



ENVIRONMENT STATEMENT

FOR THE FINANCIAL YEAR 2020-21

Submitted to SPCB under Rule 14 of The Environment (Protection) Rules 1986

TATA STEEL LIMITED
FERRO MANGANESE PLANT
JODA, KEONJHAR



TATA STEEL LTD.
FERRO MANGANESE PLANT, JODA

Ref. No. FAMD/FAPJ/ 214 /FY 22

Dated:

The Member Secretary
State Pollution Control Board, Odisha
Paribesh Bhavan
A/118, Nilakantha Nagar, Unit-VIII
Bhubaneswar-751012

Sub: Submission of Environmental Statement of Ferro Manganese Plant, Joda for the period of 2020-21.

Dear Sir,

We are submitting one set of Annual Environmental Statement in FORM-V dully filled in for the year 2020-2021 in respect of M/s Ferro Manganese Plant, Joda by Tata steel for your kind consideration.

We wish to maintain that necessary control measures have been installed and adopted to minimize the impact on environment.

We look forward to further your guidance which shall certainly help us in endeavoring further improvements in our Environmental Management Practices.

Thanking you,

Yours faithfully,

For : TATA STEEL LTD.

HEAD
FERRO MANGANESE PLANT,
JODA

Encl : as above.

Copy to -Regional Officer, OPCB, At-Baniapatt, College Road, Keonjhar - with enclosure.

ENVIRONMENTAL STATEMENT
OF
FERRO MANGANESE PLANT
(TATA STEEL LIMITED)
JODA, KEONJHAR

FOR THE YEAR 2020-2021

PREPARED BY
THE DEPARTMENT OF SAFETY & ENVIRONMENT

FERRO MANGANESE PLANT
TATA STEEL LIMITED
JODA, DIST. KEONJHAR

INTRODUCTION

Ferro Manganese plant, Joda was installed in 1958 as a captive source of supply of Manganese Alloys to steel Works, Jamshedpur with a capital investment of 1.58 Crores. The plant was set up in technical collaboration with M/s. ELKEM, Norway, one of the world pioneers in smelting technology. JODA Valley was selected as the plant site because of its close proximity to the Mn Mines of TSL from where major raw materials were to be procured. The plant was set up with an installed capacity of 30,000 MT of Fe-Mn per year from two Furnaces of 9 MVA.

Considering the changed market scenario, one of the two furnaces was modified in the year 1989 to increase the capacity from 9 MVA to 15 MVA. In the year 1995, further modification was carried out in the furnace configuration as well as pit side facilities.

M/S Tata steel limited (hereinafter termed as TSL) is presently operating with two submerged arc furnace to produce a total of 0.0504 MTPA Fe-Mn.

ABOUT THE PLANT

Plant Location and Accessibility

The site of the Ferro Manganese Plant is located at Joda, Tehsil- Barbil, District- Keonjhar, State-Odisha and it is a part of Survey of India Topo Sheet No. 73-F/8 bounded by the latitudes 22° 01' 01.181" N to 22° 01' 25.922" N and longitudes 85° 25' 48.671" E and to 85° 25' 48.671" E and the plant site is at a distance of 1.95 km from NH-215. The nearest South Eastern Railway line is at a distance of 1.0 km from plant, in East direction. The nearest airport is at Bhubaneswar at a distance of about 196 km in South-east direction. Nearest port is Paradeep at a distance of 232 km. The nearest township is Barbil which is 10.2 Km in North-West direction.

ENVIRONMENTAL STATEMENT FORM – V

(See rule 14)

ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR ENDING ON 31ST MARCH 2021

FERRO MANGANESE PLANT, TATA STEEL LIMITED, JODA

PART - A

1. Name and address of the Owner/occupier of the Industry, operation or process. : Mr. T.V. Narendran
MD, Tata Steel India & SEA
AT/PO- 5c Road, Jamshedpur
2. Name and address of the Factory Manager : Mr. G. P Sahu
Head, Ferro manganese Plant
AT/PO- Joda
3. Industry Category : Large
4. Production Capacity of Ferro Alloys. : 50,400 MT/Year
5. Year of establishment : 1958
6. Date of submission of previous Environmental Statement : 21st September 2020

PART - B

Water and Raw Material Consumption

A. Water consumption:

<u>Consumption Head</u>	2019-20 (in cu.m/Year)	2020-21 (in cu.m/Year)
Industrial Cooling	179903	177642
Process	18743	11612
Domestic	620.36	629.96
Name of the product(s)	Process water consumption per unit of products	
High Carbon FeMn	4.2	4.15

*The colony of FAP Joda is situated outside the plant area. The domestic water consumption is shown by other adjacent Manganese Mine of separate unit.

Name of raw materials	Name of Products	Consumption of raw material per unit of Output (KG/ MT or (MWH)	
		During the current Financial Year (2019-2020)	During the current Financial Year (2020-2021)
Manganese ore	Fe-Mn	2147 kg	2019 kg
Coke	Fe-Mn	568 kg	535 kg
Dolomite	Fe-Mn	196 kg	221 kg
High MnO Slag	Fe-Mn	244 kg	252 kg
Quartzite	Fe-Mn	36 kg	44 kg

B. Raw material Consumption: -

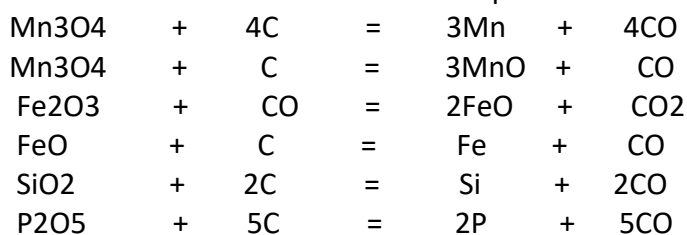
The raw material consumption for the production of FeMn is as follows: -

PART-C
POLLUTION DISCHARGED TO ENVIRONMENT/ UNIT OF OUTPUT
(Parameters as specified in consent issued)

Basically, the plant produces air pollution and the causes can be attributed to the process which has been briefed as follows: -

Brief description of the process producing FeMn :

During the smelting process, oxides of Iron, Manganese, Silicon, Sulphur and Phosphorous are reduced and the reactions involved in the above process are as follows: -



The Sulphur goes into the Slag and also escapes to the atmosphere through the stack as SO₂.

A. Water Pollutants:

The water used for cooling several parts of the Furnaces as well as scrubbing the flue gas in the Gas Cleaning Plants is re-circulated to the system and is not discharged outside the Plant. However, during rainy season discharge of storm water is a natural process.

B. Air Pollutants: Due to the effective operation of Gas Cleaning Plant.

SI No.	Stack details	Pollutants	Quantity of Pollutants discharged (mass/day) (Ton/day)	Concentration of Pollutants discharged (mass/volume) (mg/Nm ³)	Percentage of variation from prescribed standard with reasons
1	Furnace 1	PM (mg/Nm ³)	0.0084	51.21	-48.79
2	Furnace 2		0.0070	56.03	-43.97

PART - D
HAZARDOUS WASTES
(AS SPECIFIED UNDER THE HAZARDOUS WASTES)

As specified under the Hazardous & Other Waste (Management & Trans boundary Movement) Rules, 2016 and amendment thereof)

HAZARDOUS WASTES	TOTAL QUANTITY	
	DURING THE PREVIOUS FINANCIAL YEAR (2019- 2020)	DURING THE CURRENT YEAR (2020- 2021)
I) FROM PROCESS		
a. Used transformer oil	18792 Lt	3212 Lt
b. Waste oil	Nil (Garage activities have been totally stopped)	Nil (Garage activities have been totally stopped)
c. Waste batteries	24 Nos. of 12 Volt & 34 Nos. of 2 Volt	10 Nos. of 12 Volt & 02 Nos. of 2 Volt
II) FROM POLLUTION CONTROL FACILITY		
Flue gas cleaning residue (GCP sludge)	5542 MT(Approx.)	4005 MT(Approx.)

PART - E
SOLID WASTES

Solid wastes from FAP Joda is been categories in two parts i.e. Fe-Mn Slag which is generated during smelting operations and Sludge generated from Wet scrubber of Gas cleaning plant. Slags are processed as slag crusher & sold to Si-Mn plant. GCP sludge is stocked in designated place inside the plant premises for making briquette. However, other solid waste (such as scrap material, used conveyor belts, Plastic bags etc) is also being generated.

SL No	SOURCES	TOTAL QUANTITY	
		DURING THE PREVIOUS FINANCIAL YEAR (2019- 2020)	DURING THE CURRENT YEAR (2020- 2021)
a	From Process	37894 MT of FeMn Slag	35148 MT of FeMn Slag
b	From Pollution Control Facility.	5542 MT(Approx.) of GCP sludge	4005 MT(Approx.) of GCP sludge
c	1. Quantity recycled or Reused within the unit	11566 MT of FeMn Slag reused in Process	11510 MT of FeMn Slag reused in Process
	2. Quantity sold	26327 MT of FeMn slag	23638 MT of FeMn slag
	3. Quantity disposed	Nil	Nil

PART - F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Hazardous/ Solid Wastes	Characteristics	Method of disposal
FeMn Slag	MnO = 26% to 35% SiO ₂ = 20% to 30% R ₂ O ₃ * = 18% to 21% CaO = 6 % to 10% MgO = 4 % to 8%	During smelting operation High MnO slag generated as a by - product, which is partly used in Fe-Mn Process and partly sold to Si-Mn Plant.
GCP Sludge	MnO = 46% to 48% C = 3% to 4% R ₂ O ₃ = 10% to 12% CaO = 3% to 5% MgO = 6% to 7.5%	The sludge after being conveyed to the sludge drying beds from the thickener is allowed to dry sufficiently and the dry sludge is then transported to the earmarked sludge dumping site (a Co's low-lying leasehold area) for making briquette. In order to prevent the sludge getting into the water body flowing in proximity, a retaining wall of size 250Mtrs x 2.5 Mtrs x 0.5 Mtr as well as a garland drain encircling the total sludge dumping site and a 2-stage settling pit have been constructed around the dumping site adjoining the water body as pollution prevention measures .
Used Transformer Oil	Hydrocarbons	Sold to authorized recycler.
Waste batteries	lead and used acids.	Buy back to supplier

PART - G

IMPACT OF THE POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTON:

M/s Ferro Manganese Plant, Joda has spearheaded the pursuit for Environmental Protection by implementing an effective environmental management system. To this effect, the Plant has undertaken the following measures: -

- i. Annual maintenance of all four the GCPs including power consumption and sludge transportation is Rs. 40 Lakhs (Approx.)
- ii. Annual maintenance of High velocity mobile type rotary water sprinkler including diesel consumption which incurred cost of Rs. 6 Lakhs.
- iii. Real time data monitoring installed with LED display and made operational for Online stack monitoring which incurred cost of Rs. 24 Lakhs
- iv. Annual Maintenance of Fume Extraction System including power consumption is Rs. 2 Lakhs (Approx.)
- v. Extensive Plantation in and around the Plant for which the annual expenditure of Rs.2 lakhs was incurred.
- vi. Misc. contractual jobs for maintaining environmental management system was Rs.18.84 lakhs(approx.)
- vii. Fixed rotary sprinkler installed throughout the internal road which incurred cost of Rs. 6 lakhs
- viii. Annual STP operation for which the annual expenditure of Rs.3.6 lakhs were incurred.

- ix. Organic Compost machine installed with Rs 2 lakhs for making compost from biodegradable waste form canteen.

PART – H

ADDITIONAL MEASURES/ INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION, PREVENTION OF POLLUTION

- Installation of 30 KLD ETP inside the plant premises to treat the effluent water & reuse.
- Installation Briquette Plant to make briquette using GCP sludge & Mn ore Fines.
- Greenery development programme will continue in the year 2021-22.

PART - I

ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF THE ENVIRONMENT

- Ferro Alloys Plant of TATA Steel Ltd. is certified for the Integrated Management System (ISO-9001:2015, ISO-14001:2015 & OHSAS-45001:2018 and SA:8000) from last two decades. The unit has obtained various prestigious accolades from various agencies.
- Various awareness programs throughout the year conducted in the area which included celebration of World Environment Day, World Water Day. In which environment messages through Nukkad natak, poems, slogans, swachhata drive is been done every year.
- All above efforts make the plant clean - green and sustainable.

Annexure-1

Ambient Air Quality Monitoring at FAP Joda

Location	PM10 (or size <10 µm) µg/m3	PM2.5 (or size <2.5µm) µg/m3	SO2 (µg/m3)	NOx (µg/m3)	CO (mg/m3)
Gate -1	76.68	43.37	13.29	18.1	0.54
General Office	79.67	46.54	14.8	20.18	0.63
Ore yard	80.27	45.79	15.99	18.56	0.72
Back gate	74.81	42.37	10.88	13.97	0.56