



THERMOSAG
INDIA PVT LTD

ONE STOP SOLUTION FOR PROCESS EQUIPMENT



ABOUT US

Our passion for **Engineering, Designing and Precision Manufacturing** has been a key to our approach. The combination of Mechanical, Chemical and technology has been the crux of all the solutions. It always has been our positive approach and thinking **out of the box logics** that motivates us to exceed our client expectations and provide solutions and services to the nearest possible perfection. Our services include Manufacturing supply of Equipment based on Process and **Project Engineering, Engineering Consultation, Energy and Resource conservation** as a key to benefit Industrial requirement.





ABOUT US

- Thermosag is an endeavor of a group of Technocrats, who come together to provide solutions to all conceivable applications for Industries in the field for Engineering and process Applications.
- More than 2 decades of expertise in and off the field for process understanding just infuses the right balance in the solution that our client look for, taking in consideration all practical pros and cons.
- Our Innovative and Cost-Effective services cater to a diverse spectrum of industries like, chemical, petrochemical, food & beverage, Textiles, paper & pulp, pharmaceutical, fertilizer, edible oil & fats, bio diesel, oil & gas, steel, power, effluent treatment, and various other process Industries ensuring sustainability and competitive edge



Brijesh Patel

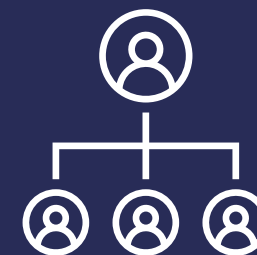
He holds more than 20 years of rigorous work experience in the field of Design, Engineering & Troubleshooting of problem equipment related to Heat transfer, Mass transfer, Thermodynamics, and Vacuum.



Avinash Verma

He also fetches 20 plus years of relentless work experience in Designing and developing engineering products, Offering engineering, Manufacturing, Quality Control for Industrial Machinery.

MEET OUR DIRECTORS



OUR TEAM



Vanraj Singh
(Quality)



Md. Parwej
(Engineering)



Hitesh Kadiya
(Marketing)



Ajit Agarkar
(Production & Planning)



Abhishek
(After sales & service)



Haresh
(Production)



Sumit Sharma
(Account)

PRODUCT DESIGN & MANUFACTURING CAPABILITIES

MVR's

Centrifugal Turbo
Compressor

Centrifugal Turbo
Blowers

Roots Blowers

Heat Exchangers

Air Cooled
Condensers

Water Cooled
Condensers

Process
Condensers

Product Coolers

Heaters/ Reboilers

Waste Heat
Exchanges

Dryers

Paddle/ Sludge
Dryers

Venturi Systems

Vacuum Packages

Ejectors

Eductors

Jet Compressors

Thermocompressors

Desuperheaters

Jet Heaters

Mixers

PRODUCT DESIGN & MANUFACTURING CAPABILITIES

Reactors

CSTR

Venturi Loop
Reactor

Separators

Cyclone
Separators

Hydrocyclones

Entrainment
Separators

Distillation & Absorption

Batch Distillation

Distillation Columns

Gas Scrubbers

Liquid-Liquid
Extractors

Solvent Recovery
Units

Precision Fabrication

Tank/Vessels

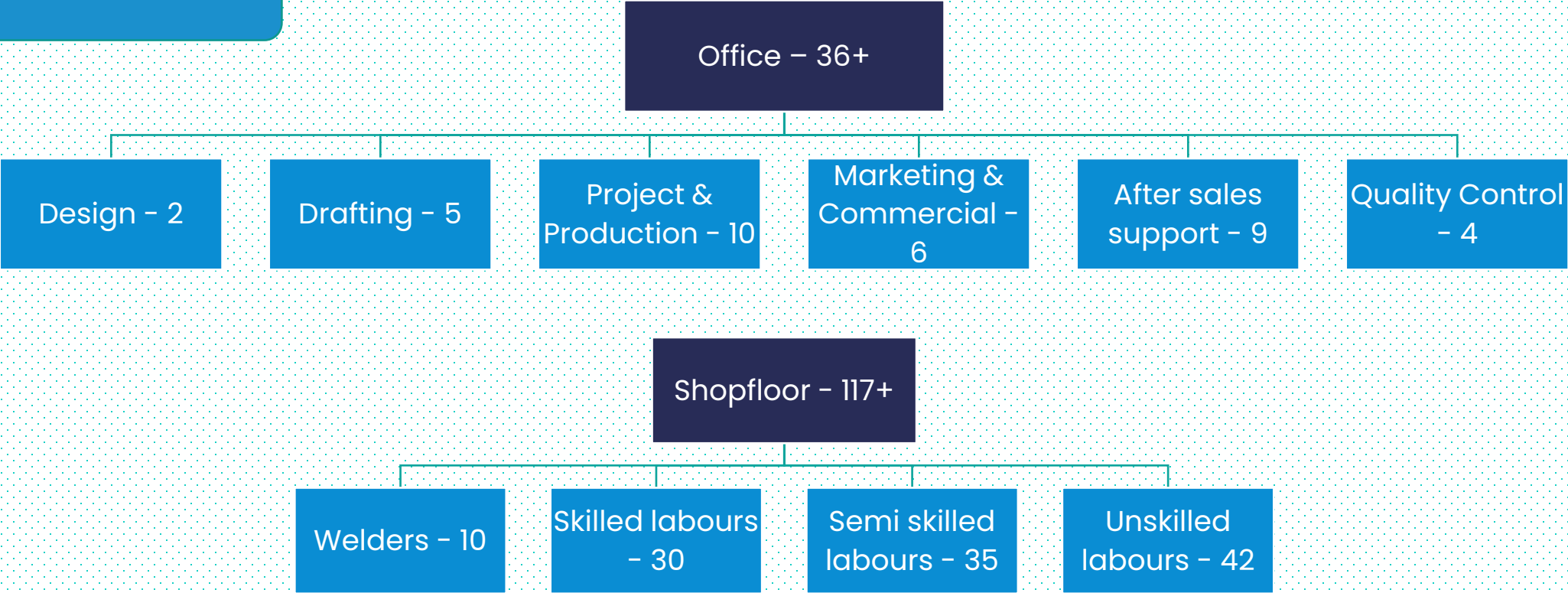
Membrane Skids

Filtration Skids

Piping Skids

STAFF STRENGTH

Total – 153+



PRODUCT DESIGN CAPABILITIES

Mechanical Design Standard

- ASME
- HEI
- TEMA
- PED
- CE
- GOST/TRCU
- Australian Standard

Drawing and Drafting

- AutoCAD
- Inventor 3D
- Solid Works 3D

Analytical

- STAAD
- FEA
- CFD



Manufacturing Facilities

Cutting Machine

Welding machine , Tig Machine

Welding & tube expanding machine

Drilling machines

Air Compressor





Welding Capabilities

Carbon steels, Stainless Steel Alloys

Duplex & Super Duplex Steels

Aluminium Bronze, P9, P11, Titanium

STANDARD



Quality Control & Test Procedure

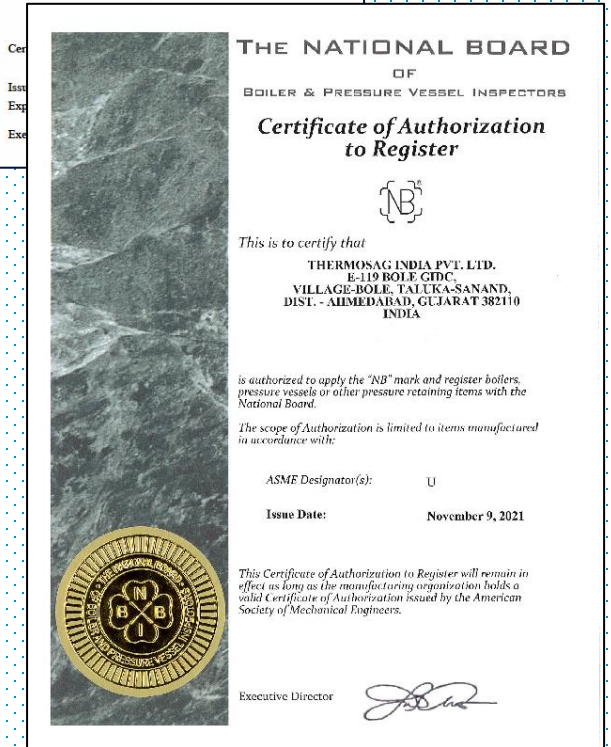
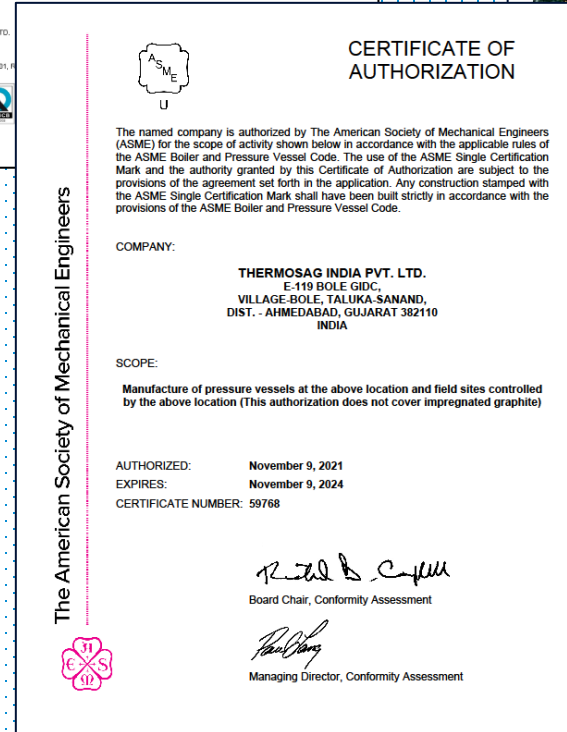
- DFT Meter
- Vernier Calipers, Micrometers, Hydrometers
- Radiography Film Developer, Viewer & Dark Room
- Ultra Sonic Thickness Gauge, Portable Spectroscope, Ultrasonic Tests (Outsourced to Approved Agencies), Material Check Tests (Outsourced to Approved Agencies)
- Dye Penetration Testing
- Oven

Test Procedures

- Hydraulic, Pneumatic, Vacuum , Helium Testing
- Dye penetrate testing & Radiography
- Magnetic particle inspection & Ultrasonic test
- Visual & Dimensional & Paint Inspections

CERTIFICATION

- ISO 9001 : 2015
- The American Society of Mechanical Engineers
- The National Board of Boiler & Pressure Vessel Inspectors





MANUFACTURING FACILITIES

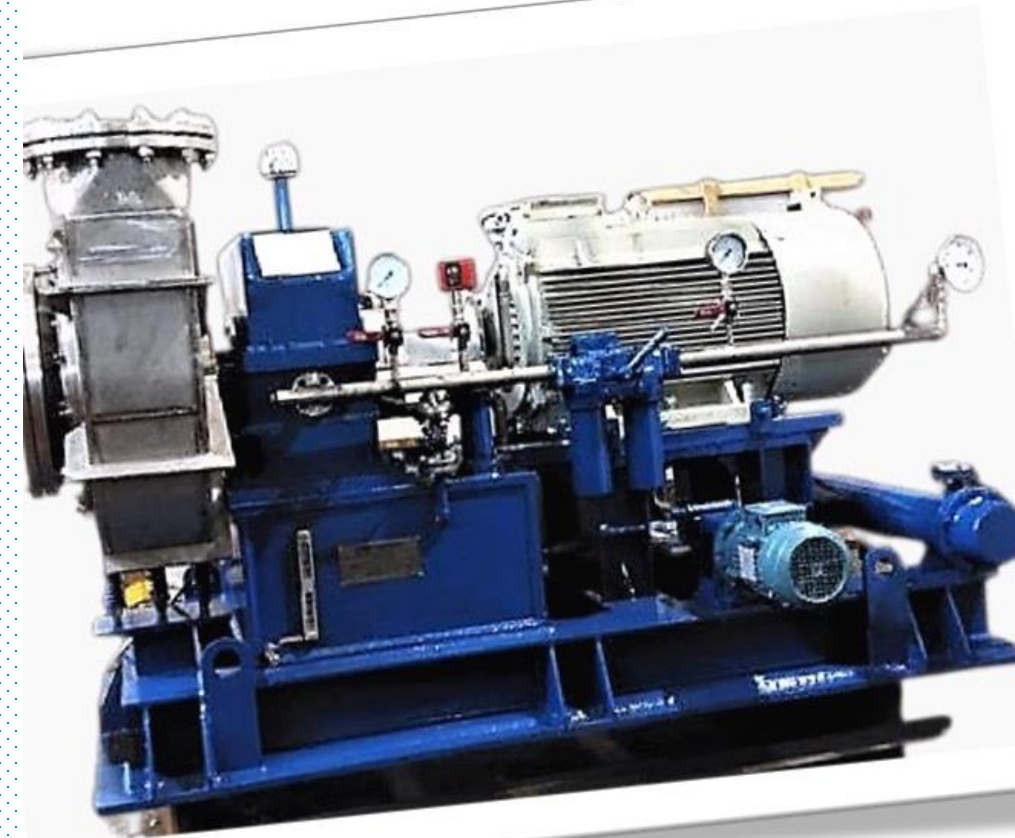
(Separate location for stainless steel)





EXPERTISE MECHANICAL VAPOR RE-COMPRESSOR

- Robust Design and Simple Operating Process
- Excellent Part-Load Performance(i.e. easy adjustment)
- Low Specific Operating Costs
- Low Specific Energy Consumption
- No Cooling Tower Required
- Steam requirement only for Startup and Makeup



Capacity Range – 500kg/hr to 50000 kg/hr
Water Evaporation

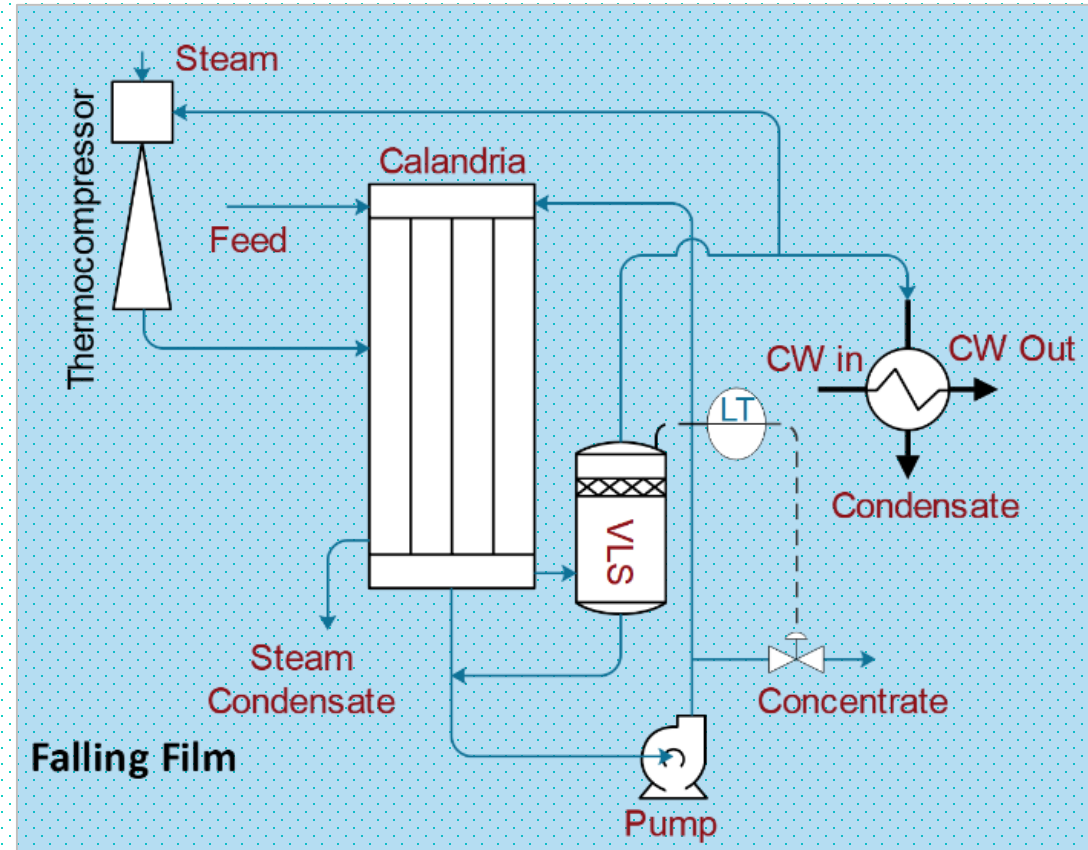
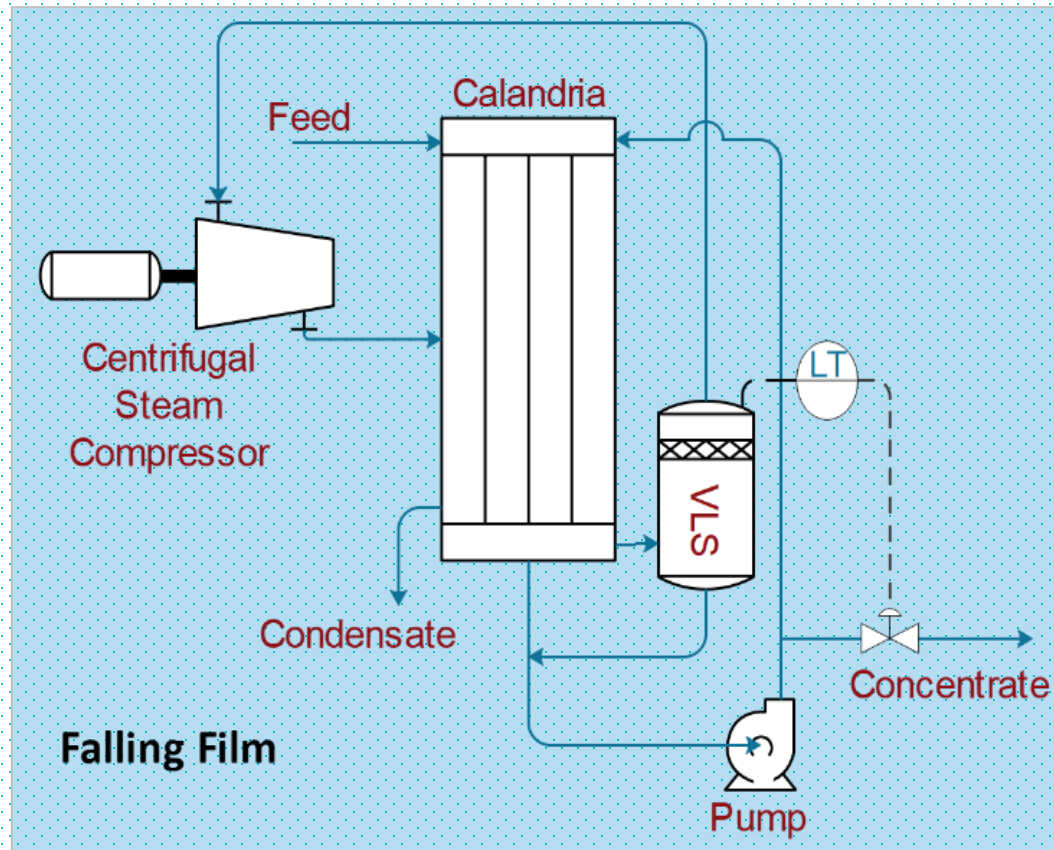


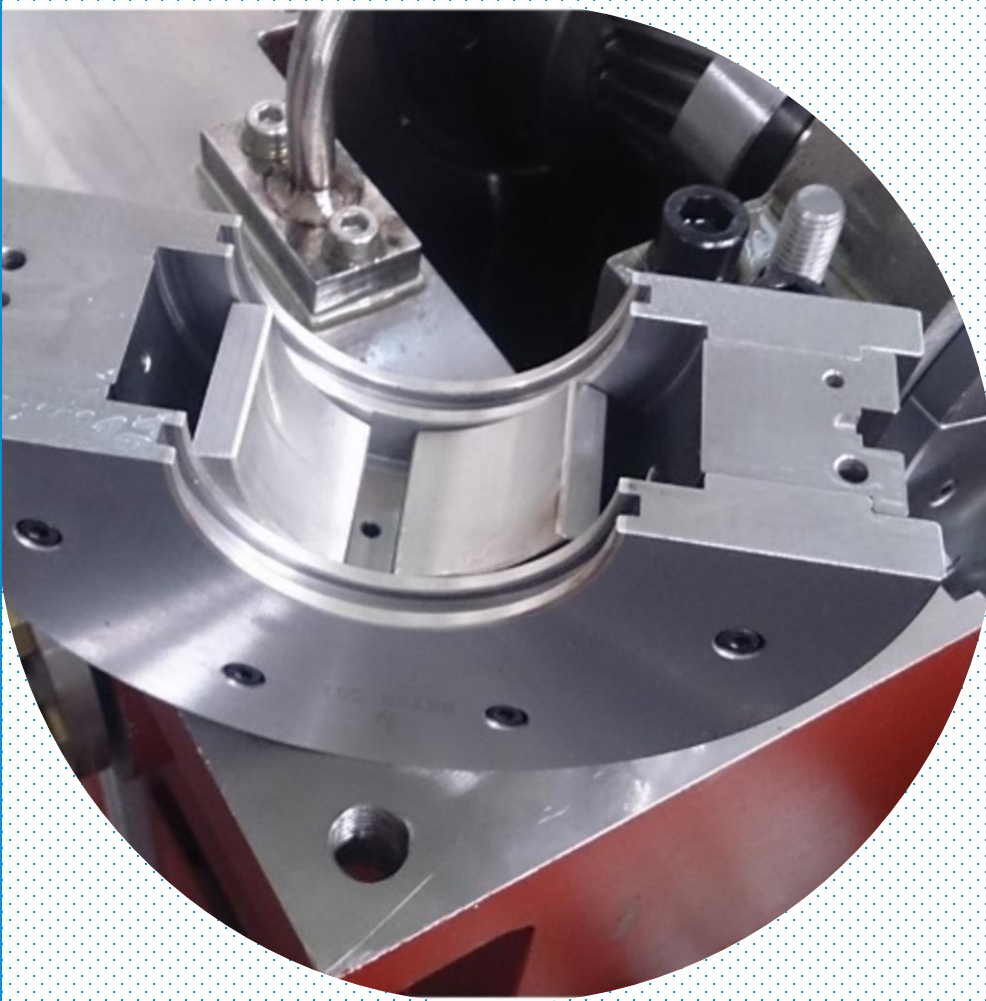
Quick Understating About MVR



- MVR is a Gas/ Vapour Compressor which compresses Water Vapour and Polytropic Compression increases Pressure and Temperature of discharged Gas/Vapour
- The secondary steam generated by the evaporator is performed by a mechanically driven compressor to increase its temperature and pressure, and then used for heating the evaporator, and then the pressurized secondary steam is condensed to complete the evaporation process.
- Using this phenomena Evaporated Vapour from Evaporator compresses to the desired level so that it can be utilized back for Evaporation.
- This process ensures utilization of more than 98% Latent Heat of Evaporated Water Vapour for Evaporation again.

COMPARATIVE SCHEMATIC – MVR v/s TVR

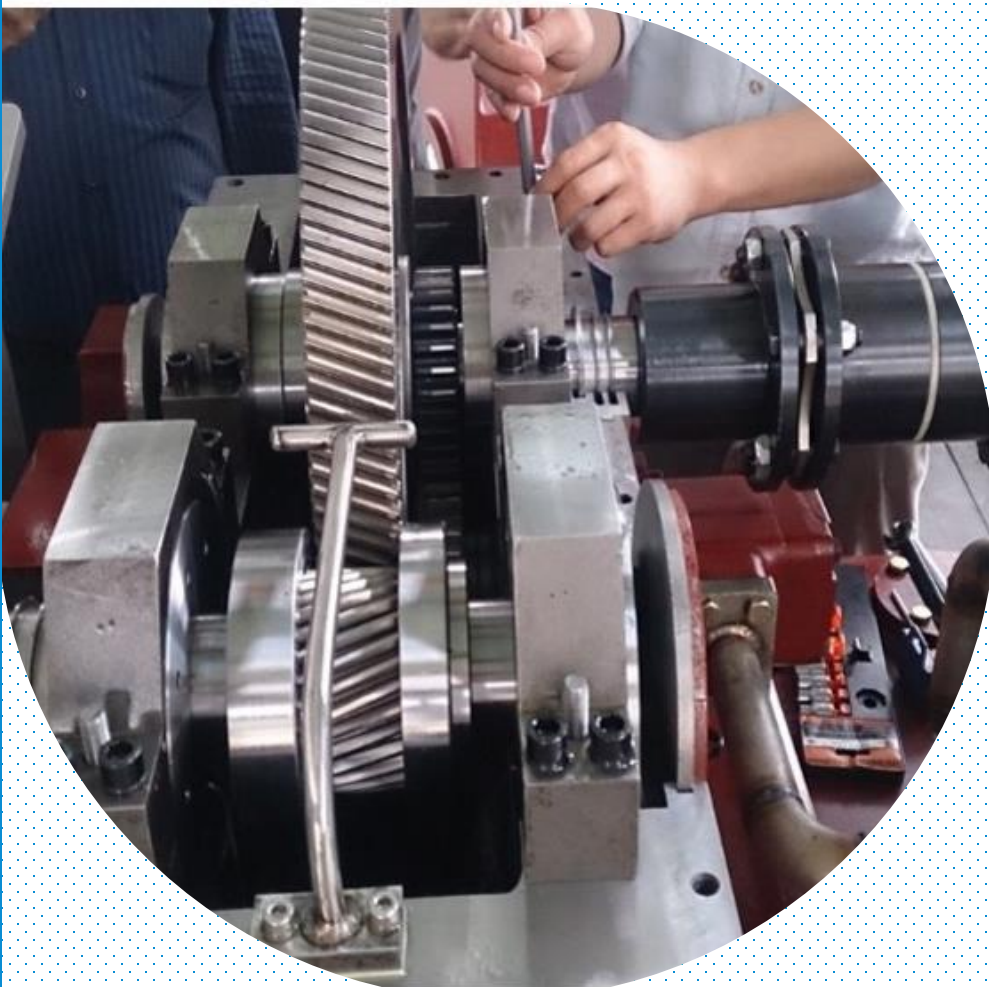




Why Turbo Compressor as MVR for Wastewater Treatment?

Performance

- Most Advanced Compressor
- High Compression Ratio equivalent to 6–20 Deg C Saturated Steam Equivalent
- Single volume flow: 3000 ~ 280,000 m³ / h
- High Compression Efficiencies; 75 –88%
- Low Noise Level; <85 dBA

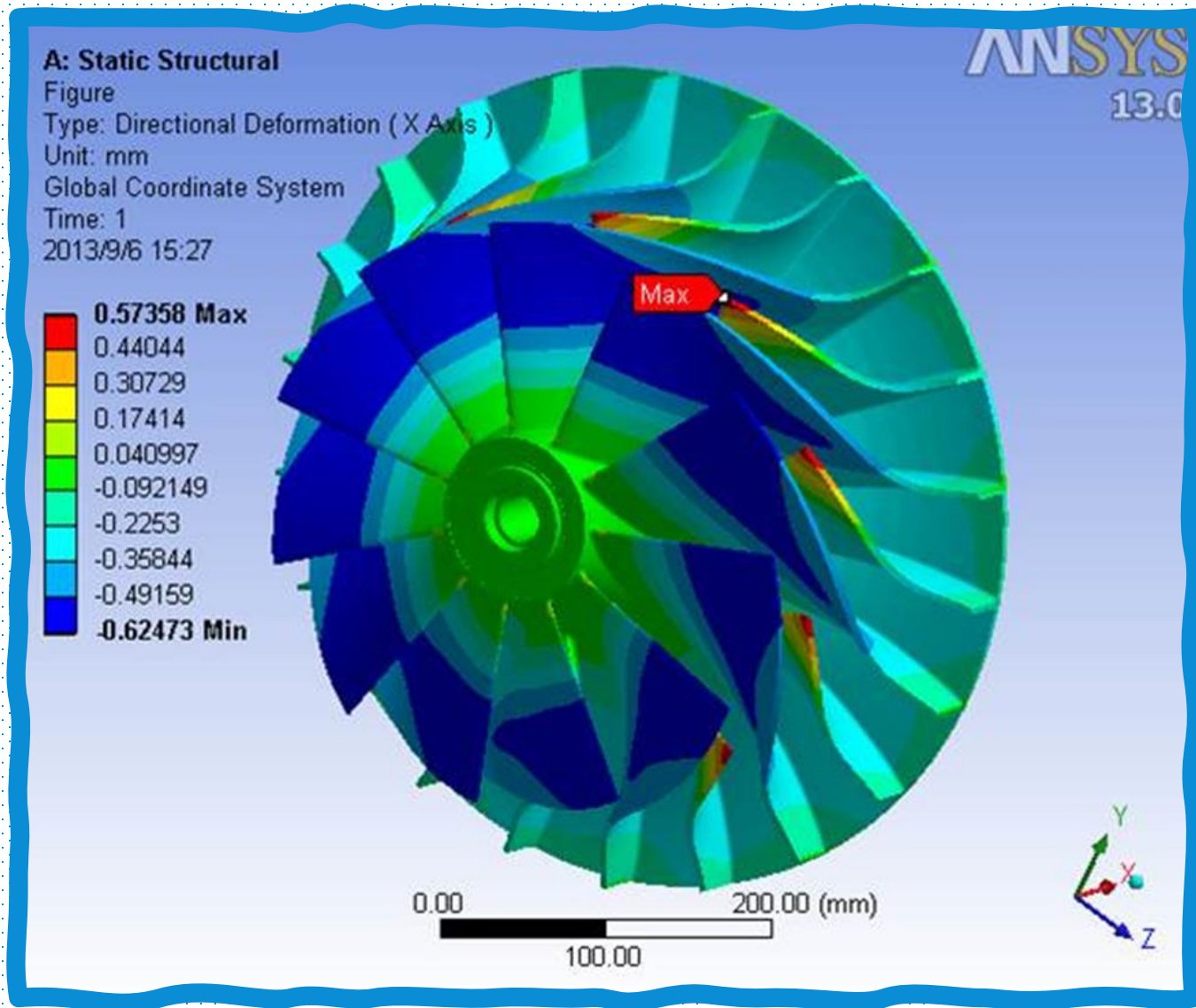


Why Turbo Compressor as MVR for Wastewater Treatment?

Construction

- Design optimization with the latest engineering tools
- Computational fluid dynamics to achieve optimal impeller dynamics
- Finite element analysis to achieve high efficiency and low stress component design
- Single Piece Milled Titanium alloy Impeller
- Casing in Stainless Steel or higher
- High-precision gear system
- Four-level precision gears ensure long life
- Single helical gear, balance fluid axial force
- Tilting pad bearing design
- Bearings with theoretically no life limit
- PLC Based perfect equipment monitoring system

Impeller Dynamics– Turbo Compressor





References

MECHANICAL VAPOR RE-COMPRESSOR

Benzo Chem Industries Pvt. Ltd.

Malkapur, Maharashtra

Specification- 90 m³/day Evaporation

Product- ETP Effluent Water

Feed TDS: 18-20%

Final Output: Salt from Centrifuge

Qty. -02 Nos. (Repeat Order)



References

MECHANICAL VAPOR RE-COMPRESSOR

Jay Chemical Industries Pvt Ltd

Specification- 300 M3/Day

Product- Waste Water

Feed TDS: 10-12%

Final Output: 45%

Qty. -01 Nos.



References

MECHANICAL VAPOR RE-COMPRESSOR





(Under Manufacturing)

References

MECHANICAL VAPOR RE-COMPRESSOR

Andes Colours Pvt Ltd

Specification- 3675 Kg/h

Feed- Waste Water

Feed TDS: 5%

Final Output: 92%

Water Evaporation: 3407 Kg/hr

Qty. -01 No.



Expertise PADDLE DRYERS

- Hollow Blade Conduction Dryer
- Low Energy Requirement
- Continuous and Smooth operation
- Consistent Product Quality
- No Product contamination
- Very Low off Gas Emission
- Excellent Temperature Control
- Low Space requirement
- Available from very small to large capacities



PADDLE DRYERS Hollow Blades

- High Heat Transfer Coefficients
- Self Travelling Material with retention time control
- Conduction Drying
- Suitable with Steam/Hot Oil
- Steam/ Hot Oil In Hollow Shaft and Blades for Uniform Heat Transfer



PADDLE DRYER Pilot Plant

- Heat Transfer Area – 3 M2
- Utility: Steam/ Hot Oil
- Power: 5 KW
- MOC: SS 316
- Skid Mounted
- Available to ship at Client's Site



References

MECHANICAL VAPOR RE-COMPRESSOR

Jay Chemical Industries Pvt Ltd

Specification- 300 M3/Day

Product- Waste Water

Feed TDS: 10-12%

Final Output: 45%

Qty. -01 Nos.

References

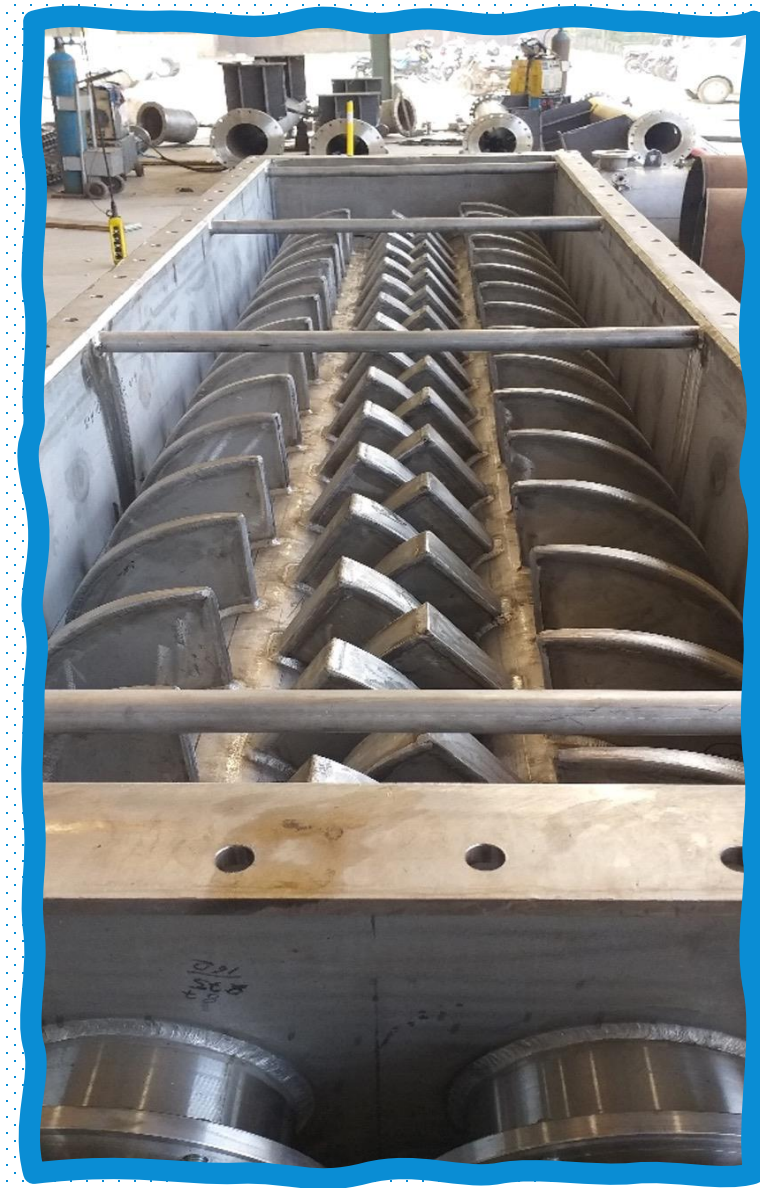
PEDDLE DRYER

Glenmark Life Science

Specification- 13m² with 300Kg/hr. feed rate at 70% moisture

Output-Less then 10% moisture

Product- ETP Sludge



References

PEDDLE DRYER

Bodal Chemical Ltd.

Specification - 100m² with 600Kg/hr. feed rate at 70% moisture

Output-Less then 10% moisture

Product- Black Dye

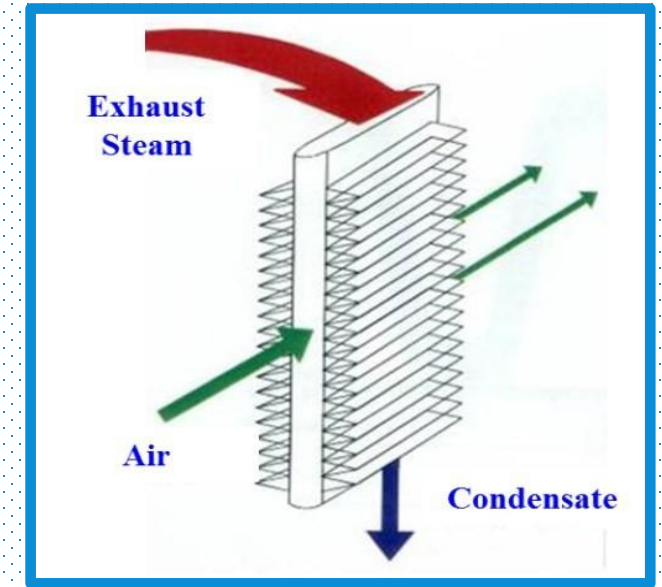
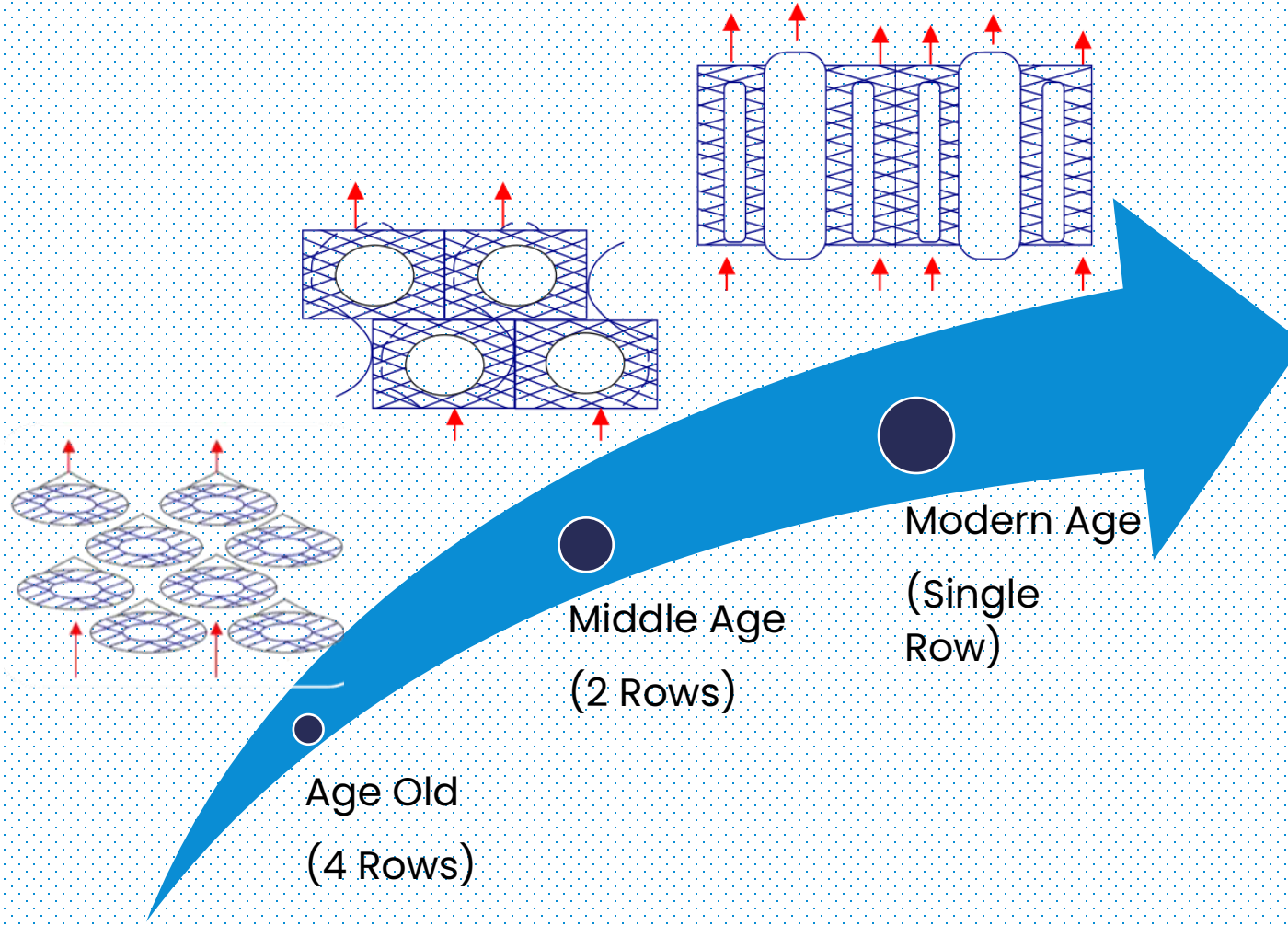




Expertise AIR COOLED CONDENSER

- A type of condensing equipment that employs ambient air as cooling medium to directly condense the turbine exhaust steam into water by air cooled bundles
- The air-cooled system is an increasingly extensive application worldwide due to its excellent water-saving performance comparing with other types of condensing/cooling system

WHY OUR CONDENSERS ARE 'BETTER'

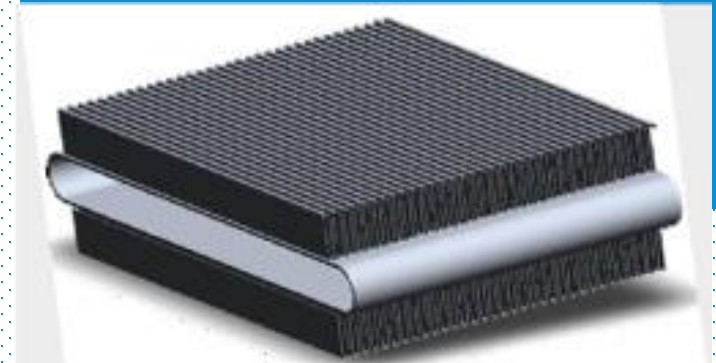


- 33% larger section area compared with multi-row tubes
- Great anti-corrosion performance
- long service life
- Easy for cleaning.
- Raised fins can improve heat transfer performance
- Less Pressure Drop

Single row systems

BENEFITS

- Uniform heat rejection and outlet pressure from all tubes
- Aluminum fins are brazed on the base tubes, lower contact heat transfer resistance
- Larger ratio of height to width of base tube, good for the separation of steam and condensate, higher steam inlet velocity
- Larger cross section area Provide lower steam side pressure drop, non-condensable gas can be pumped out easily
- Occupied area of single row condenser is less than 2-row by 13%
- Useful for forced and natural draft condensers
- Less Contamination accumulation
- Easy cleaning & Maintenance



Multi-row systems

DRAWBACKS

- Air cooled condensing bundles
- Air supply system
- Exhaust duct system
- Condensate collection system
- Vacuum-pumping system
- Cleaning system
- Electrical system
- Instrument and control system
- Supporting Structure





Reference ACC

Kutch Chemicals Ltd.

Total 2 Nos. Condensers

Capacity: 26 TPH & 40 TPH Steam
Condensation



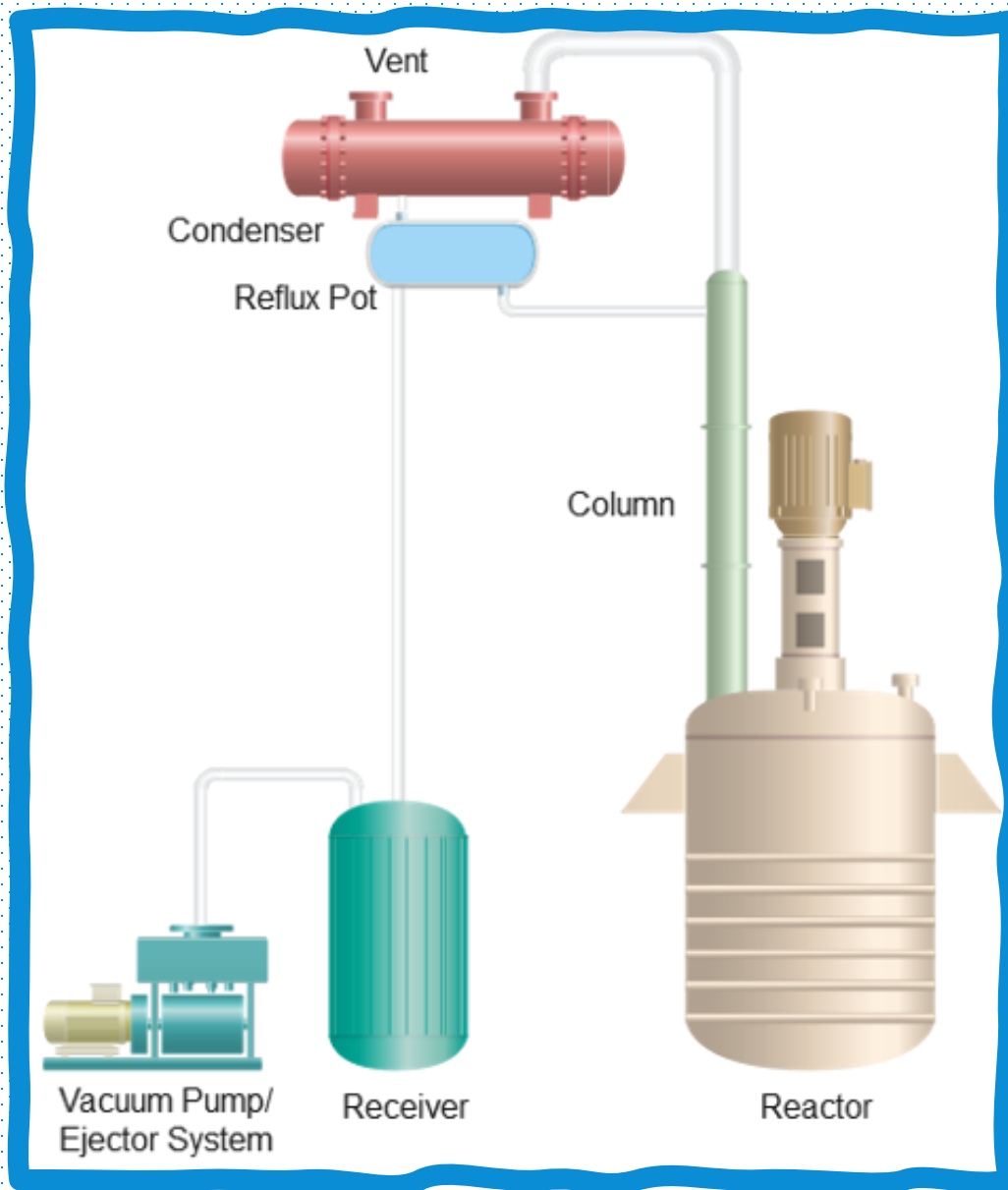
Expertise CHEMICAL REACTORS: DESIGN FEATURES

- Standard Models up to 50 KL alternatively Completely Customized for any size
- Manufacturing in various MOC
- Single Limpet Coil/ Double Limpet Coil (External)
- Jacketed/ Non-Jacketed
- Internal Coil Circular/ Longitudinal
- Baffled/ Non-Baffled
- Mechanical Seal as per required Seal Plan



Expertise CHEMICAL REACTORS: DESIGN FEATURES

- Mechanical Design as per ASME
- Heat Transfer details for Heating/Cooling
- Coil/ limpet sizing based on utility flow/ Process detail
- Agitator selection as per client requirement/ fluid properties
- Sizing for Process connections based on distillation rate
- Complete system manufacturing including Column, Condenser, Receiver, skid (for smaller capacity systems)



Expertise CHEMICAL REACTORS: CUSTOMIZED PACKAGE

- Complete Package for reaction system
- Package including designing, Manufacturing and Supply of Reactor, Separation Column, Condenser, Receiver, Vacuum System
- Column and Heat Exchanger design as per process requirement



References

SKID MOUNTED SYSTEMS

- Skid mounted LOADERS (U stamp & CE/PED Marked)
- Client: Johnson Matthey (USA)
Equipment Manufacturing
- Capacity : 50, 200, 500 & 1100 CuFt





References

SKID MOUNTED SYSTEMS

- Skid mounted LOADERS (U stamp)
- Client: Johnson Matthey (USA) Equipment Manufacturing
- Capacity : 2500 CuFt





References

SKID MOUNTED SYSTEMS

- Skid mounted – 2MC LOADER – Air Ejector
- Client: Johnson Matthey (USA) Equipment Manufacturing

References

SKID MOUNTED SYSTEMS

- Skid mounted – Bag Unloading System
- Client: Johnson Matthey (USA) Equipment Manufacturing





Capacity		Equivalent	Eq. Liquid O2	Air Requirement		Pressure	Min. Compressor Power (Installed)
NM ³ /hr	LPM	Cyl/Day	Ltr/Day	CFM	NM ³ /hr	bar	KW
5	83	15-17	150	48	82	7.5	11
7.5	125	23-25	225	68	116	7.5	15
10	167	30-34	300	92	157	7.5	18.5
12.5	208	38-2	375	110	187	7.5	18.5
15	250	45-51	450	135	230	7.5	30
20	333	64-68	600	175	298	7.5	30
25	417	80-85	750	215	366	7.5	37
30	500	96-102	900	270	459	7.5	45
35	583	115-119	1050	315	536	7.5	55
40	667	132-136	1200	355	604	7.5	55
50	833	165-170	1500	450	765	7.5	75
60	1000	200-204	1800	540	918	7.5	90
75	1250	250-255	2250	675	1148	7.5	110



PSA BASED MEDICAL OXYGEN PLANT



General Specifications:

Oxygen Purity	: 93±3%
Oxygen Pressure	: 4-5 bar g
Air pressure	: 5-6 bar g
Air Inlet Temperature	: 45 deg C max
Ambient Temperature	: 45 deg C max
Air quality	: ISO 8573 - 2010 class 1-4-1
Working Pressure	: 5-6 bar g
Voltage	: 415 VAC 50 Hz, 3 Phase



OUR WORK ETHICS



DISCOVER & PLAN

Finding the Best Possible solution to our Client's requirement

DESIGN & ORGANIZE

Design the Most Efficient, Sturdy, and Affordable Solutions

BUILD & DEPLOY

Manufacturing the Designed Solution and arranging for the Highest Quality Norms

SUPPORT & GROW

Our Simple Work Philosophy – Stand with your Customers, They Grow then We Grow



CONTACT US



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THANK YOU



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