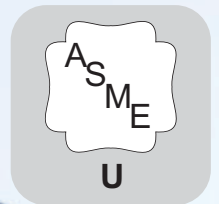


SS Techno Limited

Turnkey Zero Liquid Discharge Systems



Advanced Zero Liquid Discharge Technologies for Industrial Wastewater



About Us

SS Techno was founded by experienced Technocrats in the year 2001, to supply Innovative Turnkey Zero Liquid Discharge (ZLD) Systems based on Evaporation and Drying technology. The area of focus is Zero Liquid Discharge (ZLD) Solutions for Industrial Wastewater.

SS Techno has supplied more than 250 ZLD systems, on 'Concept to Commissioning' basis. The emphasis is always on maintaining world-class engineering standards, with optimum investment and operational cost for the customers.

SS Techno has a presence in many countries. Turnkey plants have been installed in Asia, Latin America, Europe and Africa.

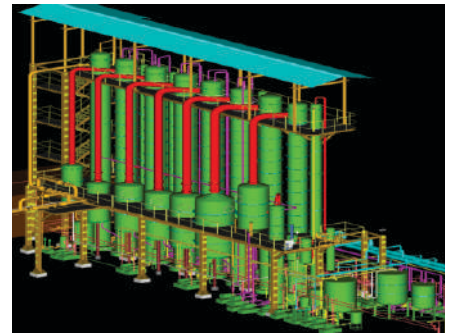
Infrastructure



Well Equipped Library & Data Bank



Design & Engineering



3D Modelling

SS Techno is a fast growing, Innovation led company with in-house application Research & Development. SS Techno designs are cost-effective and energy efficient.

SS Techno has a state-of-the-art manufacturing facility with ASME U stamp certification. The quality assurance is with stage wise inspection under TÜV. The manufacturing facility has the capability to work with materials of construction such as all grades of Stainless steel (including Duplex), Titanium, Monel etc. SS Techno has a professional and highly experienced project management & execution team.



Pilot Plant



Product Development Lab



Manufacturing Facility



Innovation, Research and Development

In-house Innovation and Technology development is the backbone of SS Techno's success and growth. Consistent Research & Development enables SS Techno to launch new innovative systems and solutions to maintain a competitive edge in the market. SS Techno has developed in-house expertise for various technologies in Thermal separation (Evaporation and Drying). Some of them are: Concentration and Drying of Raw/Biomethanated Spent wash/ Vinasse up to 98% (w/w) (dry, non-hygroscopic powder), integration of Multiple Effect Evaporator (MEE) with process plants, innovative Zero Liquid Discharge (ZLD) plants for wide variety of industrial effluents, recovery of various salts from RO Rejects etc.

Our product development laboratory focusses on the development of innovative technologies for recovering value from industrial waste.

Careful experimental analysis of the application is conducted prior to design. This is backed by a sound study of literature bank and library with latest information in the field. SS Techno's plants; return Crystal Clear Condensate Water (100% recyclable to process), are operator friendly, consume optimum utilities, deliver desired output/ product quality that meets customer expectation and require CIP (Cleaning in Place) by chemicals only (No manual cleaning required).



Packing



Dispatch



Dispatch



Erection & Installation



Erection & Installation



Erection & Installation

Zero Liquid Discharge (ZLD) Plants for Industrial Wastewater



Crystal Clear Condensate



Product Output - Solids



Zero Liquid Discharge Plant for Food and Beverage Industry

Crystal Clear Condensate Guaranteed!

SS Techno Evaporators and Drying systems designs are state-of-the-art. They are customized for specific application; considering the physical/chemical properties and characteristics of the effluent. SS Techno has extensive technical knowhow and hands-on experience in the field. This ensures appropriate solutions at optimum costs.

Thermal evaporation is an energy consuming process. SS Techno Evaporators are designed in multiple stage units which ensure optimum steam and power consumption. SS Techno is uniquely equipped to offer Evaporators that can use other forms of heat sources such as Alcohol water vapors, Engine/Furnace exhaust gas, Hot oil/ Thermal oil, Hot water, Steam vapors from turbine condenser etc. This gives an opportunity to keep operational cost as low as possible.

SS Techno Evaporators do not encounter scaling and choking problems. It requires only chemicals for Cleaning In Place (CIP) (No manual cleaning is required). It is done once in every 15 days. The plant is operated on 24hours basis. The Crystal Clear Condensate Water has less than 250 ppm Total Dissolved Solids (TDS) and is recycled back to the process, cooling tower etc. after proper treatment.

The concentrated product can be disposed off as per the norms of the industry. The concentrated output can be dried and disposed off as landfills. Some of our customers incinerate the concentrate in a regular boiler or sell it as a valuable product. SS Techno supply special purpose dryers (post-evaporation stage) such as Steam tube bundle rotary dryer, SST Dryer® (based on ATFD principle), spray dryer, screw conveyor dryer, paddle dryer, salt separation centrifuge etc. as an integral part of evaporation system to achieve Zero Liquid Discharge.



**Zero Liquid Discharge Plant for
Common Effluent Treatment Plant
(CETP)**



**Zero Liquid Discharge Plant for
Abrasive Industry**



**Zero Liquid Discharge Plant for
Agro-chemical Industry**

Schemes for Zero Liquid Discharge (ZLD) for Industrial Waste water/ effluent

- Concentration of RO reject
- Concentration and disposal of high COD streams
- Recovery of Dissolved solids
- Solvent recovery

Industries Served

- Beverages & Food Processing Waste
- Brewery
- Ceramics
- Chemical & Agro-Chemicals
- Distillery - Molasses & Grain based
- Dyes & Paints
- Electronic Hardware
- Engineering & Steel
- Fish Processing
- Landfill Leachate & CETP
- Mining & Mineral Processing
- Oil & Gas, Petrochemical
- Palm Oil Mill (POME) & other Vegetable Oils
- Pharmaceuticals
- Power Plant
- Pulp & Paper
- Textile
- Tyre



**Zero Liquid Discharge Plant
for Pharma Industry**



**Zero Liquid Discharge Plant
for Beverage Industry**



**Landfill Leachate
Dryer Plant**



**Product Output
CETP Industry**



**Solids from SST Dryer®
Pharma Industry**



**Product Output - Salt
Agro - Chemical Industry**

Innovative Solution for Molasses & Grain based Distilleries



Spent Wash



Crystal Clear Condensate



Fertipent[®] - Spent Wash Dry Powder
(Non Hygroscopic)



Zero Liquid Discharge Plant for Molasses based Distillery Industry

Crystal Clear Condensate Guaranteed!

Molasses based distillery effluent known as Spent Wash/Vinasse/Dunder is one of the most difficult applications for evaporators. These effluents are characterized by high Chemical Oxygen Demand (COD) and high volumes; creating heavy pollution load on the environment when discharged untreated. SS Techno has developed many types of innovative and globally first evaporation and drying technologies to achieve ZLD for the distillery industry.

SS Techno evaporators are designed to accept steam at any available pressure. SS Techno guarantees to deliver crystal clear condensate water, which is 100% recycled to process (fermentation), cooling tower etc., after proper treatment. Raw effluent/post-biogas effluent has been successfully handled. Special systems are installed by using alcohol water vapors from distillery instead of conventional boiler steam; slashing the evaporator energy cost.

Concentration of solids upto 97% (w/w) dry powder form (non-hygroscopic) has been successfully achieved in over 30 plants as per the need of the customer. The final output of the ZLD plant can be used for Bio-composting, Incineration or as Potash-rich Organic Fertilizer. Concentrated solids (70% (w/w)) have been successfully commissioned for incineration in regular boiler by mixing with primary fuel such as bagasse/wood chips/rice husk etc.

Grain based distillery effluent popularly known as Thin slops are concentrated and used as animal/ cattle feed by mixing with spent grains from distilleries. SS Techno offers special Steam tube bundle rotary DDGS (Distilleries Dry Grain Solubles) dryer which gives 90% (w/w) dried product.

SS Techno also installs evaporation systems which are flexible to operate either on molasses based distillery spent wash or grain based distillery thin slops.



Options for Total ZLD for Molasses based Distillery

- Bio-composting – Raw/ Bio Methanated Spent Wash/ Vinasse concentration to 30% solids (w/w).
- Incineration - Raw/ Bio Methanated Spent Wash/ Vinasse concentration to 70% solids (w/w) and mixing with support fuel in regular boiler.
- Using it as organic fertilizer (organic carbon more than 20%, potash upto 17%) at a concentration of 97% (w/w) dry non hygroscopic powder.



Evaporation plant with SST Dryer® for Bio-methanated Spent Wash (Fertispent™)



Evaporation plant for Raw Spent Wash



Evaporation plant for Bio-methanated Spent Wash

Technology suitable for Raw/ Bio-Methanated Spent Wash/ Vinasse, for Multipressure Vacuum Distillery/ Atmospheric Distillation.

Integrated & Hybrid Evaporation Plant for Molasses based Distillery

- Uses heat from Alcohol vapours without affecting distillery operation. No steam required.
- Spent Wash/ Vinasse volume reduced by minimum 50%.
- Hybrid Evaporators use Alcohol vapours from distillery and supplemented with additional quantity of Steam to achieve concentration up to 60% (w/w).
- System Operations from ground floor only.
- CIP (Cleaning In Place) by Chemicals only. It is done once in 15 days. No manual cleaning is required.
- Recycles Crystal Clear Condensate 100% suitable for fermentation, cooling tower etc.



Evaporation Plant for Bio-methanated Spent Wash

Stand-alone Evaporation Plant using Steam

- Evaporators are designed for any available steam pressure.
- Spent Wash/Vinasse concentrated up to 97% (w/w) in dry powder form (non-hygroscopic).
- CIP (Cleaning In Place) by Chemicals only. It is done once in 15 days. No manual cleaning is required.
- Recycles Crystal Clear Condensate 100% suitable for fermentation, cooling tower etc.



Evaporation plant for Grain based Distillery

System designed for any available Steam Pressure!

Distillery Spent Wash Evaporators without using Steam “Integrated Evaporation System”



Bio-methanated Spent Wash



**Crystal Clear Condensate from
Distillery Industry ZLD Plant**



**Integrated Evaporation Plant for Bio-methanated
Spent Wash on Multi-pressure Distillery**

SS Techno “Integrated Evaporation System” is designed to use mixture of alcohol and water vapors as the heat source, in place of steam. SS Techno has installed such systems for both Multi Pressure and Atmospheric distilleries to reduce the Raw/ Bio-methanated Spent Wash/ Vinasse effluent quantity/ volume by more than 50%.

Hybrid type Evaporation systems are superior and better in technology. It substantially saves energy cost to achieve concentration of Spent Wash/ Vinasse up to 60% (w/w). In this, the Alcohol water vapors from distillery are supplemented with steam to achieve desired concentration of Spent Wash/ Vinasse.

The total solid percentage in the Spent Wash/ Vinasse feed is enhanced by almost a factor of 2.4 in the Evaporator output/product concentrate. These Evaporation systems produce Crystal Clear Condensate Water which is 100% recycled to process (Fermentation), Cooling tower after proper treatment.



**Integrated Evaporation Plant
for Raw Spent Wash**



**Integrated Evaporation Plant
for Bio-methanated Spent Wash**



**Hybrid Evaporation Plant for
Bio-methanated Spent Wash**

**Technology suitable for Raw/ Bio-Methanated Spent Wash/ Vinasse,
for Multipressure Vacuum Distillery/ Atmospheric Distillation.**

Integrated Evaporation Plant

- Uses heat from Alcohol vapours without affecting distillery operation. No steam required
- Investment Payback period can be as low as 1 year
- ZLD plant operates on 24 hour basis.
- Operations are from ground floor only.
- CIP (Cleaning In Place) by Chemicals only. It is done once in 15 days. No manual cleaning is required.
- Recycles Crystal Clear Condensate 100% suitable for fermentation, cooling tower etc.



**Integrated Evaporation Plant for
Bio-methanated Spent Wash**

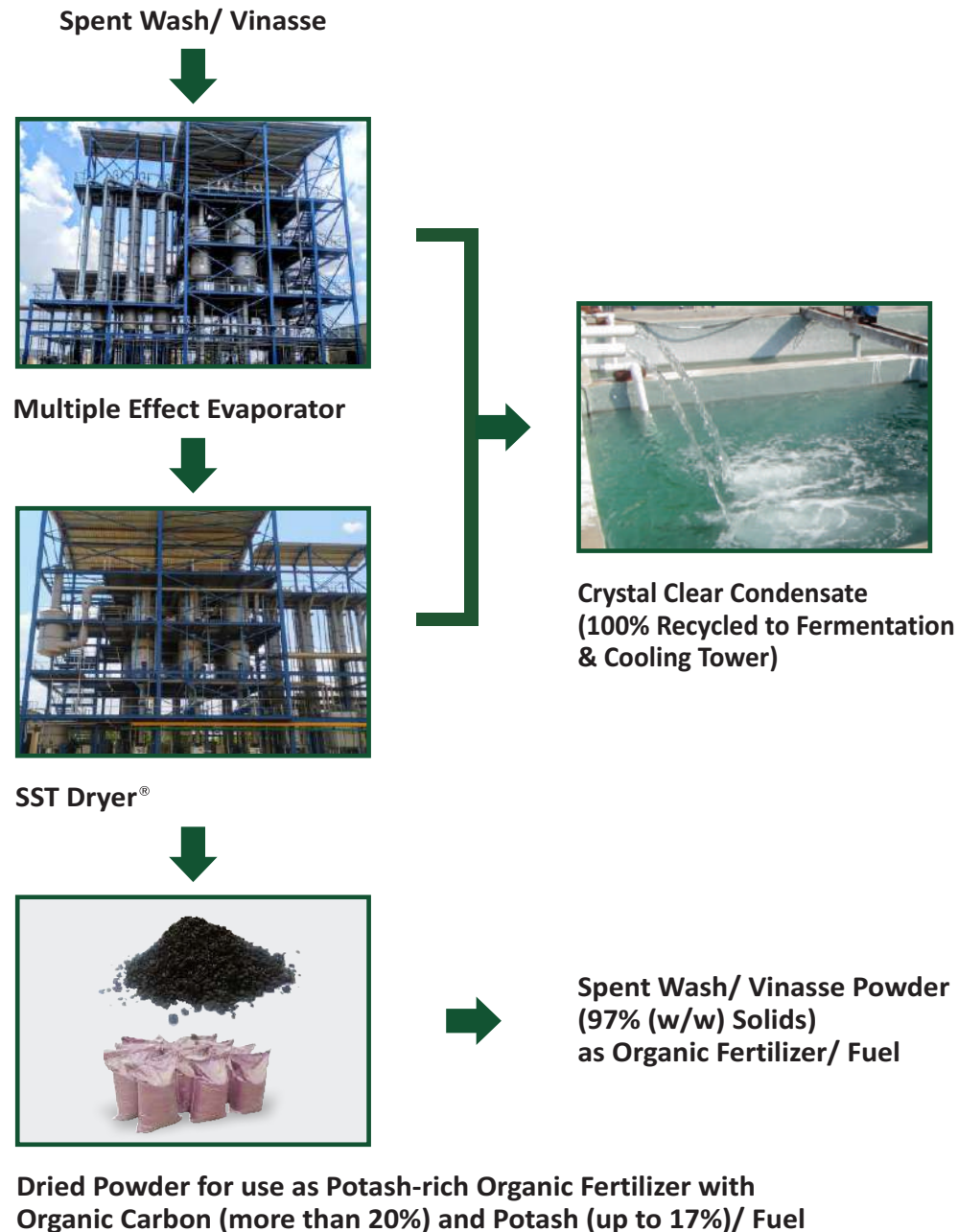
Hybrid Evaporation Plant

- System uses heat from Alcohol water vapors, supplemented with steam (at any pressure). Raw/ Bio-methanated Spent Wash/ Vinasse is concentrated up to 60% (w/w).
- ZLD plant operates on 24 hour basis.
- Operations are from ground floor only.
- CIP (Cleaning In Place) by Chemicals only. It is done once in 15 days. No manual cleaning is required.
- Recycles Crystal Clear Condensate 100% suitable for fermentation, cooling tower etc.



**Hybrid Evaporation Plant
for Bio-methanated Spent Wash**

Profitable and Innovative State-of-the-Art Technology for Spent Wash/ Vinasse treatment

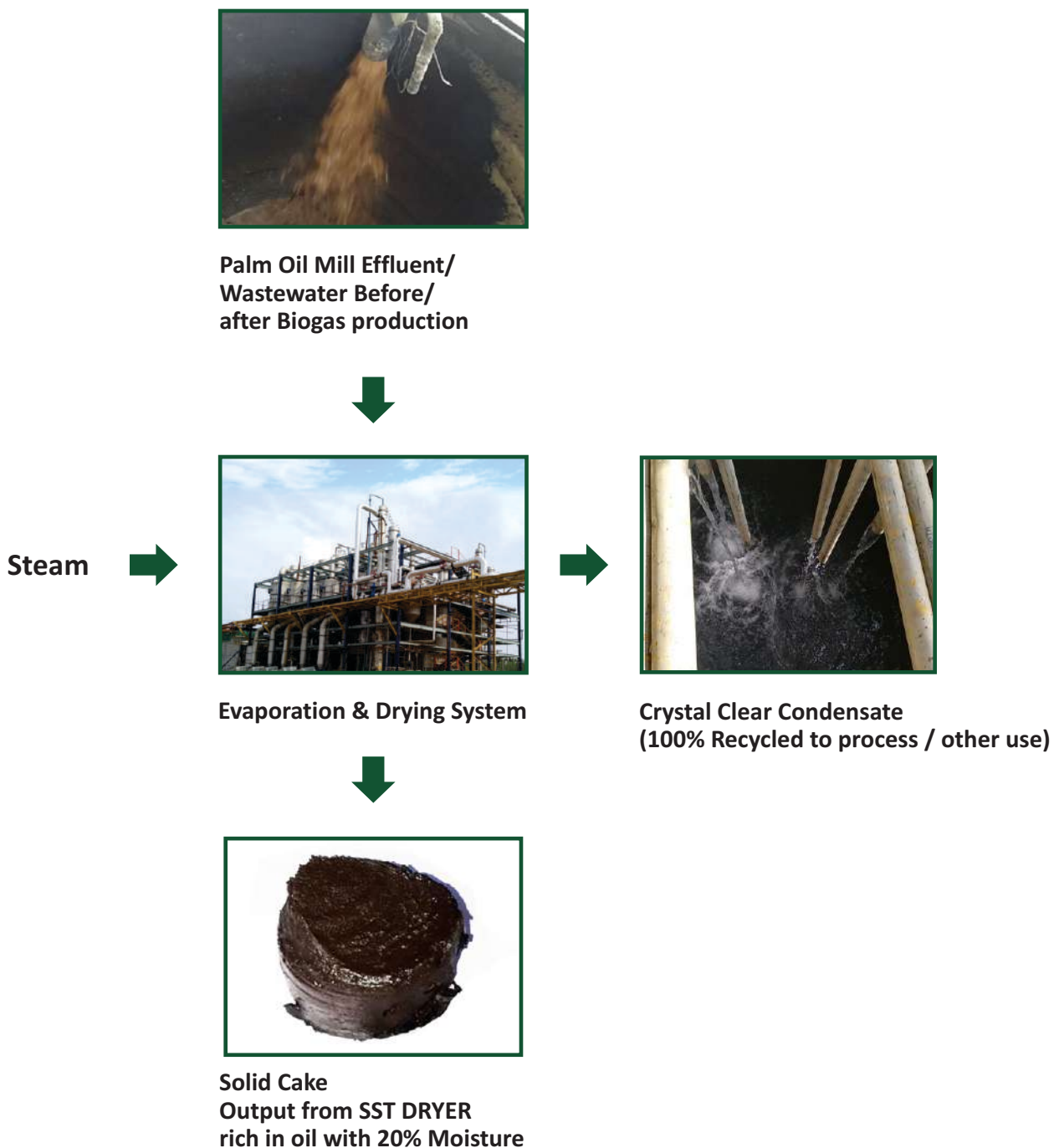


Salient Features

- This is the ultimate, Global first Zero Liquid Discharge System for Molasses-based Distillery.
- System offered for Raw/Bio-methanated Spent Wash.
- The Multiple Effect Evaporation Plant can use Alcohol water vapor and steam (at any pressure)/ only steam; as heat source.
- Crystal Clear Condensate water suitable for 100% recycling to fermentation, cooling tower etc., after proper treatment.
- Solid output is 97% (w/w) in dry powder form (non-hygroscopic). It is suitable for use as Potash-rich Organic fertilizer (Organic Carbon – more than 20%, Potash – up to 17%) or as Fuel.

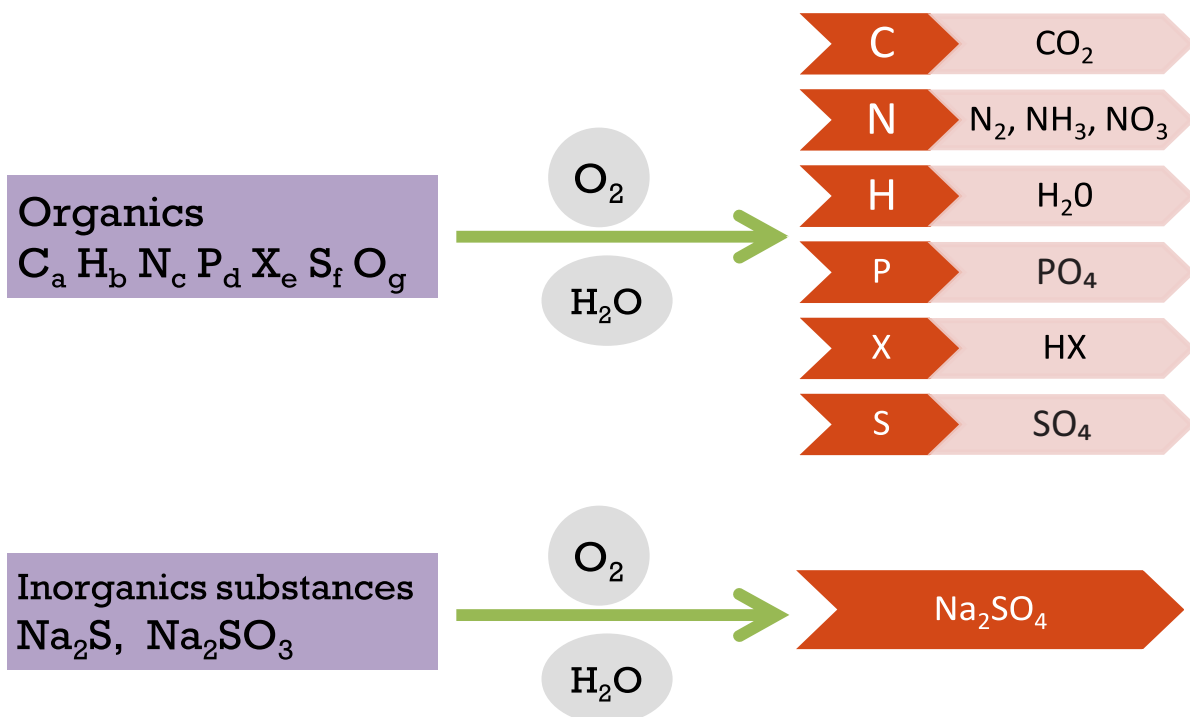
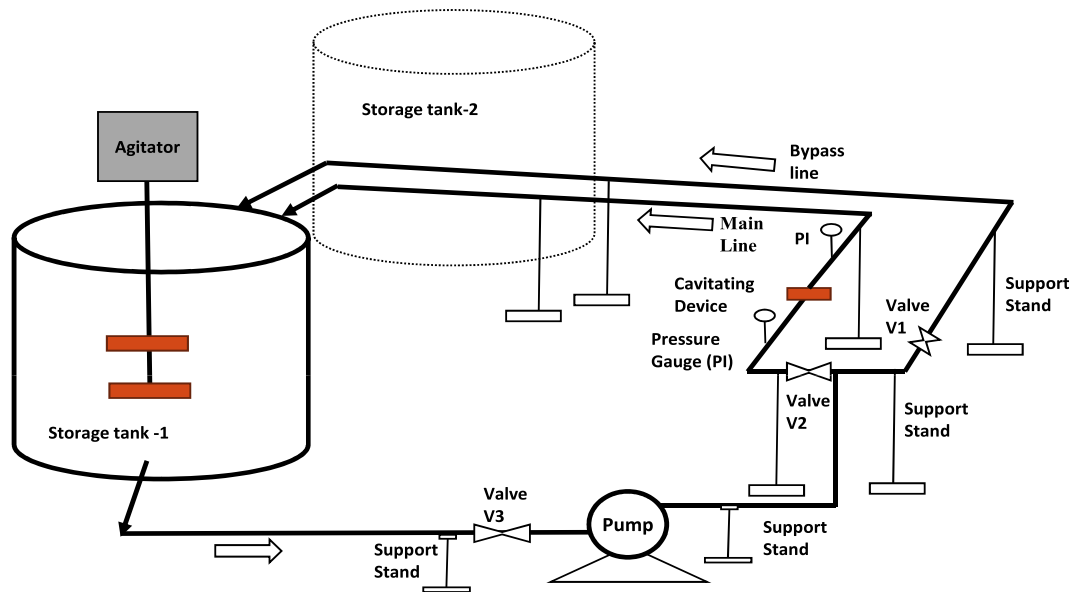


State-of-the-Art ZLD Technology for POME



Salient Features

- This is the ultimate, global first Zero Liquid Discharge System for Palm Oil Industry.
- Solids output is rich in oil.
- Oil can be extracted and sold as a commercial product. This is an additional source of revenue.
- Oil extracted solids are also used as Animal Feed or Organic Fertilizer.
- Crystal Clear Condensate water is 100% recycled to process, cooling tower etc. after proper treatment.
- Cleaning In Place (CIP) is by use of only Chemicals. No manual cleaning is required.
- One operator can take care of ZLD system. Plant operation is from ground floor only.
- ZLD system is PLC-SCADA based.



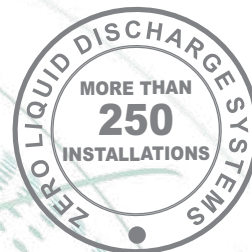
Salient Features

- Advanced technology for treatment and safe disposal of hazardous toxic effluent.
- Technologies on offer:
 - ▶ Fenton Oxidation.
 - ▶ Ozonization / H_2O_2 .
- Chemicals required are Hydrogen Peroxide, Ferrous Sulfate & Ozone.
- Reduction in COD & BOD.
- In technical collaboration with Institute of Chemical technology (ICT), Mumbai (Formerly known as UDCT).



Awards & Accolades





SS Techno Limited

Turnkey Zero Liquid Discharge Systems

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