

**PROPOSAL FOR
20 KLD WASTE WATER
EVAPORATION PLANT
FOR
ZERO LIQUID DISCHARGE**

Client Details:

**M/s SMS Envocare Limited
20, IT Park, Parsodi, Nagpur- 440022**

Submitted By:

KETAV CONSULTANT

**Plot no. 21,25,26,27 & 28 Block No.-518, Village- Juna Babalpura Patia,
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KETAV CONSULTANT

Company Profile:

KETAV CONSULTANT is a well-established & growing engineering company situated in Ahmedabad. Established in 2005

KETAV has commendable achievements in the field of Design, Manufacture, Installation & Commissioning of Evaporators, Vacuum Ejectors, Vacuum Pumps, High Pressure Pumps, Heat Exchangers, Condenser, Crystallizer, Vacuum System etc.

The asset of the company is young and experienced Engineers who have good theoretical knowledge and sound practical experience.

The team of KETAV CONSULTANT has the vision to solve the problem from the definition to Process Design, basic Engineering, detail engineering, manufacturing and the successful erection & commissioning of the system.

We have supplied more than 130 Number of ATFD plants within Last 05 Years.

We have supplied more than 425 Number of MEE plants within Last 14 Years.

We have supplied more than 15 Number of Stripper System within Last 05 Years.

We have supplied more than 12 Number of Caustic Recovery Plant within Last 5 Years.

Product Range:

- ✚ Multiple Effect Evaporator Plant
- ✚ Forced Circulation Evaporation Plant
- ✚ Falling Film Evaporation Plant
- ✚ Waste Water Evaporation Plant
- ✚ Caustic Recovery Plant
- ✚ Vacuum System
- ✚ Heat Exchangers
- ✚ Condensers
- ✚ Crystallizer
- ✚ Vacuum Ejectors & Vacuum Pumps
- ✚ Solvent Recovery Stripper Plants
- ✚ Distillation Plants
- ✚ MVR System
- ✚ ETP Plant + RO Plant
- ✚ Stripper System
- ✚ Scrubbing System

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Date: 10/08/2019

To,
The Sir / Madam,

Subject: Multiple Effect Evaporator Plant for Zero Liquid Discharge.

System-1: Three Effect Evaporation Plant + ATFD to recover Mix Salt.

Feed- 20 KLD

Feed TDS- 6.8 %

Operating Hour- 20 Hr

Dear Sir,

AS per the discussion, we are pleased to submit herewith the best techno-commercial proposal for following System to achieve Zero Liquid Discharge.

Details: This stream is final RO reject outlet from Textile effluent.

Capacity- 20 cum/Day

Tentative parameters as given below:

TDS- 68600 ppm,

COD- 4200 ppm,

Hardness approx. - 4500 ppm

1- Triple Effect Evaporator System:

The Effluent is send to Balance Tank. Feed pump will transfer the effluent from balance tank to Triple Effect Evaporation System where the Concentration of Effluent increases from 6.8 % TDS to 35 % TDS by Evaporation.

The outlet will be in the form of Slurry. It will be taken in to Centrifuge to recover Salt with 15% moisture. Remaining Mother Liquor again Feed to Cal-2 OR Send to Sludge Dry Bed.

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We have already Supplied Evaporator Plant for the Following Products.

- | | |
|-------------------------|--|
| 1- R.O. Reject Water. | 11- Pharma Industry waste water. |
| 2- Caustic Recovery. | 12- Food Color Industry Waste water. |
| 3- Dye Bath Water. | 13- Automobile Industry waste Water. |
| 4- Zinc Sulphate. | 14- Chemical & Organic Chemicals waste water. |
| 5- Manganese Sulphate. | 15- CETP Plants-09 NOS in Tirupur and more. |
| 6- Sodium Thiosulphate. | |
| 7- Sodium Sulphate. | |
| 8- Sodium Chloride. | |
| 9- Mix Salt Recovery. | |
| 10- Milk Concentration | |
| 11- Ammonium Chloride | |

We are sending the Following attachments with the offer.

- 1- Offer for **Triple** Effect Forced with Centrifuge.
- 2- Total project overall cost with structure, Cooling Tower, Electric work, Pipeline fabrication at the site etc.

Please find attached herewith following Data:

- ❖ Technical Data Sheet.
- ❖ Material of Construction.
- ❖ Scope of supply.
- ❖ Terms & Conditions.

We are sure that the above is in line with your requirement. If you require any further detail, feel free to contact us.

Thanking you,
Kamlesh Patel
+91-9879097517
(Proprietor)

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Operating Parameters:

Triple Effect Evaporator Systems

Sr. No.	Particulars	Unit	Value
1.	Water Evaporation Capacity	Kgs/Hr	806
2.	Feed Rate	Kgs/Hr	1000
3.	Concentrate Outlet Rate	Kgs/Hr	194
4.	Total Solids in Product Feed	TDS %	6.8 %
5.	Total Solids in Concentrate Outlet	TDS %	35 %
6.	Concentrate Outlet Temp.	Around °C	65 to 60
7.	Cooling water In let/out let Temp.	Around °C	32 to 40
8.	Cooling Water Quantity	M ³ /Hr	20
9.	Require Steam Pressure	Kg/cm ²	07
10.	Motive Steam Consumption	Kgs/Hr	250
11.	Plant Power Requirement	HP	35
12.	Cooling Tower Power with fan	HP	08
13.	Vacuum Pump Power	HP	10
14.	Additional Power for centrifuge	HP	03
15.	Operating Hours	Hrs/Day	20
16.	Duty	---	Contin.
17.	Total Power Require Install	HP KWH	56 38
18.	Salt Recover with 10% to 15% Moist.	Kgs/Hr	24
19.	Mother Liquor Recover- TDS- 35 %	Kgs/Hr	40

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Material of construction & Scope of supply with Quantity:

Triple Forced Evaporator Systems

Sr. No.	Particulars	M.O.C.	Three Stage
1.	CALANDRIA: Tubes Tube Sheet Shell	SS316Ti SS316 SS304	03 NO
2.	Vapor Separator	SS316	03 NO
3.	Pre heaters: Tubes Tube Sheet Shell	SS316Ti SS316 SS304	03 NO
4.	Surface Condenser 19.05 mm OD	SS304	01 NO
5.	PUMPS with Motors: Feed Pump Re circulation Pumps Transfer Pumps Condensate water Pump	SS316 SS316 SS316 SS316	01 NO 03 NO 01 NO 01 NO
6.	Vacuum pumps with motor	PSS316	01 NO
7.	Pipes & Fittings: Process Piping Vapor Ducting Condensate Piping Non Condensate Piping Seal Water Line Vacuum Line	SS316 SS304 SS304 SS304 GI GI	01 LOT
8.	Balance Tank- 300 Liter	SS304	01 NO
9.	Thermo Compressor	SS304	01 NO
10.	CATCH POT	SS304	01 NO
11.	Centrifuge	MSRL	01 NO

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Scope of Supply of Instruments & it's make:

Multiple Effect Evaporator Plant

Sr. No.	Particulars	M.O.C.	Quantity
1.	Vacuum Gauge- Forbes/Waree	6" Dial	04 No
2.	Temperature Indicator- Z- Tech	Std	04 No
3.	Temperature Indicator- Z- TECH	Std	04 No
4.	DFM for Condensate- Forbes	Std	01 No
5.	DFM- FOR FEED- Forbes/Waree	Std	01 No
	Electric Panel NON Compartment Type	Std	01 SET

Scope of Work:

We are included in our scope as below item as per the discussion

- ❖ Design, Engineering, Manufacturing, and Supply of the equipments.
- ❖ Supervision of erection & Commissioning of the system.
- ❖ Supply of Operation & Maintenance manual.
- ❖ Supply of the Civil and Structure drawings. But verify by your Engineer.
- ❖ Insurance are included in our scope.
- ❖ Provide the Drawings For Cable Route and Cable Tray Route. Cable requires quantity.
- ❖ Included the **Plant running for 03 Days** with supervisors. With help of your company Person. For Daily day time 10 Hours.
- ❖ Commissioning Charges Included.
- ❖ Internal pipes will be supported by clamps.

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Not Included in Scope of Supply:

- ❖ Waste Water Feed Line up to the Plant.
- ❖ Condensate Water Outlet line from the Plant.
- ❖ Steam line to Steam Header. And Steam line From Header to TVR.
- ❖ All civil work related with the evaporator plant.
- ❖ Provide the area for salt storage- Having 02 TON Storage.
- ❖ Provide the RO Reject Storage around 03 Days.- 20 KLD
- ❖ Provide Storage For Concentrate Waste Water- 03 Days.- 02 KLD
- ❖ Main cable incomer to our Panel. With require control.
- ❖ Supporting Structure / Platform / Stair Case etc.
- ❖ Cooling Tower, Cooling Water inlet & Outlet circulation line.
- ❖ Process pipe line fabrication.
- ❖ Electric work with cabling, lighting, roof, etc.
- ❖ Insulation of the Equipments.
- ❖ Transport Charges Extra.
- ❖ All taxes to be paid by you.
- ❖ Erection charges extra.
- ❖ Cooling Water Pump.
- ❖ Roof of the Structure ON Top Side.
- ❖ Panel room RCC.

Space Requirement:

- ❖ Space Require For Plant- 04 Mtr W x 07 Mtr Length x 11 Mtr HT.
- ❖ Space Require For Cooling Tower- 03 Mtr W x 05 Mtr Length x 03 Mtr HT.

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TERMS AND CONDITIONS:

- PRICE** : Price for Supply of the Following System- For Zero Discharge.
Feed- 20 KLD
- DELIVERY** : Within 10 to 12 weeks from the date of receipt of order.
Transport Charges Extra. And Insurance Charges Included.
- PAYMENT** : 20 % advance with the order.
75 % against Performa Invoice Prior to dispatch with taxes
05 % After Successful commissioning

For Plant Commissioning we run the Plant 10 Days. At that time we are record the Plant Capacity and salt Recovery etc. At that time we require Utility & Feed requirement as per our offer.

TAXES : GST – 18% Extra as applicable at the time of dispatch.

Performance Warranty : 10 % + OR - with Efficiency and Utility.

Warranty for Equipment:

We are giving warranty for Equipment for 12 months from the date of the Supply for any manufacturing defect. Not For the Moving part like Pump, motor etc.
Above warrantee does not apply on damage caused by accident, normal wear & tear, improper storage or transportation.

Order Cancellation :

Order received and acknowledged by the seller shall not be subject to cancellation either wholly or partly for any reason whatsoever without the seller's written consent.
The Amount already paid as advance will not be returned in case the order is cancelled in whole or in part.

Thanking You,
Kamlesh Patel-
+91 9879097517
(Proprietor)

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System: 20 KLD- 3 FC Cost & Additional cost for Evaporation System:

(Total Project Cost)

Sr. No.	Particulars	Price In Rupees
1	Triple Effect Forced Circulation Evaporation System- 20 KLD with SS316Ti Tubes	62.00 Lacs
Total Cost (A)		62.00 Lacs
Additional Cost :-		
1	Cooling Tower Cost	01.00 Lacs
2	Cooling Tower Pipelines Cost (For MS Pipe Line) With Cooling Tower Pump with motor	01.50 Lacs
3	MS Pipe lines cost (Inside our plant only)	As Actual
4	MS Structure	08.00 Lacs
5	Structure Roof	01.00 Lacs
6	Paint- with Primer- Each 02 Coat	01.00 Lacs
7	Cables for Pumps, Lighting Cable, Light Lamp, Motor Guard, Earthing, Etc.	02.00 Lacs
8	Erection & Fabrication cost of Equipments and pipe line at site	08.00 Lacs
9	Insulation-LRB Pad- 50mm THK x 100 Densities. For All Equipment and Piping. With GI Sheet	02.00 Lacs
Total Cost (B)		24.50 Lacs
Grand Total Cost (A+B)		86.50 Lacs
9	RO Reject Tank to MEE plant Feed tank - Line with Pumps. ATFD Condensate Line from Pump Discharge to steam Condensate Tank.	As Actual
10	Steam Pipe lines cost (Inside our plant only) PRV + Header Etc + Boiler Cost with Chimney	As Actual
11	RCC Work for Foundation , RCC Storage tank + other storage tank with Pumps & Piping Cost is Extra	As actual
12	RCC Tank- 1- RO Reject- 20 KLD	As actual

- Civil Columns for foundations and Equipments Extra.
- Storage tank for Feed Tank Etc.
- **Boiler cost is extra - Boiler Require – 600 Kgs/hr capacity max.**

Thanking You,
Kamlesh Patel
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