

ORCEM/ENV: 2020-21: 248

Date: 16/09/2020

The Member Secretary
Telangana State Pollution Control Board
Paryavarana Bhavan, A-3
Industrial Estate
Sanath Nagar
HYDERABAD – 500 018.

**Sub: - Submission of Form – V (Environment Statement) of Devapur Cement Works,
Orient Cement Limited for the year 2019 - 2020 - Regarding.**


Dear Sir,

We are here with submitting Form – V (Environment Statement-Cement Plant) of Orient
Cement Limited Devapur, Telangana for the year 2019 – 2020.

This is for your kind information and records please.

Thanking you sir,

Yours faithfully,
For Orient Cement Limited.,



RVR MURTY
Sr. Vice President (Works)

Encl.: As above

CC to

Environment Engineer
Telangana State Pollution Control Board
H.No. 6-2-166/A, 1st Floor
Subhash Nagar
NIZAMABAD 503002
Telangana (State)

Orient Cement Limited
Devapur Plant: PO Devapur Cement Works, Adilabad (District), Telangana 504218, India.
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Registered Office: Unit VIII, Plot No.7, Bhojnagar, Bhubaneswar, Odisha 751012, India www.orientcement.com
CIN No : L26940OR2011PLC013933

FORM -V

ENVIRONMENTAL STATEMENT REPORT FOR THE FINANCIAL YEAR 2019-2020



By

ORIENT CEMENT LIMITED

PO: Devapur Cement Works, Kasipet (M),
Dist.: Mancherial (Dist) – Telangana - 504218

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PART – A

- i) Name and address of the owner/ occupier of the industry operation or process. : **R.V.R. MURTY
Sr.Vice President (Works)
M/s. ORIENT CEMENT LIMITED
Devapur, Kasipet (M),
Mancherial (Dist.) 504 218
Telangana**
- ii) Date of the last environmental Audit report submitted : 11th September 2019
- iii) Production Capacity (Units) : 1. Clinker – 35, 00,000 TPA
2. Cement (OPC & PPC) – 30, 70,000 TPA
3. Captive Power - 50 MW

PART – B

WATER AND RAW MATERIAL CONSUMPTION

i) Water consumption (m^3 /day) : 3165

1. Process	}	-	2425 m^3 /day
2. Washings			
3. Boiler feed	}	-	361 m^3 /day
4. Boiler make up/Cooling			
Make up/ Humidification/			
Water spraying			
5. Domestic		-	379 m^3 /day

Name of Products	Water consumption per unit of product	
	During the Previous Financial year (2018-2019)	During the Current Financial year (2019-2020)
Cement	0.251 KL/MT	0.333 KL/MT
Clinker	0.230 KL/MT	0.305 KL/MT
Power	0.000530 KL/KWH	0.000514 KL/KWH

ii) Raw material consumption:

Name of Raw Materials	Name of Product	Consumption of raw material per unit of output (Ton/Ton)	
		During the Previous Financial year (2018-2019)	During the Current Financial year (2019-2020)
1. Lime Stone	Clinker	1.4092	1.4062 T/ T of Clinker
2. Additives	Clinker	0.0802	0.0824 T/ T of Clinker
3. Coal	Clinker	0.1374	0.1285 T/ T of Clinker
4. Pet coke	Clinker	0.0002	0.0081 T/ T of Clinker
5. Gypsum	Cement	0.0308	0.0336 T/ T of Cement
6. Fly Ash	Cement	0.2222	0.2071 T/ T of Clinker
7. Coal	Power	0.958 T/MW	0.958 T/MW

PART - C
POLLUTION DISCHARGED TO ENVIRONMENT

(Parameters as specified in the consent issued)

Pollutants	Quantity of Pollutants Discharged (Kg/day)	Concentrations Of Pollutants in Discharges (mg/L)	Percentage of variation from prescribed standards with reasons		
a) Wastewater : There is no generation of Process waste water from Cement Plant					
b) Domestic Waste Water Analysis Report is as under- (2019-2020)					
S. No	Parameter	Limits	MIN	MAX	AVG
1	PH	6.5-9.0	6.36	7.65	7.20
2	Total dissolved solids	<2100	781	861	823.58
3	Total Suspended solids	<100	52.9	65.4	60.63
4	Chemical oxygen demand	<250	64.8	72.5	70.21
5	Biochemical oxygen demand	<30	12.4	23.2	17.86
6	Oil & Grease	<10	1.10	1.30	1.18

Stack Attached to	Pollutants	Pollutants in Emissions discharged (kg/day) 2019-2020	Concentrations Of Pollutants in Emissions (mg/ N m ³) 2019-2020	Percentage of variation from prescribed standards with reasons
Kiln-I	SPM	170.30	23.15	-22.82%
Kiln-II	SPM	128.43	22.48	-25.05%
Kiln III	SPM	145.95	17.21	-42.65%
VRM Coal Mill	SPM	6.84	12.95	-56.84%
Cooler -I	SPM	43.43	17.05	-43.17%
Cooler -II	SPM	53.02	12.52	-58.26%
Cooler -III	SPM	53.46	14.56	-51.48%
Coal Mill –I	SPM	4.42	10.92	-63.60%
Coal Mill – II	SPM	9.67	15.20	-49.33%
Coal Mill – III	SPM	17.43	9.22	-69.27%
Cement Mill – I	SPM	11.73	13.67	-54.44%
Cement Mill –II	SPM	15.36	13.83	-53.89%
CPP I & II	SPM	277.04	34.92	-50.28%

PART - D

HAZARDOUS WASTE

(As specified under hazardous wastes/Management and handling rules, 2016)

Hazardous Wastes	Total Quantity MT per year	
	During the Previous Financial year (2018-2019)	During the Current Financial year (2019-2020)
a) From Process		
1. Used / Waste oil (5.1)	17.1 KL	33.18 KL
2. Oil Sludge / Cotton Waste Containing Oil	14.758 MT	14.32 MT
3. Hazardous Waste Co-Processed	6200.725 MT	2425.39 MT

PART - E

SOLID WASTES

Total quantity per year		
	During the Previous Financial year (2018-2019)	During the Current Financial year (2019-2020)
a) From Process	No Waste Generated	No Waste Generated
b) From Pollution Control Facility	100% collected dust recycled	100% collected dust recycled
c) Quality recycled or re-utilized	Not Applicable	Not Applicable

PART - F

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

Used Oil : Used oil disposed to CPCB Authorized Vendors.

Gypsum : Procured and stored in covered Storage yard.
This is used for manufacturing of Cement during grinding stage.

Fly ash : Procured from TPPs and stored in silos.
This is used for manufacturing of Cement during grinding stage

PART – G

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

- Optimized usage of low grade limestone in the manufacturing process and thereby conserving the mineral.
- Utilization of Rice husk as an alternative fuel. Total 16135 MT utilized for the year 2019 - 2020.
- Utilization of Carbon Black as an alternative fuel. Total 12290 MT utilized for the year 2019 - 2020.

PART - H**Additional investment proposal for environmental protection including abatement of pollution.**

Green Belt Development, Housekeeping activities, Up keeping the pollution control equipment in healthy condition and Environmental Protection and Monitoring activities are taken up. We provide sufficient fund for Environmental protection at our cement plant and Captive Power Plant. Capital and recurring cost earmarked for Environmental Protection for the year 2019 - 2020 is given below.

Capital Expenditure: 2.41 Cr

Recurring Expenditure: 10.68 Cr

PART - I**Any other particulars in respect of environment protection and abatement of pollution.**

In Orient Cement premises additional plantation of 4800 No's was done in both plant and mines area (Plant & Colony = 1200 Nos. & Mines = 3600). Further we have planned to increase the plantation in this financial year.

Company has adopted ISO 14001-2015 Environment Management System, in addition to ISO 9001 – 2015 Quality Management System and ISO 18001 – 2007 OHSAS & ISO 50001-2011 for Energy Management. Under this number of Environment Management Plans were executed for sustaining the better Environment.

World Environment Day Celebrations -2020

World Environment Day 2020 was celebrated at Orient Cement Limited, Devapur in a befitting manner. Theme for World Environment day was: **“Bio Diversity”**. In view of COVID – 19 pandemic, The World Environment Day 2020 program was organized in a safe and simple manner. It was started with speech on Environment and Biodiversity by **President (Manufacturing) and Sr. Vice President (Works)**, prize distribution to online quiz winners and further participated in the plantation at the specified location in the Mines.

WORLD ENVIRONMENT DAY – 2020 CELEBRATION



Welcome Address by Head (EHS)



Speech by President (Manufacturing)



Plantation by President (Manufacturing)



Plantation by Sr. VP (Works)

WORLD WATER DAY – 2020 CELEBRATIONS

World Water Day – 2020 has been celebrated in benefitted manner. We have organized awareness sessions among employees and colony people.



Awareness Program among Employees



CSR Activities:

Various welfare schemes are being adopted for the development of the surrounding village people & area under CSR. In the year 2019-20 around 491.28 Lakhs spent for CSR activities.

Sl. No.	Activity	2019-20 (Rs. in Lacs)
1	School Running Expenses at Devapur	367.95
2	Medical Expenses at Dispensary	86.11
3	Vanavasi Kalyani Parishad	1.74
4	Rental Charges for ESI Hospital at Devapur	1.80
5	Maintenance charges of Sulabh Complex	2.22
6	Making Water pits in 6 nearby Villages to plant	3.34
7	Community development at Gatrapalle village	0.44
8	Construction at Dhyan kendra at Eppalagudam village	0.08
9	Making of Dhyankendra - Peddapur, Thati, Thunga gudam village	4.29
10	Making pathway and slab work Dhyankendra at Maddimada	3.20
11	Construction & Painting at Dhyan kendra at Devapur Village	4.75
12	Furniture for Gram Panchayath Village Gatrapalle	0.65
13	Making Harvesting pits in Peddagudam at Devapur Village	0.22
14	Painting work at Dhyankendra - Salpalavagu	0.52
15	Road repair and cleaning work at Devapur Village	3.76
16	Road repair work at Maddimada village	0.68
17	Levelling and dressing Thurumgudam, Ippalagudam, Gondu, Maddimada Godum villages	0.35
18	Hire charges of JCB for removing of soil from Nala at Devapur Village	2.31
19	Painting work at MPP office Kazipet village	0.50
20	Construction work at Asrama girls school at Devapur village	1.48
21	Making flooring work in front of Varandah at MPPS High school Devapur	2.13
22	Snacks for ashram & ZPSS school children	0.01
23	Flooring work school at Maddimada village	0.89
24	Painting work primary school at Maddimada village	0.11
25	Construction at tribal welfare primary school - Devapur	0.62
26	Construction at flooring & window mess primary school- Devapur	1.13
	TOTAL	491.28

1. INTRODUCTION

M/s. ORIENT CEMENT LIMITED has setup a Cement Plant to manufacture Portland cement at Devapur of Mancherial District, Telangana State. **M/s. ORIENT CEMENT LIMITED** is rated as one of the most efficient cement units and is fast becoming one of the most technologically advanced in the cement industry. The Plant was established in the year 1982 with line–1 and line-II was added in 1990 Line –III was added in the year of 2009. It has an excellent track record with respect to productivity, energy conservation, quality control and environmental pollution control. The plant authorities carry out routine environmental monitoring to ensure environmental quality control at the plant. Present capacity of Clinker is 35,00,000 TPA and Cement (OPC & PPC) – 30,70,000 TPA and Power generation from Captive Power Plant is 50 MW.

2. LOCATION

M/s. Orient Cement Limited is located at Devapur (V), Mancherial District of Telangana State. The Plant is located about 22 km from Bellampally railway station, which is connected to Nagpur and Vijayawada through Bellampally. Water from Mines rain water harvesting Reservoir & Jack wells are used for plant utilities. The land is flat terrain sloping towards Southeast.

3. RAW MATERIAL AND PRODUCTS

3.1 Raw Materials

The main raw materials are Limestone from captive mining, Additives like Laterite, Flyash and Gypsum and fuel is being used as Coal from Singareni Collieries, Imported Coal and Petcoke . The quantities of raw materials consumed for the financial year 2019-2020 is furnished below table.

Raw materials consumed for the financial year 2019-2020

S.No.	Raw Materials	Consumption in MT/ Annum
1	Lime Stone	3683069.271
2	Laterite - I	115496.100
3	Laterite - II	16743.03
4	Laterite - III	83603.721
5	Gypsum	80949.893
6	Coal (Cement Plant + CPP)	558420.33
7	Fly Ash	498251.385
8	Petcoke	21163.035

3.1.1 Other Consumable Materials

The other major consumable materials used in the plant include packing bags, lubricating oils, grease and refractory bricks. The quantities of other materials consumed for the financial year 2019-2020 is furnished below table.

Other materials consumed for the financial year 2019-2020

S.No.	Other materials	Consumption
1	Packing bags	34275448 Nos
2	Lubricating oils	71163 Ltrs
3	Grease	16006 Kgs
4	Refractory bricks	155742 Nos

3.2 Products

The product manufactured during the financial year 2019-2020 was Ordinary Portland (OPC) and Portland Pozzolana Cement (PPC) and Clinker as the intermediate product in cement manufacturing. The Production during financial year 2019 -2020 is furnished below table.

Products produced during financial year 2019-2020

S.No.	Products	Production in MT/ Annum
1	Clinker	2619218
2	Cement (OPC + PPC)	2405789

3.3 Fuels and Power

3.3.1 Fuel

The plant uses coal and high-speed diesel (HSD) as fuels. Coal is used as raw material in the manufacturing process. Small quantity of HSD is used for vehicles in the plant. The annual consumption of the fuels during financial year 2019 - 2020 is furnished below table.

Fuels consumption during financial year 2019-2020

S.No.	Products	Consumption
1	Coal (CPP + Cement plant) (MT)	558420.33
2	HSD (Ltrs.)	2255865 Ltrs

3.3.2 Power

The required electrical power for the plant and colony is supplied from APTRANSCO and 2 X 25 MW Captive Power Plant. The annual consumption of electrical energy in the plant and the colony during financial year 2019-2020 is furnished below

Power consumption during financial year 2019-2020

S. No.	Products	Consumption
1	Internal (CPP) (KWH)	231576000
2	External TSEB (Units)	12372717

4. PROCESS DESCRIPTION

Materials:

Limestone + Additives → Raw meal

(95%) (5%)

Rawmeal (1.48 Ts) → Clinker (1.00 T)

(Burning with Coal at 1400 - 1450°C)

Clinker + Gypsum → Ordinary Portland cement (OPC)

(97%) (3%)

Clinker + Fly Ash + Gypsum → Portland Pozzolana Cement (PPC)

(64%) (33%) (3%)

Stage wise Operations:

Limestone Mining: Mechanized mining of limestone is done by deep hole drilling, blasting, excavation and hauling. The blasted limestone of size less than 1200 mm will be transported to Limestone Crusher for crushing.

Limestone Crushing: Limestone crushing is done in Hazemag type Double rotor impact crusher (1200 TPH capacity). The size reduction in crusher will take place from 1000 mm to less than 40 mm.

Stacking & Reclamation: Crushed limestone will be stacked with Stacker (CIMMCO Birla make – 1500 TPH capacity) as per the required quality. Capacity of the stockpile is 50000 Ts. After forming the stocking (with the required quality as well as quantity), the reclamation (Reclaimer – CIMMCO Birla make – 800 TPH capacity) will be started. The total process of stacking and reclamation is called Chevron method.

Raw material grinding: Blended Limestone will be reclaimed and will be filled into raw material hopper in the respective raw mill section. Additives (Laterite) (out sourced material) will be filled into respective Laterite hoppers. Lime stone with Laterite -1 and Laterite – 2 in required proportions will be conveyed through weigh feeders and belt conveyor to Polycom, HIC, Roller Press, where grinding will take place. The product, called Rawmeal, is entrained with air/gases to Electrostatic precipitator, Bag House where the total Rawmeal is collected and further conveyed to Continuous Flow Silo's.

Coal Crushing & Grinding: Raw coal, received from outsource, is crushed in coal crushers, where the size reduction of coal from 100 mm to 30 mm size takes place; this is conveyed to Raw Coal hoppers. Ball Mill, VRM will grind rawcoal to fine powder and will be collected in bag filter. The fine coal will be further conveyed mechanically to fine coal bins.

Pyro-processing: The system consists of Rotary Kilns (3600 TPD, 2800 TPD, 4200 TPD) with two string 4 stage and 5 stage suspension pre-heater with separate line calciner in Line-1 (FLS Technology), 5 stage suspension pre-heater with in-liner calciner in Line-2 (KHD Technology) and 6 stage suspension pre-heater with in-line calciner in Line-3 (FLS Technology) respectively. Rawmeal from respective CF silo will be conveyed to preheater. Fine coal will be fired through burner pipe in kiln and through nozzles in precalcinator. The material will be 90% calcined at kiln inlet and balance calcination, pre burning and sintering reactions will take place in kilns. Temperature of 1400 - 1450⁰C will be maintained in kiln for the completing the reactions. Clinker will be formed and is cooled in Clinker coolers. The clinker after cooling will be transported mechanically to CSP and Clinker Storage Silos.

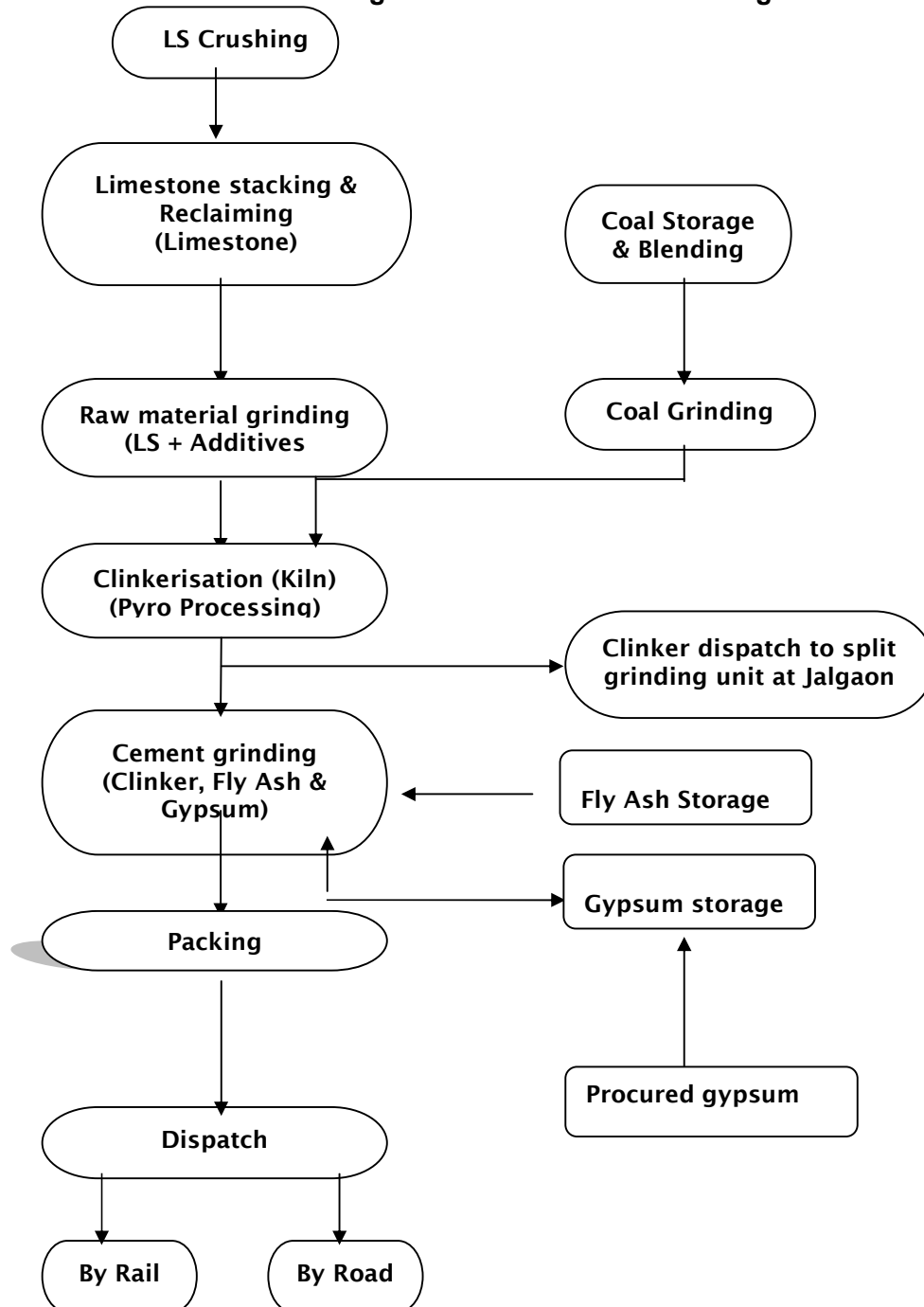
Cement grinding: Clinker from CSP and Clinker Storage Silos will be conveyed to clinker hopper. Gypsum (out source material) will be filled into gypsum hopper. Closed circuit ball mill with dynamic separator and Pregrinding Roller Press System will grind clinker and gypsum fed to it in required proportion. The product, called Ordinary Portland Cement, is conveyed mechanically to OPC storage silos. Similarly clinker, flyash and gypsum at a fixed ratio will be ground in the Roller Press and ball mill system. The product, called Portland Pozzolana Cement, will be conveyed mechanically to PPC storage silos.

Cement Packing: Six Rotary Packers (Electronic packers) are available for packing cement in to bags and dispatching.

Plant (Raw Mills to Cement Grinding section) is being operated from CCR based on PLC systems.

Captive Power Plant: Two boilers with 25 MW capacities are installed within the Cement plant premises to cater the Power requirement of the Plant.

Process flow diagram of Cement Manufacturing



5. WATER REQUIREMENT

The total water consumption is 3165 m³/day and the details are given below:

Water consumption (m³ /day) : 3165

1. Process	}	-	2425 m ³ /day
2. Washings			
3. Boiler feed	}	-	361 m ³ /day
4. Boiler make up/Cooling			
Make up/ Humidification/			
Water spraying			
5. Domestic		-	379 m ³ /day

Most of the process and cooling water will be re-circulated. Makeup water will be provided to compensate the evaporation and consumed during process. The domestic requirement includes requirements of colony, plantation, drinking as well as sanitation. The water requirement is being met by rainwater harvesting pit in mines & jack wells in the factory premises.

6. POLLUTION CONTROL MEASURES IN THE PLANT

The industry is giving top priority for pollution prevention and control measures. Therefore all the sources that release particulate matter are provided with RABH, ESPs and Pulse jet bagfilters to control the particulate emissions before releasing into the atmosphere. With respect to the gaseous pollutants like sulphur dioxide and nitrogen oxides, their emissions are significant from only the CPP Power plant.

Further their control at the source of generation is not technologically feasible and their treatment is difficult and expensive. Therefore all stacks are provided as an effective measure for good atmospheric dispersion of the pollutants and air pollution control.

The company has got adequate high efficiency pollution control equipments like RABH, Electro Static Precipitators in Main Process: Raw Mill-Kiln, Coal Mill, Cooler & Cement Mill areas through which stack emission has been kept within permissible limits.

All-important dust – generating points have been controlled with suitable dust collectors. Suitable reverse jet type dust collectors are provided for control of emission at transfer points. These dust

collectors are covered under maintenance schedule for efficient operation of the control equipments. High efficiency fabric filters are provided in coal mill circuits. To minimize dust emission at material Transfer area chutes have been designed and modified for low dust generation and lower load on dust collectors.

The plant contains inter locking system for all pollution control system during the power failures. Hence, uncontrolled emissions into the atmosphere are eliminated during power failure.

In limestone stockpile the height of the pile is maintained for low emission apart from provision of water spray system. Covered sheds are provided for Limestone stockpile and raw coal in CPP. To control fugitive emission actions such as concreting of the area, roads within and outside factory were laid down. Road sweeping machines with in-built vaccum cleaner are being used to clean the roads and fine dust materials near belt conveyors.

It is found from the data generated that the flue gas emissions from the stacks and the ambient air quality data for SPM, SO₂ and NO_x are well within the limits and comply with the standards prescribed by Telangana State Pollution Control Board (TSPCB).

6.1 Waste water Sources and Monitoring

Most of the water consumed for process as well as cooling is consumed / evaporated. The only source of wastewater is from sanitary facilities of the plant and colony is presently being sent to Sewage treatment plant and the treated water is used for Green belt development.

6.2 Air pollution sources and control measures

The sources of air emissions are from kiln with Raw mills, Cement mills, coal mills and coolers. Stack emissions monitoring is carried out once in a month through third party. The stack details are furnished in below table. It is noticed from the collected emissions data that the parameters monitored are within the limits prescribed by T.S. Pollution Control Board.

Details of Air Pollution & Control Equipments

S.No	Stack attached to	Pollution control equipment	SPM concentration average (mg/N m ³) (2019-2020)
1	3600 TPD Rotary Kiln-1 & Raw Mill - 1	ESP	23.15
2	2800 TPD Rotary Kiln-2 & Raw Mill - 2	ESP	22.48
3	4200 TPD Rotary Kiln-3 & Raw Mill - 3	Bag House	17.21
4	FBC Boilers of capacity 2 X 115 TPH	ESP	34.92
5	Cement Mill – Line 1	Bag Filter	13.67
6	Cement Mill – Line 2	Bag Filter	13.83
7	Coal Mill – Line 1	Bag Filter	10.92
8	Coal Mill VRM– Line 1	Bag Filter	12.95
9	Coal Mill – Line 2	Bag Filter	15.20
10	Coal Mill – Line 3	Bag Filter	9.22
11	Clinker Cooler – Line 1	ESP	17.05
12	Clinker Cooler – Line 2	ESP	12.52
13	Clinker Cooler – Line 3	ESP	14.56

6.2.1 Pollution Control Measures for Captive Power Plant (CPP)

There are 2 No. s of Boilers (2 × 25 MW) and are operated with coal. The emissions from the Captive power plant (CPP) before dilution in the atmosphere though a tall chimney are subjected to pass through ESPs. The Fly Ash generated in CPP is totally consumed in the Cement Manufacturing. A well-trained and highly skilled team of people are deployed for operation and maintenance of CPP.

6.2.2 Ambient Air Quality

Ambient air quality monitoring is carried out once in a month at the following locations in the factory premises to know the status of the ambient air quality.

1. East (Time Office)
2. West (Mines Office)
3. North (Near Stores)
4. South (Guest House)

Ambient air quality is monitored for 24 hours at each station for the estimation of PM₁₀, PM_{2.5}, SO₂ & NO_x. Average values for the parameters monitored are furnished in below table. The analyzed values for PM₁₀, PM_{2.5}, SO₂, NO_x are within the limits.

Average values of Ambient air quality data for the year 2019 – 2020

Direction	1	2	3	4
Particulate Matter – PM10 Concentration ($\mu\text{g}/\text{m}^3$)	60.67	67.17	67.33	54.00
Particulate Matter – Concentration PM 2.5 ($\mu\text{g}/\text{m}^3$)	21.58	24.75	25.25	16.92
Sulfur dioxide Concentration ($\mu\text{g}/\text{m}^3$)	9.83	10.08	11.00	7.08
Nitrogen dioxide Concentration ($\mu\text{g}/\text{m}^3$)	20.33	21.08	21.92	17.17
Lead (Pb)	0.07	0.09	0.06	BDL
Carbon monoxide (Co)	BDL	BDL	BDL	BDL
Ammonia (NH ₃)	BDL	BDL	BDL	BDL
Ozone (O ₃)	6.67	8.50	8.67	3.08
Benzene (C ₆ H ₆)	<0.02	<0.02	<0.02	<0.02
Arsenic (As)	ND	ND	ND	ND
Nickel (Ni)	ND	ND	ND	ND
Benzo pyrene (Bap)	ND	ND	ND	ND

1. Near Time Office
2. Near Mines Office
3. Near Store
4. Near Guest House

Note: All the values are expressed as ($\mu\text{g}/\text{m}^3$)

6.3. Ambient Pollution sources and control measures

Noise is generated in the plant from different machinery. The major sources of noise generation in the plant are identified and monthly monitoring is being carried out.

All the noise-generating equipment used in the plant was designed according to good engineering practices and the international code of practices. Further, the following provisions are made in the plant to reduce the noise levels at the generating sources

- Moving and rotating parts of the machines are always lubricated.
- Vibration isolators are provided for fans, compressors etc.
- Control rooms are isolated and sound insulated throughout the plant.
- Earplugs are provided for all personnel who may be exposed to more than 90 dB (A) noise level.

6.4. SOLID WASTE GENERATION & MODE OF DISPOSAL

There is no generation of solid wastes from manufacturing process. All the raw material used into the process end up in the product, except for limestone. Limestone during Calcination evolves carbon dioxide, which is released into atmosphere through the kiln stack. Even the ash present in the coal used for firing the rotary kiln ends up in the product.

Different types of solid wastes are generated from the non-process activities in the cement plant. They include waste packaging materials, wooden and steel scrap, empty oil/grease drums, used tyres, used batteries, burnt refractory bricks and oil sludge etc.

The dust collected in the dust control systems is not considered as waste since that is continuously recycled into the process. The cement spilled due to burst bags or due to any other accidental spill is also recycled into the process immediately.

Oil sludge is the hazardous waste generated from waste oil and sludge from HSD storage tanks. Oil Sludge and waste oils generated are negligible.

6.4.1 Solid Waste Disposal

The non-hazardous waste is sold to scrap dealers on yearly basis. The Used Oil /waste oil is being Disposed through authorized recycler and also used for lubrication of chains inside the plant.

7. SAFETY MEASURES ADOPTED AGAINST HEALTH HAZARDS

Maintenance personnel are trained and kept up to date on handling the systems, maintenance for normal conditions, upsets and emergencies. Periodical general inspection of equipment is carried out. Records are maintained for operation, inspection etc. Accidents are recorded.

Personal protective equipment like helmets, safety shoes, goggles, ear plugs and nose masks are being provided to all the employees and workmen. Signboards are displayed at places wherever necessary instructing workers to put on safety wears. Belt guards are provided for all equipment fitted with belts. Flame proof electrical equipment and tools are provided.

All the electrical installations are commissioned as per IS rules. The electrical equipment is connected through suitable earth leak circuit breakers and overload tripping systems. Flame proof electrical switches, tools, boxes and fittings are installed wherever necessary. Lightning protection system for the structure is provided.

HSD/FO storage tanks are installed as per the guidelines of Chief Controller of Explosives and are duly licensed. All the tanks are confirming to the norms/standards set up by the explosive act of factories. HSD/FO storage tanks are constructed away from the normal operations of the plant. The distance between each tank is maintained according to the standards and norms. Waste Oils are removed and stored in bins. All the tanks (storage and day tanks) are provided with bund construction for adequate and sufficient redundancy in case of loss of containment of the tank due to any reason.

Fire hydrant system is provided and adequate numbers of hydrant points are provided to cover the Coal yard area. An adequate fire extinguisher such as CO₂, DCP and Chemical foam are installed to extinguish any fire at any time. Fire extinguishers are provided at strategic points from where they can be easily accessible. CO₂ inertisation systems with battery of cylinders are provided for all the coal circuits.

8. ENERGY CONSERVATION MEASURES ADOPTED

- Multi-channel burner being used for better flame control, which in turn reduces primary air consumption and coal consumption.
- Latest clinker coolers are used to reduce coal consumption by higher heat recuperation.
- Variable speed drives, slip power recovery systems and GRRs are being used wherever applicable.
- Low wattage with sufficient illumination light fitting (wherever applicable) is used in order to reduce the power consumption.

9. GREENBELT DEVELOPMENT

Greenery / plantation recharge oxygen into environment. Greenbelt development may have the following benefits.

- a. Mitigation of fugitive emissions including odour
- b. Noise pollution control
- c. Improving the local eco-system
- d. Arresting the soil erosion
- e. Improving the landscape of the area
- f. Aesthetics

Already, lush green vegetation has been developed in most of the areas especially in the colony, near factory etc. A curtain of green belt is under development all along the boundary of the factory on the NW side of the plant. About 57% area has been covered with greenbelt.

10. HOUSE KEEPING

We at M/s. ORIENT CEMENT LIMITED are committed for to maintain good housekeeping and healthy work environment and also minimize loss of production. Factory, Mines and Colony premises are being kept clean and green aesthetic beauty. All raw materials stored in covered only. Road sweeping machines are being used for roads cleaning.

Cement Concrete roads are laid and regular water sprinkling is carried-out to control secondary fugitive emissions. CPCB Environmental Guidelines for Prevention and Control of Fugitive Emissions from Cement Plants are being followed.

- All transfer points and storage silos are provided with dust collection and extraction systems for effective control of fugitive emissions.
- Sheds are constructed for all raw materials storage.
- Fly ash handling by closed circuit pneumatic system.
- Road sweeper is deployed and good housekeeping is being maintained for controlling secondary fugitive dust emissions.
- Regular water spray is being carried out to control the secondary fugitive emissions.

Dust Control Measures



Water Tanker



Water Sprinklers



Concrete Road From main gate to Mines



Road Sweeping Machine cum Vacuum Cleaner



Coal Storage Shed



Limestone Storage Shed



Laterite Storage Shed



Gypsum Storage Shed



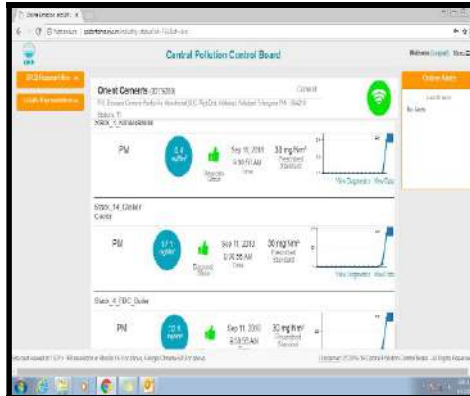
Clinker Silo



Fly ash Silo

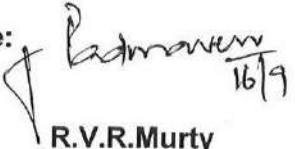
11. Continuous Emission Monitoring System

Installed online Continuous Monitoring System (CEMS) for Stack attached to the Raw mill/Kiln – I, II & III, Coal Mill – I, II & III, Cooler ESP – I, II & III, Cement Mill - I & II and Power Plant. All CEMS are connected to TSPCB and CPCB server.



For ESPs Existing single phase transformer ADOR Powercon make are replaced with 3 phase transformers supplied by Kraft Powercon. Adequate air pollution control systems are provided as detailed above and PM emission is being maintained less than 30 mg/Nm³ as per GSR 612 (E) dated 25.08.2014.

Signature:


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R.V.R.Murty

Sr.Vice President (Works)

Orient Cement Ltd.