

# EXECUTIVE SUMMARY

For

Proposed installation of 2 x 40T Induction Furnace for production of 3,96,000 TPA M.S. Billets & Rolling Mill for 3,88,080 TPA TMT Bars by Hot Rolled Process & 1,06,920 TPA by Reheating Furnace

At

Plot No. A-8 & A-13, Phase-III, Additional MIDC  
Jalna, Taluka & District Jalna, Maharashtra

Project Proponent

Ved Steels & Alloys Private Limited

**Environmental Consultant**

**Pollution and Ecology Control Services**

**Accreditation no.: NABET/EIA/2023/SA 0165 Valid upto 10<sup>th</sup> April. 2023**

## **EXECUTIVE SUMMARY**

### **INTRODUCTION**

M/s Ved Steels & Alloys Pvt. Ltd. has proposed installation of 2 x 40T Induction Furnace for production of 3,96,000 TPA M.S. Billets & Rolling Mill for 3,88,080 TPA TMT Bars by Hot Rolled Process & 1,06,920 TPA by Reheating Furnace Plot No.A-8 & A-13, Phase-III, Additional MIDC Jalna, Taluka & District Jalna, Maharashtra.

### **PROJECT DETAILS**

#### **Raw Material Requirement:**

The raw material required for the proposed project is given as below:

**Table: Raw Materials Required**

<b>Sr. No.</b>	<b>Raw Material</b>	<b>Requirement (TPA)</b>	<b>Proposed Source and distance</b>
<b>Induction Furnace</b>			
1.	Sponge Iron	3,16,800	Procured from the open market- by road
2.	Scrap	1,18,800	Procured from the open market- by road
3.	Ferro alloys	3960	Procured from the open market- by road
<b>Rolling Mill (Hot Rolled)</b>			
1.	Billets in Molten State	3,96,000	In house
<b>Rolling Mill (Reheating Furnace)</b>			
1.	Billets	109058	In house
2.	Coal	8560	Procured from the open market- by road

### **WATER REQUIREMENT**

Total Water Requirement for the project is 900 KLD. Water will be sourced from MIDC.

The breakup of water requirement for proposed plant is given below:

**Table: Water Requirements and Wastewater Generation**

	<b>Unit</b>	<b>Proposed Water Requirement m<sup>3</sup>/day</b>	<b>Wastewater Generation m<sup>3</sup>/day</b>	<b>Mode of disposal of wastewater</b>
1	Industrial	850	100	Recycle and reused in process.
2	Domestic Purpose	10	8	The sewage generated will be treated in Packaged Type STP and treated water reused for plantation purposes.
3	Plantation	40	-	-
	<b>Total</b>	<b>900</b>	<b>108</b>	-

### **Power Requirement**

The total power required for proposed project will be 20 MW and it will be procured from State Electricity Board.

### **TECHNOLOGY AND PROCESS DESCRIPTION**

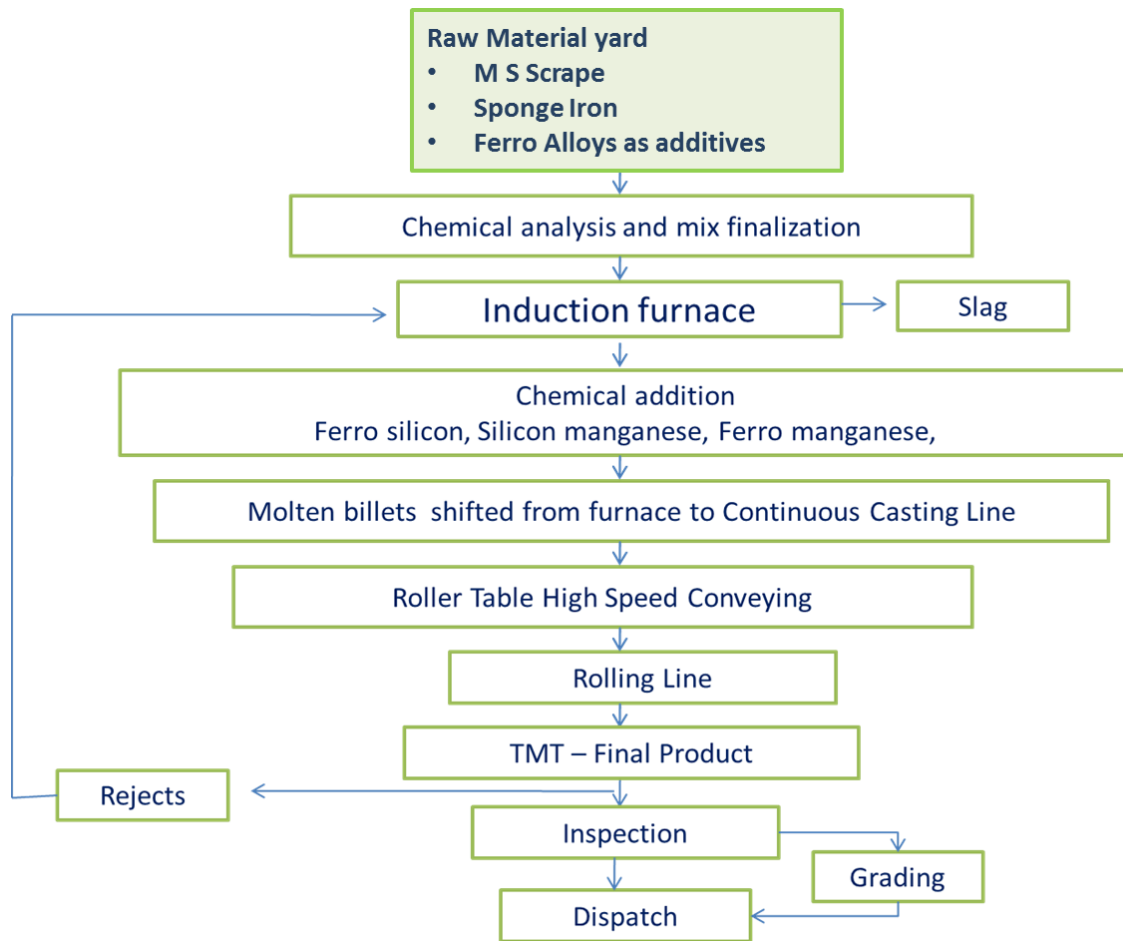
The induction furnace is used to melt many different sorts of metals, from common steel to more exotic alloys or precious metals. The greatest advantage of the induction furnace is its low capital cost, it's easier installation, simpler operation, no noise generation and there is very little heat loss due to radiation from the furnace. The raw material (Sponge Iron, MS scrap, Ferro Manganese and Ferro Silicon) is charged into the induction furnace. As soon as the furnace is charged, the switches admitting power current to the induction coil are closed.

After the furnace is switched on, current starts flowing at a high rate and comparatively low voltage through the induction coil of the furnace, producing an induced magnetic field inside the central space of the coils where the crucible is located. As the magnetic fluxes cut through the scraps and complete the circuit, they generate an induced current in the scrap which is known as eddy current, this eddy current flows through the highly resistive path of the scrap mix, generates tremendous amounts of heat and melting of scrap starts. Soon a pool of molten metals forms in the bottom causing the charge to sink. The induced current which is generated in the charge mixed and heated more

## *Executive Summary*

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homogenously. As soon as the charge has melted clearly, any objectionable slag is skimmed off, and the necessary alloying elements are added. When these additives have melted completely, the power input may be increased to bring the temperature of metal upto the point most desirable for pouring. The current is then turned off and the furnace is tilted for pouring into a crucible. As soon as pouring has ceased the crucible is cleaned completely from any slag or metal droplets adhering to the wall of the crucible and the furnace is now ready for charging again. The temperature of the furnace will be 1650<sup>0</sup>C. When the total scrap as per the capacity of the crucible is molten, the sample is taken from liquid steel and tested for the composition of steel and the carbon contents. Therefore some additives of Ferro-alloys like Silico-manganese, silicon, aluminum shots and are added to the liquid steel to maintain the composition and quality. The billets in the molten stage are transferred to rolling line for the production of long product bypassing the reheating furnace. The cooled products are then inspected and dispatched. The process flow chart is presented below:-



**Process flow Chart for Hot Billet Rolling Process**

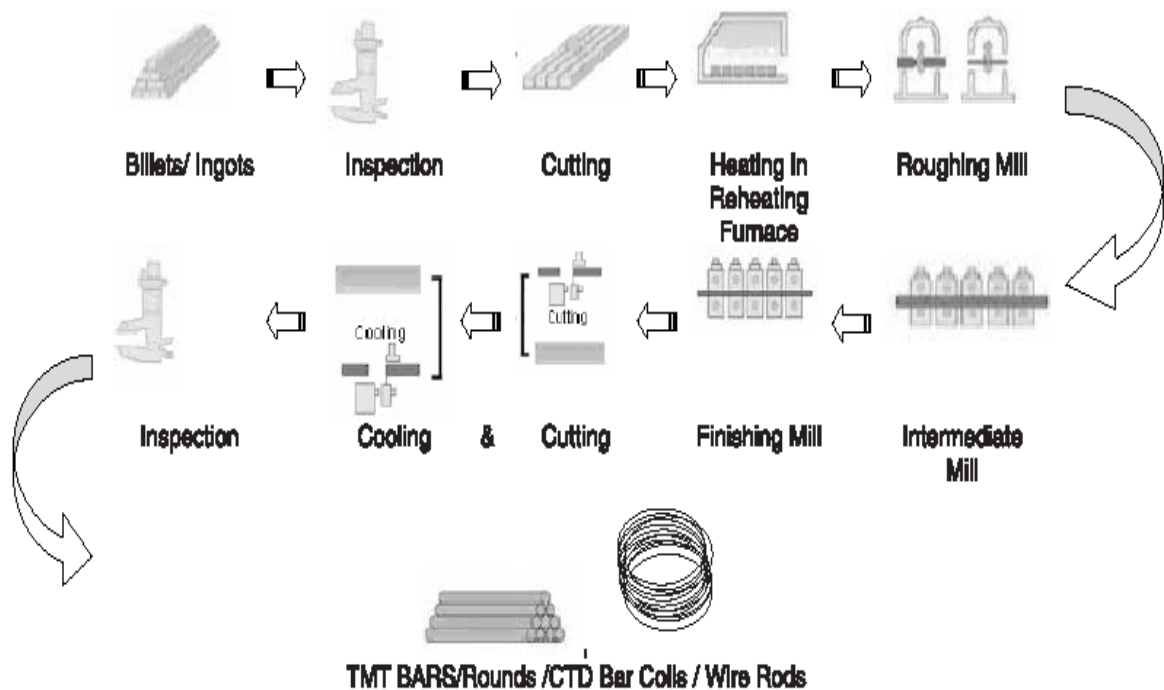
### **Advantages of Hot Billet Rolling Process**

- ❖ Energy saving is the main benefit as it consists in avoiding the normal cooling of the billet down to room temperature and the reheating for initiating the rolling. Thus the process is of less energy and more environmentally friendly.
- ❖ Billets in molten condition will be directly fed to Hot Billet Rolling machine thus saving of fuel & electricity.
- ❖ No additional increment in GLC for PM& SO<sub>2</sub>.
- ❖ No generation of Fly Ash.
- ❖ No space will be required for storage of Billets and fly ash.
- ❖ Easy handling of Process.
- ❖ Low operational cost of rolled steel depending on unit costs

- ❖ Reduced civil works and infrastructure costs
- ❖ Reduced energy consumption
- ❖ Less man power required.

### **Rolling Mill**

The billets are used in re-rolling mills for production of construction bars, angles channels, etc. The billets have edge over use of ingots for production of these products. With small change in production process like Ladle Refining & Gas Purging the alloy steel billets may be used to manufacture of steel product as EN 8, EN 9, EN 19 VC (vanadium chromium), which are used in engineering industries and also by forging industries as value added. The raw material required in this plant is MS Billets. The production mix will be based on production of the bars and Rod sizes 8mm Dia.(min.), & 32 mm dia (max.). The production process Rod and Bar Mill Plant is presented in Figure below.



### **The Production Process of Rod and Bar Mill Plant**

The steel billets are heated in a Reheating Furnace and Rolled through a sequence of rolling stands. All the finished products go directly to the cooling bed, which has a multi material receiving arrangement with run in rollers and W channel.

## **DESCRIPTION OF ENVIRONMENT**

The baseline environmental quality for the period of 1<sup>st</sup> March 2022 to 31<sup>st</sup> May 2022 was assessed in an area of 10 km radius around the proposed project site.

### **Air Environment**

The ambient air quality monitored at 08 locations selected based on predominant wind direction, indicated the following ranges;

PM<sub>10</sub> : 52.4 – 82.7 µg/m<sup>3</sup>

PM<sub>2.5</sub> : 15.2 – 48.7 µg/m<sup>3</sup>

SO<sub>2</sub> : 7.6 – 30.2 µg/m<sup>3</sup>

NO<sub>x</sub> : 12.2 – 29.6 µg/m<sup>3</sup>

Industrial Area	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>
Residential, Rural Area (CPCB Norms)	100 µg/m <sup>3</sup>	60 µg/m <sup>3</sup>	80 µg/m <sup>3</sup>	80 µg/m <sup>3</sup>

The concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> & NO<sub>x</sub> 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 is below** the stipulated standard for drinking water (BIS 10500 – 2012) except total coli found in surface water, which may be due to the human activities.

### **Noise Environment**

Noise levels measured at eight stations are 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.

Area Code	Category of Area	Limits in dB(A) Leq	
		Day time	Night time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone**	50	40

### **Land Environment**

Four 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.

The observations of soil characteristics are discussed parameter wise below;

- a) Texture of all soil samples are silty-clay-loam, Silty loam and sandy Loam in Texture Classification.
- b) Colour of soil samples is faint gray, dark gray, gray & brown red in color.
- c) The bulk density of soil samples are in the range of 0.98 to 1.4 gm/cc.
- d) Soil samples have pH values in the range of 7.4 to 7.6. The pH values are indicating nature of soil samples as neutral.
- e) Soil samples have conductivities between 132 to 462  $\mu$ S/cm.
- f) Soil samples have Organic Matter between 0.7 to 1.7 %. These values represent average fertility of soils.
- g) Soil samples have concentration of Available Nitrogen values ranged between 194 to 769 kg/ha.
- h) Soil sample have concentration of Available Phosphorous values ranged between 34 to 124 kg/ha.
- i) Soil sample have concentration of Available Potassium values range between 83 to 425 kg/ha.



## **ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

### **Impact on Air Quality**

The impacts on air quality due to source of the air pollution in the proposed project activities have been identified.

The present baseline concentrations were monitored in the EIA study. The additional emissions are mainly from induction furnace during melting process.

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

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

The atmospheric dispersion modeling and the prediction of ground level pollutant concentrations has great relevance in the following activities:

- Estimation of impact of industry on surrounding environment.
- Estimation of maximum ground level concentration and its location in the study area.

The mathematical model used for predictions on air quality impact in the present study area is AERMOD.

The predicted ground level concentrations obtained when superimposed on the baseline concentrations are within the prescribed NAAQ Standards for residential areas.

In point source emissions, the stacks are subjected to plume rise which again is dependent on force of buoyancy and momentum. The higher is the plume rise or stack, the lesser will be ground level concentrations (GLC's). The emissions when released into the atmosphere are subjected to transportation, dispersion, transformation, and fall out and wash out and finally reach the ground level at a particular distance. That's why the GLC is comparatively low at project site

### **Mitigation Measures**

- The fumes from the proposed Induction Furnace will be extracted through fume extraction system placed over the furnace connected to bag filters followed by 2 stacks of 30 mt height attached to induction furnace of 40 T respectively & 30 mt height to reheating furnace.
- During induction melting of steel scrap, lot of sparks gets generated. For the purpose of arresting sparks & flame, it is necessary to have an arrestor which arrests sparks. The device provided will be a centrifugal cyclone, which removes sparks and also collects coarser particles. The collected dust in the cyclone hopper can be drained periodically into a drum when the system is shut or a continuous motorized rotary air lock valve can be provided.
- At all the points, Dust Collectors/ dust suppression systems will be installed.
- Water sprinkling will be done regularly to control the fugitive emissions.
- All internal roads will be tarred.
- All belt conveyors will be covered.
- Ambient air quality monitoring shall be carried out on regular basis to ensure the compliance with National Ambient Air Quality Standards (NAAQS). The ambient air quality within the factory premises shall not exceed the standards (PM<sub>10</sub> 100 µg/m<sup>3</sup>, PM<sub>2.5</sub> 60 µg/m<sup>3</sup> SO<sub>2</sub> 80µg/m<sup>3</sup>, NO<sub>x</sub> 80 µg/m<sup>3</sup> and CO 04 µg/m<sup>3</sup>) prescribed by CPCB.

### **Impact on Water**

The total water requirement for the proposed Installation project is 900 KLD. There will not be any impact on the water quality as the water system is in close loop used for cooling rolls in the process. The sewage generated from the proposed Installation facility will be treated in Packaged Type STP.

**Table: Solid Waste Generation**

<b>Sr. No.</b>	<b>Solid Waste</b>	<b>Proposed Quantity (TPA)</b>	<b>Method of Disposal</b>
1.	Slag	15840	Slag will be sold to authorized vendors / brick manufacturers.
2.	Tail Cuttings	7920	Recycled back as raw material in own induction Furnaces
3.	Ash	2568	Will be sold to authorized vendors.

### **Impact on Demography and Socio-Economics**

The impacts of the proposed project, during its operation, on demography and socio-economic condition can be identified as follows.

- Negative impacts can be depletion of natural resources like water and land, depletion in air quality if proper mitigative measures are not taken.
- Increase in employment opportunities and Reduction in migrants to outside for employment.
- Growth in service sectors.
- During operation phase additional 250 technical and nontechnical people will be employed.
- Increase in consumer prices of indigenous produce and services, land prices, house rent rates and Labour prices.
- Improvement in socio-economic environment of the study area.
- Improvement in transport, communication, health and educational services.
- Increase in employment due to increased business, trade commerce and service sector.
- The overall impact on the socio economic environment will be significant.

### **ENVIRONMENT MANAGEMENT PLAN**

The management of the M/s Ved Steels & Alloys Pvt. Ltd. has taken all the necessary steps to control and mitigate the environmental pollution in the proposed project. The

environmental management plan briefs all the elements of environment pollution controlling systems proposed by the project proponent in operation phase. The environmental management plan describes briefly the action plans to be implemented during the post project monitoring stage as per the Ministry of Environment and Forest (MoEF) New Delhi, Central and State Pollution Control Board guidelines.

### **Air Environment**

The sources of air pollution are raw material handling system, materials transportation, raw materials feeding to the operating equipment. The automatic process equipment will be deployed for the raw material feeding system.

Adequate measures already adopted to arrest the emission of pollutants within the stipulated & statutory norms.

- Bag filters along with fume extraction system is proposed followed by stack.
- Fugitive emission from material unloading operations, material transfer points will be controlled fully with total enclosure.
- Fugitive as well ambient air quality monitoring shall be carried out on regular basis to ensure the compliance with National Ambient Air Quality Standards (NAAQS). The ambient air quality within the factory premises shall not exceed the standards (PM<sub>10</sub> 100µg/m<sup>3</sup>, PM<sub>2.5</sub> 60µg/m<sup>3</sup> SO<sub>2</sub> 80µg/m<sup>3</sup>, NO<sub>x</sub> 80µg/m<sup>3</sup>) prescribed by CPCB.
- Regular Stack Monitoring is being carried out and same will be continued. It will ensure that all the emissions from the plant will be controlled to meet the relevant standard set by CPCB/State Pollution Control.

### **Noise Environment**

Regular maintenance of various equipments, ear plugs/muffs will be provided for the personnel working close to the noise generating units. Further all the openings like covers, partitions will be designed properly to abate noise pollution.

### **Water Environment**

The wastewater generated from the Cooling process will be treated in settling tank and reused in the process. The domestic wastewater generated will be treated in STP.

### **Management Plan of Solid waste**

- Slag will be sold to authorized vendors / brick manufacturers.
- Tail Cuttings will be Recycled back as raw material in own induction Furnaces.
- Ash will be sold to authorized vendors.

### **Socio Economic Environment**

The company would aid in the overall social and economic development of the region. The plant will give employment 250 people of local area. In order to mitigate the adverse impacts likely to arise in the proposed project activities and also to minimize the apprehensions to the local people, it is necessary to formulate an affective EMP for smooth initiation and functioning of the project.

### **Green Belt Development**

The plantation helps to capture the fugitive emissions and attenuate the noise apart from improving the aesthetics quality of the region Avenue plantation within the plant and green belt development will be done. 33% of the land will be developed as green belt Greenbelt will be developed with local trees.

### **ENVIRONMENTAL MONITORING PROGRAMME**

The environmental monitoring is important to assess performance of pollution control equipment installed in the proposed project. The sampling and analysis of environmental attributes including monitoring locations will be as per the guidelines of the Central Pollution Control Board / State Pollution Control Board.

Environmental monitoring will be conducted on regular basis by company to assess the pollution level in the proposed project as well as in the surrounding area. 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;
- To establish a database for future Impact Assessment Studies for new projects.

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

- Air quality
- Water and wastewater quality;
- Noise levels;
- Soil quality;
- Ecological preservation and afforestation; and
- Socio Economic aspects and community development

### **ADDITIONAL STUDIES**

The additional studies as per the ToR issued by SEIAA, Maharashtra are Social Impact Assessment, Risk Assessment, & Disaster Management Plan.

**PROJECT BENEFITS:**

The proposed plants would bring forth many positive improvements in physical infrastructure in social infrastructure and employment Potential.

**CONCLUSION**

It can be concluded from overall assessment of the impacts, in terms of positive and negative effects on the various environmental components, that the project activities will not have any major adverse effect on the surrounding environment.

To mitigate any impacts due to the operation activities, a well-planned EMP and detailed post project monitoring system is provided for continuous monitoring and immediate rectification at site. Due to the project activities, Socio - economic condition in and around the project site will improve more substantially.