PRE-FEASIBILITY REPORT

FOR

Proposed Project of Single Super Phosphate (SSP), Granulated Single Super Phosphate (GSSP), Sulphuric Acid & LABSA

At

Plot No.: C-2/2, Additional MIDC Phase -III, Industrial Area, Jalna, Tehsil & Dist.: Jalna, Maharashtra -431203

SCHEDULE: 5(a), CATEGORY: A

PROJECT PROPONENT

M/s. Rajureshwar Industries Private Limited

DOC. No: MCPL/EMD/2022-23(PFR) **MARCH, 2022**

PREPARED BY

MANTEC CONSULTANTS PVT. LTD.

(QCI Accredited EIA Consultant at S.No.166 as per List of Accredited consultant Organizations/Rev.19th, February 14th, 2022

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CHAPTER - 1
EXECUTIVE SUMMARY

1.1 Introduction

The proposed greenfield project by M/s. Rajureshwar Industries Private Limited is for manufacturing of Single Super Phosphate Powder (SSP), Granulated Single Super Phosphate (GSSP), Sulphuric Acid & Labsa at Plot No.: C-2/2, Additional MIDC Phase -III, Industrial Area, Jalna, Tehsil & Dist.: Jalna, Maharashtra.

Proposed project activity falls in Category 'A' in "Chemical Fertilizer" Sector 16 as per NABET Scheme and 5 (a) as per MoEF&CC Notification. It will be appraised by Expert Appraisal Committee (EAC) of MoEF&CC, New Delhi. Proposed project situated in notified industrial area of Maharashtra Industrial Development Corporation (MIDC), Govt. of Maharashtra. Land Allottment letter is enclosed as **Annexure-I.**

Total land area available for the proposed plant is 4.5 Ha./45,000 sq. m.

Proposed project site is at a distance of 7.0 km from Jalna city and 48 km from Aurangabad city. There is always a high demand of fertilizers in the market as it works as plant nutrient for growth and development of the plant. These fertilizers are helpful in improving root growth and development which is most important for uptake of plant nutrient and water. It helps in increasing the crop production like sugarcane, groundnut and other oil seeds.

Features of the Project are given in below **Table1.**

Table 1.1 : Salient Features of the Project

S.No.	Description	Proposed Project Details
1	Project Name	Proposed Project of Single Super Phosphate (SSP), Granulated Single Super Phosphate (GSSP), Sulphuric Acid & LABSA at Plot No. C-2/2 Additional MIDC Phase III, Industrial Area, Jalna, Maharashtra – 431203
2	Total Plot Area	4.5Ha/45,000 sq. m
3	Location	Plot No.: C-2/2, Additional MIDC Phase III, Industrial Area, Jalna, Tehsil & Dist.: Jalna, Maharashtra – 431203
4	Category of Project	5(a) Category "A" of EIA notification
5	Toposheet No.	47M9; 47M13
	Topography	Plain terrain
6	Project Cost	Rs. 40.23 Crore/4023 Lakhs
	EMP Cost	Capital Cost – 119.0 Lakhs Recurring Cost -13.00 Lakhs

7	Proposed Products with capacity	• Single Super Phosphate (SSP- 1,32,000 MTPA), • Granulated Single Super Phosphate (GSSP-1,32,000) MTPA. • Sulphuric Acid- 49,500 MTPA • Labsa - 16,500 MTPA
	Raw Material Requirement	• Sulphur – 16,335 TPA • Rock Phosphate – 71,280 TPA • Sulphuric Acid – 62,700 TPA • Single Super Phosphate – 1,32,000 TPA • Linear Alkyl Benzene – 12,451 TPA
8	**Environmental Study**	
i)	Nearest Habitation	• Nagewadi Village is at 1.0 km in SW direction • Khadgaon Village is at 2.6 kms in NW direction. • Chandanzira Village is at 2.5 kms in SE direction. • Dwalwadi Village is at 3.0 kms in SW direction. • Jalna City – 7.0 Km SE
ii)	Nearest Town, city, district Headquarters along with distance in kms.	Nearest Tehsil, – Jalna – 7.0 km SE Nearest Town & District Headquarters – Jalna 7.0 km SE
iii)	Nearest Railway Station	Railway Station – Jalna Railway Station-8.0 km SE
iv)	Nearest Airport	Nearest Airport – Aurangabad Airport -46.0km West
v)	Nearest Seaport	Jawaharlal Nehru Port Trust, Navi Mumbai – 318 km SW
9	**Resource Requirement**	
i)	Water Requirement	Construction Phase- 15-20 KLD Operation Phase- 461 KLD
ii)	Source of water	MIDC, Jalna
iii)	Power Requirement	Total – 1135 KW/1336 KVA
iv)	Internal Power Generation	Waste Heat Recovery Power Generation 720 KW/847 KVA
v)	External Power Requirement	1000 KVA/1177 KVA
vi)	No. of working days	330 days
vii)	Manpower requirement	• During construction phase – 100 nos. • During operation phase – 80 Nos.

(Source: Project Report, Google Earth & Topo Sheet)

CHAPTER - 2

INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

2.1 Introduction

The proposed greenfield project by M/s. Rajureshwar Industries Private Limited is for manufacturing of Single Super Phosphate Powder (SSP), Granulated Single Super Phosphate (GSSP), Sulphuric Acid & Labsa at Plot No.: C-2/2, Additional MIDC Phase -III, Industrial Area, Jalna, Tehsil & Dist.: Jalna, Maharashtra.

2.2 Identification of the Project and Project Proponent

M/s. Rajureshwar Fertilizer Private Limited Company promoted by Mr. Aadinath Trimbakrao Patil and Mr. Nilesh Vinayak Dhandar. Dr. Aadinath Patil is one the promoter of proposed unit, he is leading medical practitioner of Jalna. He is running M/s. Aastha Hospital & ICU care in Jalna, and he also runs a Ginning and Pressing Unit and oil mill unit at Rajur, Taluka: Bhokardan, Dist.: Jalna in the name of M/s. Rajureshwar Cottex Private Limited. Dr. Aadinath Patil is one of the promoter of above unit, He is leading medical practitioner of Jalna and the Mr Nilesh Vinayak Dhandar firm popularly known as M/s. Vaishali Fertilizer Agency, this agency is pioneer in supply of fertilizer in the Jalna region.

The proposed unit will manufacture Single Super Phosphate (SSP) – 1,32,000 MTPA, Granulated Single Super Phosphate (GSSP) – 1,32,000 MTPA, Sulphuric Acid – 49,500 MTPA & Labsa – 16,500 MTPA, further this unit will be enjoying the geographical advantage of plant location, as the plant situated in Jalna city, the same is large scale consumers for the proposed products. Single Super Phosphate-Powder and Granulated form contains Phosphorus, Calcium and Sulphur which are primary and secondary plant nutrient for growth and development of the plant. SSP - A multi nutrient fertilizer containing phosphorus (14.5%), Sulphur (11%) and Calcium (21 %). SSP can apply as a basal fertilizer with other chemicals and organic fertilizers. It has tremendous impact on plant growth and also assisting in maintaining soil health and protection against pest and diseases.

The Company/ Firm wish to produce fertilizer products after getting EC, CTE, CTO & all statutory permission from other Government Authorities / Agencies.

2.3 Need for the Project and Its Importance to the Country or Region

In the modern farming, the use of fertilizers has become unavoidable to meet out food for Indian population. India is 80% dependent on farming. Indian farmers are fully aware of the importance of fertilizers for agricultural development. As per available statistics, India has increased the food grains manufacturing over the last five decades and along with other inputs, the fertilizers consumption per hector has improved. Sulphuric Acid is most Important & basic Raw Material for Chemical Industry. It is considered as Scale to determine Growth of Chemical industry in the region & Country.

1. SSP is a multi-nutrient fertilizer containing phosphorus (14.5 %), Sulphur (11%) and Calcium (21%).

2. Preferred by small and marginal farmers for its lowest price per kg.
3. SSP is the cheapest source of Sulphur for the soil.
4. Only phosphatic fertilizer will effectively utilize Indian rock phosphate.
5. SSP can apply as a basal fertilizer with other chemicals

2.4 Manpower Requirement

There will be total 100 No.s of employees (during Construction phase) and 80 Nos. of employees (during operation phase) will be employed in the proposed project activity. It includes Manager, Supervisor and skilled/semi-skilled/unskilled workers. There approximate nos. with its particulars are given in below **Table 2.1.**

Table 2.1: Details of Manpower (Operation Phase)

S. NO.	Particulars	No. of Employees	
		Construction Phase	**Operation Phase**
1	Manager	1	2
2	Supervisors	4	4
3	Skilled/Semi-skilled/Unskilled Workers	75	74
	Total	**100**	**80**

CHAPTER - 3

PROJECT DESCRIPTION

3.1 Type of Project

Proposed Greenfield project is to be developed. in Additional MIDC, Phase III, Jalna, Tahsil & Dist.: Jalna, Maharashtra, Notified Industrial Area by M/s Rajureshwar Industries Pvt. Ltd. All the industrial infrastructure facility is being available at MIDC to support proposed development.

3.2 Location of Project

The proposed project is located in notified industrial area of MIDC, Govt. of Maharashtra at Plot No.: C-2/2, Adiitional MIDC Phase III, Industrial Area, Tehsil& District: Jalna ,Maharashtra over an area of 4.5Ha./45,000 sq. m. Govt. of Maharashtra. Land Allottment letter is enclosed as **Annexure-I.**

The project site area falls in Survey of India Toposheet No. 47M9 & 47M13. The Geo Co-ordinates of the project site are given in below **Table 3.1.** Location of the proposed project site is shown in **Fig 3.1**. Topographical map showing 10 km surrounding the proposed project site is shown in **Fig. 3.2.** Google image of the proposed project site is shown in below **Fig. 3.3.** Proposed Project Site Location in MIDC Area is shown in below **Fig. 3.4.** Plant Layout of the Proposed Project Site is shown in below **Fig. 3.5.**

Table 3.1: Geo Co-ordinates of Proposed Project Site

Boundary Pillars	Latitude (N)	Longitude (E)
1	19°52'48.27”	75°49'58.96”
2	19°52'48.36”	75°49'49.68”
3	19°52'42.46”	75°49'58.93”
4	19°52'43.86”	75°49'48.27”

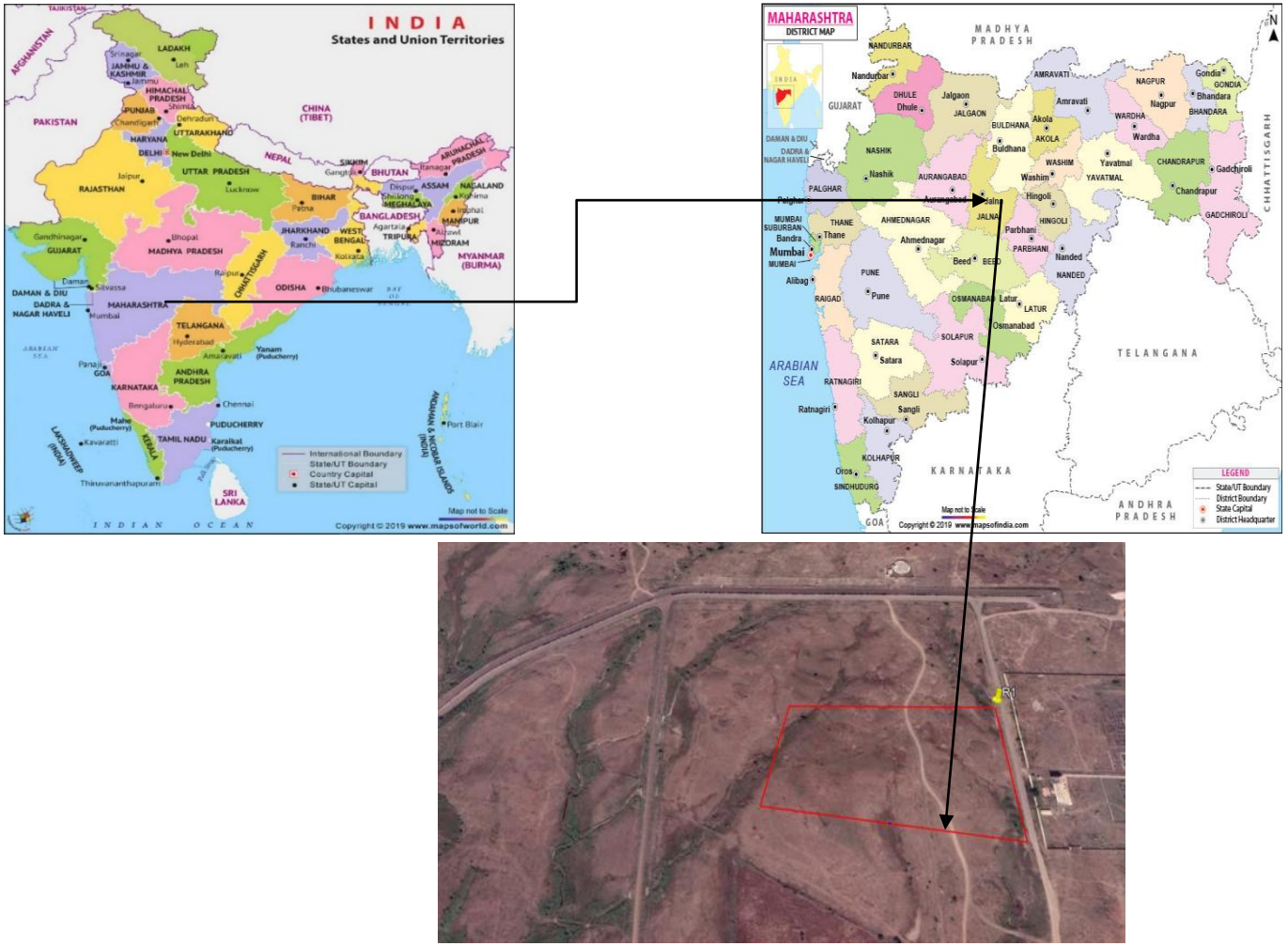


Fig. 3.1: Location Map of the Proposed Project Site

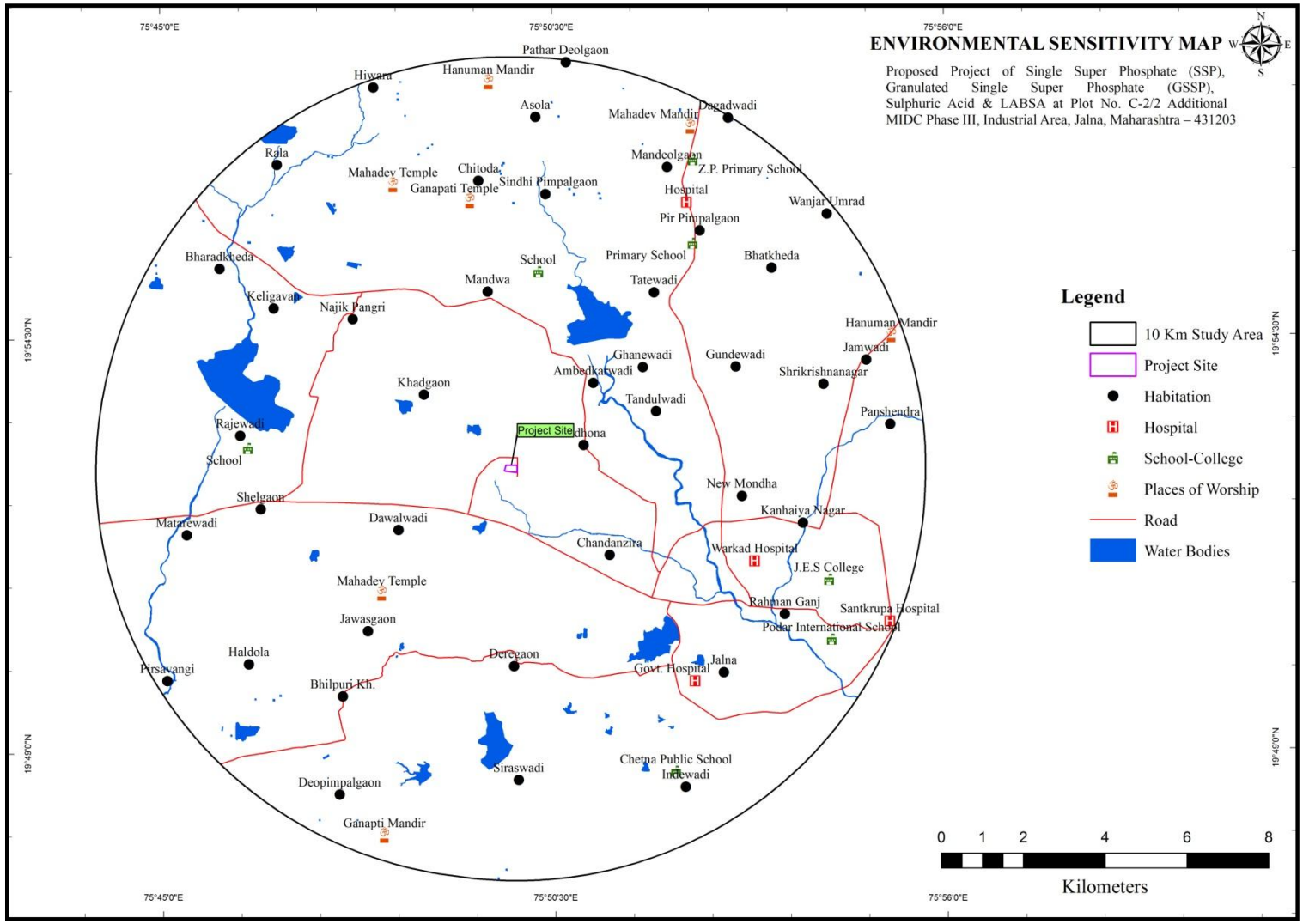


Fig. 3. 2: Environment Sensitivity Map showing 10 km around the Proposed Project Site Area

Fig.3.3: Google Image of the Proposed Project Site

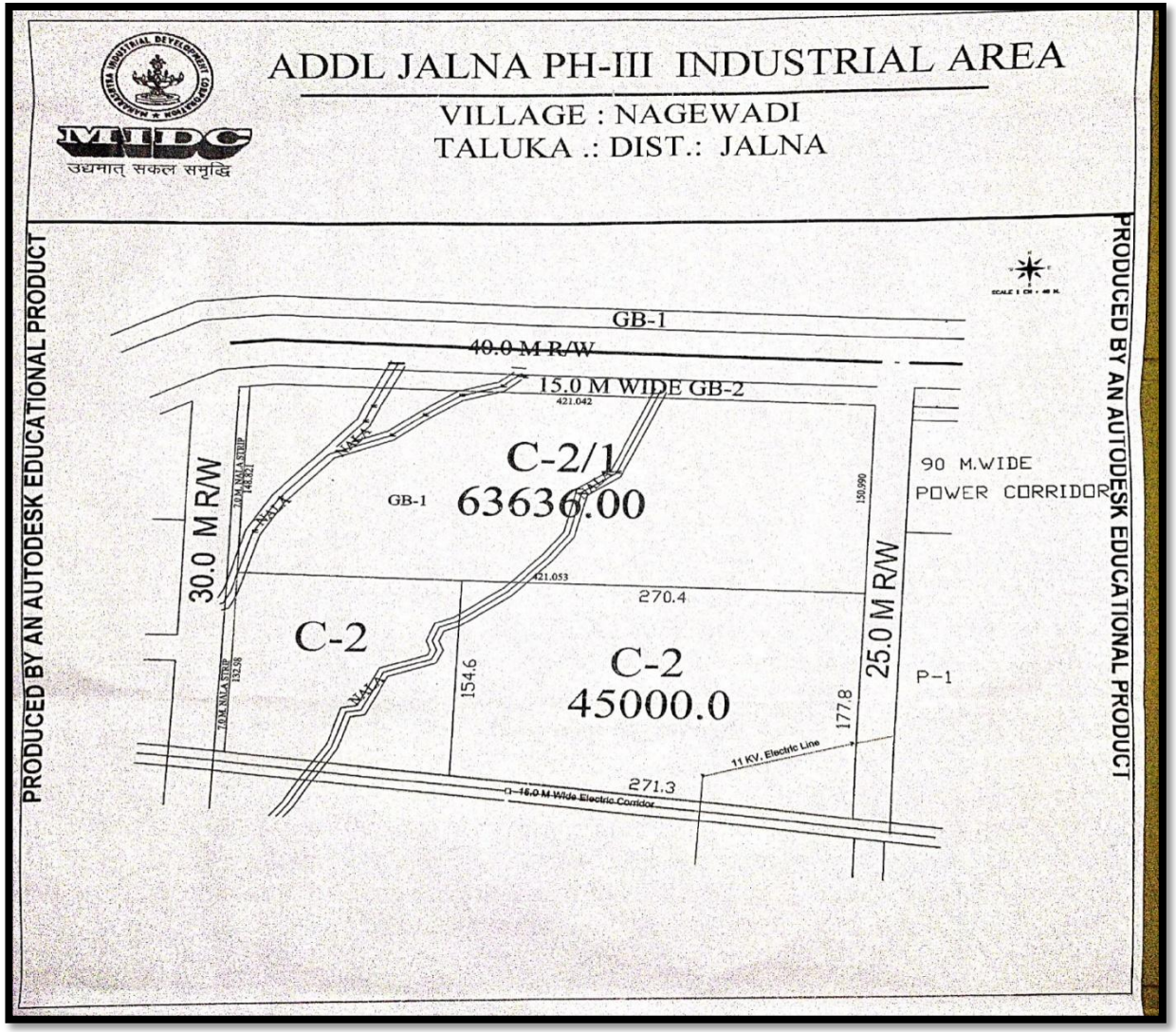


Fig. 3.4: Proposed Project Site Location in MIDC Area

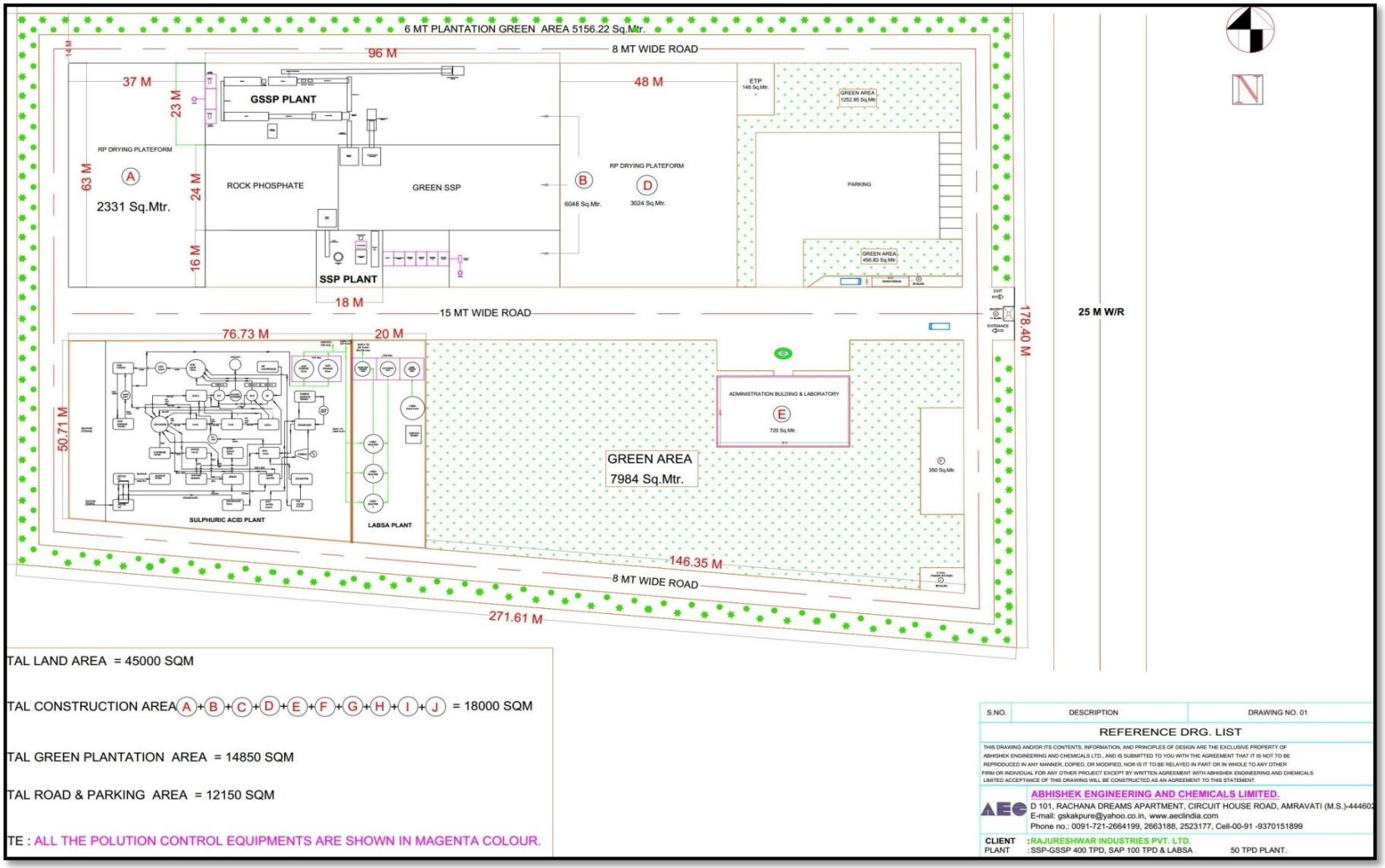


Fig. 3.5: Plant Layout of the Proposed Project Site

3.3 Type of Project Including Interlinked and Interdependent Projects, If Any

This is single entity project of chemical fertilizers situated in Additional MIDC, Phase III, Jalna & Tahsil & Dist.: Jalna, Maharashtra and it is proposed to be developed in 4.5 Ha./45,000 sq. m land area in the MIDC area. There is no any other project interlinked with the proposed project

3.4 Details of Alternate Sites

It is a chemical fertilizer project situated in MIDC, Notified Industrial Area. There is no any other alternative site.

3.5 Product Information

In proposed chemical fertilizer plant, there are total four (4) products to be produced and are as follows:

1. Single Super Phosphate (S.S.P.)
2. Granulated Single Super Phosphate (G.S.S.P.)
3. Sulphuric Acid (H_2SO_4)
4. LABSA

Proposed products information are as given below:

3.5.1 Single Super Phosphate (S.S.P.) & Granulated Single Super Phosphate (G.S.S.P.)- Chemical Fertilizers

In the modern farming, the use of fertilizers has become unavoidable to meet out food for Indian population. India is 80% dependent on farming. Indian farmers are fully aware of the importance of fertilizers for agricultural development. As per available statistics, India has increased the food grains manufacturing over the last five decades and along with other inputs, the fertilizers consumption per hector has improved. Sulphuric Acid is most Important & Basic Raw Material for Chemical Industry. It is considered as Scale to determine Growth of Chemical industry in the region & Country.

1. SSP is a multi-nutrient fertilizer containing phosphorus (14.5 %), Sulphur (11%) and Calcium (21%)preferred by small and marginal farmers for its lowest price per kg.
2. SSP is the cheapest source of Sulphur for the soil.
3. Only phosphatic fertilizer effectively utilize Indian rock phosphate.
4. SSP can be applied as a basal fertilizer with other chemicals
5. It has tremendous impact on plant growth and also assisting in maintain soil health and protection against pest and diseases.

3.5.2 Sulphuric Acid (H_2SO_4)

Sulphuric acid is colorless & Odorless dense oily corrosive liquid, inorganic acid. Concentration range is 98.4% to 98.6%. It boils at 33.8°C, has a specific gravity of 1.84 and is hygroscopic in nature i.e.,

mixes violently with water. It is stored in Mild Steel Tanks and Shipment is also done in Mild Steel Tankers. It has large scale use in Fertilizers, Micro Nutrient & Pesticide Industry & Chemical Industry like Dye: Dye-intermediate, Pigment; Petroleum Refinery, Explosives, Steel Pickling, Non-Ferrous metal Extraction, Battery, Detergent, Plastic, Manmade Fibre etc.

3.5.3 LABSA (Linear Alkyl Benzene Sulphonic Acid)

Linear alkyl benzene sulphonic acid, also known as LABSA is a synthetic chemical surfactant, which is a widely used industrial detergent. It is used in washing powder, detergent powder, oil soap, cleaning powder and detergent cake. Linear alkylbenzene sulfonate (LAS), the world's largest-volume synthetic surfactant, which includes the various salts of sulfonated alkylbenzenes, which is widely used in household detergents as well as in numerous industrial applications. The LABSA market is driven by the markets for LAS, primarily household detergents.

3.6 Steam & Electric Power

Steam Produced:

Steam is produced by recovering process in which heat is generated during manufacturing of Sulphuric Acid. Part of steam generated in plant is used in Sulphuric Acid Plant for melting solid Sulphur & De-aeration of boiler Feed water (Required for Steam generation). Some quantity is used in SO_3 generation.

Electric Power:

Electric Power is generated by Turbo generator. Turbine attached to Alternator is operated by steam. High pressure steam generated in Sulphuric Acid Plant is superheated in Acid plant & taken to Turbine section. This steam is used to operate Condensing type Turbine & out going steam is converted to Condensate water. This hot condensate water generated from turbine discharge is re-used in Waste Heat Recovery Boiler in Acid Plant for generation of steam.

Electric Power generated is used to operate Sulphuric Acid & Other Plants in the Complex.

3.7 Process Description

3.7.1 Manufacturing Process of SSP

The SSP Plant will have capacity of 1,32,000 MT/year based on 400 tons/day and 330 days working. The process of manufacturing of single super phosphate consists of rock grounding Acidulation of ground Rock phosphate and Sulphuric Acid to produce green SSP; scrubbing, curing of SSP and Packing.

Grinding Section:

Rock Phosphate is grounded to about 100-mesh size in roller mill. Ground Rock is pneumatically conveyed and collected through a cyclone in a ground Rock hopper from where it is conveyed to acidulation unit (section through a series of screw conveyer Belt conveyor and bucket elevator).

Acidulation Section:

Ground Rock Phosphate, 98% Sulphuric acid and water are fed to a mixture which is fitted with advancer and retarder type of paddles. Particular flow pattern generated by these paddles is maintained through mixing of Acid and Rock Phosphate that converts water insoluble phosphate to water phosphate. After mixing in a mixer, reaction mass is discharged in the godown. This material is lifted by means of crane and heaped in the godown for curing called green SSP. In order to avoid pollution in working area, mixer and den are kept under suction by means of Blower.

Scrubbing Section:

Gases containing fluorine and liberated during reaction in mixer and Den. This gas stream is fed in four stage venture scrubbers. In these, three stages Fluorine is scrubbed by circulating streams of Hydrofluosilicic acid. Concentration of Hydrofluosilicic acid is to recycle into system when Rock Phosphate, Sulphuric acid & water mixed following reaction takes place.

$[Ca_3(PO_4)2]3.CaF_2 + 7H_2SO_4 + 2H_2O \longrightarrow 3CaH_4(PO_4)_2 + 7CaSO_4.2H_2O + 2HF$

HF reacts with silica (already present in Rock Phosphate) to form silicon tetra fluoride

$4HF + SiO_2 \longrightarrow SiF_4 + 2H_2O$ silicon tetra fluoride

Silicon tetra fluoride is very much hygroscopic in nature, it immediately reacts with water during scrubbing of Hydrofluosilicic acid.

$3SiF_4 + 2H_2O \longrightarrow 2H_2SiF_6 + SiO_2$

This Hydrofluosilicic acid is recycled into the system to save some extent of Sulphuric acid and to maintain zero effluent discharge.

$2H2SiF6 + Ca3(PO4) \longrightarrow CaH_4(PO_4) + 2CaSiF_6$

Curing:

After discharging the material from the Den, it takes 10-15 days for curing (depends on the nature of Rock Phosphate.) During this period, material is reshuffled by an overhead crane to achieve 90-92% Conversion.

Packing Section:

After curing, material is screened through vibrating screens ,the screened material is packed into a 50kg HDPE Bags Stitched and stacked, from where it is dispatched to the farmer. The oversized material is crushed in a slicer to make a powder.

3.7.2 Manufacturing Process of SSP (Powder)

Pollution Control Device:

1. Gaseous Emission:

During the reaction of Rock Phosphate and sulphuric acid, HF is formed. The gases bearing HF is sucked by a scrubbing fan having capacity 8000NM3/hr. through a series of venturi & separator.

$[Ca3(PO_4)_2]_3.CaF_2 + 7H_2SO_4 + 2H_2O \longrightarrow 3CaH_4(PO_4)_2 + 7CaSO_4.2H_2O + 2HF$

HF React with silica to form silicon tetra fluoride

$4HF + SiO_2 \longrightarrow SiF_4 + 2H_2O$

Since, Silicon tetra Fluoride is very hygroscopic in nature forms immediately hydrofluosilicic acid.

$3SiF_4 + 2H_2O \longrightarrow 2H_2SiF_6 + SiO_2$

This Hydrofluosilicic acid is recycled into the system, which save some extent of sulphuric acid following reaction takes place.

$Ca_3(PO_4)_2 + H_2SiF_6\ H_2O \longrightarrow CaH_4(PO_4)_2 + 2CaSiF_6$

After scrubbing, the residual gases having fluoride less than 25mg/Nm^3 is vent out through the chimney.

Fluoride Balance:

Rock Phosphate contain fluoride 3.0-3.5% thus AVF = 3.24%

Plant Capacity = 400 MT/Days

Production per Hour 400/20 = 20 MT/Hr.

Rock Phosphate Consumption per MT of SSP = 0.54 MT

Rock Phosphate Consumption per hr. 20 x 0.54 = 10.8 MT

Total Fluoride available per hr. = 10.8 x 0.0324 x 1000 = 349.9 Kg

Since during acidulation 25-30% can react i.e., max 30%

70% fluoride remains in SSP in the form of as CaF2

Fluoride in SSP as F 244.9 Kg. (502 Kg as CaF2)

Per MT of CaF2 in SSP = 502/20 = 25 Kg. per MT

Balance of 30% i.e., 105 Kg. Fluoride is scrubbed through 4 Series of Venturi Scrubber, Cyclone and RCC Chamber fine spray Scrubber.

Scrubber & Venturi	% of Abs	Absorption of Qty.(Kg.)	Non absorption of Qty.(Kg.)
I Stage	90%	94.50	10.50
II Stage	85%	8.92	1.57
III Stage	80%	1.25	0.32
IV Stage	75%	0.24	0.08

Since the scrubbing Fan capacity is 16000 Nm^3 /hr,

Fluoride emission mg/Nm^3 =0.08 x 1000 x 1000 / 16000 = 5.0 mg / Nm^3

Scrubbing Efficiency = 99.92 %,

which is below the norms prescribed by State Board and CPCB.

Material Balance Diagram of SSP is shown in below **Fig. 3.6**. and Process Flow Diagram of SSP is shown in below **Fig.3.7.**

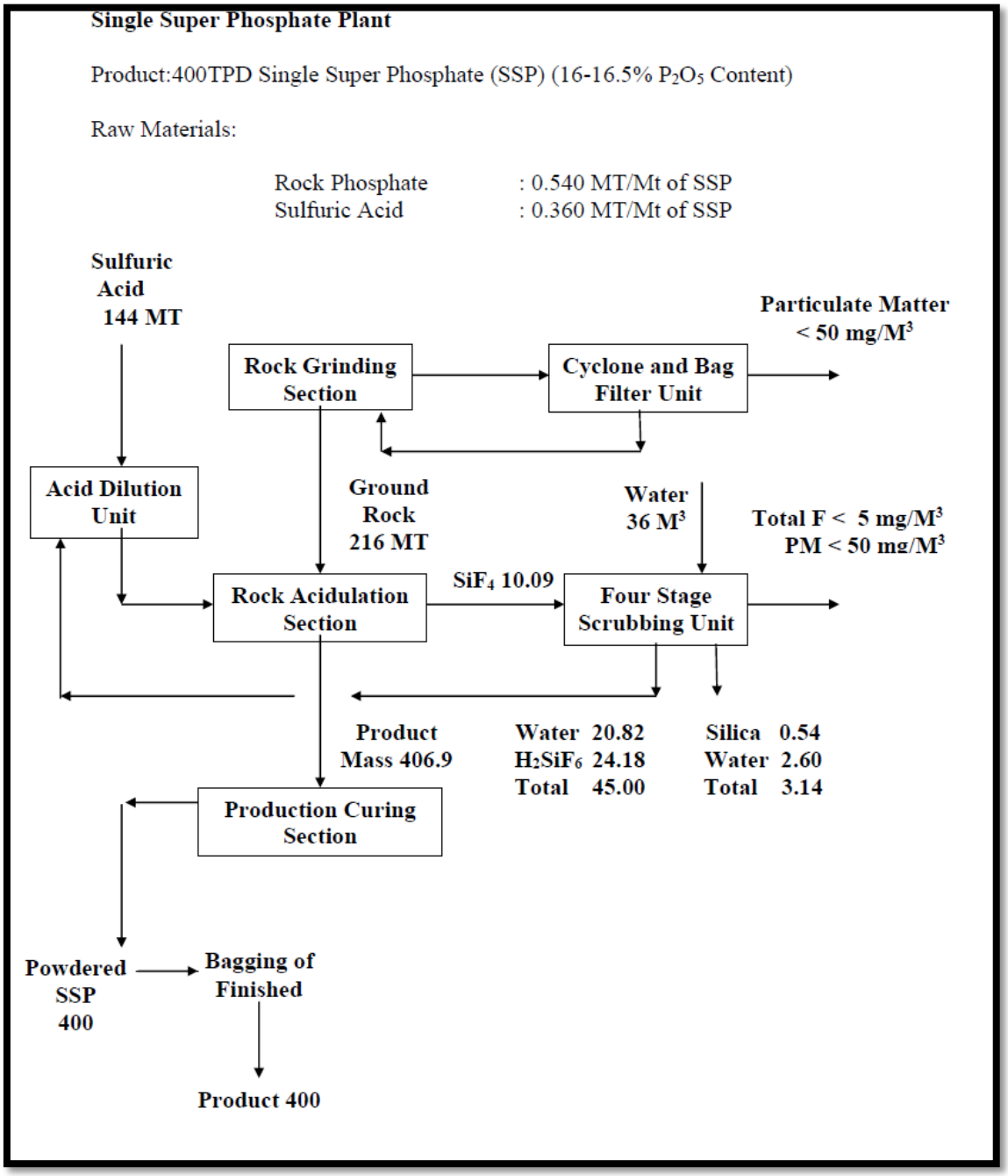


Fig 3 .6: Material Balance Diagram of SSP

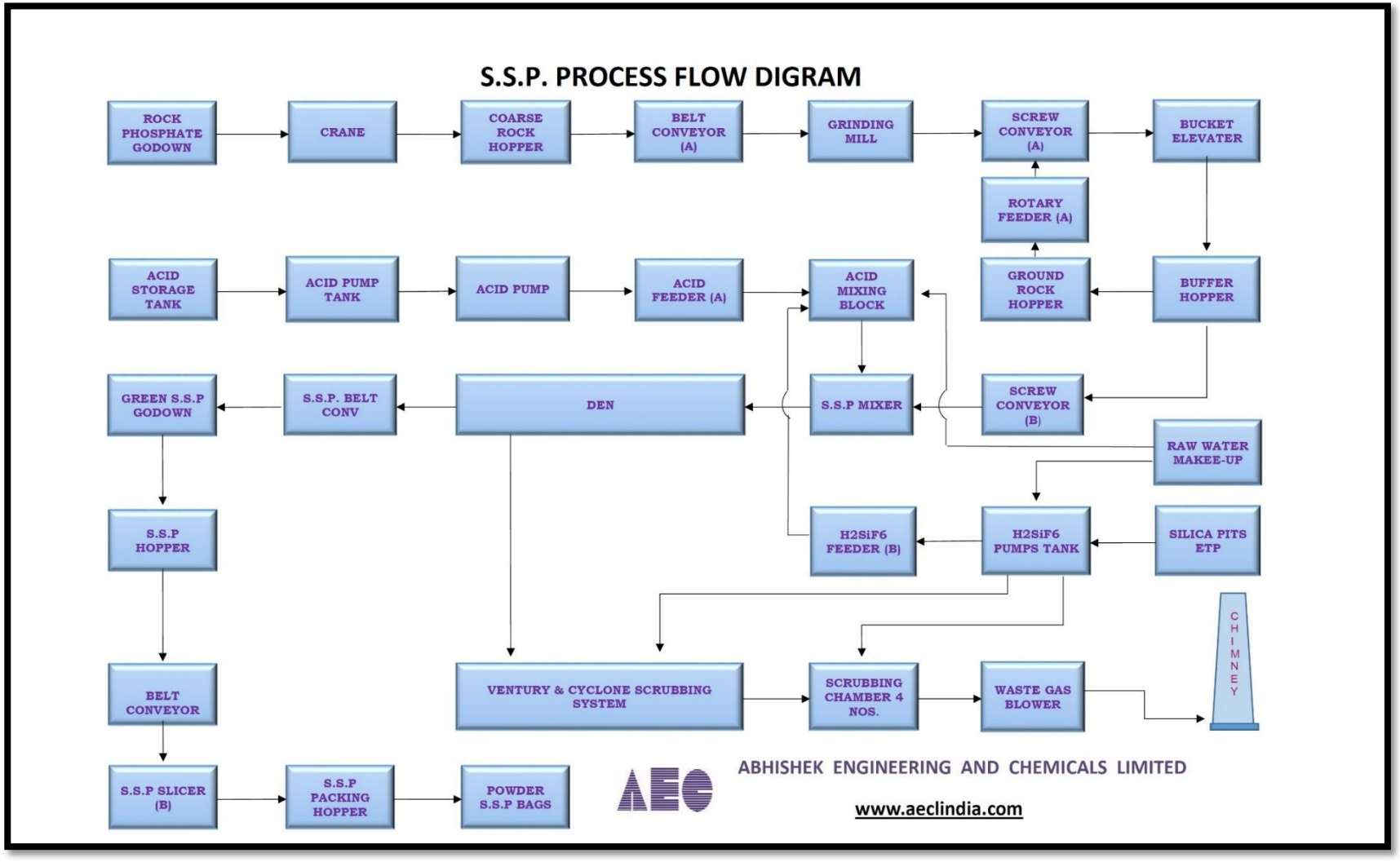


Fig. 3.7: Process Flow Diagram of SSP

3.7.3 Manufacturing Process of GSSP

Part of cured SSP powder is lifted, fed into a hopper, and conveyed to the Granulated unit of the GSSP plant. In the granulator, water is sprayed onto the powder. The controlled spraying of water and the specific rotating speed of the granulator causes the formation of small granules. These wet granules are then fed into a Dryer where hot air is blown through in order to make granules dry and hard.

The hot granules from the dryer are now fed into a Cooler where they come in contact of cold air generated by a fan which cools them down.

They are then led onto a vibrating screen acting as a sieve. The designed product size is collected and stored for subsequent bagging.

The oversized particles of the sieving process are fed into a crusher and there after recycled for granulation. The undersize is directly re-fed into the granulator.

The outlet air from the Dryer as well as the Cooler are directed to set of Cyclones for dust separation. The air is then taken in Dry Chambers for further settling of Dust. Outgoing air from dry chamber is scrubbed with water & finally clean air is discharged into atmosphere through a stack at 30m from Ground Level. Manufacturing Process Flow Chart of GSSP is shown in below **Fig. 3.8.** Water Balance Chart of GSSP is shown in below **Fig. 3.9.**

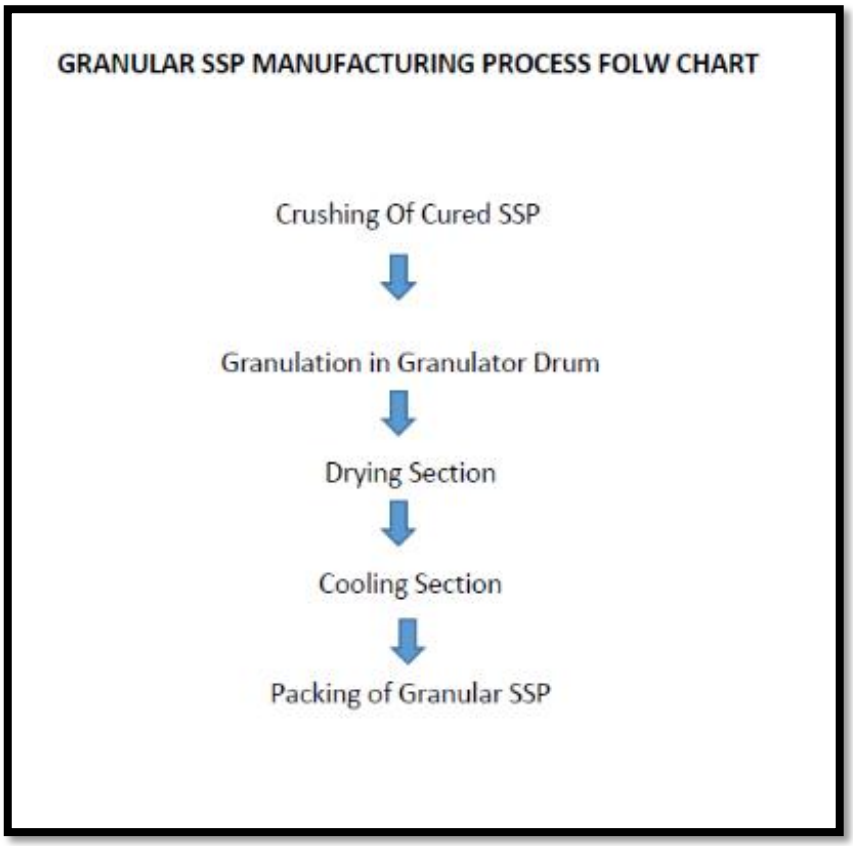


Fig. 3.8: Manufacturing Process Flow Chart of GSSP

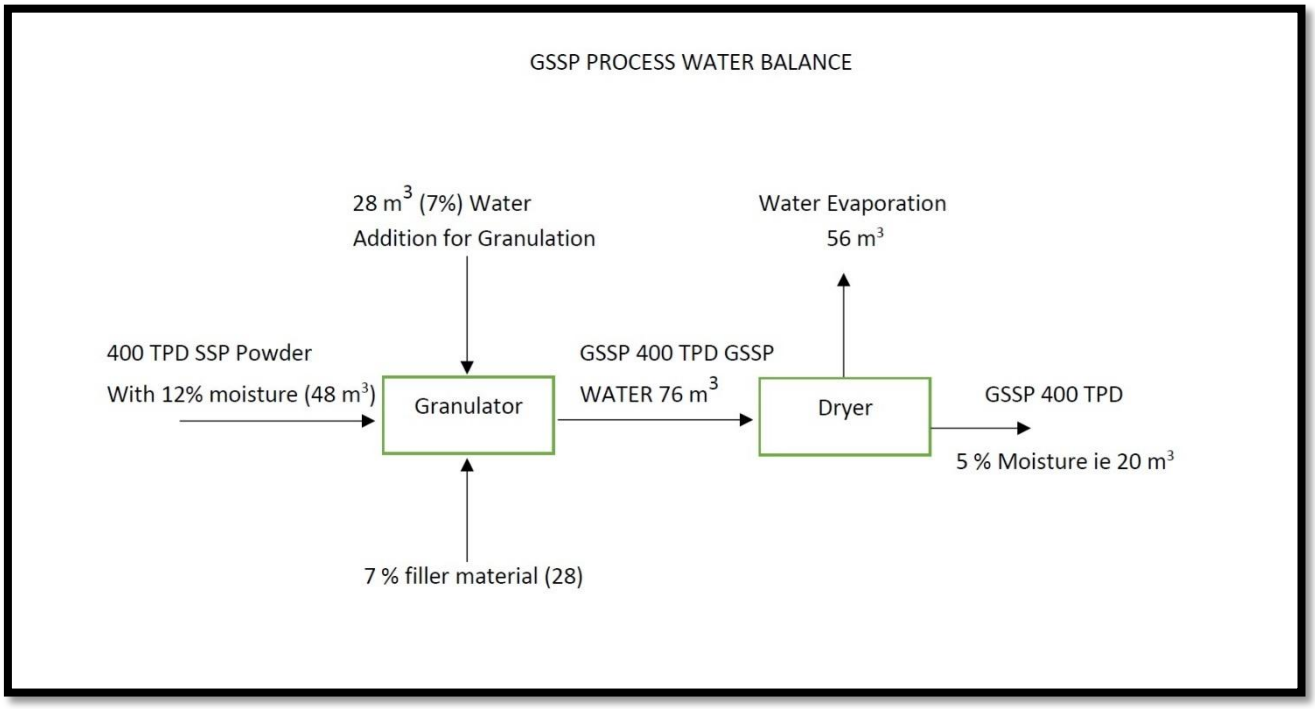


Fig. 3.9: Water Balance Chart of GSSP

3.7.4 Manufacturing Process of Sulphuric Acid

The process plant of Sulphuric Acid can be divided into 6main sections as described here below:

1. Sulphur Section
2. Sulphur Burning Section
3. Converter Section
4. Acid Section
5. Steam Section
6. Alkali Scrubbing Section

1. Sulphur Section

The bright yellow sulphur is brought in the plant by trucks and loaders and stored in the open yard. This stored sulphur is brought by pay loader or wheel barrows and loaded in the semi underground RCC, brick lined pits called as melter. The sulphur melts in this pit due to the heat available from the steam coils provided in the pits. Intense agitation of the agitator in the melter increases the rate of melting. The molten sulphur overflows from one part of the pit to another part and allows the impurities to settle at the bottom.

2. Sulphur Burning Section

The clean, viscous sulphur is pumped into a sulphur furnace in the stream of dry and clean air. This air is supplied by air blower, which is driven by electrical motor. The air is dried in a Drying Tower by absorbing the moisture in a circulation of 98% Sulphuric Acid. The Sulphur Furnace is a fire and insulation brick lined equipment, which is initially heated by burning high speed or light diesel oil.

The sulphur will burn to produce gases containing 10.5 % SO_2.

S	+	O_2	=	SO_2
32		32		64
Sulfur		Oxygen		Sulfur Dioxide

Being highly exothermic reaction, it will produce very high heat which further raises the temperature of the gases at about 1050^{0}C. These hot gases will be cooled in a Waste Heat Boiler up to 430^{0}C. Heat will be used for production of saturated steam at 35 kg/cm $_2$ g pressure.

3. Converter Section

The conversion of SO_2 to SO_3 will be optimized by using a four-bed converter with good quality of Vanadium Penta Oxide (V_2O_5) catalyst.

SO	+	½ O_2	=	SO_3
64		16		80
Sulfur Dioxide		Oxygen		Sulfur Trioxide

- In the first bed, due to the exothermic reaction, temperature of the outgoing gases will be high. These will be cooled in a Super Heater and heat will be used for production of saturated steam at 35 kg/cm $_2$ g pressure.
- In the second bed, outgoing gases will be cooled in a Shell & Tube type heat exchanger called Hot Heat Exchange. These gases will be fed to the third bed of catalyst.
- The gases from the third bed will be cooled in another shell & Tube Type Heat Exchanger called Cold Heat Exchanger. Outlet gases from the cold heat exchanger will be further cooled in an economizer I before taking in to an Intermediate Absorption Tower.
- The SO_3 gases are absorbed in this tower by circulating 98% Sulphuric acid. Following reaction takes place in Intermediate Absorption Tower.

SO_3	+	H_2O	=	H_2SO_4
80		18		98
Sulfur Trioxide		Water		Sulfuric Acid

- The gases coming out of the Intermediate tower will pass through a set of high efficiency candle filters for removal of acid mist. The gases coming out of the candle filters will have low temperature of about 65^{0}C. These gases will be passed through the shell side of the two heat exchangers in series on the shell side so as to reach the temperature to 430^0 C. These gases will again be taken to the converter in the 4th bed.
- In the Final absorption tower, the remaining SO_3 will be absorbed in the stream of 98% Sulphuric Acid and will be vented further to the atmosphere through the stack.
- The final absorption tower will also be provided with a high efficiency candle filters to remove the acid mist from the gases. The gases being vented to the atmosphere will be containing only SO_2 less than 4 kg/Ton of 100% Sulfuric acid and SO_3 + Acid Mist < 50 mg/Nm_3 within the

stipulated environmental standards.

4. Acid Section

The acid section will consist of a common Pump Tank fitted with common centrifugal submerged pumps. This tank will be brick lined with acid resisting bricks for the protection of the carbon steel shell. The acid from all three towers will be collected in a common tank. The acid collected in tank will be hot due to high temperature gases of the Inter Pass Absorption tower. This Hot acid will be cooled in a Plate type Heat Exchanger before circulating it into the Absorption Towers. A stream from this cold acid will be drawn as product for storing in the storage tanks.

5. Steam Section

The Demineralized water at about 100^0C will be fed in the 2 economizers in series by means of a multi stage, high pressure Boiler feed water pump at about 38 Kg/Cm^2g pressure. The temperature of the feed water shall be maintained at 100^0 C by heating it by the condensate return from the melter and by de-aerating water with the help of low-pressure steam.

The water in the economizers get heated due to the heat available from the gases from the 3rd pass outlet of converter. This hot water is further fed to a common Steam and Water drum of the Waste Heat Boiler in which steam is generated at about 35 Kg/Cm^2

The part of the steam will be taken to the melter for the melting of the Sulphur, for jacketing the pipelines of molten sulphur and from de-aeration of the D. M. water. The surplus steam available from the in-plant use is taken for other captive purpose.

6. Alkali Scrubbing Section

During the cold plant start-ups and during hot plant start up after short shutdowns, the temperature of converter beds are lower than the required which results in poor SO^2 to SO^3 conversion efficiency for short time. To take care of higher SO^2 emission during this period, two stage alkali scrubber is provided for safe venting of neutralized scrubbed gases at these conditions. Provision of Scrubbing Section also comes in handy for temporary plant overloads, and during extended operation of the plant under disturbed conditions.

Alkali Scrubber for Sulfuric Acid Plant

Sulphur Dioxide, Sulphur Trioxide and Acid Mist are considered as the pollutants from Sulphuric acid industries. These pollutants when emitted into atmosphere shall not exceed the limits prescribed in standard.

The main gaseous emissions discharged from the plant into the atmosphere are SO_2 and SO_3 gas with Acid Mist.

As per the norms of Central Pollution Control Board:

SO_2 emission: 2 Kg / ton of 100% Sulfuric Acid

(Design for plant: < 2 kg/ton of 100% Sulfuric Acid)

SO_3 + Acid Mist < 50 mg/Nm^3

Precaution have been taken in plant design to ensure that SO_3 as mist does not escape from the plant by selecting high efficiency mist eliminator in the inter Pass Absorption Tower and the Final Absorption Tower.

During startup of the Sulphuric Acid Plant, the levels of emissions are on a little higher side than the accepted levels as per the norms specified by the Pollution Board. To meet such circumstances, Alkali Scrubbing Unit is provided for safe venting of neutralized scrubbed gases at these conditions.

Provision of Scrubbing Section also comes in handy for temporary plant overloads, and during extended operation of the plant under disturbed conditions.

The Alkali Scrubbing System is designed to scrub SO_2 gas coming out of final Absorption Tower of Sulfuric Acid Plant. After long and short plant shut downs when Sulfuric Acid Plant is started, SO_2 emission from the plant is very high due to lower temperatures of catalyst in the converter. This results in poor SO_2 to SO_3 conversion efficiency. To take care of higher SO_2 emission during plant start-up Alkali Scrubbing System is provided which scrubs SO_2 gas in the circulating solution of NaOH and Sodium Sulfite/Bi-Sulfite. The system works on the principle of Gas Absorption with Chemical Reaction.

$$SO_2 + NaOH \rightleftharpoons NaHSO_3$$

(Sodium Bi-Sulfite)

$$NaHSO_3 + NaOH \rightleftharpoons Na_2SO_3 + H_2O$$

(Sodium Sulfite)

The process gas coming out of final Absorption Tower is taken to Alkali Scrubber, which is a packed bed tower. Here, gas is scrubbed in the circulating Alkali Solution to effect final treatment to reduce SO_2 concentration in the outlet gas to less than 180 ppm (by vol.). Alkali Scrubber is provided with a chevron type mist separator at the top in order to remove the entrained liquid droplets from the exit gas. The treated gas from Alkali Scrubber is sent to chimney. A bypass duct & valve arrangement is also provided to bypass Alkali Scrubbing System when plant is running under normal condition.

Alkali Scrubber is provided with a pump boot to hold circulating alkali solution. A vertical nonmetallic Alkali Circulation Pump is also installed in the same pump boot. The return solution from Alkali Scrubber is taken back to pump boot via a U-seal.

The scrubber is provided with an efficient alkali solution distributor (pipe type) which sprays alkali solution uniformly along tower cross section to result in maximum gas to liquid contact area. Ceramic Saddles provided in Alkali Scrubber to enhance mass transfer rate between gas and liquid.

A caustic solution hold up tank and a bleed off solution hold up tank provided with sufficient hold up capacity. List of Equipment with Brief Specification for Alkali Scrubbing System is given in below **Table 3.2.** Process flow diagram of Sulphuric Acid is shown below in **Fig. 3.10.** Schematic diagram &

overall material balance for Sulphuric Acid is shown in **Fig. 3.11.** Water balance for Sulphuric Acid Plant is shown below in **Fig. 3.12.**

Table 3.2: List of Equipment with Brief Specification for Alkali Scrubbing System

S. N.	Equipment Name	Qty.	Specifications
1	Alkali Scrubber	1	Type: Counter current packed bed type absorption tower. Diameter: 1820 mm Height: 8800 mm MOC: MS with Rubber Lining, Packing: Ceramic
2	Pump Boot	1	Type: Circular Tank Capacity: 10 m^3 MOC: MS with AR Tile Lining
3	Alkali Circulation Pump	2	Type: Centrifugal Capacity: 25 m^3/hr. Head: 25 MLC Motor: 15 HP MOC: PP
4	Alkali Solution Tank	1	Type: Circular Tank Capacity: 3 m^3 MOC: HDPE
5	Bleed Liquor Storage	1	Type: Circular Agitated Tank Capacity: 1 m^3 MOC: Tank: HDPE
6	H2O Tank	1	Type: Circular Agitated Tank Capacity: 500 Liters MOC: HDPE

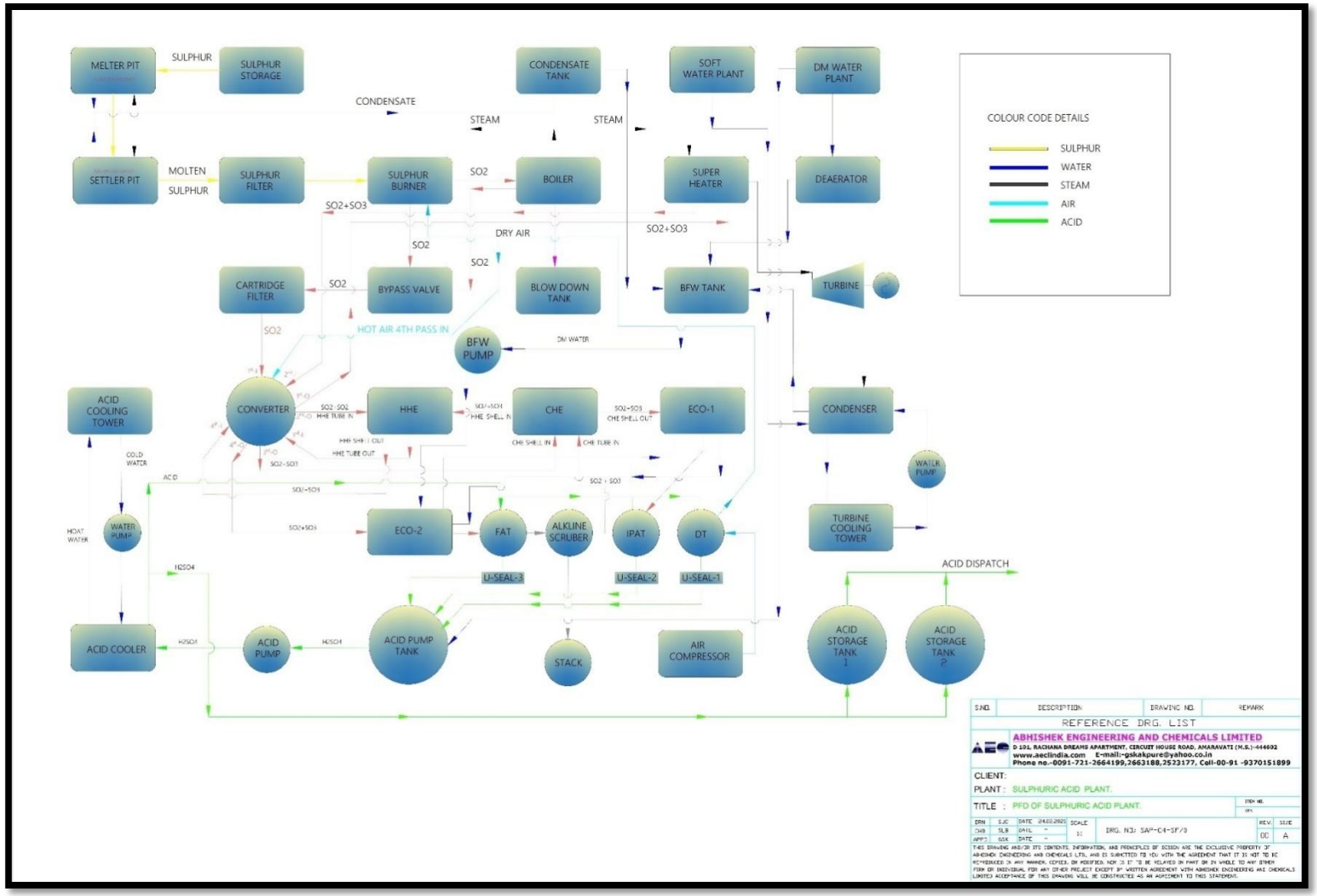


Fig. 3.10: Process Flow Diagram of Sulphuric Acid

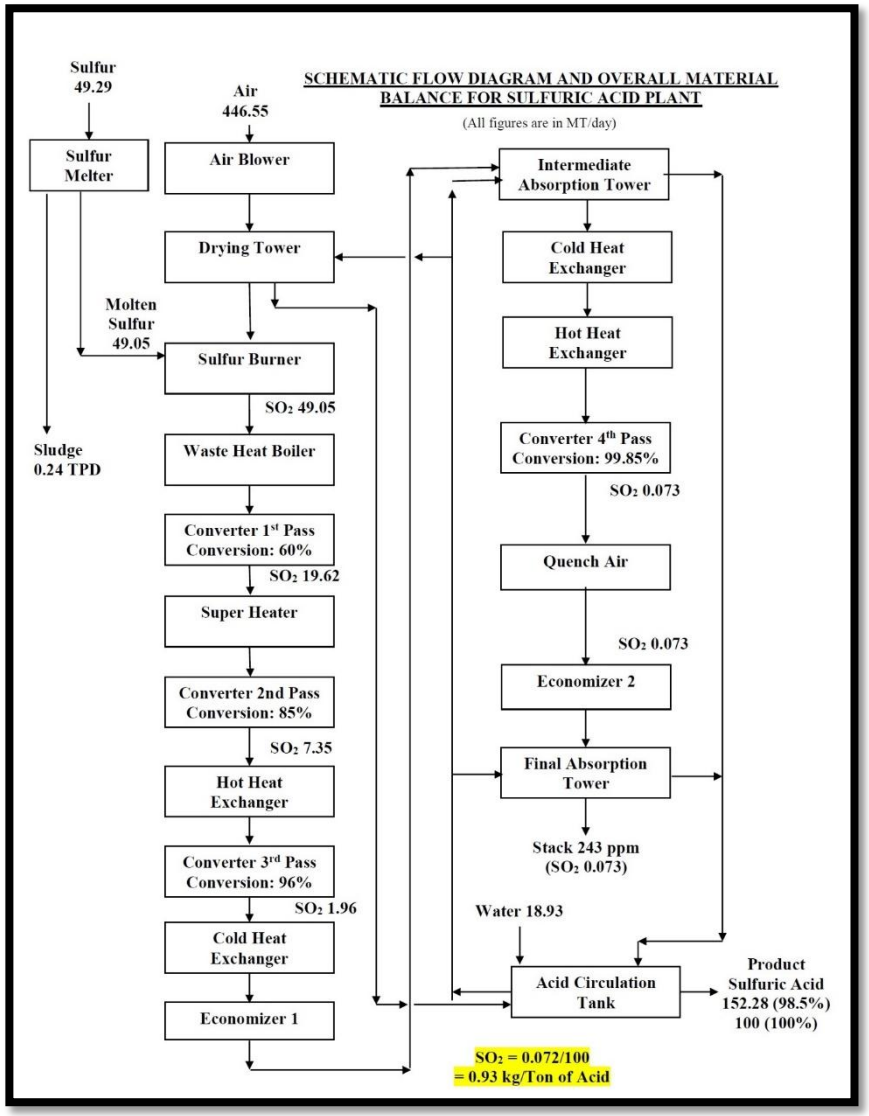


Fig. 3.11: Schematic Diagram & Overall Material Balance for Sulphuric Acid

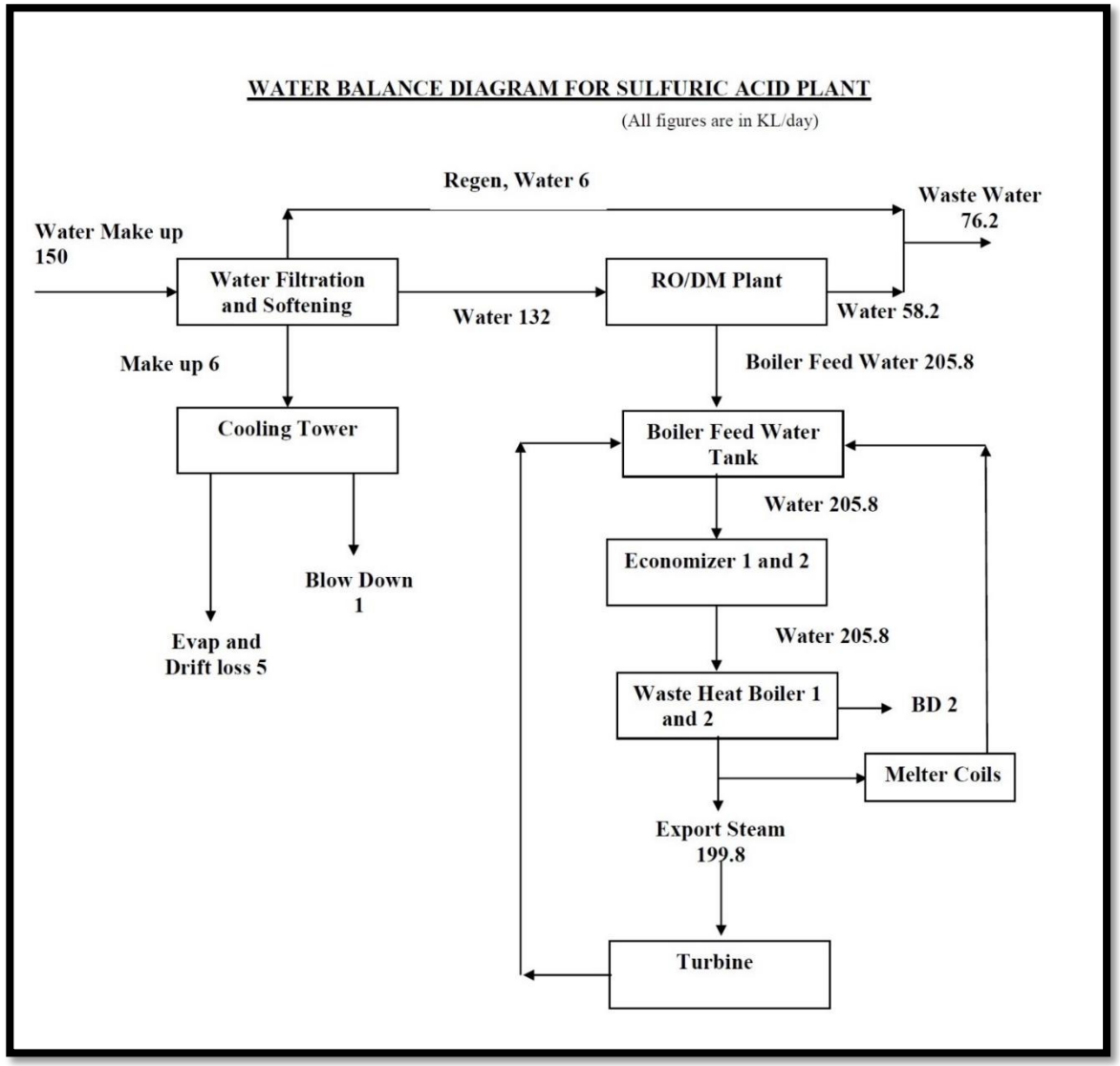


Fig. 3.12: Water Balance for Sulphuric Acid Plant

3.7.5 Process Description of LABSA:

The process described below is for producing 50 TPD LABSA (90 %) in batch process by using, 98 % Sulphuric Acid and water.

- Measured quantity of the LAB (Linear Alkyl Benzene), 98.4% Sulphuric Acid and Chilled Process water will be taken into the overhead tanks on the top floor.
- Chilled water and 98 % Sulphuric Acid from Acid Storage by means of three nos. of pumps will be taken into LAB, water & Acid Measure Vessels.
- The measuring vessels will be calibrated type for a particular capacity hold up and the excess material from all the Measuring Vessel will overflow back to the respective Storage Tanks.
- The correct measured quantity of all the raw materials from these measuring Vessels will be slowly added to the Reactor.
- With an exothermic reaction between the 98 % Sulphuric Acid, LAB and the chilled process water, a lot of heat will be generated and the and the reaction temperature will be controlled by using the Cooling Water from the cooling tower to be circulated in the jacketed reactor.
- The agitator is stopped after the reaction is completed and material is allowed to cool and settle. After some time, spent acid is separated first and allowed to settle further in the separators.
- One batch completion time is around 4-5 hours.
- The reacted finished product i.e.; 90% LABSA is finally removed from reactor and partially from separator to transfer by using pump and stored in the LABSA storage tank. From this tank, this can be loaded in a tanker or packed in the 50/200 kgs, drum for dispatch.

Chemical Reaction:

$$3H_2SO_4 + C_6H_5C_{12}H_{25} + 3H_2O \rightarrow C_6H_4SO_3.HC_{12}H_{25} + 2H_2SO_4 + 4H_2O$$

294 246 54 326 196 72

Material Balance of LABSA is shown in below **Fig. 3. 13.** Water Balance of LABSA is shown in below **Fig. 3.14.**

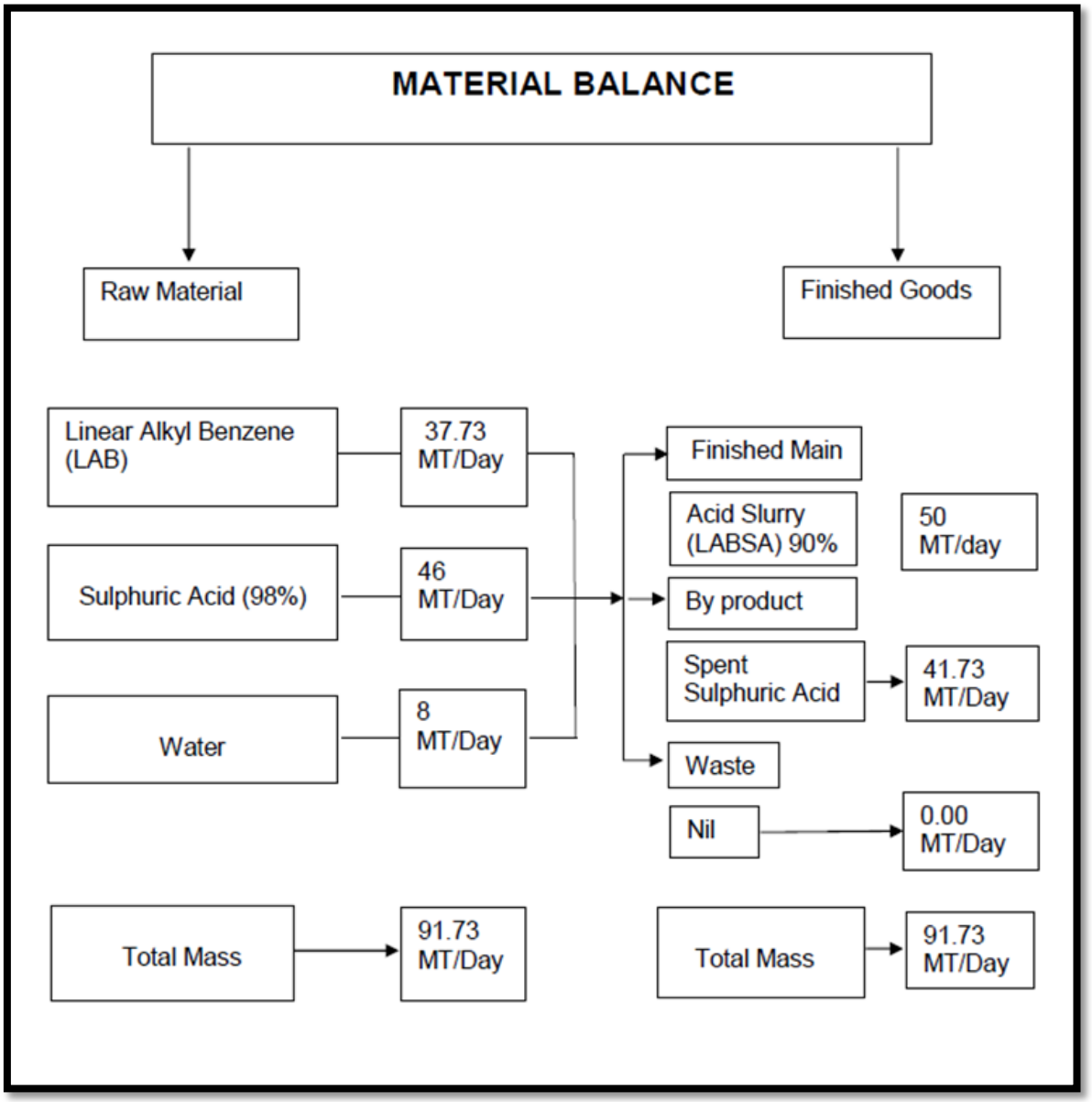


Fig. 3.13: Material Balance of LABSA

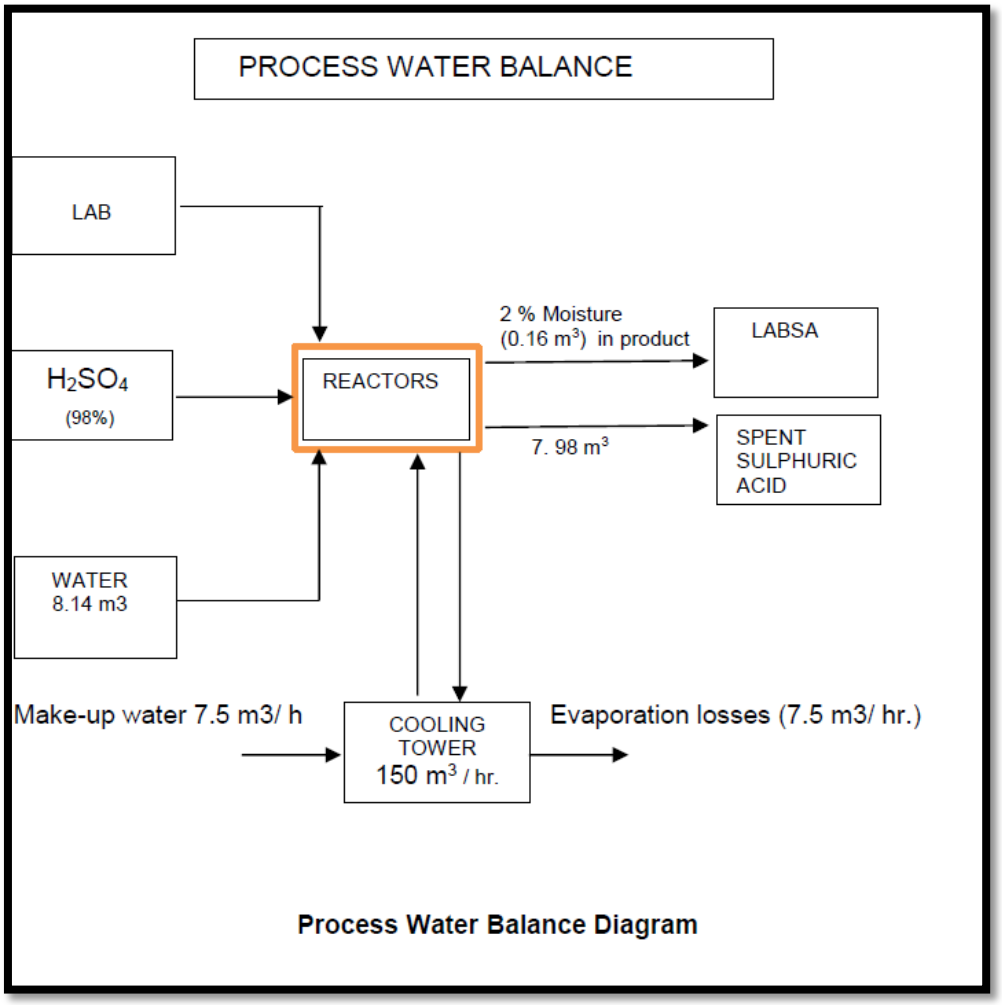


Fig. 3.14: Water Balance of LABSA

3.8 Raw Material Requirements:

S. N.	Product	Plant Cap. M.T. Per Day	Raw Material (Name)	Consumption Kgs. Per M.T.	Raw Material Req. per Day in Kgs	Raw Material Req. per Annum in Kgs (330 working Days)	Raw Material Req. Tons per Annum TPA (330 working Days)
1	Sulphuric Acid	150	Sulphur	330	49500	16335000	16335
2	SSP (Single Super Phosphate)	400	Rock Phosphate	540	216000	71280000	71280
			Sulphuric Acid	360	144000	47520000	47520
3	GSSP	400	Single Super Phosphate Powder	1000	400000	132000000	132000
4	LABSA (LINEAR ALKYL BENZENE SULPHONIC ACID)	50	LAB (LINEAR ALKYL BENZENE)	754.6	37730	12450900	12451
			Sulphuric Acid	920	46000	15180000	15180

3.9 Uses of Fertilizer:

In the modern farming, the use of fertilizers has become unavoidable to meet out food for Indian population. India is 80% dependent on farming. Indian farmers are fully aware of the importance of fertilizers for agricultural development.

3.10 Resource Optimization/ Recycling and Reuse

All possible efforts will be taken for resource optimization and recycling and reuse. Heat generated from the acid plant will be captured and power will be generated from it. Generated power will be used for the proposed plant activities. Treated water will be recycled and reused in the proposed plant activity.

3.11 Availability of Water, Its Source, Energy/ Power Requirement and Source

3.11.1 Water Requirement

Water requirement of the proposed project will be met from MIDC, Jalna. Proposed project site is situated in Additional MDC, Phase III of Jalna & water will be allotted by MIDC, Jalna. The total water requirement will be around 461 KLD. Water Consumption for Domestic purpose–17.0KLD, Green Belt Development–6.30KLD, Industrial Purpose –424.70KLD will be required. Water Requirement of the Proposed Project is given in below **Table 3.3.**

Table 3.3: Water Requirement of the Proposed Project

S.N.	Description	Quantity In KLD
1	Domestic Requirement	17.0
2	Industrial Requirement	424.70
3	Green Belt Requirement	6.30
4	Washing & Cleaning	8.0
5	Dust Suppression	5.0
	Total	**461.00**

3.11.2 Waste Water Treatment System

Total estimated generated waste water will be 31 KLD per day from proposed project activity. Generated waste water will be treated in effluent treatment plant. Effluent treatment plant of the capacity of 40 KLD (29.03% buffer capacity) will be proposed for treatment of generated waste water. Characteristics of Waste Water Streams is given in below **Table 3.4.**

Total Load to Effluent Treatment Plant (maximum): 31KL/Day

Design basis of wastewater treatment plant is as under

Effluent Quantity (maximum): 31 KL/Day

Effluent Treatment Plant Capacity: 40 KL/Day

Effluent Characteristics:

Characteristics of Waste Water Streams

Table3.4: Characteristics of Waste Water Streams

S. N.	Parameter	Stream 1	Stream 2	Stream 3	Stream 4
	Description	Filtration Plant Back Wash and Reject	Cooling Tower Blow Down	Boiler Blow Down	SA Plant Floor Wash
1	pH	6-7	7.5-8.5	9-10	2-4
2	Oil and Grease, mg/l	2	ND	ND	15
3	COD, mg/l	80	60	60	125
4	BOD_3, mg/l	25	20	20	40
5	Suspended Solids, mg/l	125	25	25	150
6	Total Dissolved Solids, mg/l	500	1200	1500	2000

Characteristics of Waste Water Streams

Table 3.5: Characteristics of Composite Stream

S. N.	Parameter	Composite Stream
1	pH	4.5-6.5
2	Oil and Grease, mg/l	7
3	COD, mg/l	60
4	BOD_3, mg/l	27
5	Suspended Solids, mg/l	85
6	Total Dissolved Solids, mg/l	1200

Description of Proposed Waste Water Treatment Plant

Composite effluent is slightly acidic in nature and since the nature of proposed industry is of inorganic chemical industry, the wastewater treatment plant will consists of physicochemical treatment units. The proposed wastewater treatment plant will consist of following unit operations.

1. Collection and neutralization
2. Separation of sludge generation by gravity settling
3. Sand filtration
4. Sludge drying

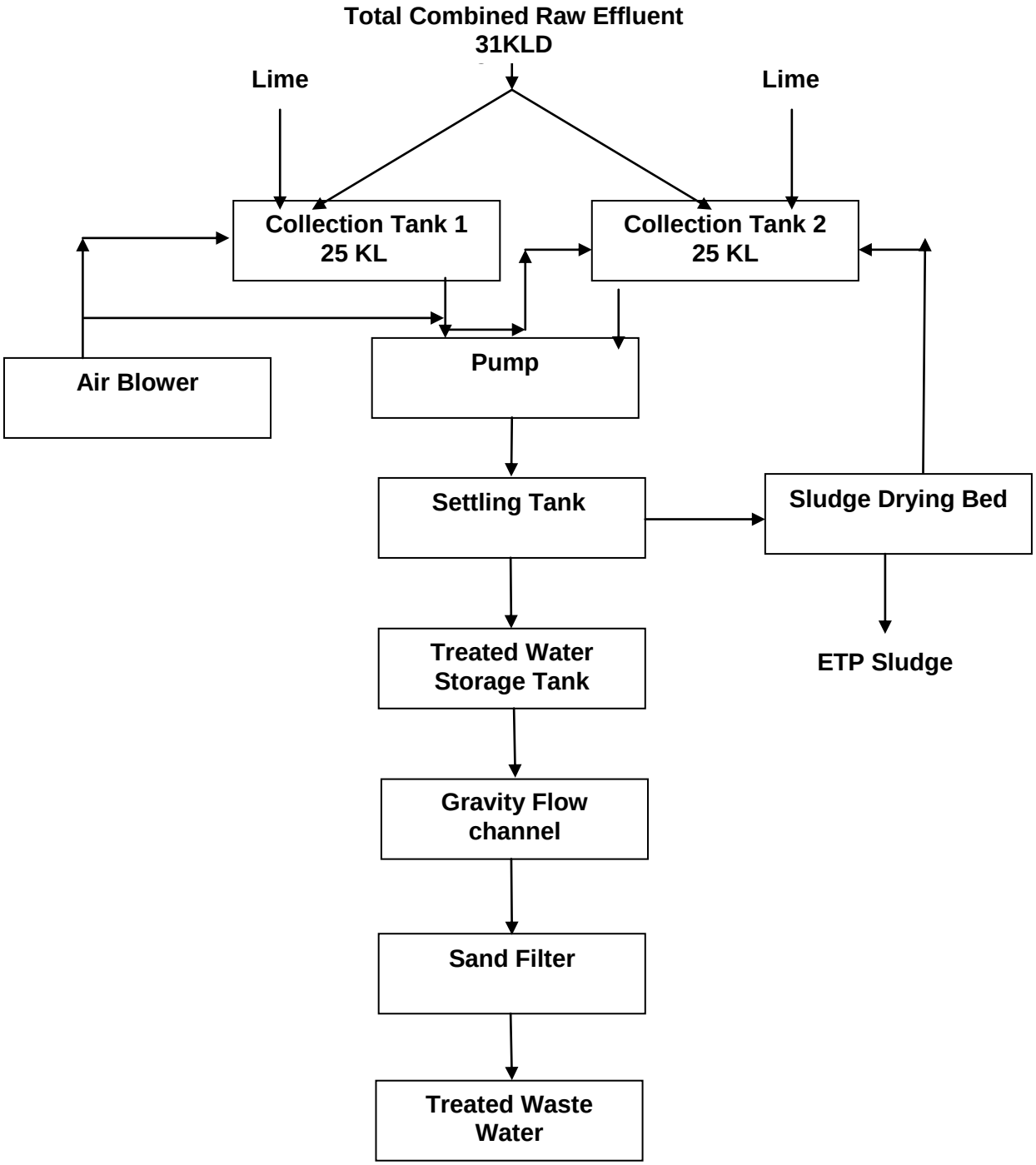
The block diagram of the proposed wastewater treatment plant i.e.; common ETP for SSP and SAP flow diagram is shown in below **Fig. 3. 15.**

Effluent Treatment Plant Capacity = 40 KLD (29.03% buffer capacity)

Total No. of ETP Proposed = 1 Nos.

Total Capacity of the ETP = 40

Fig. 3.15: COMMONETP FOR SSP AND SAP FLOW DIAGRAM



Raw effluent from the various section of the plant collected in underground RCC and AR tile lined collection tank. Such two tanks provided to operate plant in batch mode. In the same tank, lime solution or lime powder added to bring acidic pH of raw effluent to the neutral pH. Mixing in the tank and carried out by air agitation. After adequate mixing in collection tank, neutralized effluent transferred to settling tank. Here, precipitated sludge allowed to settle under gravity force. Neutralized effluent from collection tank is allowed to settle for minimum period of 8 hours. Settled sludge removed from the settling tank and transferred to sludge drying bed. Leachate generated from the sludge drying bed is again collected back into collection tank. Clear supernatant liquid from the settling tank is collected in treated waste water collection tank. From here, treated wastewater is passed through sand filter for removal of non-settleable suspended solids. After sand filtration, treated effluent can be reused within the plant or it can be used for on land irrigation. List of Major Equipment in Waste Water Treatment Plant is given in below **Table 3.6.**

Table 3.6: List of Major Equipment in Waste Water Treatment Plant

S.NO.	Equipment Name	Quantity	Specifications
1	Collection cum neutralization tank	2	Type: Underground RCC AR Tile lined tank Capacity: 15 KL, Each Mixing: By Compressed Air through Air Grid in each tank MOC: Tank: RCC AR Tile Lining Air Grid: HDPE
2	Neutral Effluent Transfer Pump	2	Type: Centrifugal Self Priming Non Clog pump Capacity: 15 m^3/hr., Each Head: 15 MLC Motor: 3 HP MOC: CI
3	Air Blower	2	Type: Centrifugal Type Air Blower Capacity: 100 m^3/hr Head: 3000 mm wcg Motor: 3 HP MOC: MS
4	Settling Tank	1	Type: Circular, Hopper Bottom Tank Capacity: 15KL MOC: RCC
5	Treated Water Collection tank	1	Type: Underground RCC Tank Capacity: 15 KL MOC: RCC
6	Sand Filter	1	Type: Down Flow Graded Sand Filter Capacity: 5 m^3/hr. Diameter: 1000 mm Height: 1500 mm Media: Graded Sand MOC: RCC with Epoxy Painting
7	Sludge Drying Bed	2	Type: Rectangular Masonry wall bed Dimension: 3 m x 3 m each Depth: 0.5 m Media: Graded Sand

			MOC: Wall: Brick Wall Bottom: PCC – Impervious

3.12 Water Management

The total water requirement is 461KLD. There are no chances for changes in quality of surface water or ground water as the proposed project is based on the concept of **"Zero Liquid Discharge".** Hence, neither the ground water table nor the general surface drainage pattern will be affected. No water will be discharged from the project site.

Following measures shall be taken:

PP will ensure that good quality potable water is provided for drinking purposes. Good sanitation facilities (toilets with septic tank followed by soak pits) will be provided and maintained for good hygienic conditions.

The spillages from fueling of machinery shall be avoided and in case of any spillage the same shall be handled properly. Likewise, the spent lubricating oils etc., shall be safely collected and properly disposed off.

3.12.1 Sewerage System

Domestic waste will be disposed in to septic tank followed by soak pit.

3.12.2 Solid Waste Management

STP sludge will be the solid waste generated from the proposed project activity which will be used as a manure for greenbelt development.

3.12.3 Industrial Waste Management

Spillage of H_2SO_4 on land will be controlled by provision of impervious flooring and floor washing will be recycled in scrubbing system. Industry has proposed plan for hazardous waste management as given below in **Table 3.7.**

Table 3.7: Solid Waste Generation and Treatment

Category of waste	Type of solid waste	Quantity	Treatment
26.2	ETP waste	195 kg/day	To approved TSDF site for secured land filling. Mostly Gypsum with free moisture
26.1	Process Waste Sludge (Sulfur Sludge)	37.5MT/Annum	To approved TSDF site for secured land filling. Sulfur content with other in organic impurities.
5.1	Spent/Used Oil	105 Lit/Year	MOEF Approved recyclers or Incineration.

33.3	Discarded Barrels/Liners/ Containers	270Nos./year	To approved recycler

Industry has proposed to provide sludge storage area for the storage of hazardous solid waste generated from the various source described above. The proposed hazardous waste storage area will be covered from side and top and will be provided with impervious layer at bottom with Leachate collection pit. The proposed dimension of hazardous waste storage yard area is 5 m x 3 m x 2 m (H).

3.13 Power Requirement

Total power requirement of the proposed project is 1135 KW/1336 KVA. Waste heat recovery boiler will be proposed at the project site which will capture steam from the acid plant and generate the power of 720 KW/847 KVA. It is proposed to buy additional power of 800 KW/1000 KVA from MSPDCL whose state grid connection of express feeder is available near the project site. DG set is also proposed of the capacity of 625 KVA. Power requirement in the proposed project for different products is given below in **Table 3.8.**

- Estimated Total Power Requirement: 1135 KW/1336 KVA
- **Source:** Maharashtra State Electricity Distribution Company Limited (MSEDCL)
- Waste Heat Recovery Boiler Power Generation: 720 KW/847 KVA
- Power from MSPDCL: 1000 KVA/1177 KVA
- DG set proposed: 1 x 625 KVA.

Table 3.8: Power Consumption of Different Products

S. N.	Plant	Power Required in KWh/MT	Grid connection required for each plant in KW	Power Generation in KW	Grid connection required in KW
1	LABSA Plant	12	25		800
2	ALUM Plant	12	25		
3	SSP Plant	27	500		
4	GSSP Plant	15	225		
5	Sulphuric Acid Plant	65	360		
6	Power Generation by waste heat recovery system from Acid Plant using Steam Turbine	--	--	720	
	Total (KW)		**1135**	**720**	**800**
	Total (KVA)		**1336**	**847**	**1000**

CHAPTER - 4
SITE ANALYSIS

4.1 Accessibility

Proposed project site is well accessible by developed road network of MIDC in its additional industrial area of Phase III in Jalna city. It is well connected by tar roads with other parts of the Jalna city.

4.2 Connectivity:

The area can be approached by:

i) National/ State Highway from project site:

- Aurangabad-Nagpur Road/Jalna-Aurangabad Road-1.50 km SW.
- Maharashtra State Highway -MSH-8/Kolkata Highway - 47.0 km NW

ii) Nearest Railway Station

Jalna railway station is at a distance of 8.06 km (SE) from the project site.

iii) Nearest Airport

Nearest Airport –Aurangabad Airport –46.0 km in West direction from project site.

iv) Nearest Sea Port

Mumbai sea port is at a distance of 330.70km (SW) from the project site.

4.3 Land form & Land Use

Proposed project site is located in Additional MIDC Phase III, Industrial Area, Jalna, Maharashtra. Existing land use pattern of proposed project site is non-agricultural and mainly used for the industrial activities. The environmental setting contains an idea on the environmental conditions/locations within the vicinity of the proposed project.

Environmental settings available surrounding of the proposed project site is mentioned in table 4.1:

S.No.	Particulars	Description
1	Forest & Marine Sanctuary	There is no forest & Marine Sanctuary within 10kms. radius of proposed project site.
2	Stream/Rivers	Kundalika River – 5.00 km NW Ghanewadi Nala - 3.00 km NE Sina River - 3.50 km SE
3	Sea	Mumbai sea port is at a distance of 330.70km (SW)
4	Hill/Mountain	There is no Hill /Mountain within 10 kms. radius of proposed project site
6	Villages	• Nagewadi Village is at 1.0 km in SW direction • Khadgaon Village is at 2.6 kms in NW direction. • Chandanzira Village is at 2.5 kms in SE direction.

		Dwalwadi Village is at 3.0 kms in SW direction
7	Historical, religious and other important cultural places	None

4.4 Topography

Jalna district is approximately situated at the center part of the Maharashtra state and in northern direction Marathwada region. The entire district is occupied by basaltic lava flows of the Deccan traps of upper cretaceous to Eocene age. The lava flows are piled over one another. The individual flow thickness ranges between 20 to 30 m. The lower part of the lava flows forms the massive basalt and often called as massive trap. Alluvial deposits along the major rivers overlie the Deccan traps. The alluvium consists of clay, silt and sand. The thickness ranges between 10 to 20 m. It is mostly flat terrain in the area of the MIDC and its surrounding land.

4.5 Soil Classification

Proposed project site is located in MIDC Phase III, Industrial Area, Jalna, Maharashtra, Notified industrial area, where land is already developed for industrial purpose. Quality of soil is not considerably fertile for agriculture activities and no evidence of any influence of soil contaminant has been noticed.

4.6 Climatic data from secondary sources

Proposed project site is fall under Seismic Zone–II which is Low Damage Risk Zone.

The district has a sub-Tropical climate, in which the bulk of rainfall is received from the southwest monsoon, between June to September. The average annual rainfall of the district ranges between 650 to 750 mm. The district often experiences drought with rainfall recording as low as 400 to 450 mm.

The rainy season is followed by Winter, which last up to February, during which the minimum temperature ranges between 9 to 10 ^{o}C and maximum temperature ranges between 30 -31 ^{o}C. The winter is followed by hot summer, which continues up to June. The maximum day temperature ranges between 42 & 43 ^{o}C during summer.

CHAPTER-5
PLANNING BRIEF

M/s Rajureshwar Industries Private Limited proposed to set up manufacturing plant for chemical fertilizers viz. Single Super Phosphate (SSP), Granulated Single Super Phosphate (GSSP), Sulphuric Acid & LABSA at Plot No.: C-2/2, Additional MIDC Phase -III, Industrial Area, Jalna, Tehsil & Dist.: Jalna, Maharashtra. The proposed project will be started after getting Environmental Clearance from EAC, Consent to Operate from MSPCB and other statutory clearances required. Proposed project activities will take care of all the rules and regulation of statutory authority and provide the control measure and devices to achieve the standard norms.

5.1 Population Projection

About 100 Nos. of skilled and semi-skilled construction workers will get direct employment during construction phase while 80 nos. of technical personal and other contract workmen will get direct or indirect employment after commissioning of proposed project.

5.2 Land use planning

The project is located in 4.5Ha./45,000 sq.m area which is a notified industrial area. Land use indicating the area likely to be developed by project set up, roads, workshops, processing, plant facilities etc. There will be no change in land use as the provided land is already meant for industrial use. 35 % i.e 1.57 ha of total land area will be used for Greenbelt as per MSPCB and CPCB guidelines.

5.3 Amenities / Facilities

All amenities/facilities required to develop greenfield project is available in proposed site as well as nearby town i.e. at Jalna.

CHAPTER-6
PROPOSED INFRASTRUCTURE

6.1 Assessment of Infrastructure Demand (Physical & Social)

On the basis of the preliminary site visit, the infrastructure demand in the villages was assessed on the basis of need and priority.

6.2 Amenities/Facilities

First aid box and drinking water facility will be made available at the project site. Rest shelter will be provided at the project site. Administration office and other statutory constructions like rest shelter, first aid, work shed and drinking water as required in the project site area will be provided. Drinking water will be made available to the workers and initially by the water tankers from the Jalna city.

6.3 Proposed Infrastructure

6.3.1 Residential Area (Non-Processing Area)

As the local persons of surrounding villages will be given manpower, no residential area/ housing is proposed within the project site.

6.3.2 Greenbelt Development

Total project site area is 4.5 Ha./45,000 sq. m from which 35% that is 1.57 Ha./15,696 sq. m area will be developed as a greenbelt within the project site area. Local and native trees such as Neem, Jamun, Karanj, Kadamb, Ashoka, Mango etc. will be preferred for plantation within the project site. Causalities of the planted saplings will be replaced every year in the monsoon season.1500 nos. of saplings will be planted per hectare as per CPCB guidelines. Total 2,355 no. of saplings will be planted at the project site. All selected species will be big, shady and canopy in nature which will arrest dispersed dust within the project site area and will act as a barrier for generated noise. Estimated budget for the development of the proposed greenbelt will be Rs. 11.78 Lakhs as a Capital Cost & Rs. 2.00 Lakhs as a Recurring Cost. Total estimated amount for the development of greenbelt will be Rs. 13.78 Lakhs.

CHAPTER -7

REHABILITATION AND RESETTLEMENT (R&R) PLAN

Proposed project activities will be carried out in Additional MIDC Phase -III, Industrial Area, Jalna, Maharashtra, which is developed for industrial purpose and there is no population or local inhabitant at the proposed project site. Thus Rehabilitation & Resettlement (R&R) Plan is not applicable to proposed project.

CHAPTER-8

PROJECT SCHEDULE AND PROJECT COST

8.1 Project Schedule and Project Cost

Proposed project is expected to be completed in the period of 36 months (3 Years) from the zero date i.e.; after obtaining statutory clearances like Environmental Clearance (EC) & Consent to Establish (CTE).

Project cost for achieving proposed production is Rs. 40.23 Crore/ 4023 Lakhs. Breakup of the project cost is given in below:

Table 8.1: Cost of the Proposed Project

S. N.	**Particulars**	Amount (Rs. in Lakhs)
1	Land	403.00
2	Building & Civil Construction	700.00
3	Plant & Machinery	2900.00
4	Furniture & Fixtures	20.00
5	Any other movable/immovable Fixed Assets	0.00
	Total	**4023.00**

CHAPTER-9

ANALYSIS OF PROPOSAL (FINAL RECOMMENDATIONS)

9.1 Financial and Social Benefits with Special Emphasis on the Benefit to the Local People Including Tribal Population, If Any, In the Area.

The project involves production of chemical fertilizer. This project will meet the requirement of local and surrounding markets of chemical fertilizers. It will increase the district and state revenue through royalties & taxes. There is total four products that are proposed to produce in chemical fertilizer plant i.e. Single Super Phosphate (SSP), Granulated Single Super Phosphate (GSSP), Sulphuric Acid & Labsa. These products are useful in farming and agriculture sector to increase the production of crops. Potassium Sulphate is a used as Chemical Fertilizer. It provides potash to plants, which is one of the three basic nutrients required by all plants. It has got advantage over other source of Potash i.e.; Murate of Potash (i.e.; KCl – Potassium Chloride). Plants require less water if we use of Potassium Sulphate as a Source of Potash. Due to above reason, use of this fertilizer is preferred in the areas where water is scare. Magnesium Sulphate is a white, fine crystalline powder. It is prime micro nutrient for plants. This micro-nutrient is primarily used in maintaining normal health and increased yields, The Magnesium Sulphate is applied directly to the crops such as cereals, pulses, oilseeds, cotton, sugarcane, vegetables, fruits, potato and many more.

It will provide employment to local peoples & their livelihood will be improved as they will get good earning source for their family. Other works also will be carried out as per the people demand & their requirement.

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