RAJ GROUP




Higher steam and power economy.

Simple construction which is easy to operate.

Carefully selected material of constructions taking into account the feed properties.

Optimal space requirement.

Skid mounted units up to certain capacities.

Capacity range from 1 KL per day to 10000 KL per day.

PLC Controlled systems.

Pure condensate from the system which can be reused in process.

Raj History and Background

Introduction

Raj Process Equipments & Systems Pvt. Ltd. established in 2003, today is amongst the fastest growing engineering company providing the services of design, engineering, manufacturing, and export of process equipments and systems, with complete solution including Turnkey projects.

Our name stands for highly specialized service in the field of Distillation Systems, Dehydration Technology, Evaporators, Dryers, Powder Handling Systems, Mixers, Associated components and many more.

Our technical knowledge and dexterity are the bedrock of our company. In addition, the key to our success is providing responsive services to our customer's needs .Our unceasing efforts on focus of achieving superior quality of installations matching best in the industry at minimum investment and optimum production cost. To accomplish this, we have a dedicated team of engineers and industrial designers, who work in close coordination with our customers to design and develop plants exactly as per their requirements.

History & Background

A decade ago, a group of self-motivated engineers decided to launch a first well-equipped fabrication firm in India, with a vision to provide GMP equipments to the chemical process industries. However, after lot of efforts and survey we all entered in Dryers, Evaporators and ZLD Plants, with professional and adroit activity to grow the business in terms as technology supplier.

In the course of time , installation of ZLD plant for various applications like Spent wash , Pharmaceutical, Chemical & Metallurgical Wastes became a specialized field of operation for RAJ with clients spread all over world .

This transition over a period saw Raj becoming a successful supplier of Zero Liquid Discharge plants

RAJ is now executing number of projects all over the country and in overseas market.

While designing the system we are focused on

- Higher through-put efficiency
- Lower energy consumption
- Reduced effluent volumes
- Adherence to International consultant & statutory norms
- Effective Project Management
- Self reliant manufacturing base
- Time bound Execution
- Problem solving approach

Engineering team

Engineering Team

As far as RAJ's technology and engineering practices are concerned, the emphasis is given to nurture research and development and also encourage new ideas. The emphasis has also been on providing the tailor made solutions to meet different conditions and requirements of the clients. The engineering team ensures that all plants, machineries and associated equipments are designed, fabricated and erected based on the following international standards.

ASME / API / TEMA / DIN / JIS for mechanical designs.

ISA / IEEE Codes for electrical and instrumentation.

Civil & structure design conforming to local country code & good engineering practices.

Architecture and aesthetics in line with international developments as per international practices and finishes. The plant layout and overall configuration is conceptualized keeping in mind future expansion, ease of operation, accessibility from road, aesthetics & stringent safety norms.

Project & Construction Team

Project and Construction Team

The focus has also been given to the workmanship and quality control at manufacturing workshop.

All the equipment manufactured by RAJ and its vendors confirm to the international designs, fabrication codes and procedures. The project team utilizes Primavera software for better scheduling and effective project management.

A vast experienced and dedicated team consisting of mechanical engineers, electrical engineers and are always on the move on 24 X 7 days basis to ensure all the projects are implemented in time and with quality.

Commissioning & After Sales Team

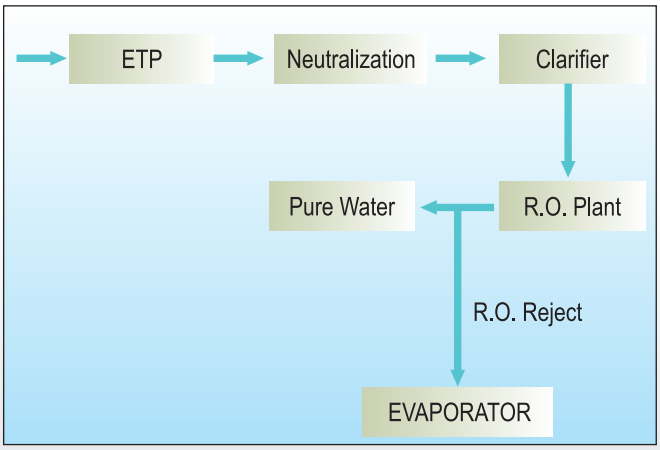
Commissioning & After Sales Team

RAJ has also been solving the existing plant's technical problems and there are number of examples where RAJ has moved in and solved the difficult problems of quality and efficiency. RAJ is thus able to provide prompt and efficient services to its clients. Clients feel assured that RAJ engineers will be around them to help them in the moment of crisis and this is the simple secret of RAJ getting repeat orders in India and in overseas markets.

Effluent Treatment Plant

Effluent Treatment

The system is envisaged for treatment of effluent mainly containing turbidity and suspended solids. Service water washing effluent from different areas is collected in common collection pit and then pumped to the flash mixer where chemical mixing takes place. The effluent is dosed with Alum, Lime and Polyelectrolyte to coagulate and flocculate the suspended / colloidal matter. Water then flows through the flocculation tank for flocculation and is finally carried over to tube/lamella settler through gravity where clarification of water takes place. Clarified water is then led to common monitoring basin through gravity. Sludge generated in the process shall be collected and pumped for further treatment.



Effluent Treatment

Reverse Osmosis Plant

Reverse Osmosis Plant (RO)

Reverse osmosis is a purification technology that uses a semi-permeable membrane. In RO, an applied pressure is used to overcome osmotic pressure, a colligative properties, that is driven by chemical potential, a thermodynamic parameter. RO can remove many types of molecules and ions from solutions and is used in both industrial processes and to produce potable water. The result is that the solute is retained on the pressurized side of the membrane and the pure solvent is allowed to pass to the other side. This membrane should not allow large molecules or ions through the pores, but should allow smaller components of the solution (such as the solvent) to pass freely.

Evaporator

Zero Liquid Discharge is a process that is beneficial to industrial and municipal organizations as well as the environment because it saves money and no effluent, or discharge, is left over. ZLD systems employ the most advanced wastewater treatment technologies to purify and recycle virtually all of the wastewater produced.

ZLD Specific Technology

ZLD systems have become a necessity for all the industries generating liquid effluents. Common effluent treatment plants in most areas have a limited capacity . The ZLD systems are normally incorporated to treat the R.O. reject streams.

Zero Liquid Discharge Plant

In zero liquid discharge plant operation, effluent is treated in three different steps depending upon the effluent specification.

- ***Step I:*** **Stripper Column**

  In this process, the effluent is treated in stripper column to recover the solvent present in effluent & reduce the COD & BOD value. This step is generally used when the effluent is having high COD & BOD Level.

- ***Step II:*** **Single or Multi-Effect Evaporator Plant**

  In this process, the effluent is treated in Multi-effect evaporator plant to concentrate the effluent or slurry.

Multi-effect evaporator plant is a combination of different types of evaporator like Falling Film, Forced Circulation & Rising Film Evaporator. In this stage steam economy depends upon the number of stages.

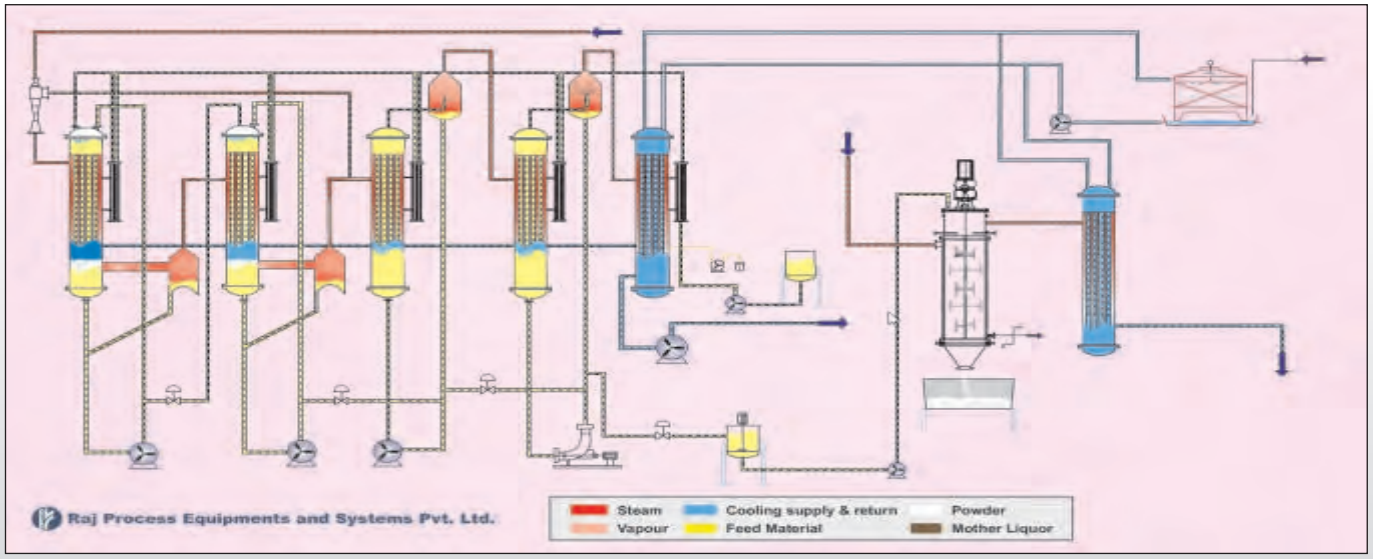
- ***Step III:*** **ATFD/Pusher Centrifuge / Tube Bundle Dryer**

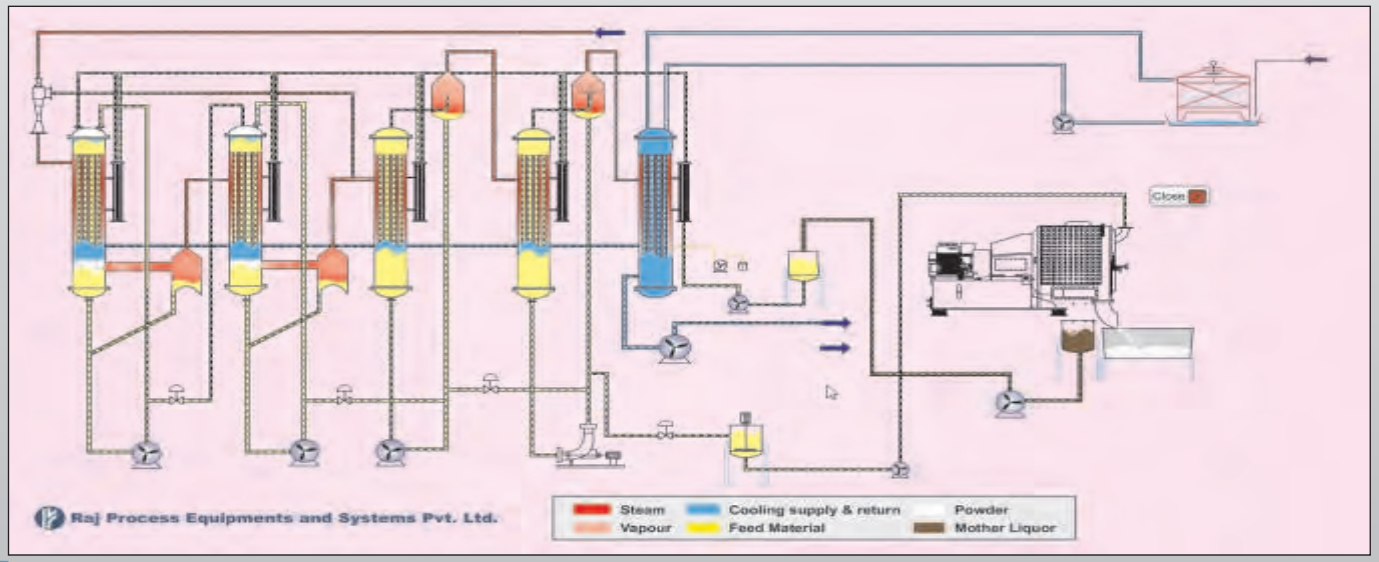
  In this process, the concentrated effluent from Multi-Effects evaporator plant is treated for complete separation of solid & liquid present in effluent.

Process

Zero liquid discharge plants consist of a combination of ETP, RO & Evaporators depending upon the nature of the liquid and its contents. The waste liquid is concentrated to the maximum level in evaporator which may be either falling film or forced circulation or a combination of both. The number of stages depends upon the quantity of liquid to be handled. The water evaporated from the evaporators is condensed in the condenser and can be reused in the process.

The concentrated liquid is then dried in either a spray dryer or agitated thin film dryer. The dry product obtained in powder form can either be used as a by-product or can be sent for land filling.





ZLD Plants

Features of RAJ Zero liquid discharge plants:

- Higher steam and power economy.
- Simple construction which is easy to operate.
- Carefully selected material of constructions taking into account the product properties.
- Optimal space requirement.
- Skid mounted units up to certain capacities.
- Capacity range from 1 KL per day to 10000 KL per day.
- PLC Controlled systems.
- Pure condensate from the system which can be reused in process.

Application of Zero Liquid Discharge Plant

- Hydrocarbon Processing:
- Textiles: Waste H_2SO_4 concentration, Sodium thiocyanate (NaSCN) concentration, Sodium Chloride (NaCl) and Sodium Sulfate (Na_2SO_4) recovery by crystallization
- Pulp and Paper: Black liquor concentration before burning, bleaching effluents concentration and up-grading, stripping of process condensates, recovery of Na_2SO_4 from incineration residues.
- Chemical Processing: Recovery of salts such as NaCl, Na_2SO_4, etc from organic synthesis, recovery and purification of acidic synthesis effluents such as HCl, H_2SO_4.
- Dairy and Beverage: Numerous dairy, food, and beverage applications including complete whey processing facilities. Whey originates as a by-product from cheese production using milk as raw material. Whey still contains many valuable components that have a wide utilization if treated properly in an appropriate process - such as simple evaporation, drying, or fractionation by ultra filtration followed by other processes, usually also evaporation and drying.
- Food & Pharmaceutical: Citric acid effluents concentration and up-grading, sulphuric acid concentration from ethanol production plants, elimination of inorganic chemicals from specific wastes, food grade phosphoric acid.
- Alumina Industry: Elimination of the sodium carbonate from the Bayer liquor, salting-out and liquor-burning high concentration evaporators.
- Fertilizer production: Ammonium nitrate residual condensates treatment, recovery of HNO_3 in effluents, recovery of H_2SiF_6 from phosphoric acid concentration units.

Raj Infrastrcture & Facilities

Corporate and state of the art engineering office

RAJ is a process-engineering house serving the dryer, Evaporator, distillery and bio-fuels industry with its strong team of professional engineers from various disciplines. The modern corporate office located in Akurdi Pune, India with networking facilities which is design hub for its domestic and international projects.

Fabrication and quality testing facility

RAJ today has a manufacturing base in PUNE India of 4 workshops capable of manufacturing around 20 large sized distillery and Ethanol projects per year. Many International third party inspection and quality conformance agency certifies the engineering & fabrication drawings, actual fabrication and shop floor activities thereby adding value to our quality manufacturing set-up.

Manufacturing Facilities

We have four manufacturing units, of which, one is for exports. We have our manufacturing facility in Khed SEZ, near Pune on Pune Nasik National Highway. Second unit is in Bhosari Industrial Area nearby Pune, which is dedicated to R&D, that ensures products with unmatched quality, third one is in Chakan area, and Fourth one is in Shirval, near Pune.

Chakan Unit

Chakan Unit

(Stainless Steel and Special Equipments)

Our Chakan unit has separate divisions for manufacturing different products. The uniqueness of the plant is it has all the fabrication processes in house which makes it to manufacture a product much faster than competitors. The area covered by Chakan Unit is 20000 Square Meters.

Bhosari Unit

(R&D Unit & Electrical Automation)

This is available with the land of 800 Square Meters area totally covered.

These manufacturing units are laced with the Hi- tech pilot facilities and testing equipments. The facilities are backed by the team of experienced engineers who work efficiently to achieve complete customer satisfaction. The design department of our company is equipped with

Bhosari Unit

software's that enable us to design the product on computer and develop it according to the industry specific need of the customer. Bhosari Unit is dedicated for R&D to ensure products with unmatched quality.

Khed Unit / Pabal Unit

(Export house)

This unit is located in First Multiproduct Special Economic Zone, Pune developed by Kalyani Group. Khed Unit is dedicated to exports and SEZ orders only. We have complete manufacturing set up as per International Norms. This is available with the land of 20000 Square Meters area.

Shirval Unit

(Carbon Steel and Heavy Fabrication)

Due to increasing demand for our products we have expanded our manufacturing facility at Shirval in Satara District. The manufacturing facility started functioning from July, 2013. This new facility is in 14 acres.

Marketing Network

Raj Process Offices and Marketing Network:

Raj has a strong domestic as well as International Marketing network.

Marketing offices in Delhi, Chennai, Ahmadabad, and Hyderabad in INDIA.

And Malaysia, Indonesia, Ukraine, Russia, Israel, Dubai, Nigeria, Kenya, Ethiopia etc Internationally.

Khed Unit
(Pabal)

Shirval Unit
(Khandala)

Certifications


TUV NORD

CERTIFICATE

Management systems as per
ISO 14001 : 2004

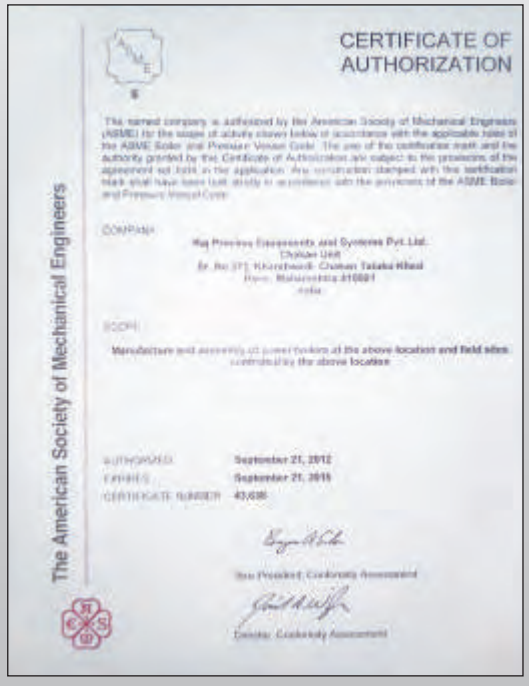
RAJ PROCESS EQUIPMENTS & SYSTEMS PVT. LTD.

Design of Process Metal Equipments, Pressure Vessels
Boiler & Components


THE NATIONAL BOARD
OF
BOILER & PRESSURE VESSEL INSPECTORS

Certificate of Authorization

RAJ PROCESS EQUIPMENTS AND SYSTEMS PVT. LTD.
DIVISION: CHAKAN UNIT
SR NO 373, KHARABWADI CHAKAN
TAL - KHED
PUNE, MAHARASHTRA, 410 501
INDIA


CERTIFICATE OF AUTHORIZATION

The American Society of Mechanical Engineers


CERTIFICATE OF AUTHORIZATION

The American Society of Mechanical Engineers

Head Office

- Jai Ganesh Vision, 'B' Wing,3rd Floor,
  Jai Ganesh Fame Building, Akurdi, Pune - 411035, India
  Tel: +91-20-40710010
  Telefax: +91-20-40710009
  Email: sales@rajprocessequipment.com
  Website: www.rajprocessequipment.com

Regional Offices

- Hyderabad

  Cell.- +91-9550151122.
- C-24 Barcelona Business Hub,
  Odhav Circle, S P Ring Road, Odhav, Ahmedabad- 382 415
  Cell. - +91-7600022352
- Unit No. FF-47,1st Floor, Omaxe Square,
  Jasola District Centre, Behind Jasola Apolo Hospital,
  New Delhi - 110 044;Tel. +91-11-40503519
- Second Floor, No: 6/9, Harikrishna colony,
  Nandambakkam, Chennai-600 089.
  Cell:+91-8220058290

Marketing Representative- International

- Bio-Tropic Industries Sdn. Bhd.
  19 -1 A , 1st Floor , Block 6 , Jalan Pahat H / 15 H,
  Seksyen 15 ,40200 Shah Alam,
  Selangor Darul Ehsan , Malaysia
  Tel.- +6 03 5523 2219 , Fax - +6 03 5523 9995
  Contact Person - Mr. Ganesan , Cell.- +60355239995
  E-mail - sales@bio-tropic.com,ganesan@bio-tropic.com
- PT. Keiso Process & Enviro Industries
  Jl-Tarum Barat II Blok Kav, Pl.No.30, Cikarang Baru,
  Cikarang, Bekasi - Indonesia
  Tel. - +62-21-29083225, +62-21-92755156
  Contact Person - Mr. Irawan
- Mykhaylo Siyatskyy
  Apt 3, Tsupov Block Bld 18, Lugansk, Ukraine-91002
  Tel. - +380501435566
  Email - michaelsiyatskyy@gmail.com
- OOO Castola Moscow,
  Suchevskaya Street 19, Block 4
  Tel - 8 (495) 787-95-32, 787-62-27, Cell. - 8 (903) 960-10-15
  Contact Person - Mr. Nikolay Kurilovich
  Email - cast2305@mail.ru
- FC GIDA VE MAKINA VE DiS TiCARET ANONiM SiRKETi
  Istanbul dunya ticaret merkezi,
  B2 Blok, kat 6, No 227, Istanbul, Turkey
  Tel. 0090 212 560 4625
- Simra Intl. Fze.
  PO Box 46798, Dubai - UAE,
  Contact Person - Mr. Saleem Shaikh
  Cell. - +971 50 5586727
  Email - simra_intl_fze@yahoo.com

Manufacturing

- Unit-I, Plot No. 166 & 167, Sector No. 7,
  PCNTDA Bhosari, Pune - 411 026 (India)
  Tel. - +91-20-27119973, 27124145
- Unit-II, Sr. No. 373, Village Kharabwadi,
  Chakan, Tal. Khed, Dist. Pune (India)
  Tel. - +91-2135-252251,255654
- Unit-III, Plot No. I-14, SEZ,
  Village - Nimgaon, Tal. - Khed, Dist Pune - 410505 (India)
- Unit - IV Gat No. 530, A/p Ahire,
  Tal - Khandala, Dist - Satara - 412802
  Tel. - 020-40710010

RAJ PROCESS EQUIPMENTS AND SYSTEMS PVT. LTD.