

Executive Summary

of

EIA/EMP for Manufacturing of Manganese oxide & Ferro Alloys (By Thermite Process)

Proponent

M/s. Janakiji Minerals

Plot No. A-2, MIDC Area Goregaon, Tahsil Goregaon, District-Gondia, Maharashtra

By

Pollution & Ecology Control Services
NAGPUR

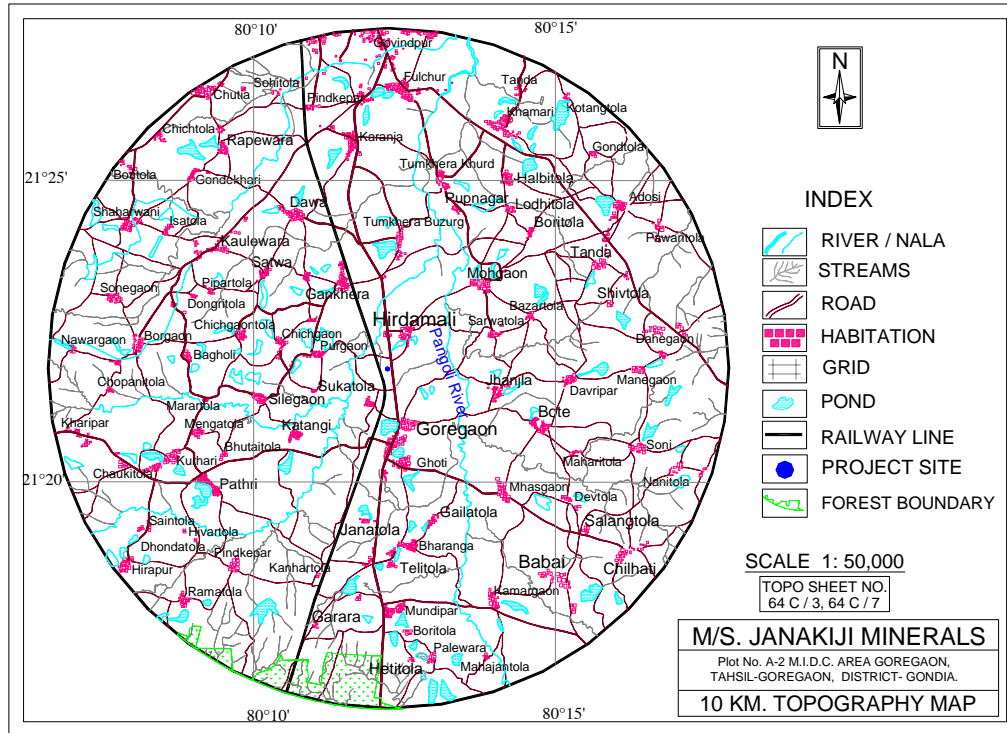
EXECUTIVE SUMMARY

1. Project Name and Location

The factory “M/s. Janakiji Minerals” was established on 17/06/2016 whose Registered Office is at – Asati Dharamkata Chowk, Lanji Road, Amgaon, Dist. Gondia has been registered with the small-scale industry, registered with (Udhyog Adhar) having registration UAN No. MH1 1A0023752 with main object to be pursued by the factory is Trading, Processing and Manufacturing unit of Manganese Ore/Powder, Manganese Dioxide Powder in first phase and shortly going to start processing & manufacturing of Manganese Oxide and Ferro Alloys (Thermite Process) Ferro Manganese Medium Carbon & Low Carbon, Ferro Titanium, Ferro Vanadium, Ferro Molybdenum in Second phase. The present and proposed– manufacturing facility of the Company is situated over 0.36 Ha area at Plot No. A-2 M.I.D.C. Area Goregaon, Tahsil-Goregaon, District- Gondia, Maharashtra.

The proposed project is manufacturing of Manganese Oxide and Ferro Alloys (By Thermite Process) at Plot No. A-2 M.I.D.C. Area Goregaon, Tahsil-Goregaon, District-Gondia, Maharashtra. Coal shall be used as a reducing agent for Conversion of Manganese Ore to Manganese Oxide.

The topographical map is shown in the Figure below:



Source: SOI Toposheet

Topographical Map (10 km Radius)

2. Products and Capacities

The production scenario of the existing and proposed plant is given in below

Existing Production Scenario

Existing Products	Sr. No.	Product	Production
	1	Manganese Ore powder	1200 MTPA
	2	Manganese Dioxide powder	1200 MTPA

Proposed Production Scenario

Proposed Products	Sr. No.	Product	Production
	1	Manganese Oxide	1200 M.T. per annum
	2.	Ferro Manganese M.C./L.C OR	120 M.T. per annum
	3.	Ferro Titanium OR	120 M.T. per annum
	4.	Ferro Vanadium OR	120 M.T. per annum
	5.	Ferro Molybdenum	120 M.T. per annum

3. Requirement of Land, raw material, water, power, with source of supply

Requirement of Land

The land required for the proposed project is 0.36 Ha (3607 Sq.m.).

Raw Material

The raw material requirement for the proposed unit is given below.

Raw Material Required (Existing) For Manganese Ore/Dioxide -

Sr.No	Product	Raw Material Quantity
1	Manganese Ore	1335 M.T. per annum
2.	Manganese Dioxide	1335 M.T. per annum

Raw Material Required For Manganese Oxide Production

Sr. No	Product	Raw Material Quantity
1	Manganese Ore	1500 M.T. per annum
2.	Steam coal/Hard coke	150. T. per annum

Raw Material Required For Ferro Alloys Production (By Thermite Process)

Sr.No	Product	Raw Material Quantity
1.	Ferro Manganese M.C./L.C	For 120 M.T. per annum Production
	Manganese powder	132 M.T. per annum
	Silico Manganese powder	93 M.T. per annum
	Aluminum powder	24 M.T. per annum
	Lime/Fluorspar	26 M.T. per annum
2.	Ferro Titanium L.C.	For 120 M.T. per annum Production
	Ilmenite	216 M.T. per annum
	Rutile	24 M.T. per annum
	Aluminum powder	96 M.T. per annum
	Lime	19 M.T. per annum
	Iron Ore	24 M.T. per annum
3.	Ferro Vanadium L.C.	For 120 M.T. per annum Production

	Vanadium Pent oxide	240 M.T. per annum
	Ferro Silicon	108 M.T. per annum
	Aluminum scrap	12 M.T. per annum
	Iron Scrap	12 M.T. per annum
	Fluorspar	4 M.T. per annum
4.	Ferro Molybdenum	For 120 M.T. per annum production
	Molybdenum concentrate	113 M.T. per annum
	Aluminum powder	10 M.T. per annum
	Lime powder	11 M.T. per annum
	Iron Scrap	143 M.T. per annum
	Ferro Silicon	32 M.T. per annum

Water Requirement

Water requirement for the project will be about 9 KLD for the process and it will be provided by MIDC and from Tube Well. Mainly the water shall be required for Zigging Process as well as for Pollution control device, drinking and Plantation.

Power Requirement

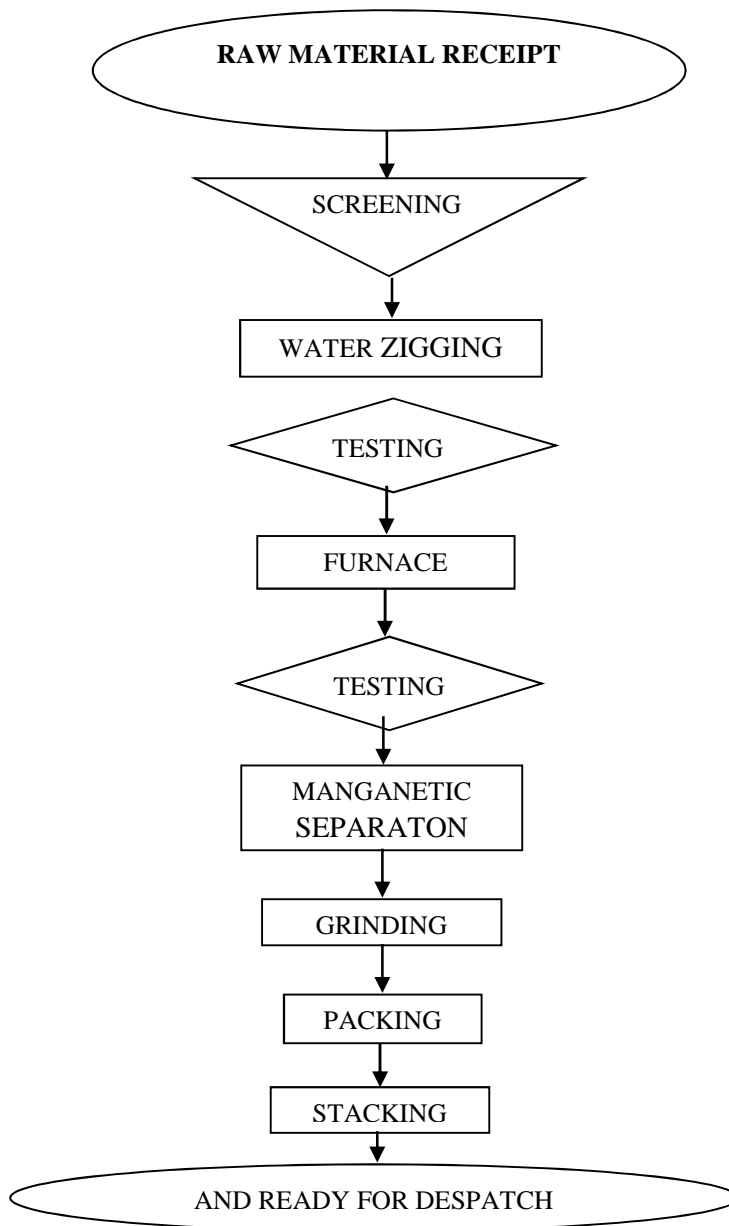
The power required will be supplied by State Electricity Board. The power requirement for the proposed project will be 120 kW.

4. Process Description

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 manual zigging is carried out.
- (B) The material is then heated in coal fired furnace. From where it is transferred for drying and magnetic separation.
- (C) Then the material is dried and after Magnetic Separation it is feed to grinding Machine, where it is powdered in the required mesh size.
- (D) After grinding it is semi automatically packed in 25 kg/50 kg/ or 100 kg HDPE Bags and kept ready for dispatch.

PROCESS FLOW CHART OF MNO PRODUCTION



Ferro Alloys / And Other Noble Ferro Alloys Thermite Process

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

Following activities are carried on:

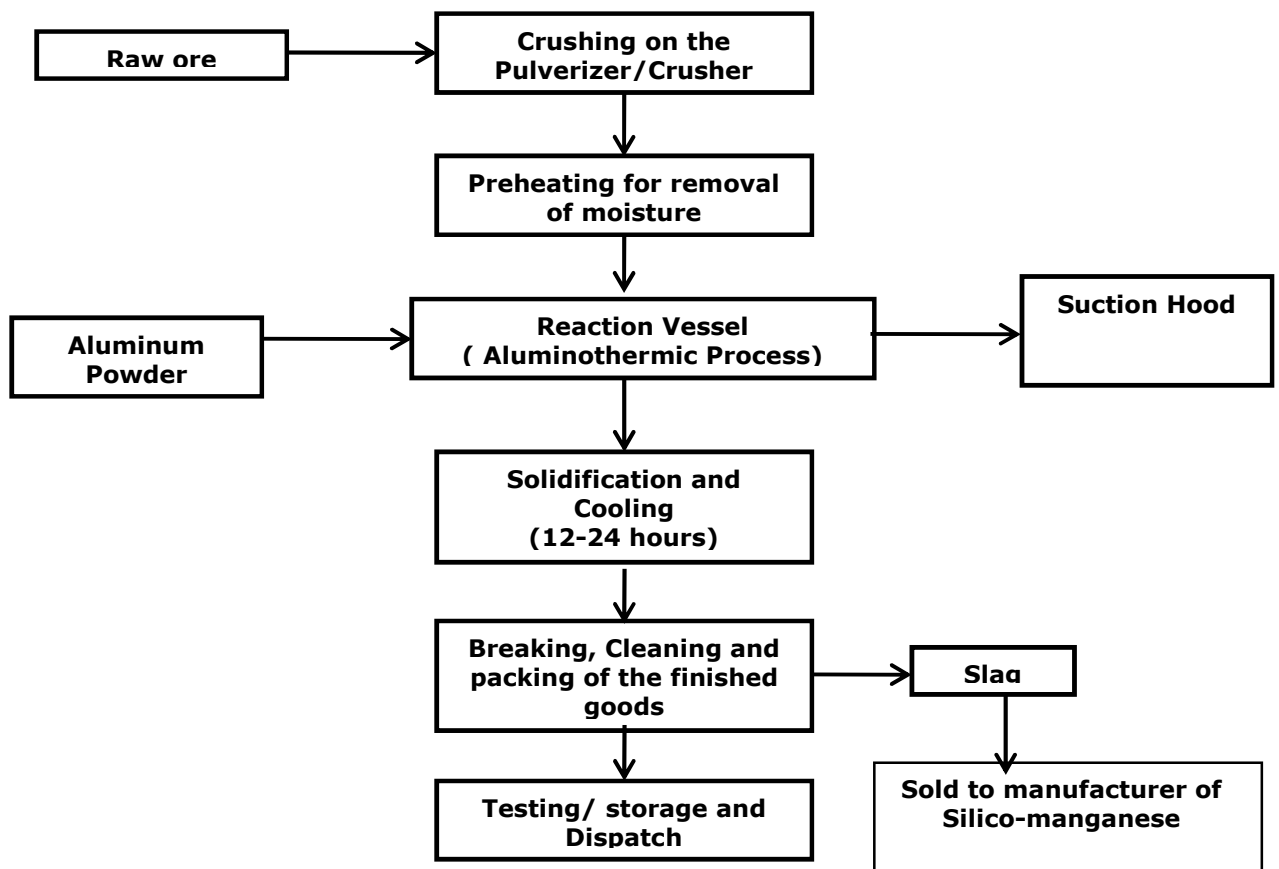
- (a) Powdering of different Alloys / Minerals.
- (b) Mixing in blender in the required proposition
- (c) Then a small fire is created (By aluminum powder) in the reaction vessel, where this blended material is added slowly. The powder starts melting inside the vessel and the

Metallic contents are automatically separated which settles down and the sludge floats.

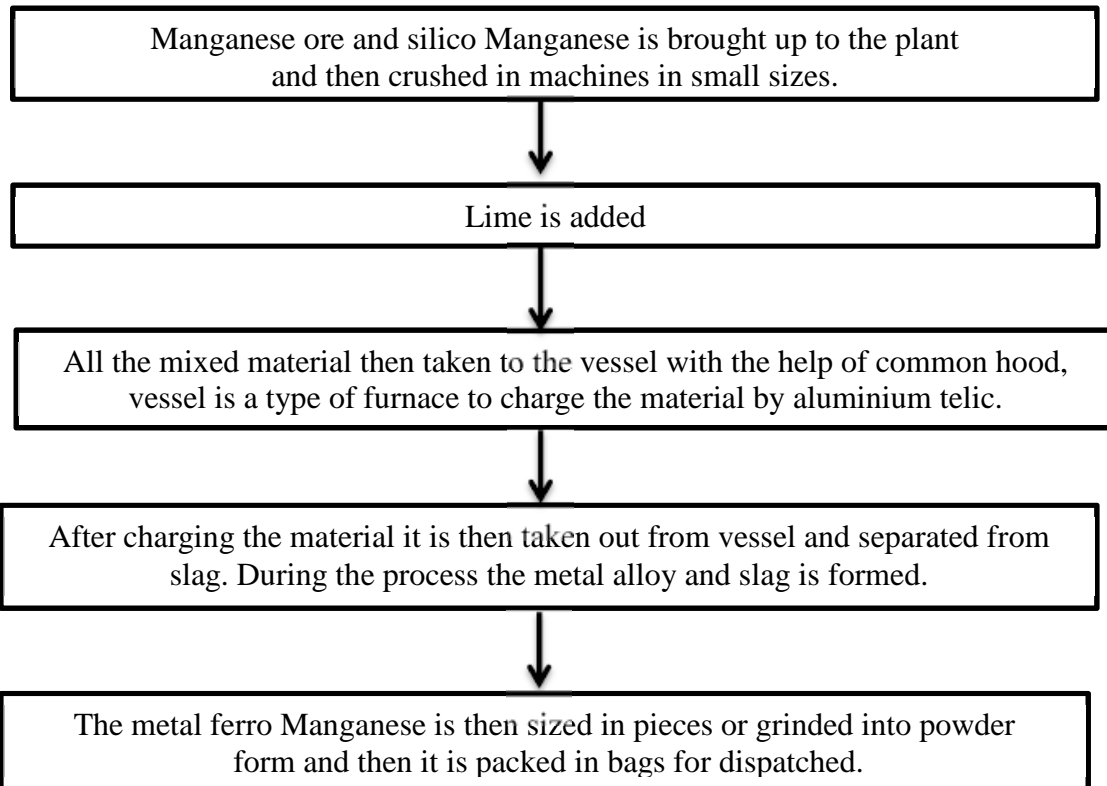
- (d) Metal and Sludge are separated by manual processes.
- (e) Metal is crushed and for some customer it is powdered in Pulveriser.
- (f) The Metal is crushed and packed in bags and kept ready for dispatches.

PROCESS FLOW CHART

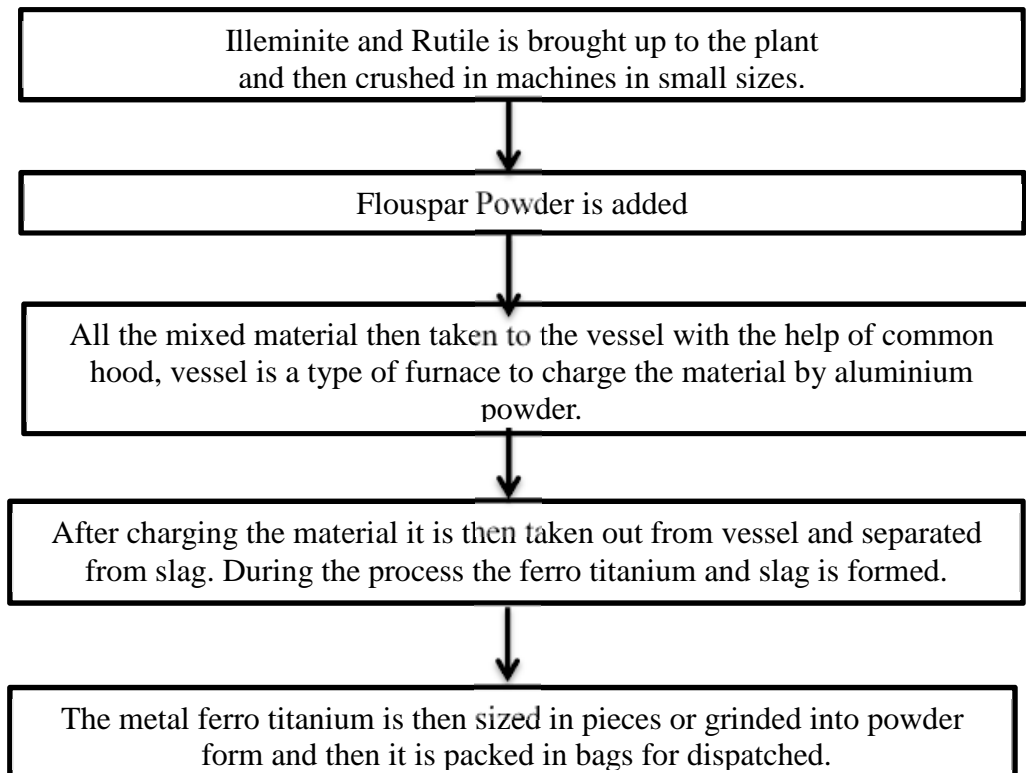
Given below is the flow chart for the manufacturing of Ferro Alloys, such as Low, Medium Carbon Ferro Manganese, Ferro Titanium, Ferro Molybdenum and Ferro Vanadium.



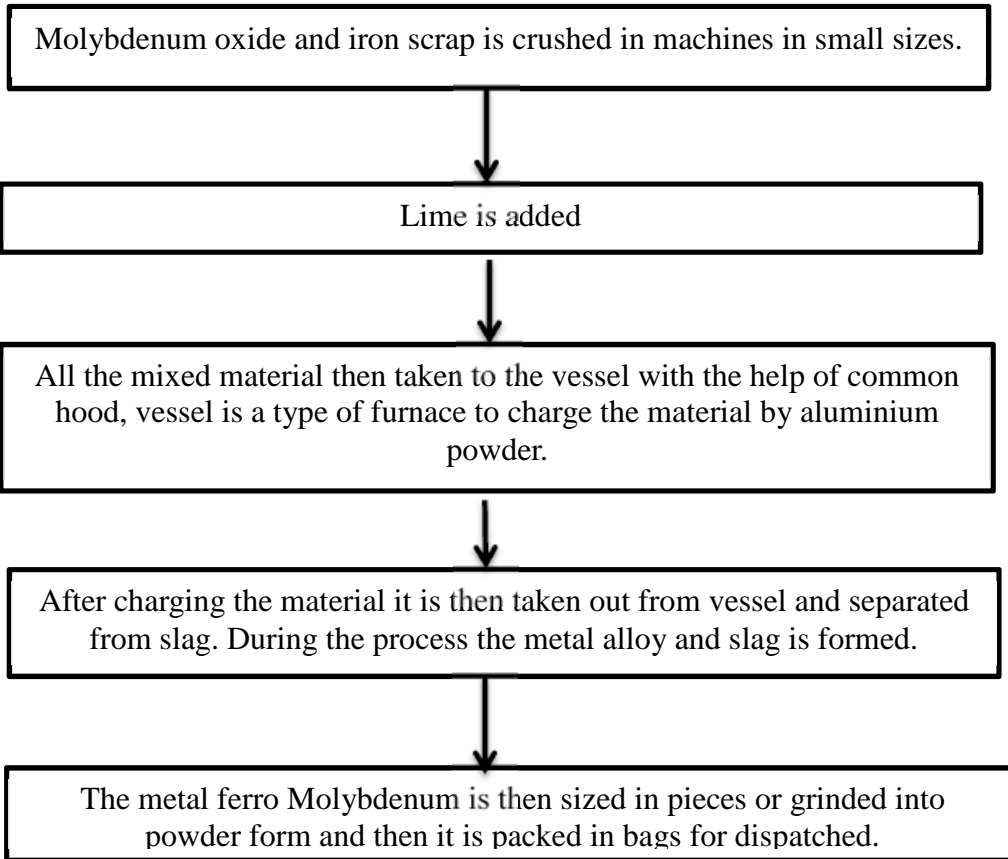
FLOW CHART FOR MEDIUM/LOW CARBON FERRO MANGANESE



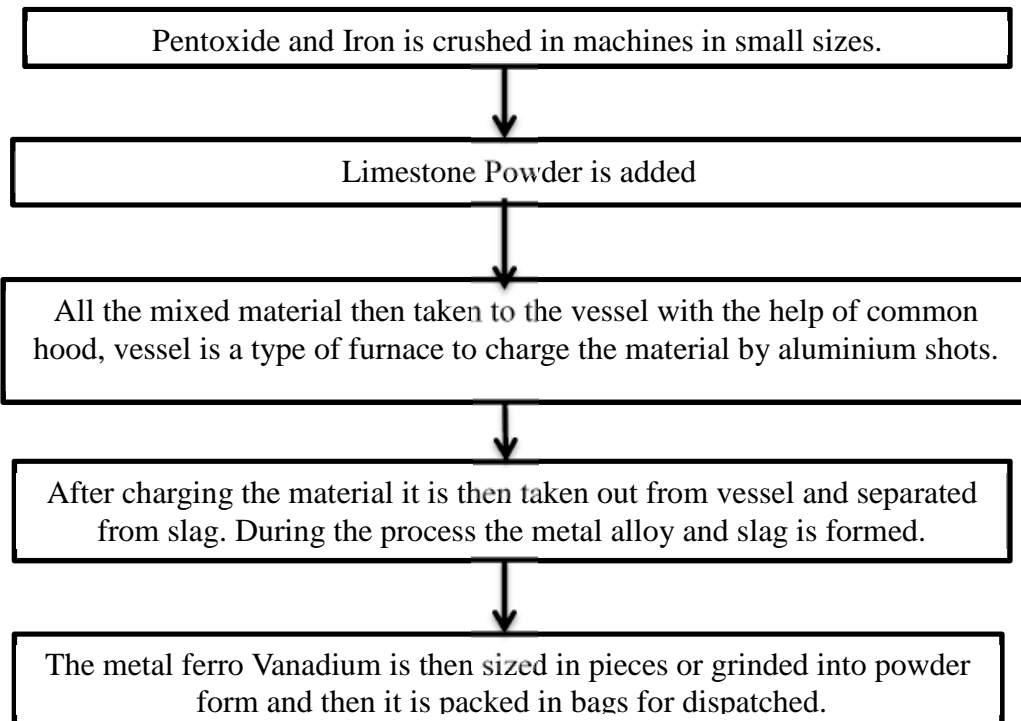
FLOW CHART FOR FERRO TITANIUM



FLOW CHART FOR FERRO MOLLYBDENUM



FLOW CHART FOR FERRO VANADIUM



5. Mitigation Measures

The present baseline concentrations were monitored in the EIA study. The additional emissions are mainly from furnace during roasting of manganese ore with coal, grinding of Manganese Ore.

The proposed project activity will result in air emissions from the following areas.

a) Raw material Handling and storage area

b) Furnace (MnO)

c) Reaction vessels

d) Transportation

- M/s. Janakiji Minerals shall provide dust suction system which will control fugitive emission due to material and raw material handling.
- Regular monitoring of air quality parameters.
- A Stack of 30 mt ht will be attached to furnace (MnO) with wet scrubbers to minimize the concentration of pollutants which is mainly PM₁₀, PM_{2.5}.
- The vehicles transporting raw materials will be covered with tarpaulin in order to prevent dust emission during the transport.
- It would be ensured that all the vehicles in the working zone are properly maintained to keep emissions within the permissible limits.
- At loading and unloading points, arrangement for Water sprinkling will be made so that dust generation during transportation of materials will be minimized further.
- The finished product will be transported by the same trucks carrying raw material.
- Plantation in the plant premises will be done in the 33% of the total land.
- All the internal roads shall be concreted / asphalted to reduce the fugitive dust due to vehicular movement
- Water spraying will be practiced frequently
- Whenever, APCS is not working, then raw material feed will be stopped. Consequently there will be no production in the unit till APCS is rectified.

Prediction of Air quality

The mathematical model used for predictions on air quality impact in the present study area is ISC-AERMOD View. It is the next generation air dispersion model, which incorporates planetary boundary layer concepts. These models are used extensively to

assess pollution concentration and deposition from a wide variety of sources. The predicted values in respect to PM₁₀, SO_x and NO_x were found to be below the Ambient Air Quality Standard of CPCB.

Noise Pollution & control measures

In plant, workers particularly working near higher noise sources, may be exposed to higher level upto 75 dB(A) for longer durations. However, provision of ear plugs or ear muffs shall be made for in-plant workers working at such locations.

The employees shall be trained in the mitigation measures and personal protection measures to be taken to prevent noise related health impacts.

Impact on Water

The total water requirement for the proposed activities is 9 KLD. During plant operation waste water will be generated from the zigging process. The wastewater generated in this process will be treated in the settling tank and will be reused in the process. The sewage generation will be 1.6 m³/day in the proposed facilities which will be treated in Packaged Type STP. No major river within 1 km of the study area.

Solid Waste Generation

The solid waste generation in the proposed plant is given in table below

Table: Solid Waste Generation & Mitigation Measures

Waste	Quantity	Mitigation Measures
Slag (Cumulative)	100 TPA	Solid waste is nonhazardous and non-toxic in nature. Slag generated from manufacturing of Ferro manganese will be sold to manufacturer of Silico-manganese.
Ash	15 TPA	Will be sold to brick manufacturers

Green belt

Green belt will be developed within the Plant premises covering a total area of about 3607 sq mt (33%) of total Plant area. About 1190 sq mt will be developed as green belt and 200 no. of trees will be planted. Local species would be preferred.

6. Capital Cost

Total Project cost for proposed project is Rs.155.0 lakhs.

7. Baseline Environmental Data

Air Environment

The baseline environmental quality for the February, March, April, May 2019 was assessed in an area of 10 km radius around the proposed project site. The ambient air quality monitored at 8 locations selected based on predominant wind direction, indicated the following ranges;

PM ₁₀	:	31.5 to 59.3 $\mu\text{g}/\text{m}^3$.
PM _{2.5}	:	13.6 to 33.4 $\mu\text{g}/\text{m}^3$
SO ₂	:	8.1 to 22. $\mu\text{g}/\text{m}^3$
NO _x	:	9.8 to 29.5 $\mu\text{g}/\text{m}^3$

The concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x were found within the National Ambient Air Quality Standards (NAAQ).

Water Environment

A total 16 samples including eight surface & eight ground water samples were collected and analyzed. The water samples were analyzed as per Standard Methods for Analysis of Water and Wastewater, American Public Health Association (APHA) Publication.

The data indicates that the ground water as well as the surface water quality are below the stipulated standard for drinking water (BIS 10500 – 2012)

Noise Environment

Noise levels measured at eight stations were within limit of 55.0 dB (A) for Residential Area or 75.0 dB (A) for Industrial Area as given in MoEF Gazette notification for National Ambient Noise Level Standard.

Land Environment

Three Soil samples were collected analyzed for physico-chemical characteristics at selected locations in the study area to assess the existing soil conditions around the proposed project site. The relevant parameters show the following characteristics.

- i. Texture of all soil samples are silty-loam and Slit-clay-loam in Texture Classification.
- ii. Colour of soil samples from agriculture and waste land is Grey and Yellowish in colour.
- iii. The bulk density of soil samples is in the range of 1.60 to 1.75 gm/cc.
- iv. Soil samples have pH values between 6.98 to 8.12 The pH values are indicating nature of soil samples as between neutral to slightly alkaline.
- v. Soil samples have conductivities between 0.029 to 0.130 mmhos/cm.
- vi. Soil samples have Organic Matter between 0.28 to 1.21 %.
- vii. Soil samples have concentration of Available Nitrogen values ranged between 114.93 to 491.04 kg/ha
- viii. Soil sample have concentration of Available Phosphorous values ranged between 16.09 to 76.41 kg/ha,
- ix. Soil sample have concentration of Available Potassium values range between 110.5 to 239.4 kg/ha.
- x. Characteristic of soil is a little deficient in Nitrogen nutrients concentration.

8. Impact of the Project

Impact on Air Quality

The emissions are mainly from furnaces during roasting of manganese ore with coal and grinding of Manganese Ore.

The proposed project activity will result in air emissions from the following areas.

- a) Raw material Handling and storage area
- b) Furnace
- c) Transportation

Noise Levels

During operational phase in the proposed project the major noise generating source is plant machinery. Under any circumstances the noise level from each of these sources will not exceed 75 dB (A). Noise levels generated in the project site will be confined within the Proposed plant the impact of noise levels on surrounding will be insignificant.

Impact on soil

According to the Notification S.O. 612(E) dated 25th February 2016 Distance from Eco-Sensitive Zone around Nagzira Wildlife Sanctuary, New Nagzira Wildlife Sanctuary, Koka Wildlife Sanctuary, Navegaon Wildlife Sanctuary and Navegaon National Park is 2.9 km. There is no critically polluted zone or CRZ Area within 10 km of the project site. The impact on terrestrial ecology will be negligible in the first instance and shall be insignificant.

9. Environment Monitoring Programme

The environmental monitoring is important to assess performance of pollution control equipment installed in the proposed project of M/s. Janakiji Minerals. The proposed project is for a manufacturing of Manganese oxide. The sampling and analysis of environmental attributes including monitoring locations will be as per the guidelines of the Central Pollution Control Board.

Environmental monitoring will be conducted on regular basis by M/s. Janakiji Minerals through MoEF&CC Recognized Laboratory to assess the pollution level in the proposed plant. Therefore, regular monitoring program of the environmental parameters is essential to take into account the environmental pollutant of the study area.

The objective of monitoring is:

- To verify the result of the impact assessment study in particular with regards to new developments;
- To follow the trend of parameters which have been identified as pollutants;
- To check or assess the efficiency of the controlling measures;
- To ensure that new parameters, other than those identified in the impact assessment study, do not become critical due to the commissioning of proposed facilities;
- To check assumptions made with regard to the development and to detect deviations in order to initiate necessary measures;

The attributes, which needs regular monitoring, are specified below:

- Air quality
- Water and wastewater quality;

- Noise levels;
- Soil quality;

10. CER

11. As per the Notification dated 1.05.2018 issued by MOEF&CC, it is mandatory to prepare Corporate Environment Responsibility Plan (CER) to spend 2 % (project cost \leq 100 crores) of total capital cost of the project on social, economic and peripheral development activities. As per the above-mentioned new office memorandum CER dated 1.05.2018 Rs. 3.1 lacs have been allocated for CER based on public hearing issues and requirement of the local people.

12. Occupational Health Measures

M/s. Janakiji Minerals will provide all necessary provisions under Factory Act. All personal protect equipments like Safety shoes, helmet & uniform will be issued to each employee based on the nature of job involved.