

JPL/EMD/ES-TPP (4X600 MW)/2023/88

Date: 08/09/2023

The Member Secretary,
Chhattisgarh Environment Conservation Board,
Paryavas Bhavan, North Block Sec.19
Naya Raipur (CG) -490099

Sub: Submission of "**Environmental Statement**" for O. P. Jindal Super Thermal Power Plant (4 X 600 MW) of Jindal Power Limited at Tamnar, District Raigarh (C.G) for the Financial Year of 2022 -2023.

Dear Sir,

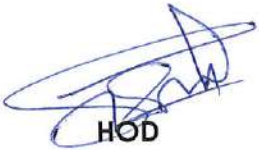
This has reference to above mentioned subject. Enclosed please find herewith the "**Annual Environment Statement**" for the Financial Year 2022- 2023 in prescribed **Form V** for O.P. Jindal Super Thermal Power Plant (4X600 MW) of Jindal Power Limited, Tamnar, District Raigarh (C.G).

This is for your kind information and record please.

Thanking you,

Yours faithfully

For Jindal Power Limited,



HOD

Environment Management Department

Encl: As above

CC: Regional Officer,
Chhattisgarh Environment Conservation Board,
TV Tower Road, Raigarh, C.G

: For your kind perusal and record please.

Jindal Power Limited

CIN No. : U04010CT1995PLC008985

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Registered Office Tamnar 496 107, District Raigarh, Chhattisgarh

ENVIRONMENTAL STATEMENT

FOR

**O.P. JINDAL SUPER THERMAL
POWER PLANT (4 X 600 MW)**

FOR THE YEAR - 2022-2023

SUBMITTED TO

**CHHATTISGARH ENVIRONMENT
CONSERVATION BOARD, RAIPUR
(C.G.)**

BY



**JINDAL POWER LIMITED
TAMNAR**

FORM -V
(See Rule 14)

(Environmental Statement for the Financial Year 2022-2023)

PART A

(i) Name and address of the owner/ occupier of the industry operation or process.

C. N. Singh
ED & Plant Head,
O.P. Jindal Super Thermal Power Plant,
Jindal Power Ltd,
Vill: Tamnar, Distt: Raigarh
Chhattisgarh-496107

(ii) Industry category Primary-(STC Code) Secondary-(STC Code).

Primary- (STC Code): Large Scale (Coal based Power Plant)

Secondary- (STC Code): Red

(iii) Production capacity- Units

Name of Product	As per Consent
Power Generation	4 X 600 MW (2400MW)

(iv) Year of establishment: (Commercial Operation Declaration)

1st Unit-14.03.2014

2nd Unit-31.03.2014

3rd Unit-15.01.2015

4th Unit-12.12.2016

(v) Date of the last Environmental Statement submitted

Vide Letter No. **JPL/EMD/ES-TPP (4X600) MW/2022 /143, dated 02.09.2022**

PART B

Water and Raw Material Consumption

1. Water consumption m³/ day

Sources Name	Total Water consumption (m ³ / day)
1. Process (DM Water Makeup)	1025
2. Cooling (Cooling Tower Makeup)	68383
3. Domestic (Potable & Service Water)	1110

Name of Products	Process water (DM water makeup) consumption per unit of products	
	During the previous financial year (2021-2022)	During the current financial year (2022-2023)
Power Generation	32.317 ml/kwh	28.829 ml/kwh

2. Raw material consumption

Name of raw Materials*	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year (2021-2022)	During the current financial year (2022-2023)
Coal	Power Generation	0.820 kg/kwh	0.784 kg/kwh
Oil	Power Generation	0.268 ml/kwh	0.186 ml/kwh

*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 (Parameter as specified in the consent issued)

Pollutants		Quantity of Pollutants discharged (mass/day)				Concentration of Pollutants discharged (mass/volume)				Percentage of variation from Prescribed standards with reasons.
(a) Water*		Not Applicable				Not Applicable				Not applicable
(b) Air										
		U#1	U#2	U#3	U#4	U#1	U#2	U#3	U#4	
Unit of measurement		(t/day)				(mg/Nm ³)				
i) Particulate Matter (PM)	Min	2.400	2.556	2.335	2.504	37.0	39.4	36.0	38.6	Within the prescribed standards
	Max	2.822	2.854	2.952	2.770	43.5	44.0	45.5	42.7	

***Note** – 100% effluent (Process and domestic) is recycled back for Ash slurry preparation, dust suppression & green belt development purpose and Zero discharge is being maintained.

PART D HAZARDOUS WASTE

As specified under Hazardous Wastes Management, Handling & Trans Boundary Movement Rules, 2008, & as amended time to time.

Hazardous Waste	Total Quantity (Kg)	
	During the previous financial year (2021-2022)	During the current financial year (2022-2023)
1. From Process	Used /Spent Oil 5.1 Generation- 28.93 MT Disposal- 28.93 MT Waste /residue Containing Oil 5.2 Generation - Nil Disposal- Nil	Used /Spent Oil 5.1 Generation-32.03 MT Disposal- 32.03 MT Waste /residue Containing Oil 5.2 Generation – 100 KGS Disposal- 100 KGS
2. From Pollution Control Facilities	Not Applicable	Not Applicable

**PART E
SOLID WASTE:**

Solid Waste	Total Quantity (MT)	
	During the previous financial year (2021-2022)	During the current financial year (2022-2023)
a. From Process	Approx. 713763 MT (Bottom Ash)	Approx. 916227 MT (Bottom Ash)
b. From Pollution Control Facilities (ESPs)	2855053 MT (Fly Ash)	3664908 MT (Fly Ash)
c. Quantity recycled or re-utilized within the unit.	3198220 MT (Ash utilization)	4528175MT (Ash utilization)

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.

Characterization and disposal of wastes:-

1. Hazardous Waste (Used /Spent oil under category No-5.1)

Characterization: Analysis report of hazardous waste (Used/Spent oil).

Reference: Ultimate Enviroltycal Solutions, Report No: UES/TR/22-23/05156

SI No	Parameter	Measurement Unit	Result	Maximum Permissible limit as per Schedule 5 (Part A & Part B)
1	Lead as Pb	mg/l	9.3	100
2	Arsenic as As	mg/l	ND	5
3	Cadmium +Chromium+ Nickel	mg/l	8.7	500
4	Polyaromatic Hydrocarbon (PAH)	%	ND	6
5	Polychlorinated Biphenyls (PBCs)	mg/l	ND	< 2
6	Sulfur (as S)	%	0.90	4.5
7	Water Content	%	0.65	1
8	Sediment	%	ND	0.25
9	Total Halogents	mg/l	361	4000

Disposal- Used/Spent Oil has been sold to CPCB approved re-cycler as per the rule

2. Solid Waste (Fly Ash)

Characteristics of Solid waste: Fly ash

Reference: Ultimate Envirolytical Solutions, Report No: UES/TR/21-22/05158

Sr. No.	Test Parameters	Test Value
1	Alumina (as Al ₂ O ₃) % by mass	26.4
2	Iron Oxide (as Fe ₂ O ₃) % by mass	10.2
3	Silica (as SiO ₂) % by mass	35.36
4	Reactive Silica % by mass	0.07
5	Calcium Oxide (as CaO) % by mass	6.51
6	Magnesium oxide (as MgO) % by mass	0.36
7	Sulphur Trioxide (as SO ₃) % by mass	0.39
8	Alkalies as (Na ₂ O) % by mass	9.66
9	Chloride (as Cl) % by mass	10.68
10	Loss on Ignition (LOI) % by mass	0.37

Disposal-Ash Utilized in different purpose in this financial year is as mentioned below.

Financial Year	Total Ash Generation (MT)	Cement Industry (MT)	Brick/ blocks/tiles and other ash based products (MT)	Reclamation of low lying area a (MT)	Back Filling of Mine ((MT)	Total fly Ash Utilization (MT)	Utilization (%)
2022-23	4581135	87019	32729	7053	4401375	4528175	98.84

PART G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

- JPL has taken every possible measure to mitigate the environmental impacts and also to conform to the applicable regulatory norms through implementing state of art technologies for environment protection. Air Pollution Control Devices (APCD) with benchmark efficiency (ESPs with 99.99% efficiency) have been installed. Gaseous analyzers for SO₂, NO_x are also installed at stacks. Plant is designed on 100% recirculation/ reuse of waste water from cooling tower blow down, boiler blow down and decanted water from ash dyke. Thus the concept of "Zero Discharge" is being maintained at all the time. The plant management is focused for effective utilization / proper management of the waste generated including fly ash.
- Adequate measures for air pollution control have been taken in and around plant area. Developments of green belt have been done in Plant premises, Ash dyke area, Mines area Rabo dam & Catchment area and Colony area. Approx. 26.51Lakh nos. of Saplings has been planted since year 2005 to March'2023.
- JPL has installed total 06 nos of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) with an investment of approx. Rs.3.0 crores in & around power plant (3 core zones & 3 buffer zones). Four Stations have 06 nos. of online analyzers and another two Stations have 09 nos. of online analyzers, which records the Ambient Air Quality Monitoring (AAQM) Data round the clock. As per the notification issued by the Ministry of Environment & Forests (MoEF&CC) on 16th November,2009 different environmental parameters are monitored at these stations by using specific measurement technique.
- Effluent generated from plant operation (Cooling Tower blow down, Boiler blow down, DM Plant neutralization pit discharge) is treated in effluent treatment plant & ash dyke decanted water is recirculated to ash handling system and both are used for ash slurry preparation.
- Domestic sewage is treated in 3 no. of Sewage Treatment Plants (STPs) installed 2 no. at plant premises and 1 no. STP at colony. The treated water is used for horticulture purpose.
- Installed 2 TPD capacity biogas plant near Plant premises, where Kitchen waste generated from plant is being used to produce Methane gas for cooking in plant canteen. The company has invested an amount of approx. Rs.28 Lakhs.
- These measures have made a positive impact towards Environment Protection and conservation of natural resource such as Coal and Water.
- We have installed the 3.2 MW rooftop solar plant at our plant building and 85 MW solar plant is under progress.
- Regular Uses of 02 nos of Truck mounted Fog cannon with water sprinkling system for mitigation of fugitive dust at source.
- JPL has purchased the 04 nos of E-vehicles for reduction of carbon emission generated from vehicles emission.
- JPL has started PUC centre at the plant premises for regular monitoring of vehicle emission.

PART – H

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

SL No.	Aspects	Environmental Protection and mitigation measures
1.	Air Pollution	<ul style="list-style-type: none"> • Installation of ESPs of efficiency >99.99% to limit the Particulate Matter (PM) below 50 mg/Nm³. • Construction of Stack of height 275 m for proper mixing and to reduce ground level concentrations. • Installation of Bag filters at fly ash silos & Coal bunkers top. • The company has installed Continuous Emission Monitoring System (CEMS) in all stacks for Continuous Monitoring of Particulate Matter and Gaseous emission (SO₂ & NO_x) to track on-line real time emission data on the continuous basis with the data connectivity CPCB and CECB server. • Space provision for installation of FGD, if required in future. • Arrangement of dust suppression system at transfer points & coal stock yard. • Installation of closed pneumatic conveying system for ash conveying. • Green belt development. • Maintaining sufficient water depth to control fugitive emissions from ash dyke and Good housekeeping is being maintained.
2.	Water Pollution	<ul style="list-style-type: none"> • The generated oil bearing effluents & other effluents from various streams is treated in Effluent treatment Plant (ETP) and the treated effluent is reused/recycled for ash slurry preparation, CHP dust suppression etc. • The company has maintained zero liquid discharge at all the time. Further, company has also installed Continuous Effluent Quality Monitoring System (EQMS) also it's connected to CPCB and CECB server. • Domestic sewage is treated in Sewage Treatment Plant. • Effluent from Ash dyke is treated and re-circulated /reused. • Construction of separate drains for storm water and effluents.
3.	Noise	<ul style="list-style-type: none"> • Suitable vibration control measures for major equipment.

	Pollution	<ul style="list-style-type: none"> • Proper enclosure of noise generating sources. • Turbines is provided with acoustic enclosure • Closed buildings for steam turbines. • A thick green belt development all along the boundary to control noise level.
4.	Solid waste	<ul style="list-style-type: none"> • Generated fly is utilized for manufacturing of fly ash bricks, blocks, tiles etc., manufacturing of cement, back filling in abandoned mines, Dyke raising. • The bottom ash is disposed in ash dyke

**PART I
MISCELLANEOUS:**

Any other particulars in respect of environmental protection and abatement of pollution.

Green Belt Development: During the year 2022-2023 approx. 19595 nos. of saplings has been planted in and around the plant premises (4X250 MW & 4X600 MW TPP). 2820 nos of sapling has been planted at Rabo dam area during the FY2022-23.

House Keeping: Maximum internal roads have been made pucca. Good housekeeping practices are being followed. Domestic House keeping like collection of domestic garbage (Colony & Plant), garden waste, civil debris is done in an efficient manner.

Rain water Harvesting Pond: A Rain Water Harvesting Pond (RWH) of capacity Approx. 35000 m³ has been constructed within plant premises to store the rain water and recharge the Ground water table.

Integrated Management System: JPL has implemented the integrated management system as per ISO 9001:2015 (Quality Management System), ISO 14001:2015 (Environment Management System), OHSAS 45001:2018 (Occupational Health & Safety Assessment Series) .These Systems have been certified by reputed certifying agency .(The company also Certified for **EN ISO 50001 (Energy Management System)** by reputed certifying agency (TUV NORD).

Environmental Awareness Program: To promote the environmental awareness among the masses including employee, Earth Day, Earth Hour, World Environment Day, and Ozone Day have been celebrated. In these occasion various environmental awareness program like poster, slogan, essay writing, quiz competition, Skits Play, etc. have been organized in nearby village schools. Environmental rally was organized covering the nearby villages for mass campaigning.

Environment Management activities through CSR: The unit has also under taken Environment Management initiatives through its CSR wing called "JSP Foundation" registered under the Company Act. At present it is working in 44 adopted villages in the vicinity of Power project, Mines and Water Reservoir area. OPJSKS has undertaken a number of innovative programmes in the area of environment protection such as pond deepening, mass plantation & distribution of saplings, construction of Biogas plant construction of Pucca roads, celebration of World Environment Day, Earth Day etc.

Training & Development: JPL has conducted following training programs to creating awareness among employees towards Environmental Management.

Sl. N.	Title of the Training	Faculty	Venue
1	Ash Dyke Management	External Trainer	JIPT
2	Environmental Factors in ESG Rating	External Trainer	Online
3	Performance and efficiency Monitoring	Internal Trainer	JIPT
4	Water Treatment Plant	Internal Trainer	JPL Tamnar
5	Safe Handling of Chlorine in WTP area	Internal Trainer	JPL Tamnar
6	Work Place Ergonomics & Occupational Health	External Trainer	JIPT
7	Ash Handling Plant - O&M	Internal Trainer	JPL Tamnar
8	First Aid	External Trainer	JIPT
9	Coal quality & its impact on boiler performance and combustion optimization	External Trainer	JIPT
10	Condenser Cooling Water Treatment	Internal Trainer	JIPT
11	Cardiopulmonary resuscitation (CPR)	Internal Trainer	JIPT
12	Basic Instrumentation & Control	Internal Trainer	JIPT
13	General Plant Safety Introduction & Legal Compliance	Internal Trainer	JIPT
14	Operation & Maintenance of dense phase ash conveying system.	Internal Trainer	JIPT
15	Safe handling & maintenance of chlorine	Internal Trainer	JIPT
16	Plant performance and efficiency monitoring and optimization	Internal Trainer	JIPT
17	Behaviour Based Safety	External Trainer	JIPT
18	Construction features of Pumps , Operation & Maintenance practices"	Internal Trainer	JIPT
19	Basic Life Support - BLS	Internal Trainer	JIPT
20	Awareness of ISO 27001:2013 (ISMS)	External Trainer	JIPT
21	Harness Solar Energy and Power the Planet	External Trainer	JIPT
22	Lightning Protection system	Internal Trainer	JIPT
23	Solar PV system design	External Trainer	JIPT
24	In-pit Crushing & Conveying system in mine	External Trainer	VTC Office
26	Cooling water & Boiler water treatment in Power Plant	Internal Trainer	JIPT
27	Defensive Driving	External Trainer	JIPT

Awards:

- ❖ 22nd Annual Greentech Environment Award 2022.
- ❖ Platinum Award " for the Grow Care India Environment Award 2022.
- ❖ Apex India Green Leaf Award 2022.
- ❖ CEE Environment Excellence Award 2022.
- ❖ Runner Up Award in the 'Safety Category' by the Jury of the Economic Times Energy Team. ET Energy Leadership Summit and Award- 2022.
- ❖ Quality Circle teams bagged GOLD award at "Chapter Convention on Quality Concepts (CCQC-2022), Bhilai Chhattisgarh.
- ❖ Quality Circle's bagged prestigious "Par Excellence" Awards @ National Convention on Quality Concepts (NCQC -2022, Aurangabad).
- ❖ Platinum Award" Under Apex India Occupational Health & Safety Award 2022.
- ❖ "Platinum Award" Grow Care India Environment Award, 2021 for outstanding achievement in the field of Environment Management under the aegis of Grow Care India Environment Award, 2021.
- ❖ "Platinum Award" Under Apex India Green Leaf Award 2021 for Environment Excellence Category.
- ❖ Par Excellence Awards at National Convention on Quality Concepts (NCQC-2021).
- ❖ Recertification of ISO 50001:2018 (Energy Management System) from TUV NORD
- ❖ ATD BEST Award 2019 ATD formerly known as ASTD (American Society for Training & Development), USA.
- ❖ Golden Globe Tigers Award & People First HR Excellence Awards 2019.
- ❖ Jindal Power Limited Quality Circle teams bagged "Par Excellence" and "Excellence" Awards at National Convention on Quality Concepts (NCQC-2018), held at Gwalior.

- ❖ Won the 16th Annual Genentech Award -2015 in "Gold Category" in Thermal Power sector in India.
- ❖ ENERGY EFFICIENCY AWARD 2015 in the Category: Power (>1000 MW) by CREDA at Raipur, Chhattisgarh, on 9th of August, 2015 in recognition and appreciation of our unrelenting efforts in Energy Efficiency during 2014-15.
- ❖ Jindal Power Limited (3400 MW) has been awarded Re-certification of ISO 9001:2015, ISO 14001:2015 and BS OHSAS 18001:2007 by TUV NORD GMBH certification agency, Germany.
- ❖ Genentech Award -2014 in "Gold Category" in Thermal Power sector in India.
- ❖ Greentech CSR Award-2014
- ❖ Frost & Sullivan's Green Manufacturing Excellence Awards 2013.
- ❖ Won the par excellence & excellence award from QCFI for the Year 2013.
- ❖ Won the First Prize" in the Annual Flower & Vegetable Show organized by TRL Krosaki Refractory's Ltd. for the Year 2013.
- ❖ Genentech Award -2013 in "Platinum Category" (Highest category) in Thermal Power sector in India.
- ❖ Greentech CSR Award-2013.
- ❖ Jindal Power limited (JPL) has been ranked 5th with 2 Leaves Award in green rating project of thermal power plants in the country conducted by Centre for Science and Environment (CSE), New Delhi.
- ❖ Greentech Environment Gold Award-2012.

PHOTOGRAPHS OF ENVIRONMENTAL AWARENESS PROGRAM



Plantation program at Jindal Power Limited



Online poster competition organized on the occasion of WED-2021



Plantation Program & conclusion ceremony organized on the occasion of

CERTIFICATES & PHOTOGRAPHS OF ENVIRONMENT AWARDS RECEIVED.



Greentech Environment Award 2022



Certificate of Apex Green Leaf Award 2022



Apex Green Leaf Award 2022



Certificate of Apex Green Leaf Award 2022



Grow Care Award 2022



Certificate of Grow Care Award 2022



CEE Environment Excellence Award 2022



Certificate of CEE Environment Excellence Award 2022