INTRODUCTION

M/s. Narayan Organics Pvt. Ltd. Unit-II proposed to produce Copper phthalocyanine blue, Pigment alpha blue & Pigment beta blue at Block no. 164, 165, 166, 167, 168, 169, 170, Village: Vedach, Taluka: Jambusar, Dist: Bharuch.

Cost of Project:

The estimated cost of the project for the proposed new manufacturing project is estimated around Rs. 12.6 Crore. Out of this around Rs. 1.50 Crore will be invested for pollution control measures.

Production Capacity

Production capacity in terms of intermediate products and finished products are prescribe below.

Details of Production Capacity

Sr. No.	Items	Quantity in MT/ Month
1.	Copper Phthalocyanine Blue	700
2.	Pigment Alpha Blue	75
3.	Pigment Beta Blue	200
	Ammonium Carbonate Solution-12-15% (By-product)	500
	Total	**1475**

Details of Raw Material

Sr. No.	Product	Total Quantity (MT/Month)	Name Of the raw material	Total Quantity after Expansion (MT/Month)
1.	Copper phthalo cynine blue	700	Phthalic Anhydride	770
			Urea	900
			Cuprous Chloride	140
			Ammonium Molydate	2
			Ortho Nitro Toluene (ONT)	35
			Caustic soda flakes	70

			Sulphuric acid(Spent Sulphuric acid generated from pigment alpha blue)	1700
			Total	**3617**
2.	Pigment Alpha Blue	75	CPC Blue	75.25
			Sulfuric Acid	265
			Caustic soda flakes	15
			Total	**355.25**
3.	Pigment beta Blue	500	CPC Blue	202
			Iso butyl alcohol	17
			Total	**219**
	TOTAL	**975**		**4191.25**

Product & their applications

The products manufactured after expansion / additions will be Crude pigments and finished pigments. All the pigments are basically powders and insoluble in water. However, due to their coloring properties they are used in paints, plastics and inks. The applications of pigments can be described as per following Table

Pigments applications

Sr. No.	Pigments	**Inks**		**Paints**		**Plastics**				**Water bases**			**Rubber**
		Offset	Liquid	Air Drying	Baking	PVC	PE	PP	PS	Paint	Ink	Textiles	
01	CPC Blue	Raw material of Alpha Blue, Beta Blue & other pigments											
02	Alpha Blue	●	--	--	--	●	●	--	--	--	--	--	●
03	Beta Blue	--	●	●	●	--	--	--	--	○	○	○	--

● = Suitable

○ = Partially suitable

ECHNICAL FEASIBILITY:

The technical feasibility consists of

- Technology

- Manufacturing process adopted by the Company for different products
- Raw materials requirement
- Plant and machinery requirement
- Utilities requirement
- Infrastructure requirement which includes Land / Buildings / ETP Plant / Manpower etc.

Since the Company is already manufacturing Blue Crude, at GIDC Ankleshwar hence the Company do not envisage any problem for establishing these products at a bigger scale. As such the Company do not find any difficulty in acquiring right kind of technology to manufacture Alpha Blue, Beta Blue and CPC Blue crude.

Manufacturing Process

The manufacturing process for existing and proposed products is given hereunder,

Copper Phthalocyanine Blue

BASIC CHEMICAL REACTIONS

$$4C_8H_4O_3+2CO(NH_2)_2 \xrightarrow{130°C \sim 140°C} 4C_8NO_2H_5 + 2CO_2 + 2H_2O$$

Phthalamide Eq.-I

$$4C_8NO_2H_5+8CO(NH_2)_2 \xrightarrow{140°C\sim170°C} 4C_8H_7NO_2+2CO_2+2H_2O$$

Di-Amino Phthalamide

$$4C_8H_7N_3+CuCl \xrightarrow{180°C\sim190°C} C_{32}H_{16}N_8Cu+NH_4Cl+1/6N_2+2/3\ NH_3$$

Eq.–II

Ammonium Molybdate CPC Blue Equ - III

Manufacturing Process:

(1) Charge required quantity of Phthalic Anhydride, Urea in a Glass Vessel, which is already having a solvent at desire temperature.

(2) Heating the content to higher temperature and then, addition of catalyst and Cuprous Chloride to it.

(3) Raise the temperature of the reaction mass at desire temperature and maintain this temperature for 6/8 hours.

(4) After reaction is over, draw the sample and check for complete conversion of Phthalic Anhydride to CPC Blue Crude.

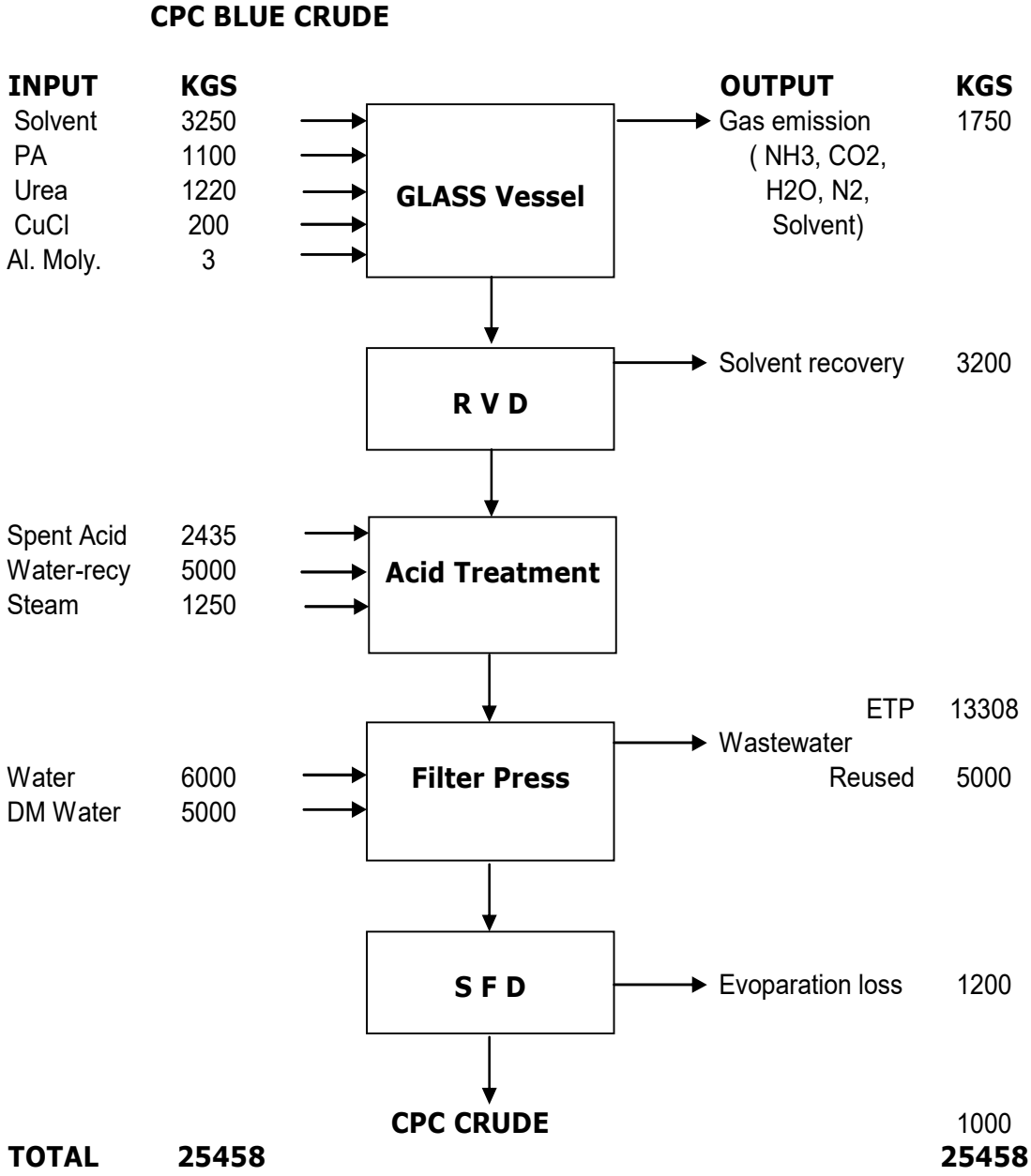
(5) Discharge the batch into Horizontal Rotary Vacuum Dryer (HRVD) and remove the solvent under vacuum. After complete removal of solvent add water to the

Horizontal Rotary Vacuum Dryer (HRVD) and transfer the material to treatment tank.

(6) Give the requisite treatment to CPC Blue Crude and filter it through PP Filter Press.

(7) Dry the material using Spin Flash Dryer (SFD) and collect the dried powder in bags and send it to Godown.

Material Balance Diagram:



Pigment Beta Blue

Chemical Reaction

No chemical reaction is involved in the manufacturing of CPC Beta Blue, only unit operations/ processes will be involved.

Manufacturing Process

(1) Charge CPC crude into Ball mill for ball milling.

(2) Mix the material thoroughly and heat the contents till the reflux stars. Continue the reflux of solvent for 5 hours and then, start recovery of the same.

(3) Starts collecting recovered solvent in a separate tank

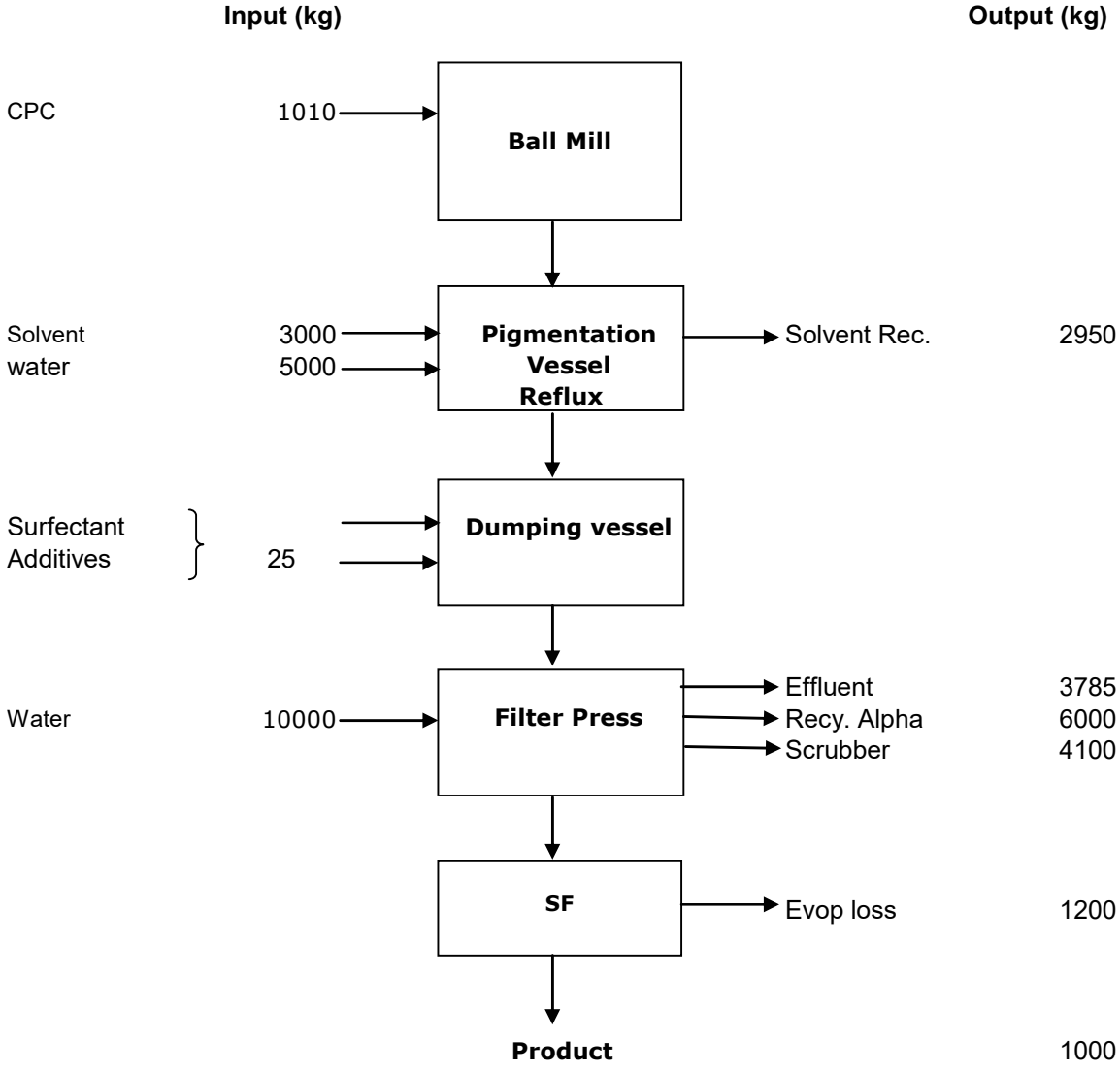
(4) Dump the material into dumping vessels with required surfactant and additives. Stir for 4 to 5 hours.

(5) Filter the mass and wash the material to neutral pH.

(6) Route the wet cake to SFD for drying purpose and collect the material in the HDPE/ Jumbo bags.

(7) If necessary, blend the material in the blender and pack the material in PP bags or Jumbo bags depending upon the requirement of the plant.

Material Balance Diagram:



Pigment alpha blue

Chemical Reaction

No chemical reaction is involved in the manufacturing of Pigment Beta Blue, only unit operations/ processes will be involved.

Manufacturing Process

(1) Copper phthalocyanine blue is ground in a ball mill

(2) Following this, ground copper phthalocyanine blue and 98% sulphuric acid are charged and thoroughly mixed in a vessel to obtain a homogenous paste.

(3) The temperature of the vessel is cooled to 10^0C

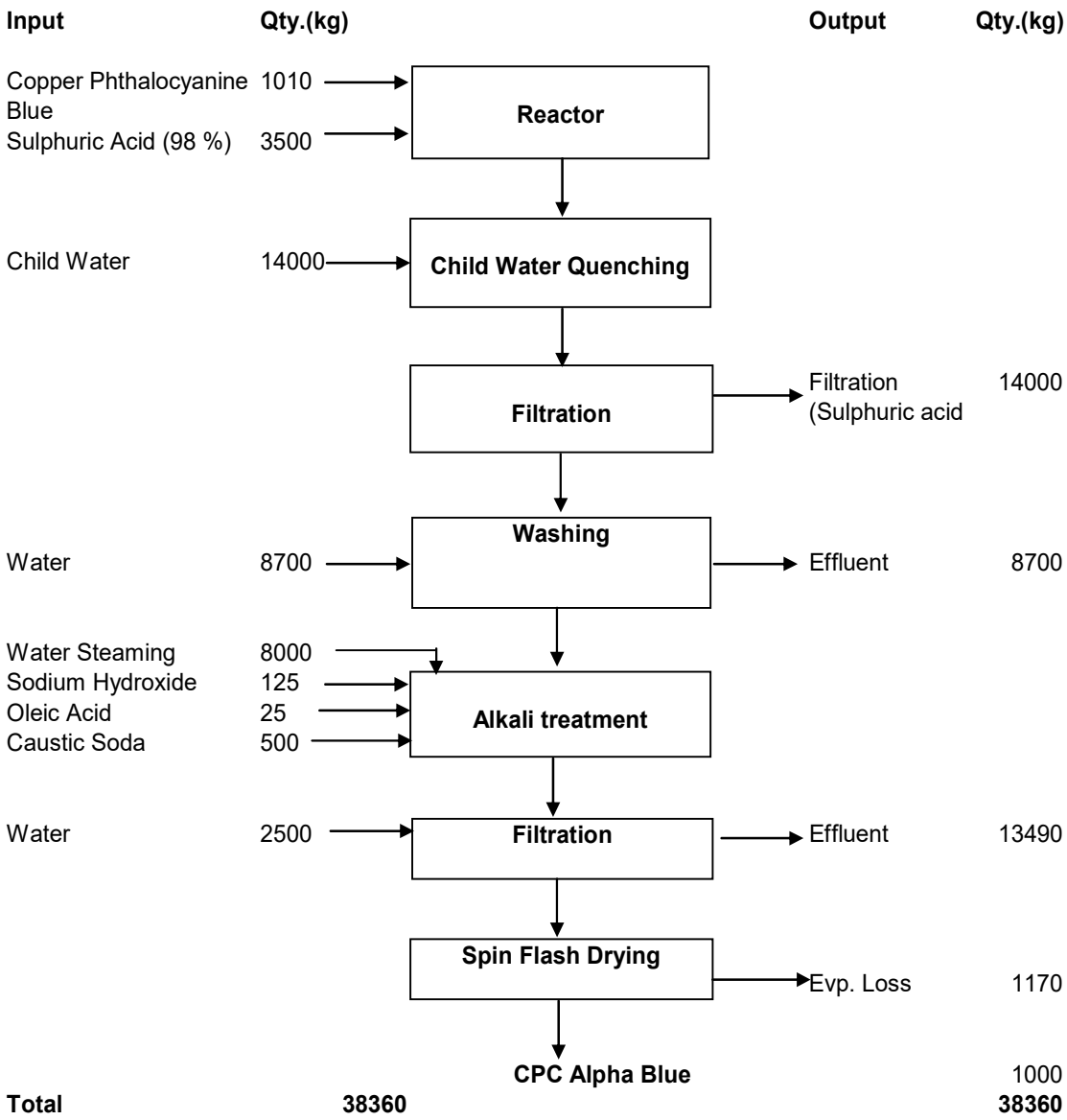
(4) The contents are dumped into another vessel containing water. This is done to reduce sulphuric acid concentration to 10%-20%.

(5) The concentrate liquor obtained from the previous step is purified by alkali wash (NaOH) followed by acid wash (98% sulphuric acid)

(6) Each washing stage is followed by filter press drying.

(7) The dried finished product is finally sent down for SFD.

Mass balance of Alpha Blue:



Source of Air Pollution & it's control measures

Ammonium Carbonate Recovery systems

The process emission containing Ammonia and Carbon dioxide mainly. The Ammonia gas gets absorbed in the water and results in Liq. Ammonia solution (12–15%). This Ammonia solution is recovered as By- Product and sold to actual users.

Details of air pollution source

Sr.No.	Stack attached to	Fuel Type	Stack Height	APC measures	Probable emission
1	Boilers 2 Nos	Coal/ Lignite	32.0	Dust Collector	PM<150 mg/NM^3 SO_2<100 mg/NM^3 NO_x<150 mg/NM^3
2	Thermic Fluid Heaters 2 Nos	Coal/ Lignite	32.0	Dust Collector	PM<150 mg/NM^3 SO_2<100 mg/NM^3 NO_x<150 mg/NM^3
3.	Boiler (For MEE) (5 TPH)	Imported Coal	30	MDC, Bag Filter, Water Scrubber	PM<150 mg/Nm^3 SO_2<100 mg/Nm^3 NO_x<150 mg/Nm^3
Process Gas stack					
4.	Process Stack-1	--	15.0	Two stage water Scrubber followed Acid scrubber	NH_3<150mg/NM^3
5.	Process Stack-2	--	15.0	Two stage water Scrubber followed Acid scrubber	NH_3<150 mg/NM^3

Source of water pollution & its control measures

The main source of the industrial wastewater generation is process and washing and utilities. The entire quantity of the industrial wastewater is segregated in to three parts as per the concentration,

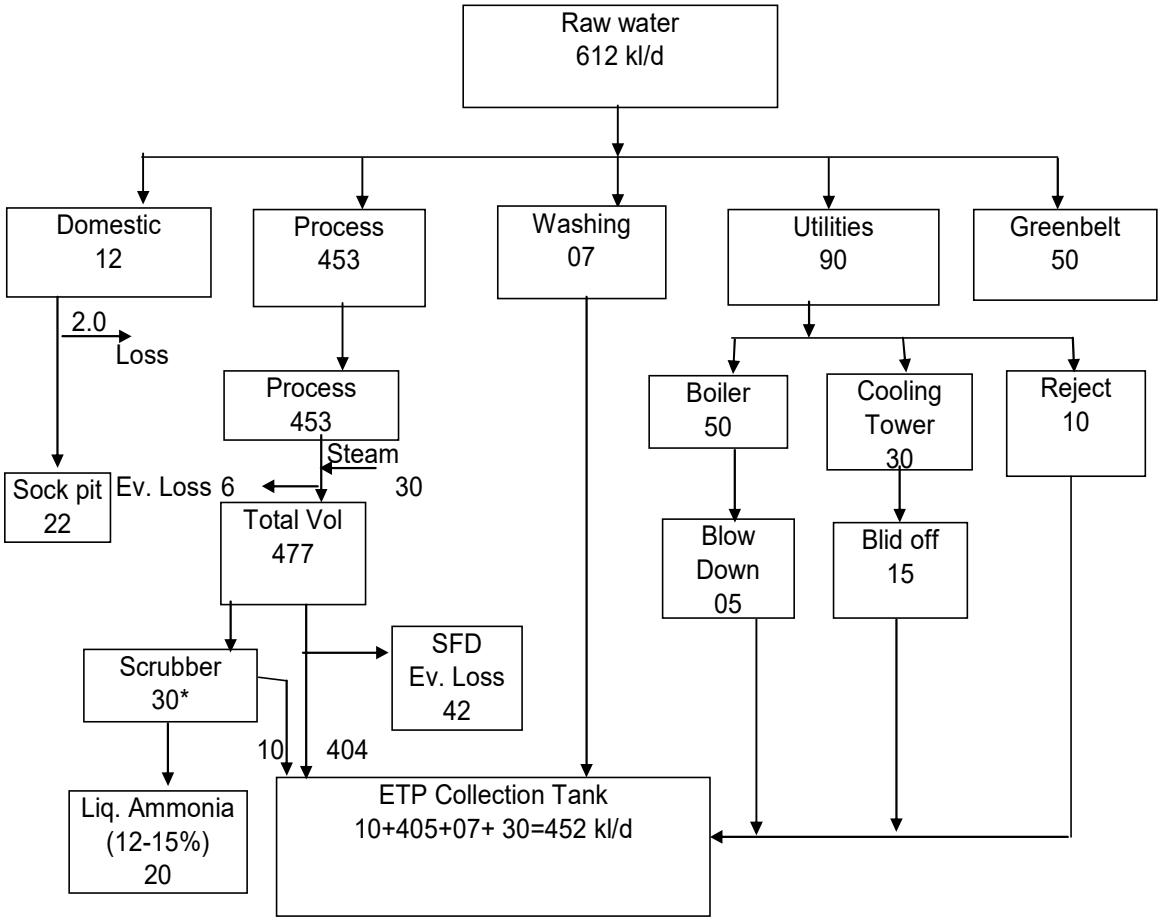
(i) concentrated stream (i.e. ML of acidic treatment of Alpha Blue)

(ii) general/weak stream from manufacturing activities of other product from Manufacturing stream

(iii) Effluent from the utility section i.e. RO reject, DM plant regeneration, cooling bleed off, boiler blow down etc.

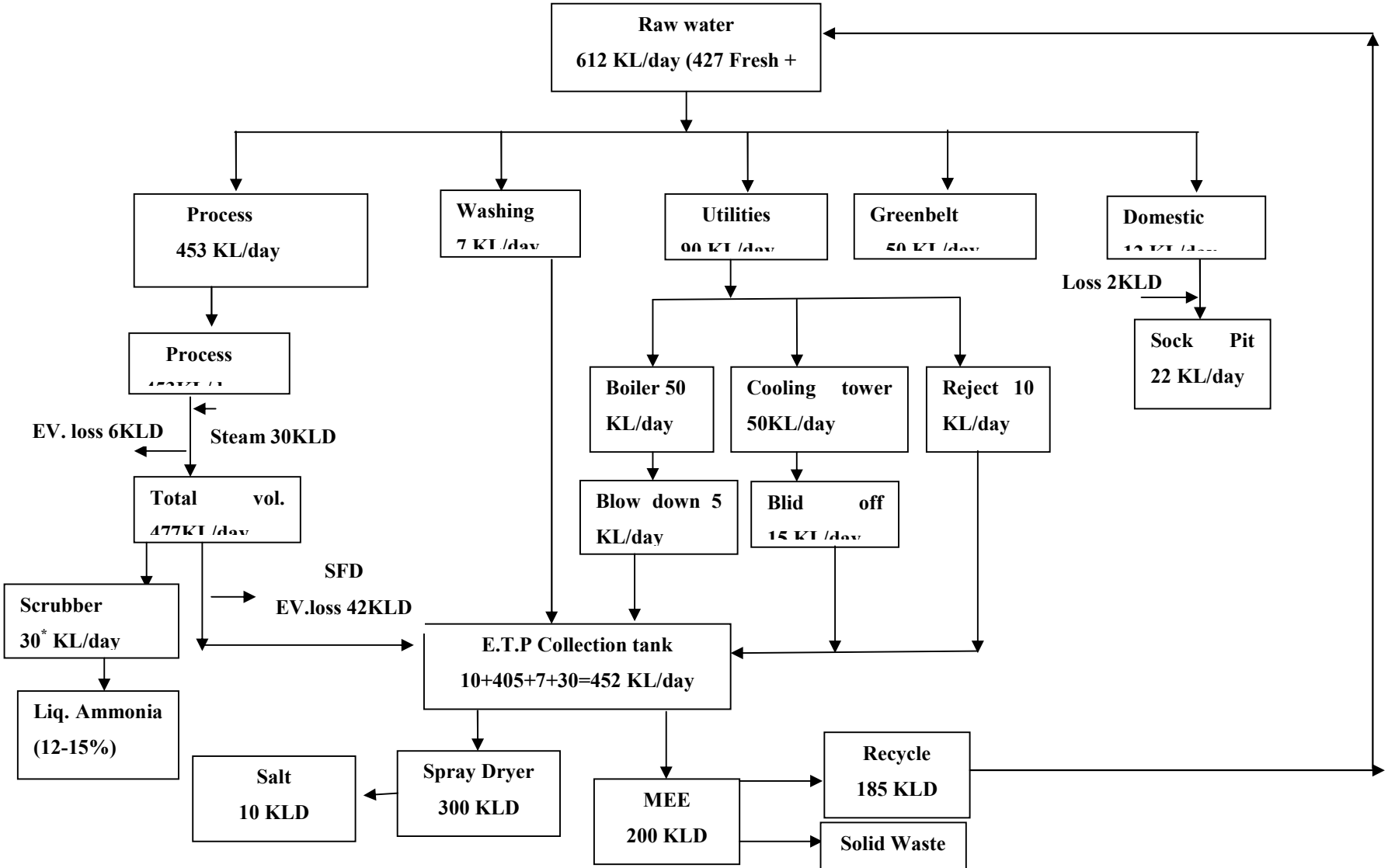
Acidic effluent reused in process and balance effluent will be treated to achieve the statutory norms. Finally treated industrial effluent is discharged into ECP channel.

Old Water Balance Diagram



M/s. Narayan Industries, Village:Vedach,Taluka:Jambusar, Bharuch

Proposed Water Balance Diagram:



M/s. Jyoti Om Chemical Research Centre Pvt. Ltd., Ankleshwar.

Source and disposal of Hazardous wastes

Sr. No.	Types of Waste	Sources	Quantity	Composition
1	Chemical Sludge	ETP	600 Mt/Month	Part of sludge will be sold to cement industries and balance will be sent to TSDF site as land filling approved by GPCB
2	Spent Oil	Spent Oil	0.2 MT/Yr	Sold to approved recycler
3	Discarded containers of Hazardous Raw material	Raw material	1200 Nos/Month	Sold to approved recycler
4.	Spray Dry Salt/ MEE Waste	Boiler/Spray Dryer	0.75 MT	Collection, Storage, transportation, disposal to TSDF site as land filling approved by GPCB.

Funds for pollution control measures

The management is quite conscious of its responsibility for maintaining clear environment adequate funds will be provided for the pollution control measures as financing part of overall expansion. Out of total investment of project, around Rs. 1.5 Crore will be invested for pollution control measures.

Necessary provision for Environmental management system is in practice and will be part of practice in future expansion projects.

Monitoring facilites

The post – project environmental monitoring suggested herewith should be as per the following guideline. The highlights of the integrated environmental monitoring plan are:

- The stack monitoring facilities like ladder, platform and port – hole of all the stacks maintained in good condition.
- Regular monitoring of all gaseous emissions from stacks / vents and all fugitive emissions in the process areas.
- The performance of air pollution control equipment evaluated based on these monitoring results.

- Water consumption in the complex recorded daily.
- Analysis of untreated and treated effluent, before discharge into the final disposal pipeline carried out regularly.
- Performance of effluent treatment plant units evaluated based on these analysis results.
- As far as possible, noise curbed at its source, with the help of acoustic hood and other such noise reducing equipments.
- Regular noise level monitoring to be carried out.
- Green belt properly maintained and new plantation programmes undertaken frequently.
- Continued environmental awareness programmes carried out within the employees and also in the surrounding villages.