

Better Environment  
Better Tomorrow



**Shree Krishna TechMech Pvt. Ltd.**  
We Design, Deliver Quality System

[www.sktmpl.com](http://www.sktmpl.com)

Process Designer & Manufacturer



## FROM DIRECTOR DESK

We are delighted to connect with you and share our mission, values, and endeavours. At SKTMPL we have a passion for two vital aspects of life: crafting exceptional spirits and preserving the environment. Our commitment is two fold: to produce the finest quality spirits that delight the palate and to do so in an environmentally responsible and sustainable manner.

We take immense pride in our artisanal approach to distilling. Each drop of our spirits is a testament to our dedication to perfection. From selecting the finest raw materials to employing time-honoured techniques.

We recognize that we operate in a world with finite resources, and it is our duty to protect and preserve it for future generations. Sustainability lies at the core of our operations. Through responsible sourcing, energy efficiency, waste reduction, and carbon offset initiatives, we aim to minimize our environmental impact.

Embracing innovation is a key driver of our success. We constantly strive to push the boundaries of techniques while exploring new avenues to improve our sustainability practices. Our team works tirelessly to find creative solutions that align with our values and benefit both our customers and the planet.

As a company rooted in a vibrant community, we believe in giving back. Whether through supporting local initiatives, participating in environmental cleanup programs, we actively engage with our community to foster positive change.

Honesty and integrity guide everything we do. We are committed to being transparent with our customers. Our practices are always in accordance with ethical standards, and we are open to feedback and suggestions.

Together with our dedicated team, passionate patrons, and esteemed partners, we aspire to build a better future. We look forward to sharing many more milestones with you.

Cheers to a brighter, sustainable, and more flavourful future!



## ABOUT COMPANY

Founded in 2010 as Shree Krishna Engineers and rebranded in 2015, as Shree Krishna TechMech Pvt Ltd. has been at the forefront of innovation in the engineering and manufacturing industry. What began as a venture specializing in industrial dryers has since evolved into a dynamic and versatile company offering a wide range of cutting-edge solutions, including Evaporators, Distillation, pollution control equipment.

Our journey started with a clear vision: to provide top-quality industrial dryers that catered to the unique needs of our clients across various industries. We swiftly gained recognition for our commitment to excellence, reliability, and customer-centric approach. As we continued to grow, we realized that there were vast opportunities to explore new technologies and expand our expertise.

The decision to diversify our product line into Evaporators and Distillation equipment was a pivotal moment for us. We embraced this challenge head-on. Our dedication to continuous improvement and customer satisfaction remained unwavering throughout this process.

Today, we take pride in being a comprehensive solutions provider, catering to a wide array of industries such as chemical processing, pharmaceuticals, food and beverage, and environmental sectors. Our products are designed to optimize efficiency, conserve resources, and minimize environmental impact, aligning perfectly with our commitment to sustainable practices.

Key attributes that defining Shree Krishna TechMech Pvt Ltd are, Innovation, Expertise, Customer-Centric Approach, Sustainability, Reliability.

At Shree Krishna TechMech Pvt Ltd, we believe that our success is intertwined with the success of our clients. As we continue to evolve and innovate, we remain committed to delivering industry-leading solutions that empower businesses to thrive in a competitive world.

We look forward to embarking on a mutually rewarding journey with you.

## Mission

At Shree Krishna TechMech Pvt Ltd, our mission is to be a leading provider of high-quality tailor-made process solutions that helps our clients to achieve operational excellence and sustainable growth. We are committed to delivering innovative, reliable, and cost-effective solutions that meets the unique needs of our customers, while ensuring utmost safety and efficiency.

At Shree Krishna TechMech Pvt Ltd, our ultimate goal is to be recognized as a trusted partner and industry leader in providing turnkey process equipment solutions.

## Vision

Our vision at Shree Krishna TechMech Pvt Ltd is to be the premier provider of turnkey process equipment solutions, delivering excellence from concept to commissioning. We envision ourselves as a leading global player, known for our technical expertise, innovation, and unwavering commitment to customer satisfaction. We aim to build long-term partnerships based on trust, integrity, and mutual growth. Our vision is to integrate eco-friendly technologies, promote energy efficiency, and minimize the environmental impact of our operations. Ultimately, our vision is to be a trusted partner, respected for our exceptional customer service, technical prowess, and unwavering commitment to excellence.

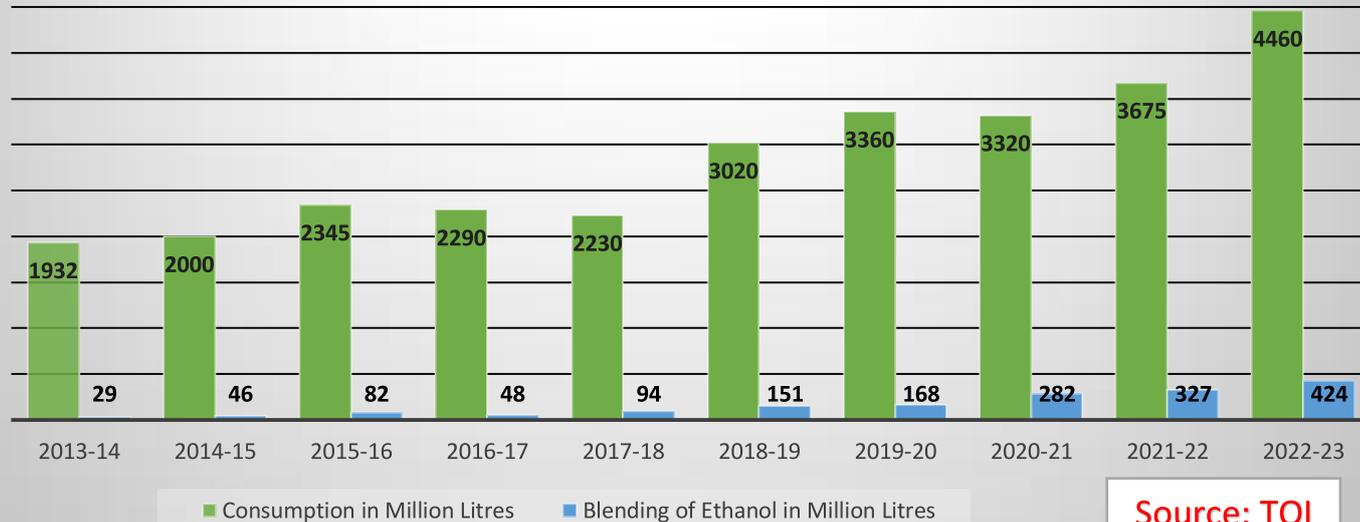
## Values

- 1. Quality:** We are committed to delivering process equipment of the highest quality, ensuring durability, reliability, and performance excellence for our customers.
- 2. Innovation:** We embrace innovation and continuously strive to develop cutting-edge solutions that drive efficiency, optimize processes, and meet the evolving needs of our clients.
- 3. Customer Focus:** Our customers are at the heart of everything we do. We listen to their requirements, provide personalized solutions, and prioritize their satisfaction throughout their journey with us.
- 4. Safety:** We adhere to strict safety standards and promote a culture of safety consciousness in all our operations.
- 5. Employee Development:** We foster a culture of learning, growth and empowerment, providing opportunities for their professional development and personal well-being.



## DISTILLERY

### NEED OF ETHANOL IN INDIA



**Above graph shows:** Ethanol blending and ethanol production ratio, these are two related but distinct concepts in the context of biofuels. The blending ratio is usually expressed as a percentage, denoting the proportion of ethanol in the blend. For example, Year 2013-14 represents a blend containing 1.5% ethanol and 98.5% petrol, while Year 2022-23 denotes a blend containing 9.5% ethanol and 90.5% petrol.



### APPLICATIONS OF DISTILLERIES

1. Alcohol Production
2. Ethanol and Biofuel Production
3. Perfume and Fragrance Industry
4. Herbal and Medicinal Products
5. Industrial and Laboratory Applications
6. Research and Development

### WE SUPPLY / SERVICES:

- Turnkey ENA Plant Based on Grain/Molasses
- Turnkey Ethanol Plant Based on Grain/Molasses
- Rectified Spirit to Ethanol
- Sugarcane Syrup to Ethanol
- Spray Dryer for Spent Wash (Molasses)
- DDGS Dryer for Grain Distillery
- Revamping/Capacity Enhancement of Existing System
- We can Audit of Existing System
- Automation & upgradation of Existing System/ Plants



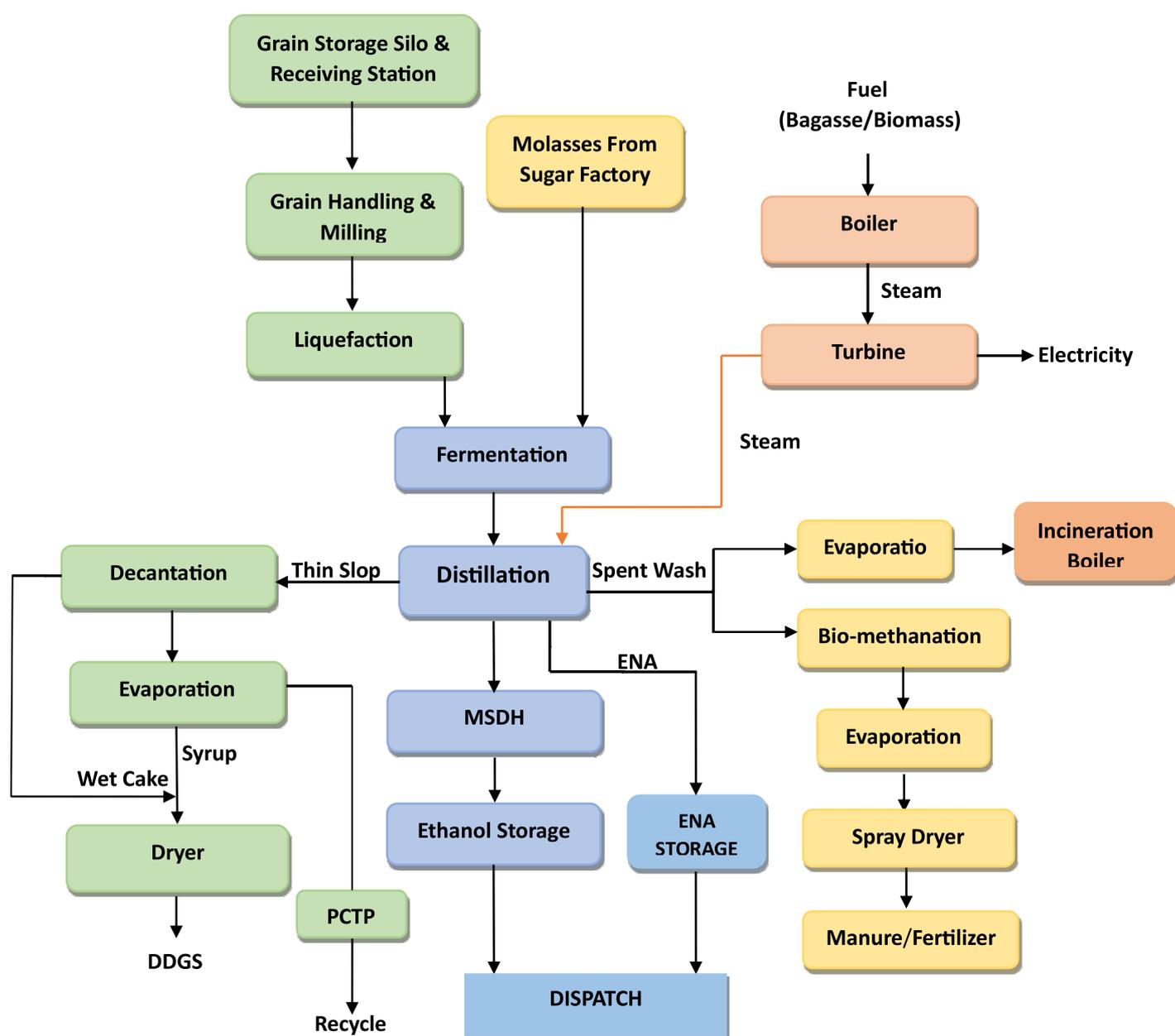


## BENEFITS OF ASSOCIATION WITH SKTMPL:

We provide support for -

- Land location checking and suitability checking.
- Document for EC (Assisting/Support for Documents)
- Assisting to get permissions like, Water Lifting, NOC from Concern Department.
- All documents required like, Factory & Electrical licences

## BLOCK DIAGRAM FOR DISTILLERY :

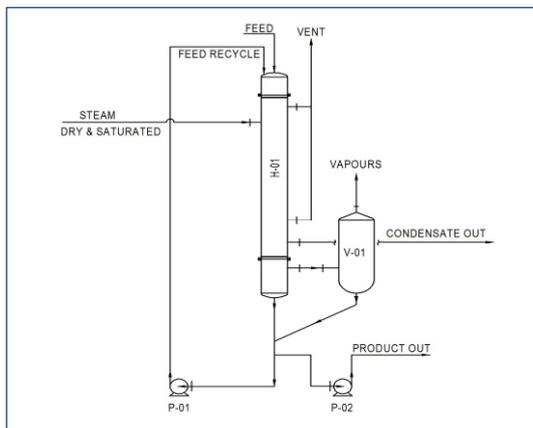




# EVAPORATORS

## ● EVAPORATORS AND ZERO LIQUID DISCHARGE SYSTEMS :

The use of evaporators in industrial effluent treatment plants offers several benefits, including **Minimization of water consumption, Volume reduction, Recovery of valuable resources, Concentration of pollutants, Compliance with regulations.**

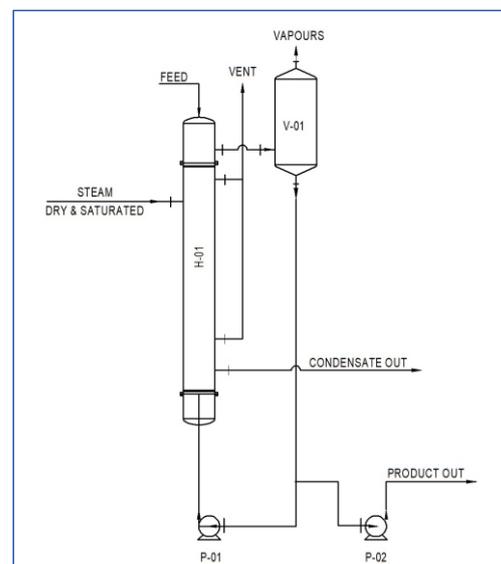


## ● FALLING FILM EVAPORATOR

A Falling Film Evaporator (FFE) is a type of industrial evaporator used in various applications to concentrate or separate liquid solutions. It operates on the principle of creating a thin film of liquid that flows downward inside a heated tube, allowing efficient evaporation and concentration of the liquid.

## ● FORCED CIRCULATION EVAPORATOR

It operates on the principle of forcibly circulating the liquid through the evaporator to enhance the heat transfer and evaporation process. Force circulation evaporation (FCE) are partially used for handling viscous or fouling liquids that may have difficulty flowing naturally in a Falling Film Evaporator. They are commonly used for concentrating solutions, crystallization processes, and treating high viscosity fluids or heat sensitive liquids. The design and configuration of a Forced Circulation Evaporator can vary depending on the specific requirement of the application.



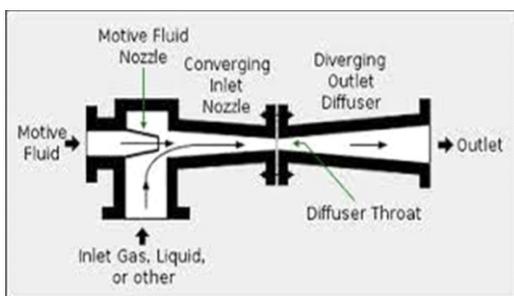
## ● MULTI EFFECT EVAPORATORS (MEE)

A multiple effect evaporator (MEE) is a type of industrial evaporation system used to concentrate a liquid solution. The MEE can be only falling film type or can be only forced circulation type or can be combination of falling film and forced circulation. In MEE the vapor generated in one effect is used to heat the heating medium for next effect, and so on. This design allows for efficient energy utilization, making it an economically viable solution for concentrating liquids.

Energy Efficiency , High Concentration Ratios , Versatility , Heat Integration , Environmental Friendliness etc are few benefits of Multiple Effect Evaporators.

The energy savings and increased efficiency often make MEEs a favorable choice in many industrial application.

## ● ENERGY EFFICIENT SYSTEM USING THERMOVAPOUR RECOMPRESSOR (TVR)



TVR gives highest steam efficiency than direct steam heating as part of the vapours are sucked and combined with motive steam used back again as heating media .

Eg. If we consider Two effect evaporator with thermos vapour recompression (TVR) , it will require 33% less steam than the conventional Two effect evaporator. This means , the steam usage for the Two effect with TVR is comparable to that of Three effect evaporator.



## • ENERGY EFFICIENT SYSTEM USING MECHANICAL VAPOUR RECOMPRESSOR (MVR)

MVR systems are known for their high energy efficiency. Instead of relying on external heat sources, MVR uses mechanical energy to compress the vapor, which requires significantly less energy compared to traditional evaporators or steam-based systems. Using a Mechanical Vapor Recompressor (MVR) in a Multiple Effect Evaporator (MEE) system offers several advantages, similar to those provided by a Thermo Vapor Recompressor (TVR). However, MVR operates through a different mechanism, where mechanical energy is used to recompress the vapor from the previous effect(s) rather than utilizing high-pressure vapor. Here are the advantages of using a Mechanical Vapor Recompressor in an MEE.

While Mechanical Vapor Recompression offers numerous advantages, it's essential to consider the initial capital investment required for setting up an MVR-based MEE system. MVR remains a compelling solution for energy-efficient and cost-effective evaporation processes in various Industries.

Using MVR reduces steam consumption thus helping in lowering greenhouse gas emissions associated with steam production.

## • ZERO LIQUID DISCHARGE (ZLD)

Implementing Zero Liquid Discharge using Multiple Effect Evaporators can significantly reduce the environmental impact of industrial wastewater discharge and promote sustainable water management practices. However, it's important to note that ZLD systems are complex and require careful planning, design, and operation to achieve optimal efficiency and compliance with environmental regulations. MEE can only concentrate a solution from  $x\%$  concentration to  $y\%$  concentration. To achieve ZLD certain equipment's/systems like Pusher centrifuge and Agitated Thin Film Dryer (ATFD).

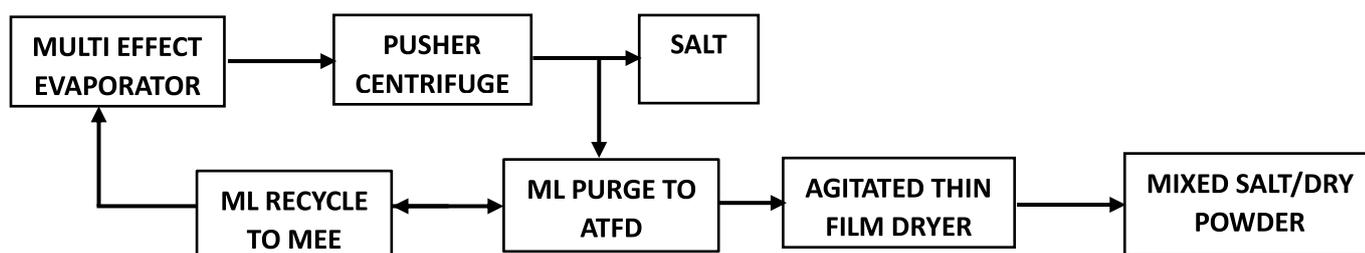
MEE with Pusher centrifuge is used in case the system consists of crystalline solids.

MEE with ATFD is used when the effluent contains non crystalline solids or when the organics in effluent are on higher side.

MEE in combination with pusher centrifuge and ATFD is used when majority of salts are crystalline which are removed in pusher centrifuge and remaining non-crystalline and organics are removed in ATFD.



Typical Block Diagram for Zero liquid Discharge





# INDUSTRIAL DRYERS

## ● ROTARY DRYER

### 1. Drum Dryer :

Drum Dryer consists of a rotating drum, usually positioned horizontally, which is heated either by direct contact with hot air or by utilizing hot gases flowing through the drum. Wet or moist materials are fed into the inlet end of the drum and are continuously lifted and showered through the hot air or gas stream as the drum rotates. This process causes the moisture to evaporate, resulting in dried solids exiting from the other end of the drum.



### 2. Steam Tube Bundle Rotary Dryer

Steam is introduced into the tubes, which are positioned inside the stationary shell. The material to be dried is fed into the shell, and as it comes into contact with these rotating hot steam tubes, the heat is transferred to the material, causing moisture to evaporate. The feed material is continuously lifted, showered with the help of shovels provided on tube bundle.



The absence of a rotating shell eliminates the need for complicated mechanical components, such as tires, trunnion rollers. This simplification results in a more compact and efficient design, reducing maintenance requirements and enhancing overall reliability.

General Rotary dryer applications are :

1. **Breweries - DDGS** (Distiller's Dried Grains with solubles)
2. **Chemical Industries** : Salts, Phosphates, Metal sludge, Soda Ash, Silica.
3. **Petrochemical Industries** : Polymers, PVC, HDPE, PTA.
4. **Mineral Industries** : Clay, Coal, Fireclay, Limestone, Sand, Slag.

## ● SPRAY DRYERS

The spray dryer is a widely used industrial drying equipment that utilizes a unique atomization process to quickly and efficiently remove moisture from liquid or slurry materials. The atomizer or pressure nozzles breaks down the material into tiny droplets, increasing its surface area for effective drying. The drying chamber is designed to provide a large surface area for contact between the droplets and the hot air. As the atomized droplets come into contact with the hot air, rapid evaporation occurs. The moisture within the droplets transforms into vapor. The separation system separates the dry particles from the exhaust air stream. The dry particles are collected at the bottom of the drying chamber and the separation system. while the clean, air is discharged through the exhaust blower.

General spray drying applications are :

1. **Food** : Milk powder, coffee, tea, eggs, cereal, spices, flavorings.
2. **Pharmaceutical** : Antibiotics, medical ingredients, additives.
3. **Industrial** : Paint pigments, ceramic material, catalyst, foundry fluxes.

## ● SPIN FLASH DRYER

A spin flash dryer is a type of industrial drying equipment used to dry materials quickly and efficient, which are in cake or paste form. Here is a brief overview of its working process:

Feed Bin is designed to provide a continuous and controlled feeding. The agitator is used for stirring and mixing the material. The wet material is fed into the agitator from the feed bin. As the wet material enters the Spin Agitator, it comes into contact with the hot drying medium, which rapidly evaporates the moisture from the material. The fine particles or dried flakes are carried along with the drying medium towards the flash duct. A separation system, such as a cyclone separator & bag filter, is typically employed to separate the dried material from the drying medium. The dried material is collected at the outlet of the cyclone separator & bag filter, while the drying medium is usually discharged through an exhaust system.

General Spin Flash Dryer applications are :-

**Agro-chemicals, Ceramics, Organic Chemicals, Food products, Pharmaceuticals, Pigments & dyestuffs.**





## ● FLUID BED DRYER

A fluid bed dryer operates on the principle of fluidization, where a hot air is passed through a bed of solid particles, causing them to behave like a fluid. Once the material enters the drying chamber, a stream of hot air or gas is introduced from the bottom of the chamber. This upward flow of air or gas creates a fluidized bed of particle. As the air flows through the bed of material, it lifts and suspends the particles, creating a fluidized state. The fluidization helps in uniform drying and prevents stagnation of material.

Vibratory Fluid Bed Dryer is an extension of Fluid Bed Dryer. Vibratory motors are used to impart gentle vibrations to the drying chamber and the fluidized bed. The vibrations enhance the mixing and movement of particles, and improve heat transfer efficiency.



General Fluid Bed Dryer applications are :

1. Chemicals, Pharmaceutical & Biochemicals, Polymers, Food & Dairy products.
2. Foundry fluxes, Foundry resin coated sand application, Heating as well as cooling system.

## INDUSTRIAL COOLERS

### ● SPRAY COOLER

Spray cooler is technology adopted for the material of wax category. The material to be sprayed is kept in molten condition in the steam jacketed/hot water jacketed vessels. From the jacketed vessels it is transferred to the by the jacketed feed pumps with the help of positive displacement pump. (It is also steam jacketed). The molten mass is pumped with the help of high-pressure pumps.

At the same time the cold air is passed on this molten mass through the uniform air distribution system in the spray chamber. The heat of the fine particles is liberated & particles are cooled. The spray cooled particles are further passes to the spray cooler duct, cyclone, secondary cooler etc.



General Spray Cooler applications are:

- Encapsulated Materials
- Fats, Hydrates, Glycosides
- Palm Sterine
- Inorganic/ organic melts
- Stearic acid/ stearates
- Waxes

## INDUSTRIAL HOT AIR GENERATOR

### ● A. SOLID FUEL FIRED HAG

A hot air generator is commonly used to provide the necessary heat for the drying process. The combustion take place in a fluidized bed, where a controlled amount of air is blown through the bed to keep fuel in a fluidized state. The hot gases produced during combustion flow over the tubes of the heat exchangers, transferring their heat energy to the air circulating through the tube of Heat Exchanger. Flue gases containing particulate matter, passes through a series of fabric filter bags, which capture the particles while allowing clean gas to pass through chimney.



### ● B. LIQUID/GASEOUS FUEL FIRED

A gas-fired Hot Air Generator operates by burning gaseous fuels, such as natural gas, LPG. The gas-fired HAG consists of burner where the gaseous fuel is ignited. The burner design ensures proper mixing of fuel and air to facilitate complete combustion and maximize heat energy output. With the help of blower ambient air is forced through the HAG, absorbing heat from the hot gases and becoming heated.

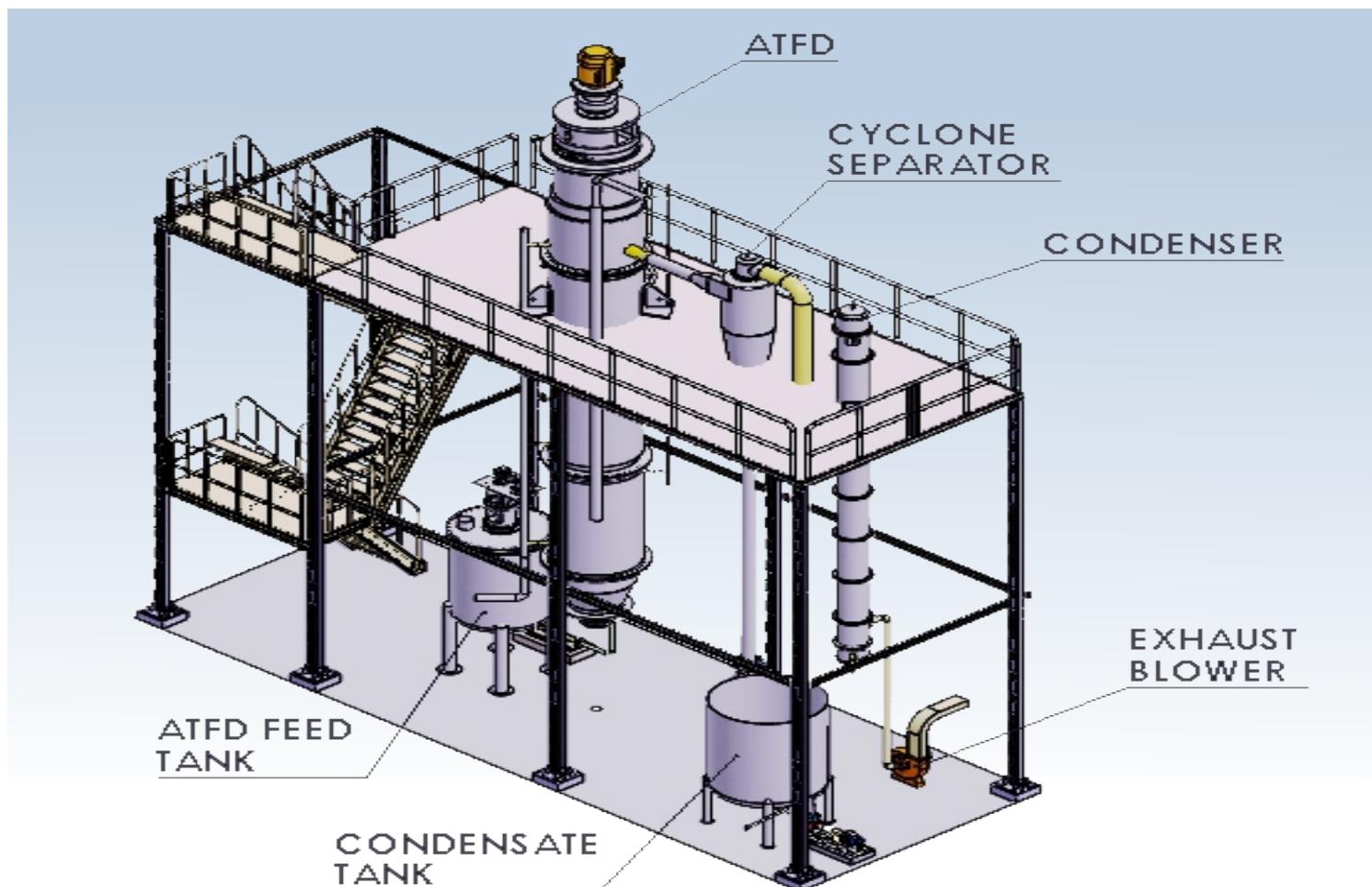
General applications of Hot Air Generator are:

- Food Processing Industry
- Textile Industry
- Pharmaceutical industry
- Chemical Industry





## AGITATED THIN FILM DRYER (ATFD)



### WHAT IS ATFD ?

An agitated thin film dryer is a industrial drying equipment used to remove moisture or solvents from a liquid or slurry product. It operates on the principle of creating a thin film of the liquid or slurry on the inner surface of a heated cylindrical vessel and then scrapping it by means of scrapper blades to enhance evaporation by creating new surface area.

The agitated thin film dryer consists of a cylindrical vessel/shell with a heating jacket on the outside. The liquid or slurry enters the dryer through a feed inlet and is distributed onto the heated inner surface/shell through distribution arrangement. The shell is a stationary part on which a film is created. The rotor which is inside the shell has a scrapper blades which is constantly rotating at certain speed thus scrapping the material inside and give space for new film formation, increasing the heat transfer The dry powder goes downward due to gravity where it gets collected at the bottom hopper.

The thin film of the product formed on the inner surface of the shell is subjected to high heat transfer rates due to the large surface area and the short residence time. The heat from the jacket transfers through the shell wall and evaporates the volatile components of the liquid or slurry. The vapor is typically removed through a vapor outlet, by applying a slight negative draft while the dried product is discharged from the bottom of the dryer.



## WORKING OF ATFD

The working of an agitated thin film dryer involves several steps:

- 1. Feed Introduction:** The liquid or slurry feed is introduced into the agitated thin film dryer through a feed inlet. The feed is usually preheated to a certain temperature before entering the dryer.
- 2. Film Formation:** The feed is distributed onto the heated inner surface of the dryer, typically a cylindrical shell. The rotation of the rotor and the design of the scrapper blades help spread the feed evenly, forming a thin film on the inner wall of the dryer.
- 3. Heating and Evaporation:** The thin film of the feed is subjected to heat transfer from the heating jacket. The heat promotes evaporation of the volatile components in the feed. The short residence time of the feed in the dryer ensures efficient evaporation.
- 4. Agitation and Mixing:** The scrapper blades inside the dryer continuously agitate and mix the feed as it flows downward due to gravity. This agitation helps in maintaining a thin, uniform film and prevents the formation of localized hot spots or product build-up on the dryer walls.
- 5. Vapor Separation:** The evaporated vapours rise from the thin film and are removed through a vapor outlet. These vapours often contain the volatile components or solvents that were present in the feed. They are typically condensed and collected for further processing or solvent recovery.
- 6. Product Discharge:** The dried product, with desired moisture or solvent content, reaches the bottom of the dryer and is discharged through a bottom hopper.

## APPLICATION OF ATFD

Agitated thin film dryers are particularly useful for drying heat-sensitive materials or for concentrating solutions with a high solids content. The thin film and agitation help minimize thermal degradation and fouling, resulting in high-quality dried products. They are commonly used in

1. Solvent Recovery
2. Drying Heat-Sensitive Materials
3. Concentration of Solutions
4. Purification of Oils
5. Crystallization
6. Achieving Zero liquid discharge
7. Polymer Processing
8. Chemical
9. Pharmaceutical
10. Food and Beverage Industries
11. Drying of organic compounds
12. Concentration of fruit juices



## - OUR PRODUCTS -

### 1. Distillery Systems

- ENA Plant based on Grain/Molasses
- Ethanol Plant based on Grain/Molasses
- Rectified Spirit to Ethanol (MSDH)
- Sugarcane syrup to Ethanol

### 2. Evaporator

- Falling Film Evaporator (FF)
- Induced Falling Film Evaporator
- Forced Circulation evaporator (FC)
- Combination of FF & FC Evaporator
- Zero Liquid Discharge (ZLD) systems
- TVR based Evaporator Systems
- MVR based Evaporator Systems

### 3. Industrial Dryer

- Rotary Dryer
- Spray Dryer
- Spin Flash Dryer (SFD)
- Fluid Bed Dryer (FBD)
- Agitated Thin Film Dryer (ATFD)

### 4. Material Handling Systems

- Pneumatic/ screw Conveying System
- Rotary Air Lock Valve
- Paddle/ Ribbon Mixer
- Screw Conveyor/ Belt Conveyor

### 5. Direct /Indirect Hot Air Generator (HAG)

- Solid Fuel fired HAG
- Liquid /Gaseous fuel Fired HAG

### 6. Pollution Control Equipment

- Dust Collection System
- Fabric/Bag Filter
- Mechanical Dust Collector (MDC)
- Fume Extraction System

### 7. Industrial Cooler

- Spray Cooler

## - TRUSTED BY VALUEBLE CLIENTS -



## Shree Krishna TechMech Pvt. Ltd.

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