vedanta
transforming for good

VL/OPCB/002/2023-208
September 28, 2023

The Member Secretary
State Pollution Control Board, Odisha
Parivesh Bhawan,
A/118, Nilakantha Nagar,
Unit-VIII
Bhubaneswar – 751 012

Sub.: **Submission of Environment Statement for 2022-23 of Smelter & CPP of Vedanta Limited, Jharsuguda**

Ref.: Rule 14 of the Environment (Protection) Rules, 1986

Dear Sir,

This has reference to the captioned subject and the cited reference. Please find the Environment Statement of Smelter & CPP of Vedanta Limited, Jharsuguda for 2022-23 duly filled in Form- V.

Thanking you,

Yours faithfully,

Dr. Amit Kumar Tyagi
Head-Environment

Received
30/9/23

No.....Dt.....
RECEIVED
30 SEP 2023
S.P.C. BOARD
BHUBANESWAR-12

Encl.: Environment Statement in Form-V

Copy to: The Regional Officer, State Pollution Control Board, Odisha, Jharsuguda

VEDANTA LIMITED, JHARSUGUDA
Vill : Bhurkamunda, P. O. : Kalimandir, Dist. : Jharsuguda (Odisha) : 768202
T +91-664 566 6000 F +91-664 566 6267 www.vedantalimited.com

REGISTERED OFFICE: Vedanta Limited, 1st Floor, 'C' wing, Unit 103, Corporate Avenue, Atul Projects. Chakala. Andheri (East), Mumbai 400093, Maharashtra, India.
CIN: L13209MH1965PLC291394

O/C

vedanta
transforming for good

VL/OPCB/002/2023-208
September 28, 2023

The Member Secretary
State Pollution Control Board, Odisha
Parivesh Bhawan,
A/118, Nilakantha Nagar,
Unit-VIII
Bhubaneswar – 751 012

Sub.: **Submission of Environment Statement for 2022-23 of Smelter & CPP of Vedanta Limited, Jharsuguda**

Ref.: Rule 14 of the Environment (Protection) Rules, 1986

Dear Sir,

This has reference to the captioned subject and the cited reference. Please find the Environment Statement of Smelter & CPP of Vedanta Limited, Jharsuguda for 2022-23 duly filled in Form- V.

Thanking you,

Yours faithfully,

Dr. Amit Kumar Tyagi
Head-Environment

REGIONAL OFFICE, STATE POLLUTION CONTROL BOARD, ODISHA
RECEIVED
29/9/2023
JHARSUGUDA

Encl.: Environment Statement in Form-V

Copy to: The Regional Officer, State Pollution Control Board, Odisha, Jharsuguda

VEDANTA LIMITED, JHARSUGUDA
Vill : Bhurkamunda, P. O. : Kalimandir, Dist. : Jharsuguda (Odisha) : 768202
T +91-664 566 6000 F +91-664 566 6267 www.vedantalimited.com

REGISTERED OFFICE: Vedanta Limited, 1st Floor, 'C' wing, Unit 103, Corporate Avenue, Atul Projects. Chakala. Andheri (East), Mumbai 400093, Maharashtra, India.
CIN: L13209MH1965PLC291394

ODISHA POLLUTION CONTROL BOARD

FORM V

(See Rule 14)

Environmental Statement for the financial year ending on 31st March on or before 30th of September every year.

PART A

(i) Name and address of the owner/ occupier of the industry operation or process : Arun Misra

(ii) Industry category Primary-(STC Code) Secondary-(STC Code) : RED A, Aluminium Smelter

(iii) Production capacity :

Production Name	Production Capacity	Production Unit
Aluminium Smelter Plant	1800000	Metric Tonnes/Year
Power Plant	1215	Megawatt

(iv) Year of establishment : 2008

(v) Date of the last environment statement submitted : 23/09/2022

PART B

1. Water consumption m3/ d

Process : 838 m3/day

Cooling : 46914 m3/day

Domestic : 821 m3/day

Name of products	Process water consumption per unit of product output	
	During the previous financial year	During the current financial year
Aluminium Metal	Nil	Nil
Power Generation	1.99	1.989

2. Raw material consumption

Name of raw materials	Name of products	Consumption of raw material per unit	
		During the previous financial year	During the current financial year
Alumina	Aluminium Metal	1.732 MT/MT Al.	1.763 MT/MT Al..
Calcined Petroleum Coke	Aluminium Metal	0.372 MT/MT Al.	0.257 MT/MT/Al.
Coal Tar Pitch	Aluminium Metal	0.085 MT/MT Al.	0.059 MT/MT Al.
Aluminium Fluoride	Aluminium Metal	0.015 MT/MT Al.	0.016 MT/MT Al.

Coal	Power Generation	0.827 (at GCV 2973 Kcal/kg)	0.831 (at GCV 2982 Kcal/Kg)
LDO	Power Generation	0.000181 KL/MWH	0.000193 KL/MWH

*Industry may use codes if disclosing details of raw materials would violate contractual obligations, otherwise all industries have to name the raw material used.

PART C

Pollution discharged to environment/ unit of output.

Pollution	Quantity of pollutants discharged(mass/day)	Concentration of pollutants in discharges(mass/volume)	Percentage of variation from prescribed standards with reasons
Water	**Zero discharge Condition Maintained**		
Air			
Air	CPP Unit 1 - PM, 653.07 Kg/day	42.17 Mg/Nm3	within the prescribed limit
Air	CPP Unit 1 - SOX, 17292.06 Kg/day	1217.55 Mg/Nm3	within the prescribed limit
Air	CPP Unit 1 - NOX, 4874.42 Kg/day	342.64 Mg/Nm3	within the prescribed limit
Air	CPP Unit 2 - PM, 659.79 Kg/day	43.70 Mg/Nm3	within the prescribed limit
Air	CPP Unit 2 - SOX, 18828.71 Kg/day	1247.50 Mg/Nm3	within the prescribed limit
Air	CPP Unit 2 - NOX, 5126.05 Kg/day	339.50 Mg/Nm3	within the prescribed limit
Air	CPP Unit 3 - PM, 501.95 Kg/day	43.47 Mg/Nm3	within the prescribed limit
Air	CPP Unit 3 - SOX, 13876.79 Kg/day	1199.67 Mg/Nm3	within the prescribed limit
Air	CPP Unit 4 - PM, 667.89 Kg/day	43.91 Mg/nm3	within the prescribed limit
Air	CPP Unit 4 - SOX, 19267.02 Kg/day	1266.75 Mg/Nm3	within the prescribed limit
Air	CPP Unit 4 - NOX, 4949.48 Kg/day	325.42 Mg/Nm3	within the prescribed limit
Air	CPP Unit 5 - PM, 673.01 Kg/day	40.91 Mg/Nm3	within the prescribed limit
Air	CPP Unit 5 - SOX, 20196.16 Kg/day	1287.67 Mg/Nm3	within the prescribed limit
Air	CPP Unit 5 - NOX, 5375.83 Kg/day	342.70 Mg/Nm3	within the prescribed limit

Air	CPP Unit 6 - PM, 658.84 Kg/day	42.77 Mg/Nm3	within the prescribed limit
Air	CPP Unit 6 - SOX, 19927.07 Kg/day	1291.33 Mg/Nm3	within the prescribed limit
Air	CPP Unit 6 - NOX, 5208.73 Kg/day	337.42 Mg/Nm3	within the prescribed limit
Air	CPP Unit 7 - PM, 677.95 Kg/day	42.20 Mg/Nm3	within the prescribed limit
Air	CPP Unit 7 - SOX, 20471.95 Kg/day	1273.17 Mg/Nm3	within the prescribed limit
Air	CPP Unit 7 - NOX, 5616.69 Kg/day	349.67 Mg/Nm3	within the prescribed limit
Air	CPP Unit 8 - PM, 727.77 Kg/day	44.45 Mg/Nm3	within the prescribed limit
Air	CPP Unit 8 - SOX, 21227.28 Kg/day	1294.58 Mg/Nm3	within the prescribed limit
Air	CPP Unit 8 - NOX, 6168.97 Kg/day	376.42 Mg/Nm3	within the prescribed limit
Air	CPP Unit 9 - PM, 675.60 Kg/day	44.28 Mg/Nm3	within the prescribed limit
Air	CPP Unit 9 - SOX, 20025.68 Kg/day	1311.75 Mg/Nm3	within the prescribed limit
Air	CPP Unit 9 - NOX, 5562.15 Kg/day	364.42 Mg/Nm3	within the prescribed limit
Air	Potroom FTP PM 117.79 Kg/day	2.45 Mg/Nm3	within the prescribed limit
Air	Potroom FTP Total Fluoride - 33.19 Kg/day	0.71 Mg/Nm3	within the prescribed limit
Air	Bake Oven FTP PM - 25.51 Kg/day	4.64 Mg/Nm3	within the prescribed limit
Air	Bake Oven FTP Total Fluoride - 17.51 Kg/day	3.30 Mg/Nm3	within the prescribed limit

Name of Pollutants : PM , SOX, NOX, Total Fluoride.

PART D

Hazardous Wastes

(as specified under Hazardous Wastes (Management and Handling) Rules, 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
(a) From process	279127.44 MT & 9826 Nos rejected Alf3 Bags	311336.98 MT & 22286 Nos rejected Alf3 Bags
(b) From pollution control facilities	64 MT & 34534 Nos rejected filter bags	73.16 MT & 22500 Nos rejected filter bags

PART E
Solid Wastes

	Total Quantity	
	During the previous financial year	During the current financial year
(a) From process	Solid Waste - Ash (Fly Ash + Bottom Ash) 3504163 MT	Solid Waste - Ash (Fly Ash + Bottom Ash) 3157872 MT
(b) From pollution control facility	As above , Solid Waste - Ash (Fly Ash + Bottom Ash) 3504163 MT	As above, Solid Waste - Ash (Fly Ash + Bottom Ash) 3157872 MT
(c)(1) Quantity recycled or re-utilised within the unit	4430875.3 MT (Hazardous & Non Hazardous Waste)	3562166.715 MT (Hazardous & Non Hazardous Waste)
(2) Sold	28009.98 MT & 804 nos. Discarded containers sent along with Used oil	40091.04 MT & 501 nos. Discarded containers sent along with Used oil
(3) Disposed	H.Waste 8694.98 MT & 31230 .16 MT of Cathode Residue (Disposed through authorized re-processor)	H.Waste 8571.48 MT & 21428.28 MT of Cathode Residue (Disposed through authorized re-processor)

PART F

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

PART G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production Uploaded . Enclosed.

PART H

Additional measures/ investment proposal for environmental protection abatement of pollution, prevention of pollution Uploaded . Enclosed.

PART I

Any other particulars for improving the quality of the environment Uploaded . Enclosed.

Remarks : Uploaded .

FORM – V
(See Rule 14)

Environmental Statement for the financial year ending the 31st March 2023

PART- A

i	Name and address of the occupier of the industry operation or process	: Mr. Arun Misra Executive Director Vedanta Limited, Smelter & CPP Bhurkamunda Jharsuguda – 768 202
ii	Industry Category Primary (STC Code) Secondary – (SIC Code)	: Large, Red A 3A. Aluminium manufacturing with Captive Power Plant
iii	Production Capacity (Units)	: 18.0 LTPA Aluminium : 1215 MW (9 x135 MW) Captive Power Plant
iv	Year of Establishment	: 2008
v	Date of the last Environmental Statement submitted	: 23rd September 2022

PART – B

Water and Raw Material Consumption

(1) Water Consumption m^3/Day

Process	: 838 m^3/day
Cooling & Boiler Feed	: 46914 m^3 /Day (CPP & Smelter)
Domestic	: 821 m^3 /Day

Name of Product	Process Water Consumption per Unit of Product Output	
	During the previous year (2021-22)	During the current year (2022-23)
Aluminium Metal	Nil	Nil
CPP 1215 MW	1.99	1.989

JHARSUGUDA VEDANTA LIMITED

(2) Raw Material Consumption

Name of Product	Name of Raw Materials	Unit	Consumption of Raw Material Per unit output	
			During the previous financial year (2021-22)	During the current financial year (2022-23)
Aluminum Metal	Alumina	MT/MT Al.	1.732	1.763
	Calcined Petroleum Coke	MT/MT Al.	0.372	0.257
	Coal Tar Pitch	MT/MT Al.	0.085	0.059
	Aluminium Fluoride	MT/MT Al.	0.015	0.016
	Cryolite#	MT/MT Al.	0.0015	0.0013
	Furnace Oil	KL/MT Al.	0.02	0.024
Electricity (Captive Power)	Coal	MT/MWH	0.827 (at GCV 2973 Kcal/kg)	0.831 (at GCV 2982 Kcal/kg)
	LDO	KL/MWH	0.000181	0.000193

Includes cryolite for starting of up pots

*Industry may use Codes if disclosing details of raw material would violate contractual obligations, other wise all industries have to name the raw materials used.

VEDANTA LIMITED * JHARSUGUDA *

PART – C

Pollution Discharged To Environment /Unit of Output

(Parameters as specified in the consent issued)

Pollutants	Units & Parameters		Quantity of pollutants discharged (mass/day)	Concentration of pollutants in discharges (mass/volume)	% of variation from prescribed standards with reasons
a) Water*			Zero discharge condition maintained	NA	NA
b) Air	UOM		Kg/Day	Mg/Nm3	
	CPP Unit - 1	PM	653.07	42.17	Within the prescribed limits
		SOx	17292.06	1217.55	
		NOx	4874.42	342.64	
	CPP Unit - 2	PM	659.79	43.70	
		SOx	18828.71	1247.50	
		NOx	5126.05	339.50	
	CPP Unit - 3	PM	501.95	43.47	
		SOx	13876.79	1199.67	
		NOx	3645.304	315.56	
	CPP Unit - 4	PM	667.893	43.91	
		SOx	19267.02	1266.75	
		NOx	4949.48	325.42	
	CPP Unit - 5	PM	673.018	40.91	
		SOx	20196.166	1287.67	
		NOx	5375.83	342.7	
	CPP Unit - 6	PM	658.84	42.77	
		SOx	19927.07	1291.33	
		NOx	5208.73	337.42	
	CPP Unit - 7	PM	677.95	42.20	
		SOx	20471.95	1273.17	
		NOx	5616.69	349.67	
	CPP Unit - 8	PM	727.77	44.45	
		SOx	21227.28	1294.58	
		NOx	6168.97	376.42	
	CPP Unit - 9	PM	675.60	44.28	
		SOx	20025.68	1311.75	
		NOx	5562.15	364.42	
	Pot Room FTP	PM	117.79	2.45	
		Total Fluoride	33.19	0.71	
	Bake Oven FTP	PM	25.51	4.64	
		Total Fluoride	17.51	3.30	

**No effluent is discharged outside the company premises*

VEDANTA LIMITED JHARSUGUDA

PART-D

Hazardous Waste

{As specified under Hazardous Wastes (Management, Handling & Transboundary Movement) Rules 2016}

(a) From Process:

Sl. No.	Hazardous Wastes (Generation)	Total Quantity	
		Previous financial year (2021-22)	Current financial year (2022-23)
1.	Used/Spent oil	22.803 MT	57.946 MT
2.	Waste Residue Containing oil	29.451 MT	15.132 MT
3.	Cathode residues including pot lining wastes	39916.450 MT	41370.00 MT
4.	Silicon Carbide Refractory bricks from pot-lining Waste (Cathode Residue refractory)	Nil	660.320 MT
5.	Spent Pot Lining (Mixed Fines)-(Cathode Residues including pot lining Waste)	Nil	3033.32 MT
6.	Tar containing Wastes	2.645 MT	6.06 MT
7.	Flue gas dust and other particulates	Nil	Nil
8.	Aluminium Dross (drosses and waste from treatment of salt sludge)	20193.410 MT	45656.220 MT
9.	House Keeping waste	1956.257 MT	2608.618 MT
10.	Rejected AlF3 Bags	9826 Nos.	22286 Nos.
11.	Asbestos waste (Ladle cleaning and other units)	Nil	Nil
12.	Coke dust	1720.350 MT	1681.95 MT
13.	Spent Ion Exchange resin containing toxic metal	1.17 MT	0.276 MT
14.	Green Anode Ridge waste	Nil	Nil
15.	Green anode cooling decantation sludge	Nil	Nil
16.	Shot blasting dust	7198.50 MT	6937.80 MT
17.	Drain Cleaning sludge	381.733 MT	186.78 MT
18.	Ladle cleaning residue	22,143.260 MT	23,762.910 MT
19.	Anode Butt with Fines	1,85,561.410 MT	1,85,450.644 MT
20	Discarded Containers/Barrels/Liners/contaminated with Hazardous waste/Chemicals	Nil	Nil

VEDANTA LIMITED JHARSUGUDA

(b)From Pollution Control facilities:

Sl. No.	Hazardous Wastes	Total Quantity	
		Previous financial year (2022-22)	Current financial year (2022-23)
1.	ETP sludge	64.00 MT	42.44 MT
2.	Rejected filter bags	34534 Nos.	22500 Nos.
3.	Ash from Incinerator	NIL	30.72

PART – E

Solid Wastes *

(a) From Process & (b) From Pollution Control facilities

Sl. No.	Solid Wastes	Total Quantity	
		Previous financial year (2021-22)	Current financial year (2022-23)
1.	Ash (Fly ash + Bottom ash)	35,04,163 MT	31,57,872 MT

(c)

(1) Quantity recycled or re-utilised within the unit:

Sl. No.	Solid Wastes	Total Quantity	
		Previous financial year (2021-22)	Current financial year (2022-23)
1.	Ash (Fly ash + Bottom ash)	1,21,121.580 MT (Inside) 40,99,058.455 MT (Outside in brick, cement, road, quarry filling, low lying filling,	NIL (Inside) 33,45,524.605 MT (In brick manufacturing units, cement industries, road, quarry filling, low lying filling,
2.	Tar containing waste	3.645 MT	6.06 MT
3.	Aluminium Dross (drosses and waste from treatment of salt sludge)	2618 MT	7606 MT
3.	House Keeping waste	997.987 MT	1346.618 MT
4.	Ladle cleaning residue	22440.32 MT	23843.354 MT
5.	Rejected AlF3 Bags	NIL	NIL
6.	Coke dust	1720.350 MT	1711.61 MT
7.	Green Anode Ridge waste	NIL	NIL
8.	Spent Anode	1,82,914.959 MT (Recycled)	1,82,128.486 MT (Recycled)

(2)Sold:

Sl. No.	Solid Wastes	Total Quantity	
		Previous financial year (2021-22)	Current financial year (2022-23)
1.	Discarded containers / liners	804 Nos. (Sent along with used oil)	501 Nos. (Sent along with used oil)
2.	Aluminium Dross	25652.560 MT	37750.840 MT
3.	Spent Anode	2357.420 MT	2340.200 MT

VEDANTA LIMITED JHARSUGUDA

(3) Disposed:

Sl. No.	Solid Wastes	Total Quantity	
		Previous financial year (2022-22)	Current financial year (2022-23)
1.	Ash (Fly ash + Bottom ash)	NIL	NIL
2.	Drain Cleaning sludge	293.34 MT	231.440 MT
3.	ETP Sludge (Chemical Sludge from Waste water Stream)	48.52 MT	58.16 MT
4.	Ash from Incinerator	Nil	30.38 MT
5.	House keeping Dust	1037.74 MT	1264.36 MT
6.	Shot blasting dust	7315.38 MT	6987.14 MT
7.	Cathode Residue (Spent Pot Lining)	31230.16 MT (To authorized re-processor)	21428.28 MT (To authorized re-processor)

PART – F

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

Characteristics of Solid Wastes

(a) Aluminium Dross

Parameter	Unit	Value
Aluminium Metal	%	5-13
Iron	%	0.5-1
Alumina	%	75-90
Carbide & Nitrides	%	2-3
Fluoride	%	0.01-0.1

(b) Spent Pot Lining

Parameter	Unit	Value
pH	-	10
Carbon	%	45-50
Aluminium	%	0.40-0.50
Silica	%	1.0-1.5
Iron	%	0.5-1.0
Sodium	%	15-20
Fluoride	%	10-12
Aluminium Carbide & Nitride	%	5-6
Cyanide	%	0.01-0.025
Others	%	10-15

(c) Fly Ash

Parameter	Unit	Value
Aluminium	mg/kg	6530
Calcium	mg/kg	2878
Chromium as Cr	mg/kg	27.10
Magnesium	mg/kg	502
Manganese as Mn	mg/kg	93.42
Molybdenum as Mo	mg/kg	42.45
Nickel as Ni	mg/kg	8.23
Phosphates as P_2O_5	%	0.89
Potassium	mg/kg	355
Silicon dioxide as SiO_2	%	52.42
Sodium	mg/kg	76.38
Titanium as TiO_2	mg/kg	504
Total Sulphur as SO_3	%	0.08
Unburnt Carbon	%	1.23

(a) Disposal Practice of Hazardous and Non Hazardous Wastes

S.No.	Hazardous Waste	Quantity of generation year (2022-23)	Quantity of Disposal year (2022-23)	Mode of Disposal
1.	Used/Spent oil	57.946 MT	100.14 MT	Sale to Authorized re-processors having approval of OSPCB
2.	Waste Residue Containing oil	15.132 MT	25.86 MT	Incineration in HW incinerator
3.	Cathode residues including pot lining wastes	41370.00 MT	20767.96 MT	Co-processing in cement kilns/sale to authorized recycler/re-processor
4.	Silicon Carbide Refractory bricks from pot-lining Waste (Cathode Residue refractory)	660.320 MT	660.320 MT	Disposal through actual users authorized by OSPCB
5.	Spent Pot Lining (Mixed Fines)-(Cathode Residues including pot lining Waste)	3033.32 MT	3033.32 MT	Disposal through Actual users authorized by OSPCB/Co-processing in cement kiln.
6.	Tar containing Wastes	6.06 MT	6.06 MT	In house recycling
7.	Flue gas dust and other particulates	Nil	Nil	Inhouse recycling /CHWTSDF
8.	ETP Sludge (Chemical Sludge from Waste water Stream)	42.44 MT	58.16 MT	Disposal in CHWTSDF/ Co-processing in Cement kiln authorized by OSPCB
9.	Aluminium Dross (drosses and waste from treatment of salt sludge)	45656.220 MT	37750.84 MT	Authorized re-processors having approval of SPCB/ CPCB/In-house recycling

10.	Housekeeping waste	2608.618 MT	1264.36 MT	In-house recycling/disposal in CHWTSDF/Co-processing in Cement kiln authorized by OSPCB.
11.	Rejected Filter bags (FTP)	22500 Nos.	16714 Nos.	Incineration in pots/incineration in HW incinerator
12.	Rejected AlF3 Bags	22286 Nos.	22267 Nos.	Incineration in pots/incineration in HW incinerator
13.	Asbestos waste (Ladle cleaning and other units)	Nil	Nil	Disposal in CHWTSDF
14.	Spent Ion Exchange resin containing toxic metal	0.276 MT	1.352 MT	Co-incineration in Captive Power Plant
15.	Green Anode Ridge waste	NIL	NIL	Inhouse Recycling /CHWTSDF
16.	Green anode cooling decantation sludge	NIL	NIL	Inhouse Recycling/Disposal in CHWTSDF
17.	Shot blasting dust	6937.80 MT	6987.14 MT	Disposal in CHWTSDF
18.	Drain Cleaning sludge	186.78 MT	231.44 MT	Disposal in CHWTSDF
19.	Used anode butt with fines	1,85,450.644 MT	2340.22 MT	In house Recycling/Authorized re-processors
20.	Discarded Containers/Barrels/Liners/ contaminated with Hazardous waste/Chemicals	NIL	NIL	Captive Reuse/ Sent to authorized re-processor along with used oil
21	Ash from Incinerator	30.72 MT	30.38 MT	Disposal in CHWTSDF
S.No.	**Non Hazardous Waste**	**Quantity of generation year (2022-23)**	**Quantity of Disposal year (2022-23)**	**Mode of disposal**
1.	Ash (Fly Ash + Bottom Ash)	31,57,872 MT	33,45,524.605 MT	In brick manufacturing units, cement industries, road, quarry filling, low lying filling,

PART – G

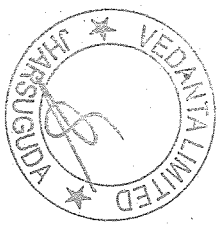
Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production

(A) Water Conservation Programs

- Construction of a water storage tank with the holding capacity for 24-hour operation in Bake Oven and Green Anode Plant
- Revamping of Fire service water lines in Smelter Plant has been undertaken.
- Float valve installed in Sintex tanks to control overflow of water.
- Cooling Tower operational efficiency has been increased.

(B) Energy Conservation Initiatives

- Replacement of Non ES pots by 100% graphitized cathodes – 120 million kWh
- 2nos. of 350KW VFD installation in Casthouse-2 Pump house – 5.12 million kWh
- Separation of CH#3 Header – 3.50 million kWh
- VFD installation for Shot blast Turbines – 0.18 million kWh
- Scoop Bath Tighting trafo Voltage reduction from 260V to 220V.- 0.027 million kWh
- 36 No of old BR/CR motor replaced with IE3 motor – 0.032 million kWh
- RB-53,73,93,113,133,153 Idle time Elimination – 0.99 million kWh
- Ball mill running hours optimization – 0.64 million kWh
- Conventional lights replacement with LED in Highmast – 0.04 million kWh
- Installation of LED Light in shop floor and control room – 0.103 million kWh
- Replacement of pulse valve diaphragm in FTP 1 – 0.102 million kWh
- Installation of 100% graphitized cathode – 19.89 million kWh
- Installation of RUC cathode – 1.49 million kWh
- Separate header for Cast House & Carbon - 1.72 million kWh
- Compressor overhauling – 0.55 million kWh
- Implementation of Vedanta Lining Design – 0.93 million kWh
- AC optimization in control room and shop floor – 1.22 million kWh
- Improvement of Conversion Efficiency of Rectifier systems from 98.64% to 98.66% - 1.46 million kWh
- Ball Mill power optimization in GAP – 0.89 million kWh
- RPH-2 CT fins replacement – 0.23 million kWh



PART – H

Additional measures/investment proposal for environmental protection including abatement of pollution, prevention of pollution

(A) Additional Measures:

Air Pollution Control:

- Plantation of 56000 saplings done in Jharsuguda complex to increase the green cover.
- Wind Barrier of 10 Metres height has been installed at railway siding.
- 27 Nos. of diesel forklift replaced by EV forklift.
- 750 MU of green energy purchased.
- 65 MT of biomass co – firing completed in CPP
- Replacement of filter bags at Unit-1,2,3,4,7,8,9.
- Water sprinkler line fixed at both side of phase 1 & phase 2.
- New mist cannon introduced for dust suppression on road.
- Water sprinkling Spray line installation done in Phase 2 silo side and one mist cannon provided at phase-1 silo area.
- Dulevo and Mobile water tanker used for controlling the fugitive emission.
- Installation of dust conveying system from coke feeders to Green Anode Plant silo.
- Enhancement of dedusting system of transfer points
- Online velocity and flow monitoring system installed in Bake oven
- Fume exhaust installed in Cast House 3.
- Smelter 1, FTP 1 revamping completed.
- In crushed bath silos, dedusting unit installed.
- Dedusting-1 Silo outlet gate valve functioning done for no further leakages
- Dedusting 1 & 2 duct line air flushing done to improve suction efficiency
- Dedusting-1 bag chamber air suction leakage arrested for better suction.
- Dedusting1 dust conveying line overground done to check line leakage
- Complete replacement of Damaged FTP ducts in FTP-3 & FTP-4
- Dedusting Bag Chamber High level Pop up display in HMI to avoid dust Spillage due to Jamming
- FTP 05 Hooter installation in Control Room to avoid FTP going in Bypass mode in Case of any Sensor malfunction
- Air Pressure regulator & Safety valve installation at Alumina Unloading point to prevent air leakage due to high pressure.
- Pneumatic conveying system of DD-9 taken in line for recycling of Furnace-9 dust in anode making process. Manual bagging stopped which was leading to air pollution
- Leakage arresting drive in all 3 FTPs
- Dedusting unit DC1 suction duct modification (Change in suction duct diameter) at conveyor cv 1.03 & 2.01 for effective dedusting.
- Dross cooler installation for all Cast house DPU resulting cooling of dross within 20 min against earlier practice of 24 Hr, reducingCo2 emission
- Bag filter bag replacement in 5 Bag filter out of 7 Nos Bag filter in DPU location
- Suction duct installed in Dross cooler Screener.
- Chute modification of loading point of Packing coke vehicle done

Water Pollution Control:

- Total 5 km Fire line above ground done in FY 22-23
- Fire line leakage arrested in GAP TP#7, GAP cooling tower, GAP Silo area, Rodding etc
- Drinking water line leakage arrested in Potline area(Total 6 nos of leakages)
- Process water pipeline leakage arrested in CH#2
- All Sintex tank cleaning done (Total 46 nos)
- Firefighting line leakage arrested at Acid storage area.
- Fire hydrant line leakage arrested at NGSL office area.
- Potable water tank leakage arrested.
- Firefighting line leakage arrested at CWP area.
- Water washing minimized at ESP area.
- Scheduled drain cleaning is being done.
- Re-routing of Grouping & Ungrouping heat exchanger water line above ground from under ground to prevent water loss due to leakage underneath
- Fire deluge line in all FTP conditioning tower top.
- Fixed type water sprinkling system installation at railway siding.

Solid Waste Management:

- Achieved around 106 % ash utilization in various avenues such as highway projects, cement plants, brick manufacturing etc.
- Ash shifting through 115 railway rakes to various cement plants.

(B) Investment Proposals:

- Concreting of ash stacking and loading platform at Railway siding.
- Approach road concreting of railway siding
- Electrification of Fleet – Forklift, LMV, HMV (Tanker)
- Ordering for revamping of Smelter 1 FTP 2, 3, 4.
- Procurement of renewable power

PART – I

Any other particulars for improving the quality of the environment

- Implemented Integrated Management System (IMS) across Smelter and CPP for better quality, pollution control and improve health of people working in the plant.
- All important Environmental Days Celebrated to build up Environmental awareness among employees and community.
- Distribution of tree sapling in community for developing greenery
- Established Butterfly park to protect 30+ rare species and Created a nurturing environment for butterflies.
- Received ASI certification for Smelter 2.
- Our products are EPD verified based on through Life Cycle Assessment (LCA) in accordance with international standards: ISO 14040:2006, ISO 14044:2006, ISO 14025:2006 and EN 15804:2012+A2:2019
- We have produced 55 KT of Green Aluminium i.e. Restora (produced through renewable energy) and Restora Ultra (through metal recovered from Dross processing).

- Specific GHG emission achieved 15.57 MTCO2e/MT-AL in FY23 reduced by 10.8% from FY21 baseline
- Green World Award for Environment Management
- Received Indian Green Manufacturing Challenge (IGMC) Award'22
- Platinum Award for Responsible Manufacturer of FY'22 by IMexI
- Grow care India Gold Award for Environment Management