

- Milk Powder Plant (SMP/ WMP/ Dairy Whitener)
- Herbal Extracts
- Whey powder
- Fruit juice powder
- Instant coffee powder
- Egg powder
- Maltodextrin powder

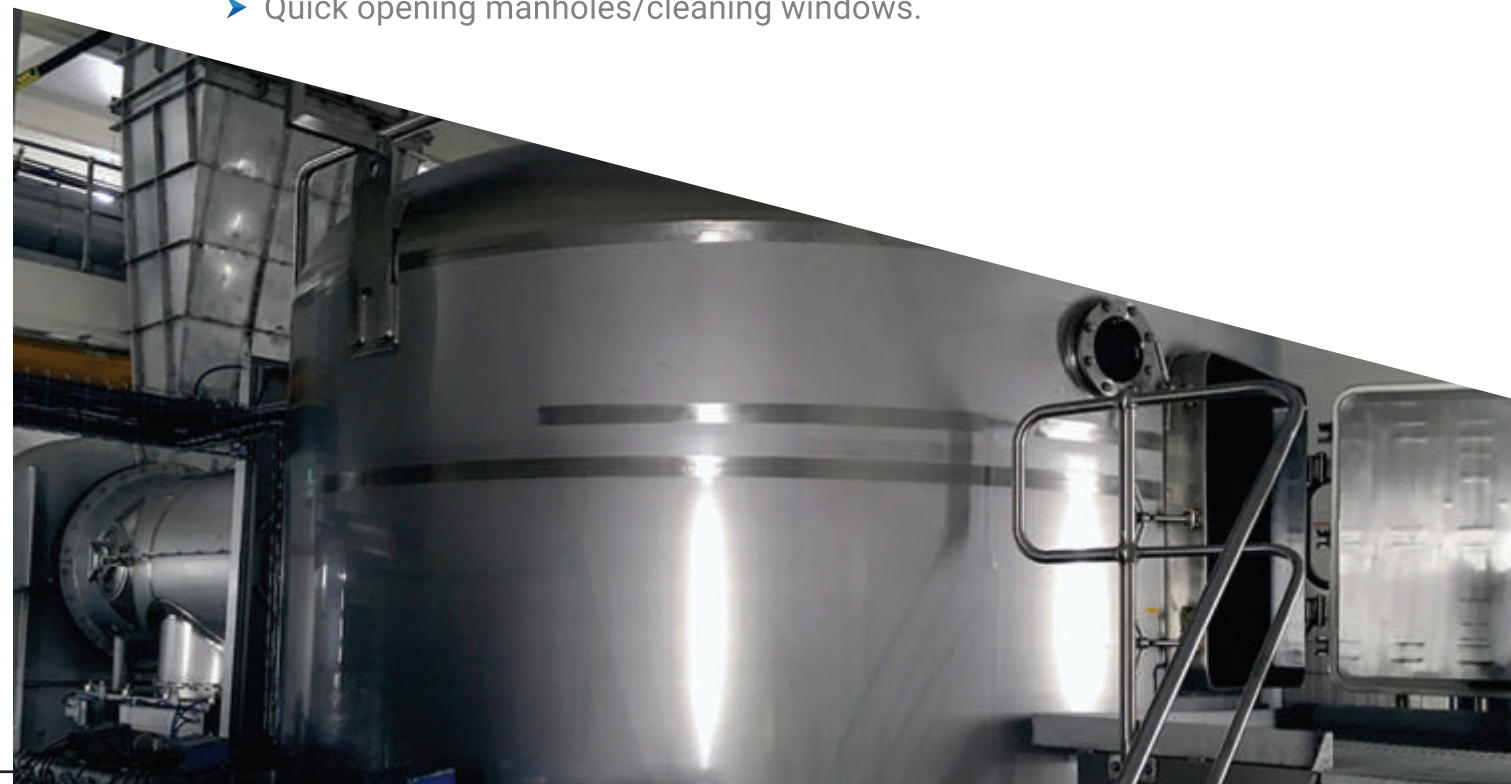
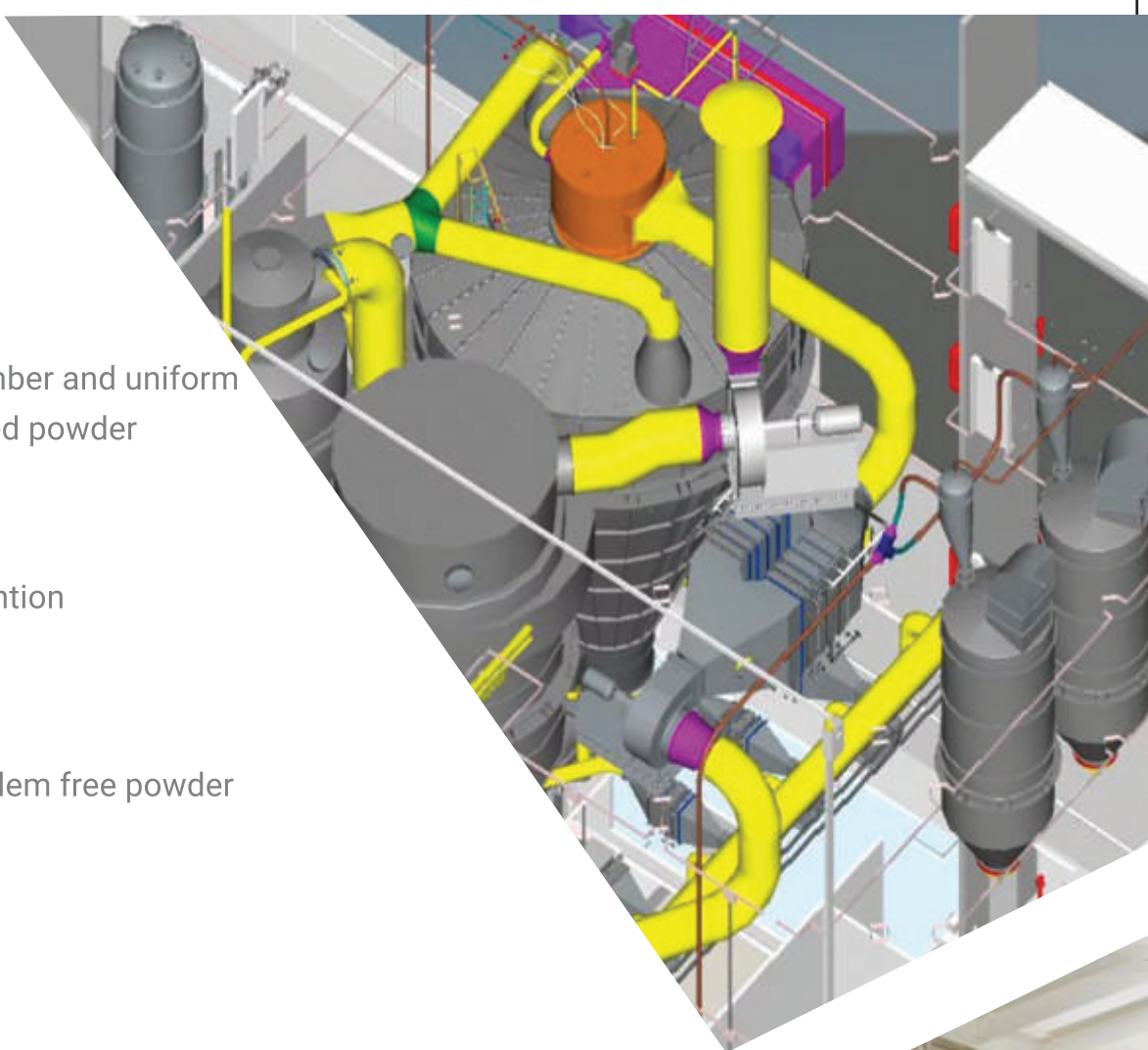
FBE MANUFACTURE SPRAY DRYER WITH FOLLOWING TYPES OF DRYING CHAMBER

- Tall form dryer
- Multi stage dryer (Ceiling exhaust)
- Compact Multistage dryer (Bottom exhaust)



SALIENT FEATURES OF FBE DESIGNED SPRAY DRYER

- Drying & particle formation in one process.
- Wide range of particle size and distribution can be obtained.
- Unique Air Disperser with uniform distribution of air in dryer chamber and uniform air velocity profile around atomization space resulting in minimised powder sticking and reduced downtime.
- Reduced running cost
- Fully automatic operation which requires very little human intervention
- Continuous production machine without human touch.
- Provision of cooling cum conveying system.
- Bottom cone angle of drying chamber is optimised to induce problem free powder slide across the cone.
- Air exhaust from high efficient cyclone & filter bag house
- Quick opening manholes/cleaning windows.



OUR PRECIOUS CLIENTS



Amul



And Many More....



FOOD & BIOTECH
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