

JPL/EMD/ES-TPP (4X600 MW)/2020/ 346

Date: 09/09/2020

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 2019 -2020.

Dear Sir,

This has reference to above mentioned subject. Enclosed please find herewith the "**Annual Environment Statement**" for the Financial Year 2019- 2020 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,



N.K. Kothari
President & COO



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 - 2019-2020

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 2019-2020)

PART A

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

Nageen Kothari
COO, Unit 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/2019 /134, dated 16.09.2019**

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)	212623
2. Cooling (Cooling Tower Makeup)	14568056
3. Domestic (Potable & Service Water)	519421

Name of Products	Process water (DM water makeup) consumption per unit of products	
	During the previous financial year (2018-2019)	During the current financial year (2019-2020)
Power Generation	41.561 ml/kwh	29.856 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 (2018-2019)	During the current financial year (2019-2020)
Coal	Power Generation	0.753 kg/kwh	0.775 kg/kwh
Oil	Power Generation	0.333 ml/kwh	0.273ml/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	USD	1.719	1.388	2.309	USD	26.5	21.4	35.6	Within the prescribed standards
	Max	USD	3.017	2.841	2.867	USD	46.5	43.8	44.2	

USD- Unit under Shut Down

***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 (2018-2019)	During the current financial year (2019-2020)
1. From Process	Used /Spent Oil 5.1 Generation- 31.290 MT Disposal- 23.290 MT Waste /residue Containing Oil 5.2 Generation - Nil Disposal- Nil	Used /Spent Oil 5.1 Generation- 10.210 MT Disposal- 18.210 MT Waste /residue Containing Oil 5.2 Generation - Nil Disposal- Nil
2. From Pollution Control Facilities	Not Applicable	Not Applicable

**PART E
SOLID WASTE:**

Solid Waste	Total Quantity (MT)	
	During the previous financial year (2018-2019)	During the current financial year (2019-2020)
a. From Process	Approx. 460721MT (Bottom Ash)	Approx. 499016 MT (Bottom Ash)
b. From Pollution Control Facilities (ESPs)	1842886 MT (Fly Ash)	1996064 MT (Fly Ash)
c. Quantity recycled or re-utilized within the unit.	2351192 MT	2520430 MT

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 Envirollytical Solutions, Report No: UES/TR/19-20/014139

SI No	Parameter	Measurement Unit	Result	Maximum Permissible limit as per Schedule 5 (Part A & Part B)
1	Lead as Pb	mg/l	72.3	100
2	Arsenic as As	mg/l	ND	5
3	Cadmium +Chromium+ Nickel	mg/l	52.4	500
4	Polyaromatic Hydrocarbon (PAH)	%	2.5	6
5	Polychlorinated Biphenyls (PBCs)	mg/l	0.32	< 2
6	Sulfur (as S)	%	0.45	4.5
7	Water Content	%	0.32	1
8	Sediment	%	0.18	0.25
9	Total Halogens	mg/l	1135.0	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: Shriram Institute Test, Report No: C1/0000177889

Sr. No.	Test Parameters	Requirements	Test Value
1	Silica dioxide (SiO ₂) plus aluminium oxide (Al ₂ O ₃) plus Iron Oxide (Fe ₂ O ₃) % by mass	70.0 Min	95.7
2	Silica dioxide (as SiO ₂) % by mass	35.0 Min	59.6
3	Magnesium oxide (as MgO) % by mass	5.0 Max	0.7
4	Total Sulphur (as SO ₃) % by mass	3.0 Max	0.4
5	Total Chloride (as Cl) % by mass	0.05 Max	0.03
6	Loss on Ignition (LOI) % by mass	5.0 Max	0.3
7	Reactive Silica % by mass	20.0 Min	35.5
8	Available Alkalies as equivalent sodium oxide (Na ₂ O) % by mass	1.5 Max	0.2
9	Moisture content % by mass	1.0 Max	0.2
10	Fineness specific Surface in m ² /kg by blaines permeability method	320.0 Min	463
11	Particle retained on 45 micron Is sieve (wet Seiving) %	340.0 max	3.4
12	Soundness , Autoclave Expansion , %	0.8 Max	0.04
13	Lime Reactivity- Average Compressive strength in n/mm ²	4.5 Min	4.7
14	Compressive Strength at 28 Days % of control	Not less than 80% of the strength of corresponding plain cement mortar cubes	93

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

Financial Year	Total Ash Generation (MT)	Supply to Brick Making Plant (MT)	Other's (MT)	Ash Dyke Raising (MT)	Mines filling (MT)	Total fly Ash Utilization (MT)	Utilization (%)
2019-20	2495080	19858	0.00	1775000	725572	2520430	101.02

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 (till March 2015), Rabo dam & Catchment area and Colony area. Approx. 25.14 Lakh nos. of Saplings has been planted since year 2005 to March'2020.
- 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 4 no. of Sewage Treatment Plants (STPs) installed 2 no. at plant premises, 1 no. at labor colony 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.

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 Pollution	<ul style="list-style-type: none"> • Suitable vibration control measures for major equipment. • 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
MISCLLANEOUS:**

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

Green Belt Development During the year 2019-2020 approx. 1252 nos. of saplings has been planted in and around the plant premises (4X250 MW & 4X600 MW TPP). 4990 nos. of saplings has been planted at Road side Plantation. 600 nos of sapling has been planted at Raboo dam area. Approx. 1172 nos. of saplings has been planted at Colony area during the financial year of 2019-20.

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.

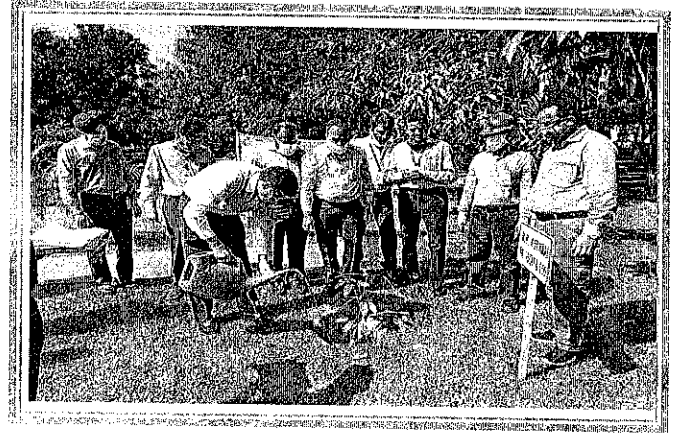
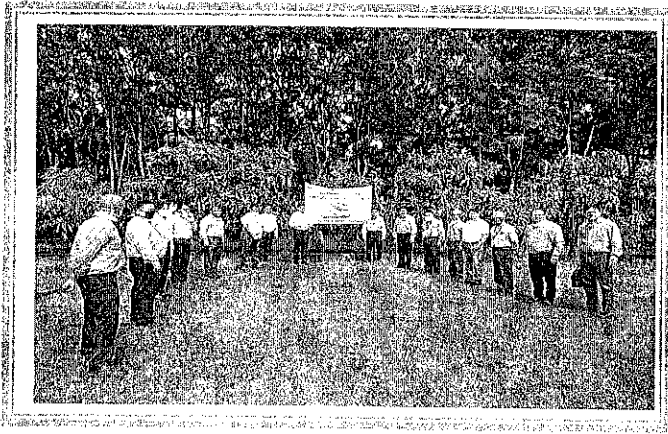
Training & Development: JPL has conducted following training programs to creating awareness among employees towards Environmental Management.

Sl. No	Title of the Training	Faculty	Venue
1	IMS Awareness	Internal Trainer	JPL Tamnar
2	Training on "Fire fighting & Safety"	Internal Trainer	JPL Tamnar
3	IMS awareness program for safety quality & environment	Internal Trainer	JPL Tamnar
4	Renewable energy & its impact on grid & thermal units	Internal Trainer	JPL Tamnar
5	Occupational Health & Hazards	Internal Trainer	JPL Tamnar
6	ISO Quality Standard	Internal Trainer	JPL Tamnar
7	Major Accident Hazards control	External Trainer	Central Labour Institute, Mumbai
8	Fire Hazards and its Prevention	Internal Trainer	JPL Tamnar
9	Electrical hazards precautions & Prevention	Internal Trainer	JPL Tamnar
10	Electrical Fire & Safety	Internal Trainer	JPL Tamnar
11	Awareness on Energy management system	Internal Trainer	JPL Tamnar
12	5'S Awareness Training	Internal Trainer	JPL Tamnar

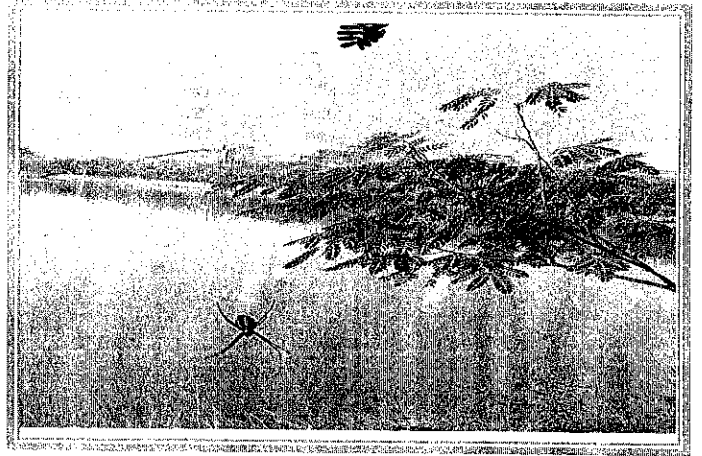
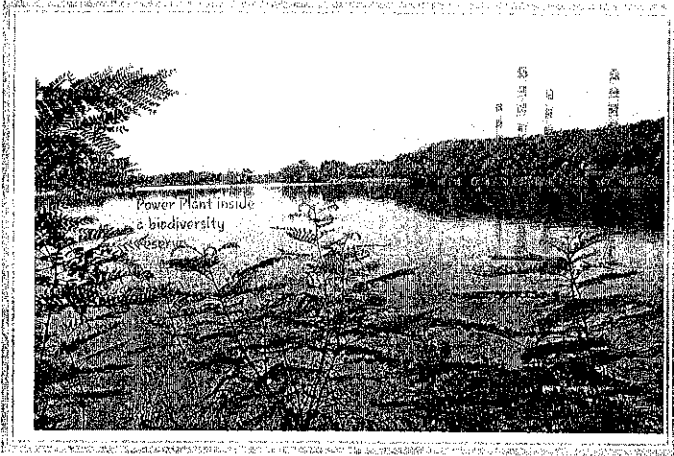
Awards:

- ❖ 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.
- ❖ 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.
- ❖ 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 (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.
- ❖ Genentech Award -2014 in "Gold Category" in Thermal Power sector in India.
- ❖ Greentech CSR Award-2014
- ❖ Genentech Award -2013 in "Platinum Category" (Highest category) in Thermal Power sector in India.
- ❖ Greentech CSR Award-2013.
- ❖ Greentech Environment Gold Award-2012.
- ❖ 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.

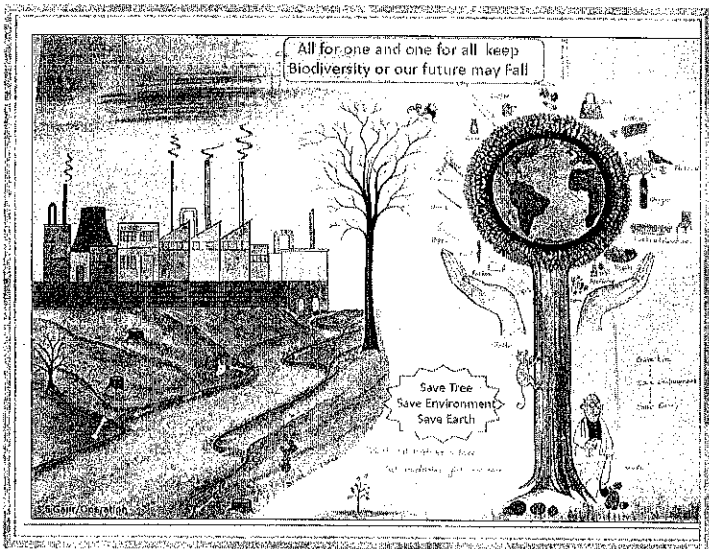
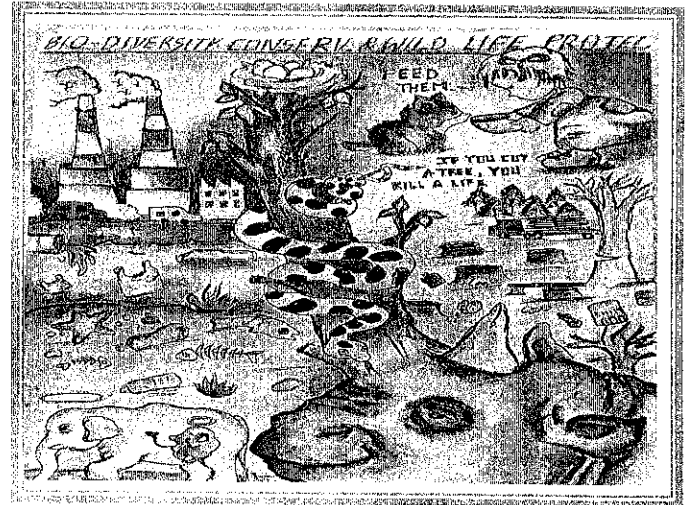
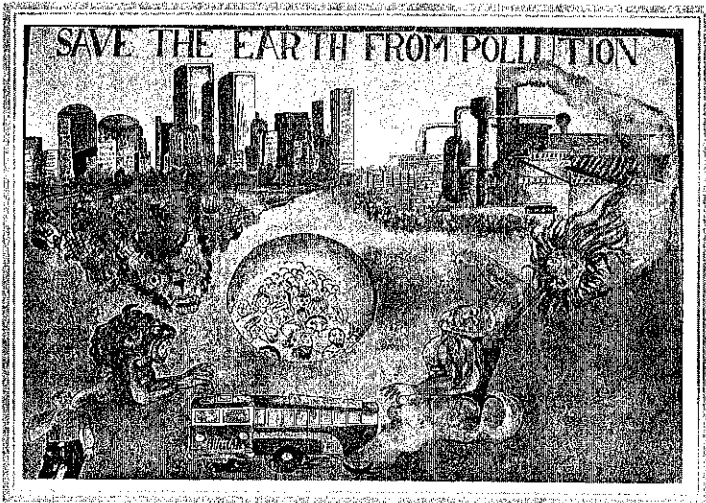
PHOTOGRAPHS OF ENVIRONMENTAL AWARENESS PROGRAM



Plantation program at Jindal Power Limited

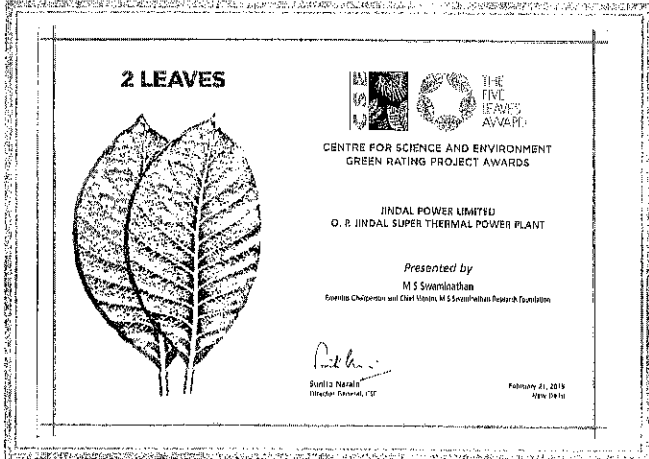


Photography competition organized on the occasion of WED-20

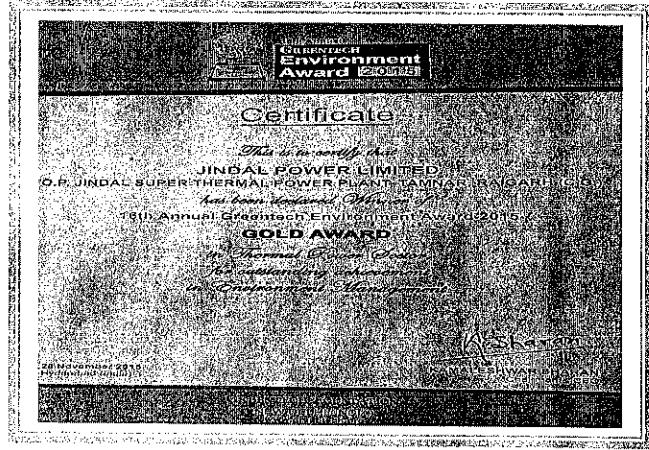


Online poster competition organized on the occasion of WED-20020

CERTIFICATES & PHOTOGRAPHS OF ENVIRONMENT AWARDS RECEIVED.



Certificate of Green Rating Project Award



Certificate of Greentech Award