

## OUR PRODUCT RANGE

- ◆ GRAIN & MOLASSES BASED TURNKEY DISTILLERY PLANT
- ◆ MULTIPLE EFFECT EVAPORATOR (MEE) SYSTEM
- ◆ ZERO LIQUID DISCHARGE PLANT (ZLD)
- ◆ HERBAL EXTRACTION PLANT
- ◆ DRYERS
- ◆ PROCESS EQUIPMENTS
- ◆ AGITATED THIN FILM DRYER (ATFD)



## Projexel Process Equipments Pvt. Ltd

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## INFRASTRUCTURE

**Projexel Process Equipments Pvt. Ltd.** is a Turnkey solution Provider Company was established in 2015. We are maintaining world-class engineering standards with optimum investment and operation cost for the customers. Our expertise is in providing turnkey plants of **Multiple Effect Evaporators (MEE), Zero Liquid Discharge Plants, Molasses and Grain based Distillery, Herbal Extraction Plants, Dryers and Process Equipments.**

**Projexel** is fast growing company with in house Research & Development unit. Projexel has a state-of-art manufacturing unit with all required certificates. We also worked under third part inspection agencies like TUV. We have experience of different material of constructions (MOC) like Titanium, Duplex Steel, Stainless Steel, Mild Steel etc.

Our fabrication division having all required machineries and well equipped shop that enable our workforce to carry out the task or project with highest precision. We provide the best available tool and equipment's for our workforce to perform a task with maximum efficiency and quality output.

Our systematic and positive approach towards the work helps us to optimize the costing and increase productivity.

With experienced manpower we are able to deliver promptly and efficiently services to our clients. This is the simple secret of Projexel getting repeat orders.

The focus is always on maintaining world class engineering standards with optimum investment and operational cost for the customers.



## INFRASTRUCTURE

We work hand in hand with our clients to meet their requirement at all time. It has been our commitment to provide highest quality in least time and efficient manner possible.

We routinely follow the quality procedure right from the start to final dispatch. After the completion of work or project the inspection report as procedure and carried out a full inspection report which help us for hand over to the client with zero error.

Inspection report is carried out as per the international norms, which certifies that the work is complete with no defect.

## DURING LOADING OF EQUIPMENT





## RESEARCH & DEVELOPMENT FACILITY

Projexel has dedicated research and development facility at Bhosari, Pune. We have complete set up of pilot plant trials of various equipments. A dedicated team of R&D help us to launch new innovative systems and solutions. A careful experimental analysis of the application is conducted prior to design



## **DISTILLERY/ETHANOL PROJECT USING MOLASSES & GRAIN**

We Projexel is in to complete turnkey supply of Distillery/Ethanol project using molasses as well as grain as feedstock. Production of ENA / EQRS / RS / Ethanol majorly consist of following sections

- Molasses Handling System
- Fermentation
- MSDH
- Decatation
- ZLD
- Liquefaction
- Distillation
- Evaporation
- Dryer

During Execution of 350 KLPD Grain Based Ethanol Plant



Fermentation section



Distillation & Evaporation section



DDGS Dryer section



## DISTILLERY/ETHANOL PROJECT USING MOLASSES & GRAIN

Multi pressure Distillation Plant is a set of columns integrated with each others for optimization of steam consumption. The modern MPR Distillation plant comprises of the following columns

- Analyzer column
- Degasifying column
- Pre rectifier column
- Extractive Distillation column
- Rectifier column
- Simmering / Refining column
- Recovery column

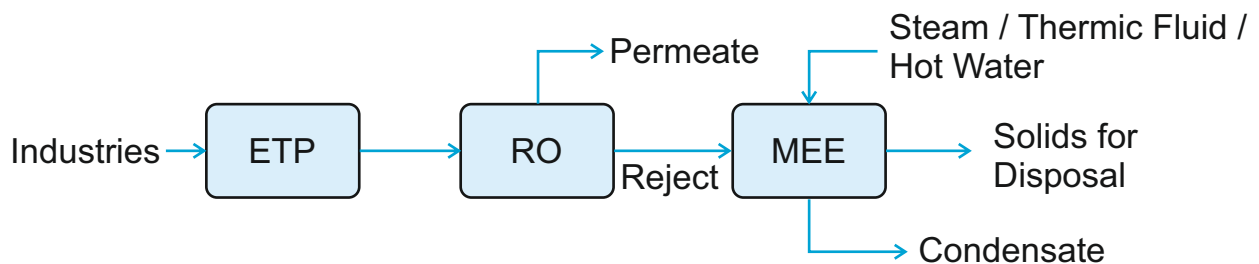


Spent wash generated as effluent is concentrated in Multiple Effect Evaporator (MEE) Intergrated as well as Stand-alone evaporator system followed by Dryer (Spray Dryer in case of Molasses and DDGS Dryer in case of Grain ) to achieve complete Zero Liquid Discharge plant



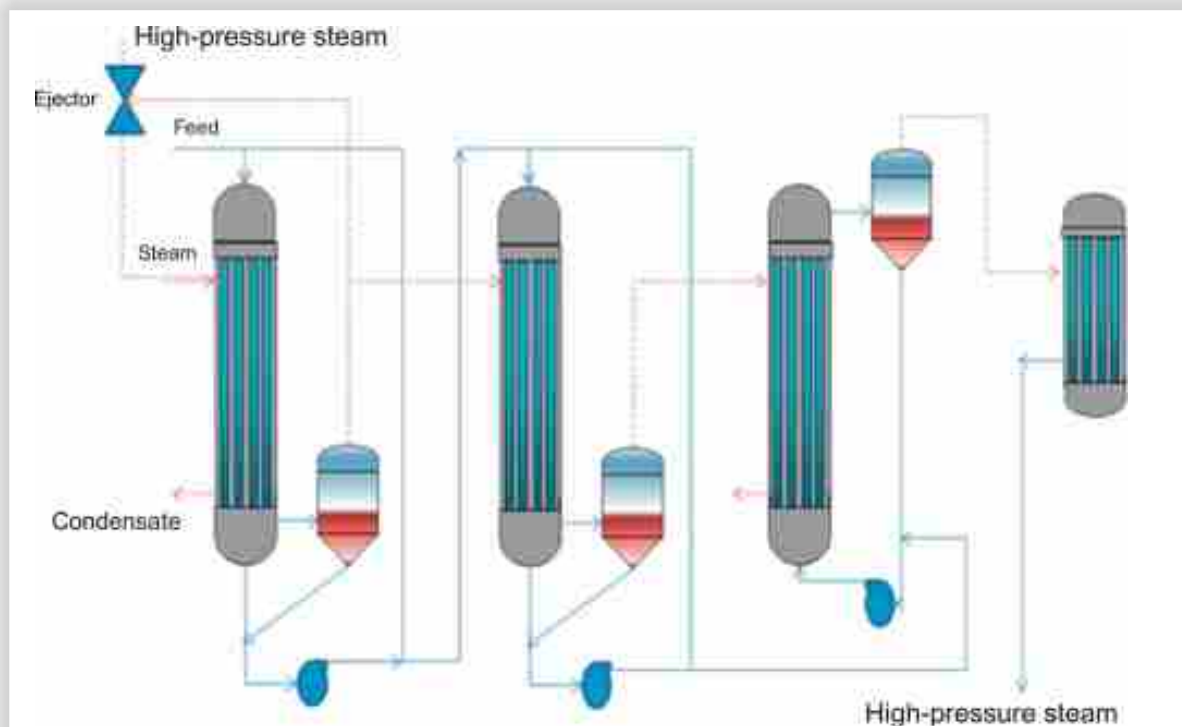
## MULTIPLE EFFECT EVAPORATOR (MEE)

Multiple Effect Evaporator is necessity of all industries which are generating effluent to achieve Zero Liquid Discharge plant. Zero liquid discharge plants is a combination of ETP, RO & Evaporator depending upon nature of effluent. We design the MEE considering the physical and chemical properties of the effluent. Hands on experience in the field ensure the solution at optimum cost of investment and operation.



## EVAPORATOR BASED ON THERMO VAPOUR RECOMPRESSOR (TVR) TECHNOLOGY

In TVR normally vapour generated from first effect getting mix with live steam, this mixed system used as a heating source for 1st effect by this way we are enhancing the steam economy.



## INTEGRATED EVAPORATOR FOR DISTILLERY

Distillery spent wash has very high BOD, COD and high BOD/COD ratio. The number of inorganic substances such as chlorides, sulphates, phosphates, potassium and calcium are also very high.

We have stipulated stringent norms for proper disposal of spent wash as its uncontrolled discharge may affect the land surfaces and water bodies, particularly the physical, chemical and biological properties of soil and water.

Projexel has Innovative Integrated technology to achieve Zero Liquid Discharge. Integrated evaporation (using alcohol vapours from distillery) offers low energy consumption





## STAND ALONE EVAPORATOR FOR DISTILLERY

The total process condensate water is recyclable after proper treatment and can be recycled back for process, Cooling Tower etc.

The evaporation plants are specially designed to handle molasses raw spent wash, bio-methanated spent wash and grain thin slop to achieve desired solid concentration. Projexel offer evaporation Plants with different combinations of Falling Film and Forced Circulation Multi Effect Evaporation Plant.

The concentrate from evaporator further concentrated in to the Spray dryer in case of Molasses based distillery or in to the Dryer in case of Grain Based distillery.



**FIVE EFFECT EVAPORATOR FOLLOWED  
BY PUSHER CENTRIFUGE**



**THREE EFFECT EVAPORATOR WITH  
STRIPPER FOLLOWED BY CENTRIFUGE**



**THREE EFFECT EVAPORATOR  
FOLLOWED BY ATFD**





**TWO EFFECT EVAPORATOR FOLLOWED  
BY CENTRIFUGE HEAT SOURCE HOT WATER**



**SOLID FROM ATFD**



**SOLID WASTE FROM PUSHER CENTRIFUGE**



**CLEAR CONDENSATE FROM MEE**





**TWO EFFECT EVAPORATOR FOLLOWED  
BY PUSHER CENTRIFUGE FOR  
SALT SEPARATION**

For companies of less effluent generation a single effect evaporator with TVR is best, economical solution to achieve complete zero liquid discharge.

Projexel offers skid mounted single effect evaporator upto feed capacity of 10 KL/day. Skid mounted single effect evaporator is plug and play kind system.

Effluent is a combination of different salts like sodium chloride, sodium sulphate, calcium chloride, calcium sulphate etc.

When we concentrate effluent into multiple effect evaporator the different salts precipitate at different cocentration depends on their solubility.



**SKID MOUNTED SINGLE EFFECT  
EVAPORATOR FOLLOWED BY BASKET  
CENTRIFUGE FOR SALT SEPARATION**

## EVAPORATOR BASED ON MECHANICAL VAPOUR RECOMPRESSOR (MVR) TECHNOLOGY

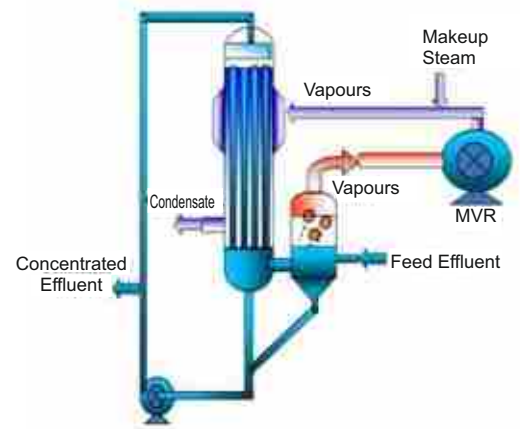
Normally its comes with single effect, complete vapour generated getting compressed with mechanical blower.

Reduction of energy costs being one of the primary considerations led to the adoption of multiple-effect plants, followed by thermal vapor compression and now being replaced or converted to mechanical vapor recompression which is also known as 'MVR' for further reduction of energy cost, reduce overall water losses, minimize energy through reduction of fossil fuel consumption and to bring Environmental sustainability by reducing Operating expenses for production.

As the name suggests, mechanical vapor recompression technology involves the use of a mechanical compressor that recompresses the vapor of an MVR evaporator to a higher pressure.

The main benefit of MVR mechanical vapour recompression is that it allows for significant energy savings. Mechanical vapour compression, unlike the alternative thermal vapor compression, does not depend on large quantity of steam supply. And since no fluid mixing occurs, all of the available vapor can be compressed for complete energy recovery.

Mechanical vapour recompressors cost a little higher than a conventionally heated thermal plant of the same capacity; however, it turns out to be a beneficial investment, in the long run. The investment costs get repaid in a short period in terms of energy saving itself apart from other benefits.





## ATFD (AGITATED THIN FILM DRYER)

In the ATFD (AGITATED THIN FILM DRYER) the concentrated effluent from the MEE plant is treated for complete separation of solids and liquid.

The selection of ATFD or any other centrifuge depends on COD value of the effluent.

Many times for small industries having very less effluent generation, it is economical to use ATFD directly (without MEE). The Dry Powder obtained from ATFD can be either used as a by-product or be sent for disposal.



**ATFD OF 35M<sup>2</sup> AREA**



**ATFD OF 30M<sup>2</sup> AREA**



**ATFD OF 25M<sup>2</sup> AREA 2Nos.**



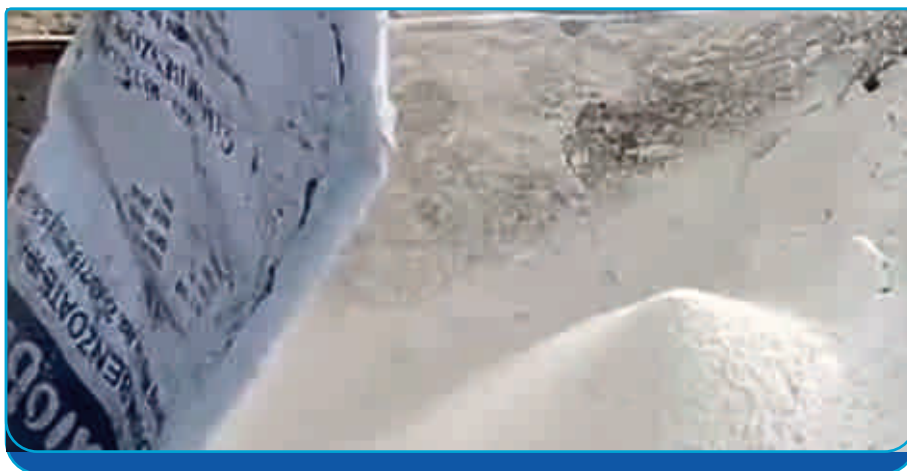
**ATFD (AGITATED THIN FILM DRYER)**



**ATFD OF 20M<sup>2</sup> AREA 2 Nos.**



**ATFD OF 10M<sup>2</sup> AREA**



**SOLIDS FROM ATFD**

## HERBAL EXTRACTION PLANT

Projexel offer specially designed herbal extraction plant. Extraction from different parts of plant like seeds , barks, root, flowers etc. The process of extraction for a particular compound or multiple compounds are dependent on the solubility of the rich components in an extraction media such as aqua (water) or organic solvent or a mixture of organic solvents by using the principle of physical separation and the property of solubility of those compounds



**EXTRACTOR**



**CONCENTRATOR**



**EVAPORATOR**



**SOLVENT STORAGE TANK**



### AGITATED TANK



Agitators include top, side, and bottom entering units for use in a variety of applications from small pilot scale to large production units. Agitators can be mounted on beams/ channels, clamp mounted to the tank side, or flange mounted to the vessel with a variety of sealing options.

An agitator is a device or mechanism to put something into motion by shaking or stirring. There are several types of agitation machines, including washing machine agitators.

### REACTOR

A chemical reactor is an enclosed volume in which a chemical reaction takes place. In chemical engineering, it is generally understood to be a process vessel used to carry out a chemical reaction, which is one of the classic unit operations in chemical process analysis.





## STORAGE TANKS



## AGITATORS

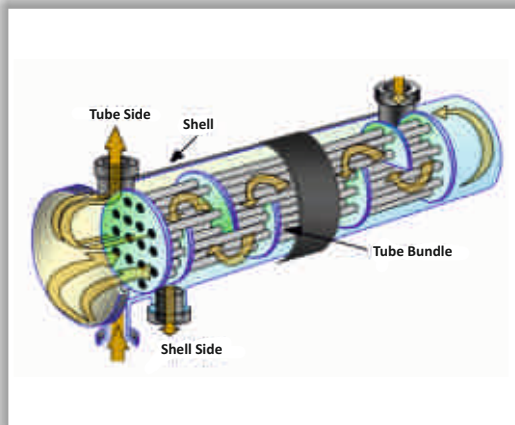


Agitators usually consist of an impeller and a shaft. An impeller is a rotor located within a tube or conduit attached to the shaft.

It helps enhance the pressure in order for the flow of a fluid be done.

Modern industrial agitators incorporate process control to maintain better control over the mixing

## PROCESS EQUIPMENTS



## HEAT EXCHANGER

A heat exchanger is a system used to transfer heat between two or more fluids. Heat exchangers are used in both cooling and heating processes. The fluids may be separated by a solid wall to prevent mixing or they may be in direct contact.






## Our Esteemed Clientele



**Projexel Process Equipments Pvt. Ltd**

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