PRE-FEASIBILITY REPORT

FOR

NEW UNIT

OF

MANUFACTURING OF MANGANESE OXIDE, MANGANESE DIOXIDE AND FERRO ALLOY UNIT

AT C/156,MIDC BUTIBORI, DISTRICT NAGPUR, (M.S.)

M/s. SINGH FERRO ALLOYS

EIA Consultant: Pollution and Ecology Control Services (PECS), Nagpur (MS).

1.0 INTRODUCTION

1.1 PREAMBLE:

Ferroalloy refers to various alloy of iron with a high proportion of one or more other elements such as manganese, aluminum, or silicon. They are used in the production of steels and alloys. The alloy impart distinctive qualities to steel and cast iron or serve important functions during production and are, therefore, closely associated with the iron and steel industry, the leading consumer of ferroalloys. The leading ferroalloy-producing countries in 2008 were China, South Africa, Russia, Kazakhstan and Ukraine, which accounted for 77% of the world production. World production of bulk chromium, manganese and silicon ferroalloys was estimated as 29.1 million tonnes (MT) in 2008, a 3% decrease compared with 2007.

Ferro-alloys are among the essential inputs required for steelmaking. It improves the quality of steel, by controlling the harmful impurities and at the same time improves the mechanical properties of steel through alloying. Growth in Global as well as domestic steel industry directly drives the demand of Ferro-alloys. Since Indian steel industry is under massive expansion, there is a tremendous potential for investment in Ferro-alloy production.

1.2 PROJECT DESCRIPTION:

The production details of the proposed project are given below

Sr. No.	Name	Proposed
1.	Manganese oxide	1000 MTPA
2.	Manganese dioxide	1000 MTPA
By Thermite Process		
3.	Ferro Titanium **OR**	600 MTPA
4.	Low/medium carbon ferro manganese **OR**	1200 MTPA
5.	Ferro molybdenum **OR**	250 MTPA
6.	Ferro vanadium **OR**	250 MTPA
7.	Medium Carbon ferro manganese	1200 MTPA

The products are produced from highly acclaimed raw materials sourced from different corners of the domestic market. Located at a strategic location in the country, they procure the raw material from the nearby mines and also procure raw material from international markets.

SITE DESCRIPTION:

The plant of M\s. Singh Ferro Alloys is established to manufacture and process Manganese oxide, Manganese Dioxide and various Ferro Alloys. The factory is located 27 kms away from Nagpur city, at Plot No. C/156, MIDC Butibori, District Nagpur, (M.S.). The latitude and longitude of the proposed project are 20°56'45.91"N and 78°56'49.35"E respectively.

SITE LOCATION:

The factory is 27Kms from Nagpur The factory is in Buti Bori Industrial Area Plot no. C/156, Taluka: Hingna, District Nagpur. It is easily accessible throughout the year from Nagpur by Road, Nearest Railway Station and Airport of Nagpur.. It enables the speedy and convenient movement of our goods.

- The railway siding is only 8 K.m. away from the factory side
- Nearest Airport is Dr. Babasaheb Ambedkar Airport, Nagpur is27 kms away.

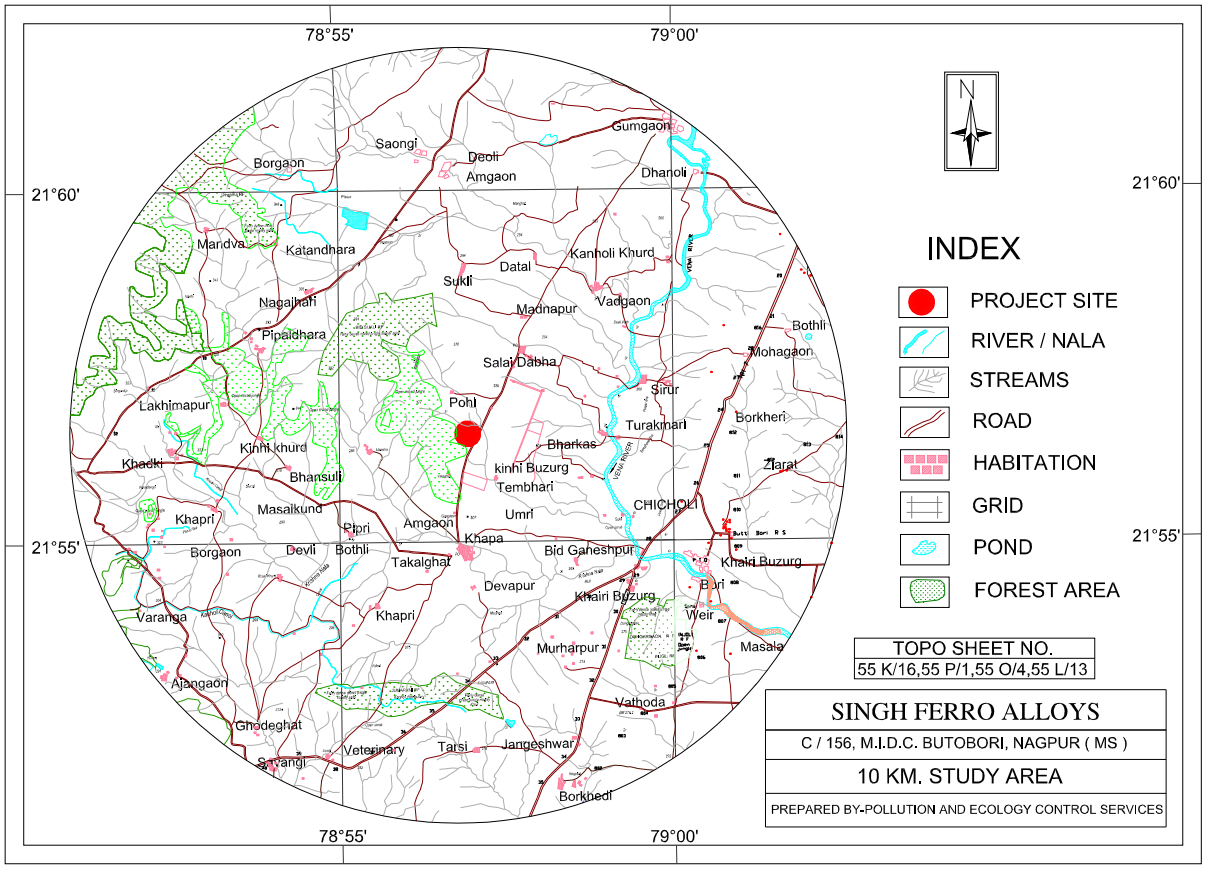

Figure 1: Study Area

SOURCE & AVAILABILITY OF WATER:

Water will be sourced from MIDC Butibori and the total water requirement will be 5 KLD.

POLLUTION CONTROL MEASURES:

The pollutants in the form of solids, liquids and gases are generated from various technological units and, if let out as such, will have hazardous effects on the environment. Pollution of the environment, not only adversely affects the flora and fauna, but also shortens the life of plant and equipment. This vital aspect, therefore, has been taken into account while planning the plant and equipment and adequate measures have been proposed to limit the emission pollutants within the stipulations of statutory norms.

- During construction only domestic waste shall be generate and will get treat in septic tank.
- Dust will be generated during transportation, storing of raw material and construction activities. The dust emission shall be mitigated by water spraying on the roads within the plant premises.
- Domestic / sewage effluent shall be sent to septic tank followed by soak pit.

2.1 INTODUCTION OF THE PROJECT AND BACKGROUND OF PROJECT PROPONENT

Identification of the project and project proponent:

The head office of Singh Ferro Alloys is at Nagpur (Maharashtra), the production processes will be carried out at there well equipped unit in MIDC Industrial area Butibori Nagpur. The incorporation of latest technology and machines enables them to meet the upcoming production requirements and growing market needs.

The company will be incorporated with the following main objects:-

- To Manufacture, Buy, Sell Exchange, Export, Import, Mining, & Building Construction.
- To carry on the business of manufacturer, Processors, Importers, Exporters and Dealers in all kinds of Ferro Alloys, such as Low, Medium, High Carbon, Ferro Manganese, Ferro Mollybdenum, Vanadium, Ferro Aluminum and other kinds of Ferro Alloys.
- To carry on the business of manufacturer, processors, Importers, Exporters and Dealers in all kinds of Ferrous and Non Ferrous metals meant for any industrial and non Industrial use whatsoever and to carry on the business in cold or hot rolling, re-rolling, Slitting, Edge Mining, Sheeting, Stamping, Dressing, Extruding, Forging, Drying, Flatting, straightening, Heat Treatment of all kinds of steel and other metals or any other kinds of strips, foils, tapes wire rods, plates and any other section shapes or form. Manufacturer, Processors, Importers, Exporters and Dealers.

The satellite image showing project site is given below in figure no. 2.

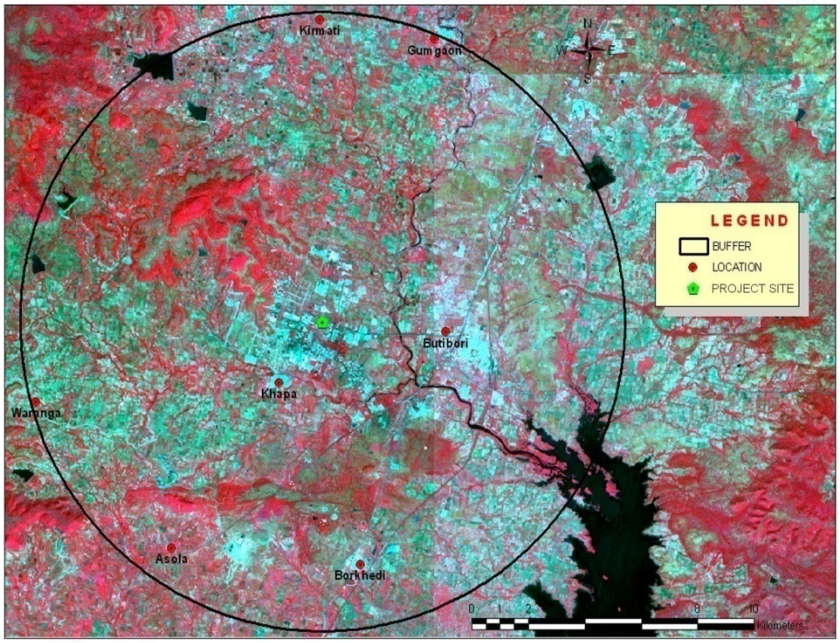

Figure 2 : Satellite Image

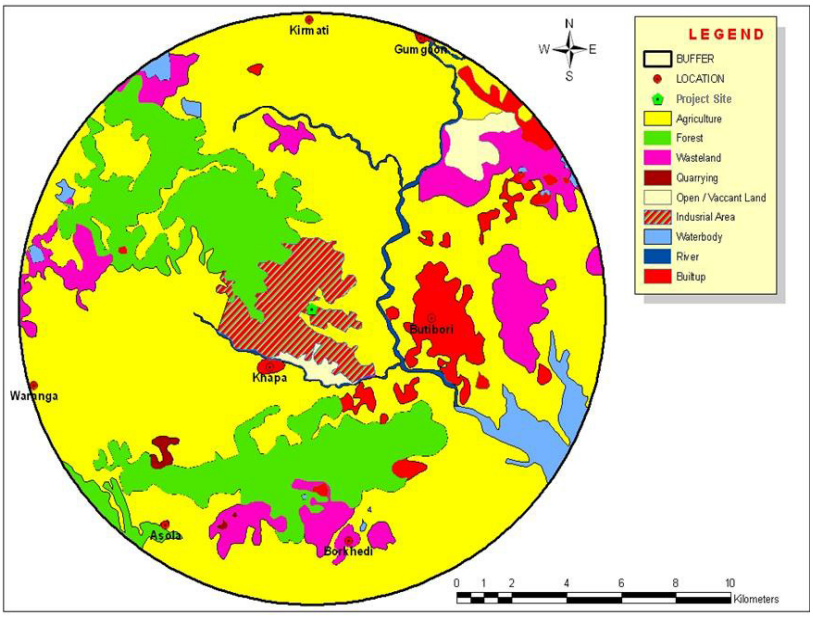

Figure 3: Land Use

2.2 JUSTIFICATION :

The ferroalloy industry is associated with the iron and steel industries, its largest customers. Ferroalloys impart distinctive qualities to steel and cast iron and serve important functions during iron and steel production cycles. The principal ferroalloys are those of chromium, manganese, and silicon. Chromium provides corrosion resistance to stainless steels. Manganese is essential to counteract the harmful effects of sulfur in the production of virtually all steels and cast iron. Silicon is used primarily for deoxidation in steel and as an alloying agent in cast iron. Boron, cobalt, columbium, copper, molybdenum, nickel, phosphorus, titanium, tungsten, vanadium, zirconium, and the rare earths impart specific characteristics and are usually added as ferroalloys.

United States ferroalloy production in 1989 was approximately 894,000 megagrams (Mg) (985,000 tons), substantially less than shipments in 1975 of approximately 1,603,000 megagrams (1,770,000 tons). In 1989, ferroalloys were produced in the U. S. by 28 companies, although 5 of those produced only ferro-phosphorous as a byproduct of elemental phosphorous production.

2.3 EMPLOYMENT GENERATION (DIRECT & INDIRECT):

The proposed project creates direct indirect employment to 40 people.

3.0 PROJECT AT GLANCE

1. Name of the proposed unit : M/s. Singh Ferro Alloys.

2. Location of the proposed unit : AT C/156, MIDC Butibori, District Nagpur, (M.S.)

3. Products to be manufactured:

Sr. No.	Name	Proposed
1.	Manganese oxide	1000 MTPA
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7.		1200 MTPA

4. Raw Material Requirement :

Sr. No.	Raw Material	Quantity MT/Year
1.	Manganese Ore	3000 MTPA
2.	Coal / Charcoal	500 MTPA

Sr. No.	Raw material	Quantity required (TPA)			
		Low /medium carbon Fe-Mn	Fe - V	Fe - Mb	Fe - Ti
1.	Manganese Ore	**1250 MT**	-	-	-
2.	Ilmenite Sand	-	-	-	**350 MT**
3.	Silico Manganese	**500 MT**	-	-	-
4.	Aluminum Powder	**50 MT**	**60 MT**	**60 MT**	**190 MT**
5.	Aluminum Scrap	**200 MT**	**40 MT**	**40 MT**	-
6.	Steel / Iron Scrap	-	-	**10 MT**	**10 MT**
7.	Molybdenum Concentrate	-	-	**130 MT**	-
8.	Flourspur,	-	**10 MT**	**5 MT**	**5 MT**
9.	Rutile / Zirconium,	-	-	-	**50 MT**
10.	Titanium Scrap,	-	-	-	**40 MT**
11.	Limestone Powder,	**200 MT**	**10 MT**	**5 MT**	**40 MT**
12.	Titanium Dioxide,	-	-	-	**5 MT**

5. POWER REQUIREMENT:

The power required will be supplied by State Electricity Board. The power requirement for the proposed project will be 125HP.

6. Land Requirement:

The land required for the proposed project is 600 sq mt. A Shed of 250 sq mt is already constructed by MIDC.

7. Layout Plan:

The site layout plan is given below in figure no. 4.

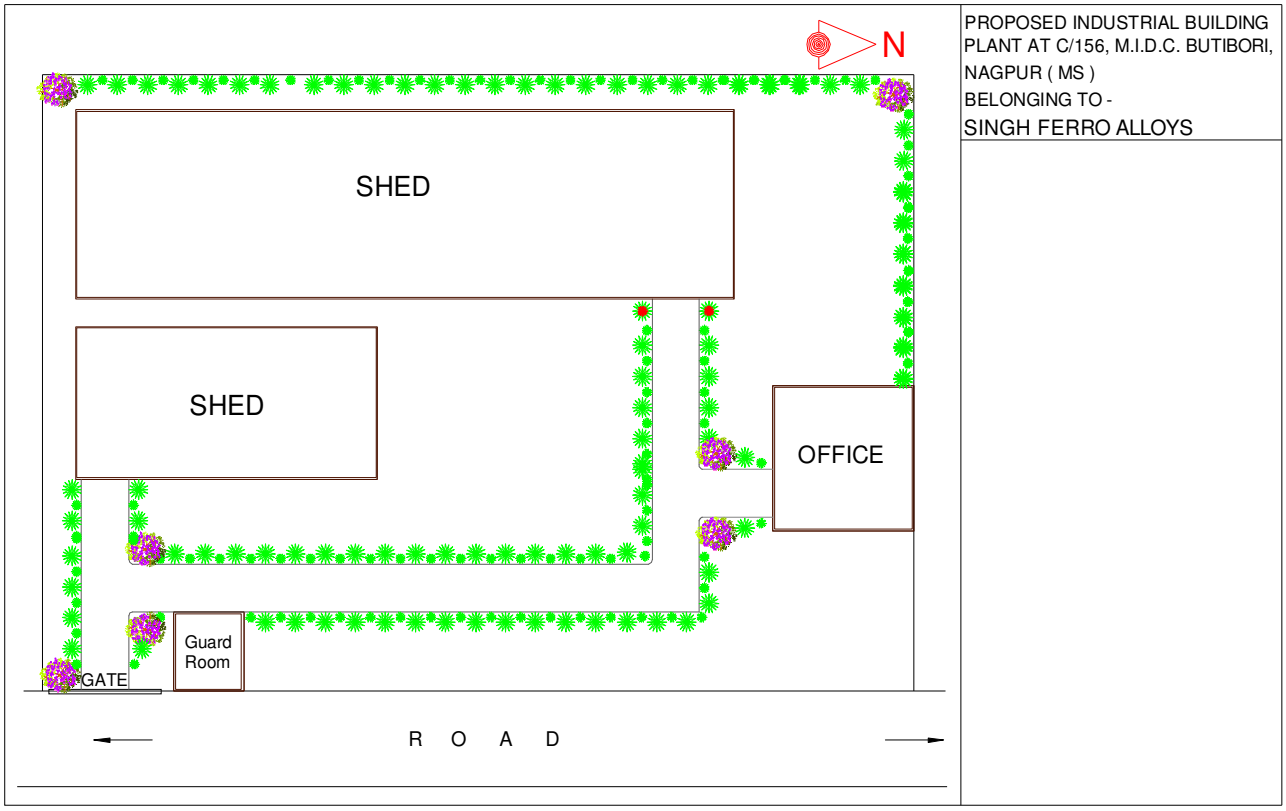


Figure 2: Layout Plan

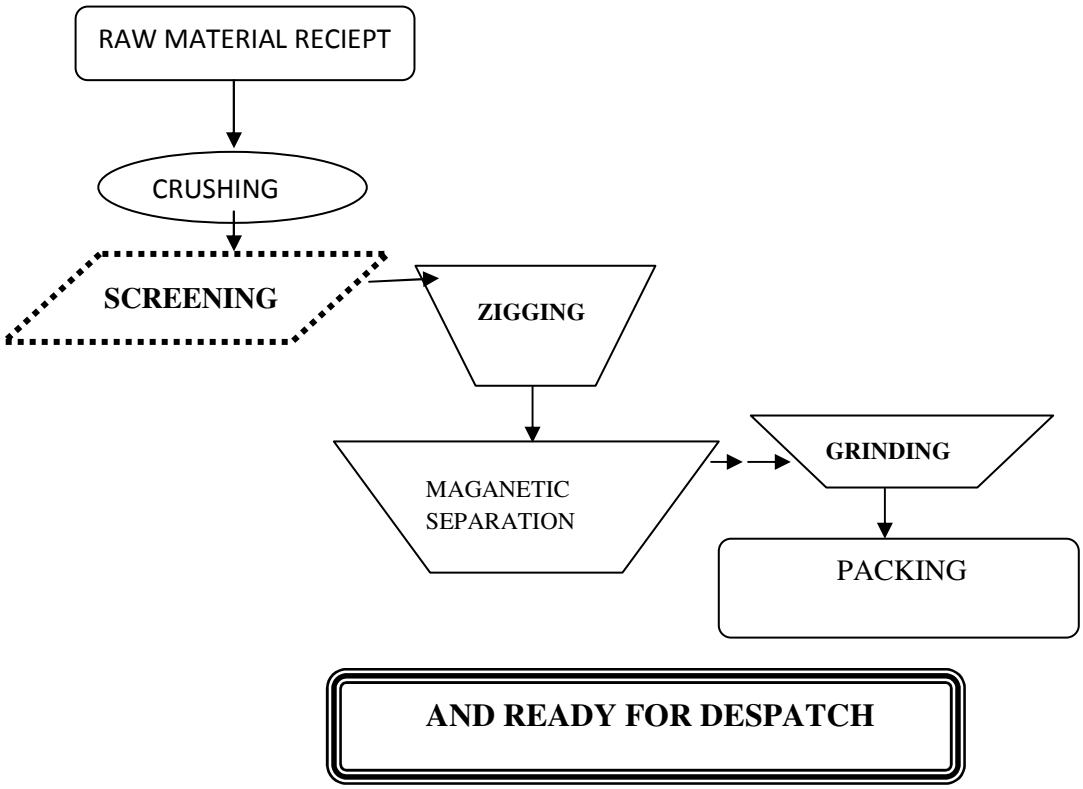
3.1 PROCESS DETAILS

MANUFACTURING PROCESS OF MANGAESE DIOXIDE

After receipt of material it is tested for its impurities. After getting full information's about its impurities following processes are followed to remove impurities and improve the purity of Manganese Ore.

- **Screening:** The material is screened so that uniform sizes are obtained for further process.
- **Zigging:** Water jigging is done to separate and wash impurities.
- **Magnetization:** Different sizes of MnO_2 ore are feed to magnet where unwanted impurities get removed.

PROCESS FLOW CHART OF MnO_2 PRODUCTION



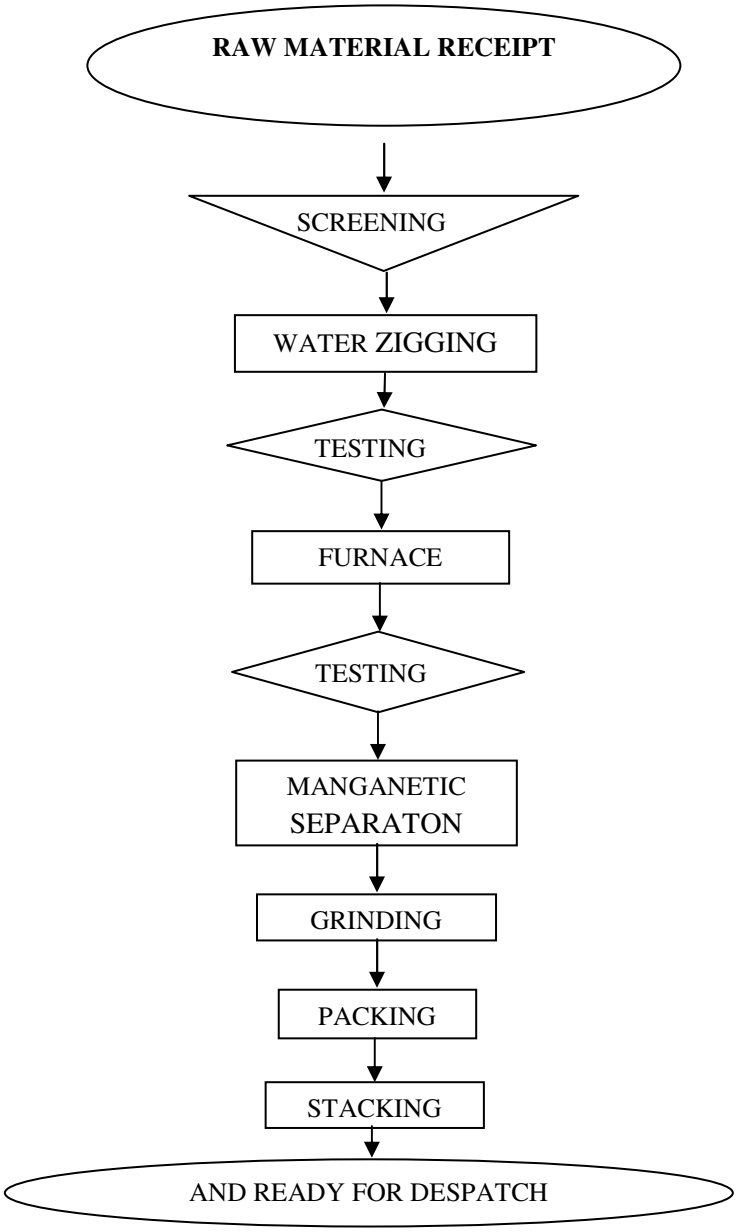
MANUFACTURING PROCESS OF MANGANESE OXIDE

(A) After Raw Material receipt at the site it is tested for the contents of various elements and then the material is screened. After screening you get different sizes, which are jigged in automatic water jigging.

(B) Then the material is dried and after Magnetic Separation it is feed to grinding Machine, where it is powdered in the required mesh size.

(C) After grinding it is semi automatically packed in 25 kg/50 kg/ or 1000 kg HDPE Bags and kept ready for dispatch.

PROCESS FLOW CHART OF MnO PRODUCTION



FERRO ALLOYS / AND OTHER NOBLE FERRO ALLOYS

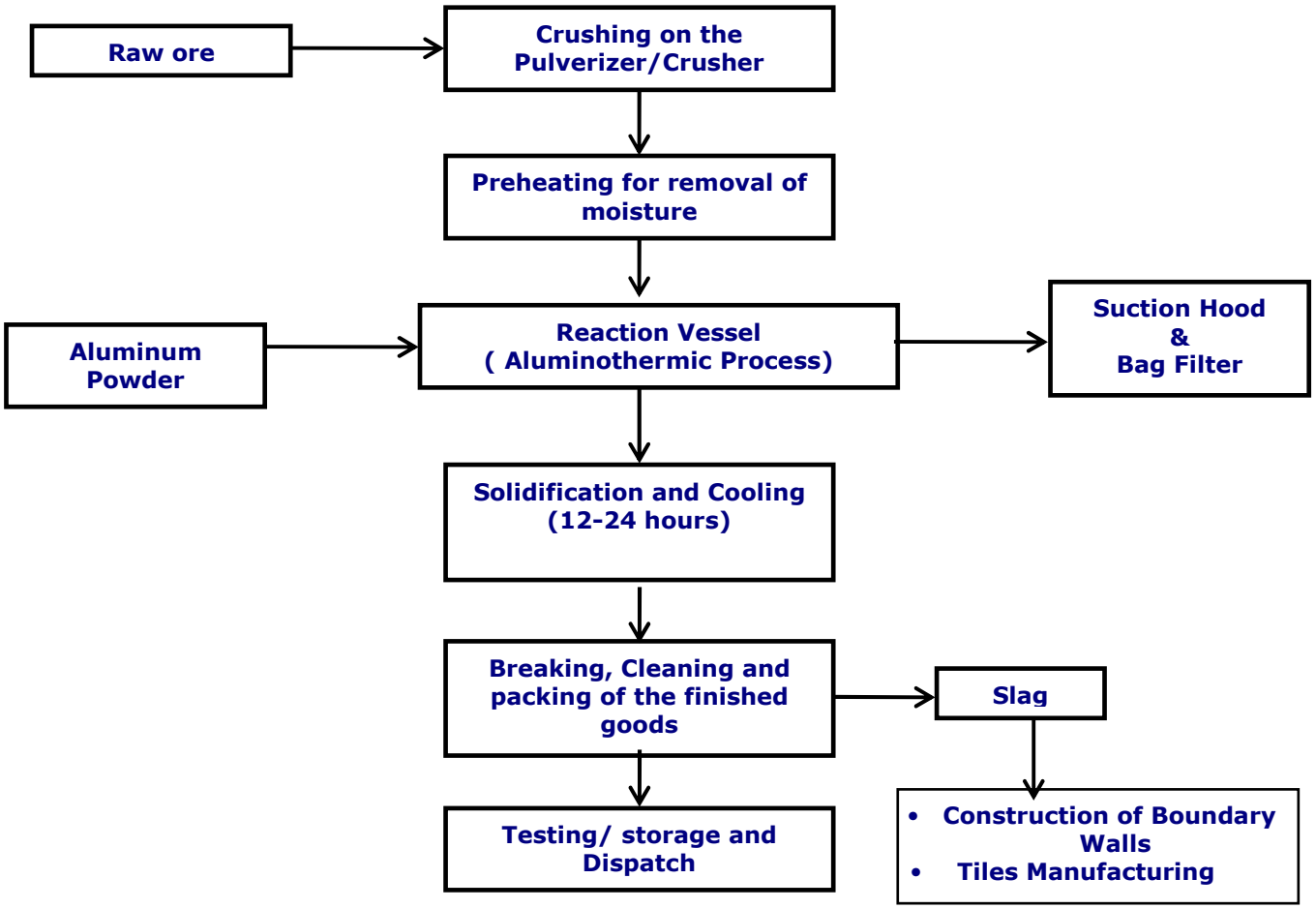
TERMITE PROCESS

Manufacturing of Ferro Alloys through Termite Process is very easy and simple.

Following activities are carried on:

(a) Powdering of different Alloys / Minerals.
(b) Mixing in blender in the required proposition
(c) Then a small fire is created (By aluminum powder) in the reaction vessel, where this blended material is added slowly. The powder starts melting inside the vessel and the Metallic contents are automatically separated which settles down and the sludge floats.
(d) Metal and Sludge are separated by manual processes.
(e) Metal is crushed and for some customer it is powdered in Pulveriser.
(f) The Metal is crushed and packed in bags and kept ready for dispatches.

PROCESS FLOW CHART



4.0 SELECTION OF SITE & LOCATION OF PLANT

Selection of the site for any project is the most important aspect for it's successful operation & better economic viability. Proximity to Raw material source, assured supply of fuel and other infrastructural support are required to be essentially examined while selecting the site of the plant. The following basic requirements are necessarily required to be fulfilled.

i. Easy & nearer access to Raw Material such as Ores, Coke etc.

ii. Availability of water from continuous source.

iii. Power supply/ evacuation arrangement.

iv. Nearer access through road.

4.1 LOCATION:

The factory of M/s. Singh Ferro Alloys. Ltd. is located 27 kms away from Nagpur city, at C/156, MIDC Butibori, District Nagpur, Maharashtra

4.2 TYPE OF THE PROJECT:

The proposed Project involves manufacturing of Manganese oxide, Manganese Dioxide and installation of new unit to manufacture various Ferro Alloys along with following activities:

- Feed/Industrial Grade Manganese Oxide (MnO)
- Manganese Dioxide
- Low/Medium Carbon Ferro Manganese
- Ferro Aluminum, Ferro Titanium, Ferro Molybdenum, Ferro Vanadium

4.3 SITE ANALYSIS

LAND USE

The existing land is industrial land.

TOPOGRAPHY

The topography of the land is plain.

EXISTING LAND USE PATTERN

The existing land is industrial land.

EXISTING INFRASTRUCTURE

All required infrastructure is prevailing in the site.

GREEN BELT

33% of total land Green belt will be developed as green belt.

SOCIAL INFRASTRUCTURE

Social infrastructure will be developed as per need based in the Villages

4.4 Availability of Utilities

For successful running of any unit most important factor is the availability of Raw Materials, as well as Utilities & Power, Water Connectivity which are required to efficiently run the Equipment.

5.0 Water System & Plant Utilities:

5.1 Source of Water

Water required for the plant will be sourced from MIDC Butibori.

5.2 Water Consumption

Make up water requirement for the project will be about 5 KLD for the process.

5.3 Fire Protection System

The fire fighting system will be designed in conformity with the recommendations of the Tariff Advisory Committee (TAC) of Insurance Association of India. While designing the fire protection systems for proposed facilities its extreme ambient conditions need special attention. Codes and Standards of National Fire Protection Association (NFPA) will be followed, as applicable.

6.0 ENVIRONEMENTAL MANAGEMENT PLAN

6.1 Sources of Pollution

The major sources of pollution from proposed units can be classified under the following heads:

- Pollutants in the waste gases namely, suspended particulate matter (SPM), sulphur dioxide, NO_X and Carbon monoxide, etc.
- Fugitive dust generated during vehicular movement
- Noise pollution
- Waste water and sewage
- Solid Waste Generation

The various measures proposed to mitigate the impact of these pollution sources on the environment are discussed below:

6.2 Pollution Control Measures

6.2.1 Air Pollution

Proper care will be taken by installing Bag filters followed by Stack to control source emission. Hence there will not be any major deposition of pollutants into air, land and water.

To control fugitive dust emissions due to vehicular movement water sprinkling and spraying system will be installed. Internal roads will be asphalted.

6.2.2 Water Pollution

It is estimated that total effluent generation from the proposed installation will be from zigging and air pollution control systems and as domestic effluent. The effluent from zigging and air pollution control systems will be treated in sedimentation tank and will be reused in the process.

Sewage Line is provided by MIDC dept

Zero discharge condition from the proposed plant will be maintained.

6.2.3 Noise Pollution

There will no such high noise generate due to operation of proposed units, however Noise generation may occur due to handling of raw materials and finished products. For that Ear plugs/ ear muff will be provided to the workers working in noisy area.

6.2.4 Solid Waste Management

Following are the solid waste generation due to operation of proposed units:

b. Slag from Ferro Alloys

Disposal of Slag from Ferro Alloys:

Slag generated from manufacturing of Ferro manganese will be sold to manufacturer of Silico-manganese.

6.2.6 Plantation

Apart from the aforesaid pollution control measures the Company has already planted 10,000 no. of trees and proposed to plant 20,000 no. of trees in and around the premises. During plantation landscaping pattern will be considered. The plantation scheme covers the plantation of ornamentals plants and some local fruit bearing species.

Selection Criteria of plant species for Green Development Plant

The selection of plant species for the development depends on various factors such as climate, elevation and soil. Area falls under the tropical region and thus the plants that area adapted to this condition should be selected. The plant should exhibit following characteristics in order to be selected for plantation.

1. The species should be fast growing and providing optimum penetrability.

2. The species should be wind firm and deep rooted

3. The species should form a dense canopy.

4. As far as possible, the species should be indigenous and locally available

5. Species tolerance to air pollutants like SPM, SO_2, and NO_x should be preferred.

6. The species should be permeable to help create air turbulence and mixing within the belt.

7. There should be no large gaps for the air to spill through.

8. Tree with high foliage density, leaves with larger leaf area and hairy on both the surface.

9. Ability to withstand conditions like inundation and drought.

10. Soil improving plants (Nitrogen fixing, rapidly decomposable leaf litter).

11. Attractive appearance with good flowering and fruit bearing.

12. Bird and insect attracting tree spacing.