NAMAN
INDUSTRIES

Design, Engineering,
Manufacturing, Errection &
commissioning company

NAMAN INDUSTRIES

– ZERO LIQUID DISCHARGE / MULTI EFFECTIVE EVAPORATOR(MEE)

Manufacturing & EPC consultant for **Chemical, Pharma, beverages & food Industries** and all related engineering Industries

Overview

The journey of Naman Industries have started 8 years back, established in 2015, as a Manufacturing & EPC consultant for Chemical, Pharma, beverages & food Industries and all related engineering Industries, We have been **expertise in** Design, Engineering, Manufacturing, Errection & commissioning company. Over a period of time based on the customer requirement & upgradation process in the field of Effluent & Water Treatment we have slowly developed our own MEE & ZLD SYSTEM and are now leading Manufacturer of all types of ZERO LIQUID DISCHARE (ZLD) & Evaporation Technology.

We have also been manufacturing all types of Bulk drug & Fine drug equipment's.

Products specifications

ZERO LIQUID DISCHARGE:

Zero Liquid Discharge (ZLD) is an advanced water treatment process with the goal of reusing as much water as possible in the production process without the need to discharge any waste.

ZLD is the ultimate wastewater treatment process that has zero or nearly zero impact on the environment. By combining several processes, salt (which can be reused or sold) and purified water that can be reused in the technology, are recovered from the wastewater. This makes it possible to reduce the operating costs of the main technology. These benefits make ZLD one of the most popular technologies to reduce the industry's environmental impact, especially in countries that are subject to strict environmental regulations on industrial waste.

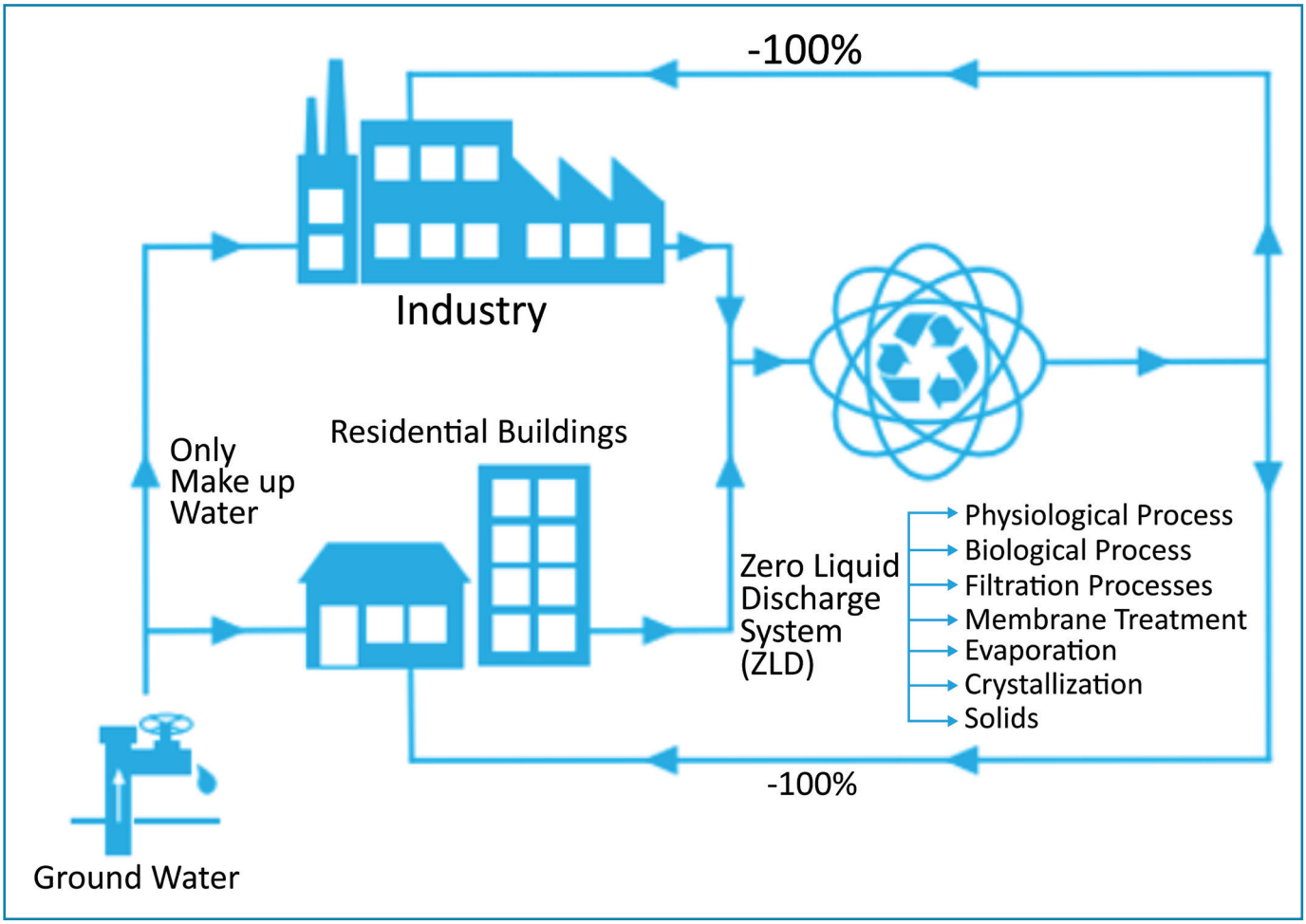
ZERO LIQUID DISCHARGE:

ZLD process typically involves the following steps: pre-treatment, concentration and thermal treatment.

Pre-treatment is used to reduce the amount of TSS (Total Suspended Solids), COD (Chemical Oxygen Demand) and turbidity. After removal or significant reduction of TSS, COD and turbidity of treated wastewater, other wastewater treatment processes can be used.

Concentration of dissolved solids in the ZLD system is usually accomplished by membrane technologies, such as reverse osmosis (RO), electro dialysis (ED) or by a combination of RO with ED. With the help of ED technology or the above-mentioned combination of RO + ED, we can achieve recovery of more than 98 % of treated water.

Thermal treatment the last step of the ZLD process is usually consisting of evaporator and crystallizer. The output of this process is crystalline salts NaCl, Na2SO4, etc. These salts can be sold for further processing. Any unusable solid waste is land filled at controlled landfills. Evaporated water can be reused as condensate.



Benefits of ZLD plant

Zero liquid discharge plant technology is growing globally as an important wastewater management strategy to reduce water pollution and extend water supply. The main benefits of ZLD are:

Minimizes waste water discharge	*Maximizes water recovery*	*Creates a valuable product for sale and further processing*
Removes many environmental issues	*Reduces dependence on local water sources*	*Significantly reduces the risk of sanctions within the legislative standards for discharged waste*

MULTI EFFECTIVE EVAPORATOR(MEE) :

Multiple Effect Evaporator (MEE) is a system consists of a sequence of heat exchangers – VLSs (vapour-liquid separators) used widely for many applications in industries to achieve evaporation and obtain desired concentration as output by using an efficient amount of heat source such as steam or hot water to evaporate water. Evaporation is normally stopped before the solute starts to precipitate in the operation of an evaporator. Most of the industrial evaporators have tubular heating surfaces. The tubes may be horizontal or vertical, long or short and the liquid may be inside or outside the tubes.

TYPES OF EVAPORATOR

- **FREE FALLING FILM EVAPORTOR(FFFE) :** A typical feeding method of multi-effect evaporators is forward feed, where both feed and steam are introduced in the first effect and the feed passed from effect to effect parallel to the vapor from the earlier effect. Feeding the steam results in the formation of a small amount of water vapor, which is used to heat the second effect. The vapor releases its latent heat and condense. The released latent heat would result in the formation of a smaller amount of vapor in the second effect. This process is repeated in subsequent effects, until the vapor temperature becomes close to the feed sea water temperature.

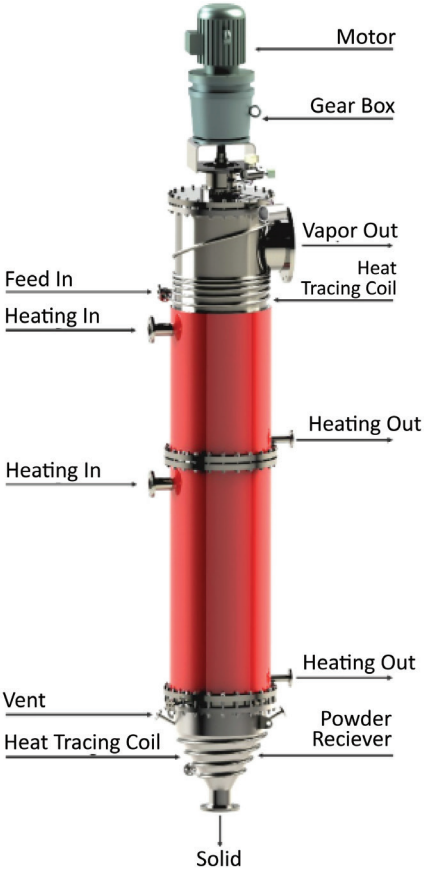
FORCED CIRCULATING EVAPORATOR(FCE) : Forced Circulating Evaporators are normally used for liquids which are prone to fouling, scaling, and crystallizing or for those which are inversely soluble or while concentrating thermally de-gradable materials. Here high re-circulation rate allows high liquor velocities through the tubes which help to minimize the build-up of deposits or crystals along the heating surface. The universal type, preferably used for concentration of solutions containing encrusting substances, hardening agents and un-dissolved solids, and for viscose solutions; also suitable for evaporative crystallization

AGAITATED THIN FILM DRYER(ATFD)

Agitated thin film evaporators are typically used for fluids which are difficult to handle due to higher sensitivity and viscosity. Such an evaporator consists of tow key components: a jacketed shell and a rotor which rotates at high speed inside the shell.

During operation, the rotor revolves at high speed. The feed distributor spreads the incoming feed uniformly over the cylinder top periphery. The rotor blades pick up the material, spread it over a heated surface in a thin film and agitate the film intensely, as it rapidly travels down.

The material transforms from solution to the slurry, wet cake, wet powder and finally dry powder as it travels from top to bottom. The vapour generated rises counter-currently to the inbuilt entrainment separator. Here the entrained droplets are separated from the vapour stream. The clean vapour leaves the dryer through the vapour nozzle at the top.



Features

Feeds can be processed without pre-concentration or dilution	*Indirect heating and drying in the absence of air. Particularly effective for heat, light and oxygen sensitive products. Best suited for solvent bearing products for complete solvent recovery*	
Quick processing time, best suitable for heat sensitive products	*Probably the most energy efficient dryer in the market. Thermal efficiency exceeds 90%*	*Fine powder of uniform consistency can eliminate pulveriser from downstream step*

Fine Drug Equipments

NAMAN INDUSTRIES- the pioneer in the field, meets your needs for variety of applications through a chain of processes such as pre-crushing to micro fine grinding, grading and handling of bulk powder materials with almost dust free operation.

ANFD – Agitated Nutsche Filters and Dryer

The Agitated Nutsche Filter – ANFD consists of a cylindrical shell with top dished and welded flat bottom. The ANFD base Steel plate is stiffened with supports welded under the base steel plates. The Steel base plate is having arrangement of heavy bolting bar to hold the filtering cloths. Suitable support is provided under filter cloth to facilitate the flow of filtrate. Suitable nozzles are provided including Manhole and Side discharge nozzle. Solids bars is used for designed Agitator shaft and solid plate for blades made in specially "S" curved to take high torque generated during solid discharge and re-slurring operation.

Features

- cGMP equipment design and construction
- Single (Monoblock) or Double (Detachable base) model options
- Highly efficient drying with integrated heating system
- Sealed single piece agitators prevents leakage of heat transfer fluid into the process media
- Total interchangeability between cloth and mesh filtration media
- Optional detachable portable filter unit supplied on WHEELSDesign

Specifications

Main Dimensions: Designed to suit specific applications
Flange Drilling: ANSI - B 16.5, #150
Capacity: 0.5KL TO 5 KL
Pressure: 0-6 barg (0-90 psig)
Operating Temperature: up to 200 Deg.C
Filtration: 10-200 Micron

Tray dryers

Features

- Rounded edges and corners throughout the design
- CGMP construction for pharmaceutical models

Specifications

DESIGN TEMP : 30 TO 150 C
TRAY SIZE CAP : 12 TO 192
MOC : SS 304/316L/DUPLEX/SUPER DUPLEX, Hastelloy c22 AS PER CUSTOMER REQUIREMENT
CONSTRUCTION SPEC : cGMP , ASME

Vacuum Tray Dryers (VTD)

Vacuum Tray Dryers (VTD's) that are easy to use and consume less power than other traditional types of Dryers. We design VTD's from laboratory to production scale and can meet sterile process requirements when necessary for drying highly toxic or sensitive products.

Features

- Rounded edges and corners throughout the design
- Sturdy welded external chamber reinforcement ensures maximum operating protection and dependability under full vacuum operation
- Hollow pad type baffled heating shelfs
- Vapor condensation unit along with a receiver
- Circular and rectangular drying systems ideal for small to moderate levels of production
- CGMP construction for pharmaceutical models.

Specifications

STANDARD SHELVES : 12 + 1 NOS
DESIGN TEP : 0 T 150 C
TRAY SIZE CAP : 12 TO 96
MOC : SS 304/316L/DUPLEX/SUPER DUPLEX, Hastelloy c22 AS PER CUSTOMER REQUIREMENT
CONSTRUCTION SPEC : cGMP , ASME

Roto cone vaccum dryer

Rotary Cone Vacuum Dryer (RCVD) is completely jacketed for optimum dryer efficiency. Heat transfer fluid, typically hot water, steam or vapour, is circulated around the conical jacket for even product drying through conduction. We can supply the Thermal Control Unit where required

Design-features

- cGMP equipment design and construction
- Sealed single piece heating jacket
- All bearings of the dryer are external to the blending vessel
- Non-clogging design. Easy to clean
- Hollow shaft gearbox is used.
- Complete Automation with PLC based operation is possible

Technical-info

- Design & Construction: AMSE Sec.VIII
- Main Dimensions: Designed to suit specific applications
- Flange Drilling: ANSI - B 16.6, #150
- Capacity: Typically supplied from 300L to 5,000L
- Operating Pressure: 6 Barg (90 psig)
- Operating Temperature: up to 200 Deg.C

We attach due importance to critical parameters such as top cut size and grade distribution of powder, power consumption and minimum running maintenance for the equipment.

Micronizer/Air Jet Mill

Action grinding and collecting operations for achieving ultra-fine grinding upto 0.4 micron to 15 microns* depending upon the nature (Physical & Chemical Property) of the product. Air jet mill (also known as micronizer) is designed for grinding hygroscopic, heat sensitive and explosive materials to achieve consistent steep particle size distribution. We allows greater control over the grinding parameters and product particle size distribution.

Bulk and Intermediate Equipments

Distillation column / packings

Distillation is one of the most popular separation technique of separating chemical substances depending on differences in their volatilities in a boiling liquid mixture. It is a process in which a mixture of liquid or vapour with two or more substances is separated into its desired purity component fractions by the application and removal of heat. It is usually a part of a larger chemical process.

Design-features

- Manufactured in accordance with international specifications
- Non-clogging design. Easy to clean
- Vertical design in batch or continuous column format
- Innovative internal perforated horizontal plates/ TRAY TYPE

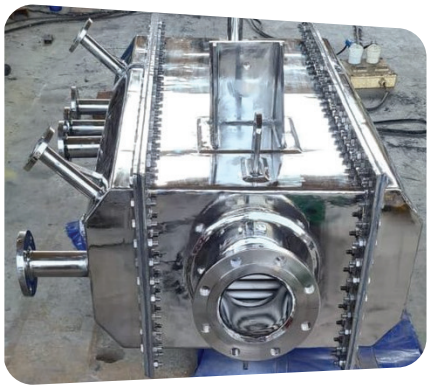
Technical-info

- **Main Dimensions:** Designed to suit specific applications. Typically the sizes follow 400 MM TO 1200 MM DIA
- **Flange Drilling:** ANSI - B 16.6, #150
- **Capacity:** Typically supplied from 63L to 14,000L
- **Operating Pressure:** 0-6 Barg
- **Operating Temperature:** Ambient

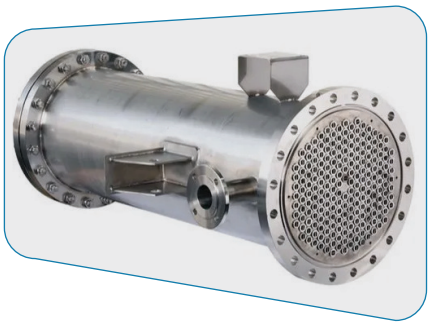
Evaporation Systems

HEAT EXCHANGERS

Our Shell and Tube heat exchanger systems are highly efficient and are preferred when there is a good quality source of secondary fluid used for the Shell side of the system.



Box type heat Exchanger



Shell & tube heat exchnager

Features

- Designed to Current Good Automated Manufacturing Practice (cGAMP)
- Robust Design
- Modular construction
- Tube fluid is designed to take the most efficient heat removal route through the system

Specifications

Heat Transfer Area: from 0.5 m2
Materials: 316L Stainless Steel Tube, 304L Stainless Steel Shell
Gasket: PTFE
Shell Connection: Flange to ANSI B16.5.
Temperature: 0 to 200 Deg C
Pressure: 12 barg
Design: U-tube, straight and multipass

ETP/STP Softness

ASME Code and Non-Code Steel Tanks and Pressure Vessels

Custom ASME code and non-code tanks and pressure vessels are used for commercial, industrial and municipal water softeners, filters, dealkalizers, and deionizers/demineralizers. These lined or unlined tanks are available in **carbon steel, stainless steel or galvanized, with several available linings. Our standard tanks and pressure vessels are rated at 100 psi with test at 150 psi.**

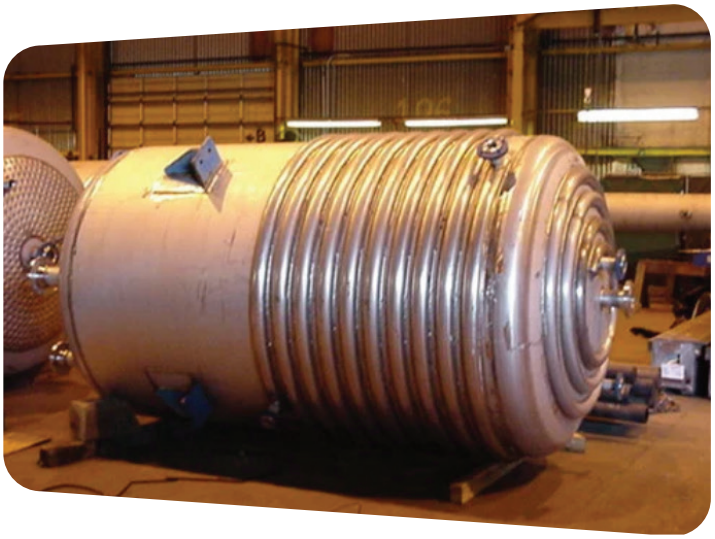
Pressure Vessels

Jackated & limped coil Reactors

We manufacture a range of Stainess Steel and Exotic Alloy Reactors designs in a variety of materials such as 304 S/S, 316 S/S, and Hastelloy C276. We also offer high chemical resistant hybrid Reactors.

Features

- **Welding:** According to latest ASME
- cGMP equipment design and construction
- Sealed single piece optional heating jacket
- Manufactured in accordance with international specifications
- Non-clogging design. Easy to clean
- Anchor, Propeller and Turbine agitating system available
- Mechanical seal for shaft to housing seal
- Motor: Flange Mounted Flame proof design



Specifications

- **Design & Construction:** AMSE Sec.VIII,
- **Main Dimensions:** Designed to suit specific applications. Typically the sizes follow the industry standard vessel length/diameter ratios of between 1/3-15 range.
- **Flange Drilling:** ANSI - B 16.6, #150
- **Capacity:** Typically supplied from 0.5 KL to 15 KL
- **Operating Pressure:** 0-6 Barg
- **Operating Temperature:** -28 to 200 Deg.C.
- **Anchor agitating system:** Min 36rpm, Max 64rpm
- **Propeller agitating system:** Min 36rpm, Max 300rpm
- **Turbine agitating system:** Min 56rpm, Max 300rpm

RECEIVERS & STORAGE TANKS

Vessels, Storage tanks & receiver

Our Storage Tank designs are available in both vertical and horizontal models to suit site preference / physical space available. Horizontal storage tanks have capacities ranging from 250 to 16,000 litres whilst vertical designs have capacities ranging from 250 to 30,000 litres.

Features

- Manufactured in accordance with international specifications
- Non-clogging design. Easy to clean
- Both Horizontal and Vertical designs available

Specifications

- Design & Construction: AMSE Sec.VIII
- Flange Drilling: ANSI - B 16.6, #150
- Capacity: Typically supplied from 50L to 30,000L
- Operating Pressure: 0-6 Barg
- Operating Temperature: Ambient

NAMAN INDUSTRIES

Our Services

Specialist in complete

Zero Liquid Discharge (ZLD), Multi Effect Evaporator (MEE) &

Agitated Thin Film Dryer (ATFD)

NAMAN
INDUSTRIES

Turnkey Based Projects

- All Type of Pharma Equipments Both Bulk Drug and Fine Drug Equipments
- Pipe Line Works
- Clean Room Equipments
- Maintenance of ETP and STP Plants
- All Types of Structural Fabrication Works

EPC Company

Manoj Choudhary

+91 8106003273 | +91 9182187601

info@namanindustries.co.in,

md@namanindustries.co.in

www.namanindustries.co.in

Unit 1: Plot No. 34A. Ram Reddy Nagar, IDA Jeedimetla,
Hyderabad - 500055, T.S.

Unit 2: Plot No. 60. K.k. Owners Society, IDA Jeedimetla,
Hyderabad - 500055, T.S.