

REGISTERED POST

ORCEM/ENV: 2021-22: 138

Date: 03/07/2020

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 Orient Cement Limited Devapur Cement Works, for the year 2020 - 21 - Regarding.

Dear Sir,

We are here with submitting Form – V (Environment Statement-Cement Plant) of Orient Cement Limited Devapur, Telangana for the year 2020 - 2021.

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)

Cement Limited

Plant: PO Devapur Cement Works, Adilabad (District), Telangana 504218, India.

Phone: 36 240709 Fax: +91 8736 240522

Registered Office: Unit VIII, Plot No.7, Bhoynagar, Bhubaneswar, Odisha 751012, India www.orientcement.com

ORCEM/ENV: 2021-22: 138

FORM -V

ENVIRONMENTAL STATEMENT REPORT FOR THE FINANCIAL YEAR 2020-21



By

ORIENT CEMENT LIMITED

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

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PART – A

- i) Name and address of the owner/ : **R.V.R. MURTY**
 occupier of the industry operation : **Sr. Vice President (Works) – Unit Head**
 or process. : **M/s. ORIENT CEMENT LIMITED**
Devapur, Kasipet (M),
Mancherial (Dist.) 504 218
Telangana
- ii) Date of the last environmental : 16th September 2020
 Audit report submitted
- iii) Production Capacity (Units) : 1. Clinker : 35,00,000 MTPA
 2. Cement (OPC & PPC) : 30,70,000 MTPA
 3. Captive Power Plant : 50 MW

PART – B

WATER AND RAW MATERIAL CONSUMPTION

i) Water consumption (m^3 /day) : 2114

1. Process	}	:	1401 m^3 /day
2. Washings			
3. Boiler feed	}	:	309 m^3 /day
4. Boiler make up/Cooling			
Make up/ Humidification/ Water spraying			
5. Domestic		:	404 m^3 /day

Name of Products	Water Consumption per unit of product	
	During the Previous Financial year (2019-20)	During the Current Financial year (2020-21)
Cement	0.333 KL/MT	0.236 KL/MT
Clinker	0.305 KL/MT	0.225 KL/MT
Power	0.000514 KL/KWH	0.000616 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 (2019-20)	During the Current Financial year (2020-21)
1. Lime Stone	Clinker	1.4062	1.4104
2. Additives	Clinker	0.0824	0.0779
3. Coal	Clinker	0.1285	0.1097
4. Pet coke	Clinker	0.0081	0.0195
5. Gypsum	Cement	0.0336	0.0289
6. Fly Ash	Cement	0.2071	0.2238
7. Coal	Power	0.958	0.1025

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) Waste Water : There is no generation of Process waste water from Cement Plant (Re-cycling only)					
b) Domestic Waste Water Analysis Report is as under- (2020-21)					
S. No		Limits	Minimum	Maximum	Average
1	PH	6.5-9.0	7.55	7.88	7.69
2	Total dissolved solids	<2100	752	882	821.73
3	Total Suspended solids	<100	22	46	33.73
4	Chemical oxygen demand	<250	54	80	68.73
5	Biochemical oxygen demand	<30	7	15	10.73
6	Oil & Grease	<10	0.39	0.54	0.47
7	Fecal coliform Per 100 ml	<100	Absent		

Stack Attached to	Pollutants	Pollutants in Emissions discharged (kg/day) 2020-21	Concentrations Of Pollutants in Emissions (mg/ N m ³) 2020-21	Percentage of variation from prescribed standards with reasons
Kiln-I	SPM	178.06	23.77	-20.75%
Kiln-II	SPM	156.72	24.81	-17.31%
Kiln III	SPM	194.42	23.02	-23.25%
Cooler -I	SPM	42.59	17.15	-42.84%
Cooler -II	SPM	83.40	18.71	-37.64%
Cooler -III	SPM	51.31	15.99	-46.69%
VRM Coal Mill	SPM	10.81	16.49	-45.04%
Coal Mill –I	SPM	7.87	17.94	-40.20%
Coal Mill – II	SPM	13.86	21.61	-27.97%
Coal Mill – III	SPM	25.26	13.78	-54.05%
Cement Mill – I	SPM	7.91	19.20	-36.01%
Cement Mill –II	SPM	22.84	18.03	-39.89%
CPP I & II	SPM	232.47	33.27	-55.77%

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
(2019-20)

During the Current
Financial year
(2020-21)

a) From Process

1. Used / Waste oil (5.1)	29.17 MT	14.935 MT
2. Oil Sludge / Cotton Waste Containing Oil	14.32 MT	5.035 MT
3. Hazardous Waste Co-Processed	2425.39 MT	1401.84 MT

PART - E

SOLID WASTES

Total quantity per year		
	During the Previous Financial year (2019 - 2020)	During the Current Financial year (2020 - 21)
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 TSPCB/CPCB Authorized Vendors and Internal use
Gypsum	:	Procured and stored in covered Storage yard. This is being used for manufacturing of Cement during grinding stage.
Fly ash	:	Procured from Thermal Power Plants and stored in silos. This is used for manufacturing of Cement during Portland Pozzolana Cement

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 and increase of Mine life.
- Usage of Alternate Fuels like:

Rice husk	:	33240 MT
Carbon Black	:	10537 MT
Plastic Waste	:	3350 MT
Hazardous Waste	:	1401 MT

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. Further upgradation of pollution control equipment is also been taken up. Sufficient fund for Environmental protection at our cement plant and Captive Power Plant is arranged. Capital and recurring cost earmarked for Environmental Protection for the year 2020-21 is given below.

Capital Expenditure : Rs. 1.24 Crores

Recurring Expenditure: Rs. 5.26 Crores

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

In Orient Cement premises additional plantation of 1000 No's was done in plant and colony. Further we have planned to increase the plantation in this financial year.

Company is following Integrated Management System, which include ISO 14001:2015 Environment Management System, ISO 9001:2015 Quality Management System and ISO 45001:2018 Occupational Health and Safety Management System & ISO 50001:2018 for Energy Management System. These systems would support for the better improved Environment.

World Environment Day Celebrations - 2021

World Environment Day 2021 was celebrated at Orient Cement Limited, Devapur in a benefiting manner. Theme for World Environment day is: **"Ecosystem Restoration"**. The World Environment Day 2021 program was organized in a safe and simple manner considering Covid-19 pandemic situation. It was started with speech on Ecosystem Restoration by **President (Manufacturing) and Sr. Vice President (Works)**. Virtual training and quiz competitions were organized to create awareness among Employees and Workmen and further participated in the plantation of tree saplings at Part – 2 area in Mines.

WORLD ENVIRONMENT DAY – 2021 CELEBRATIONS



Welcome Address



Speech by Sr. VP (Works)



Plantation by President (Mfg.)



Plantation by Sr. VP (Works)

WORLD WATER DAY, WORLD EARTH HOUR, EARTH DAY – 2021 CELEBRATIONS

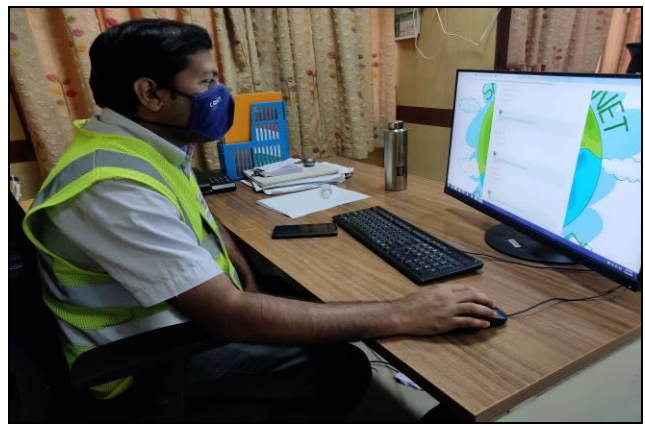
World Water Day, World Earth Hour, World Earth Day – 2021 has been celebrated in benefitted manner. We have organized awareness sessions among employees and colony people.

On Earth Hour all colony residents participated and complete power off in the entire colony for one hour.

Earth day was celebrated with theme “Restore our Earth”. Virtual awareness sessions and quiz competition was organized to create awareness among Employees and Workmen.



World Water Day – 2021



Earth Day – 2021 (Participation of Virtual Quiz Competition)



Earth Hour – 2021 (At Residential Colony)

CSR Activities:

Welfare schemes/activities are being taken up for the development of the villagers & the surrounding area under CSR. In the year 2020-21, an amount of Rs. 422.92 Lakhs was spent for CSR activities.

Sl.No.	Activity	2020-21 (Rs. in Lacs)
1	School Running Expenses at Devapur	386.09
2	Medical Expenses at Dispensary	15.36
3	Vanavasi Kalyani Parishad	1.44
4	ESI Hospital at Devapur- Rent	-
5	Maintenance charges of Sulabh Complex	2.24
6	Waste water drainage system line Sulab complex	1.81
7	Making Room with shed work at Ghatraopalli Village	1.85
8	Dist.Collector - Mancherial Relief Fund Paid - COVID -19	5.00
9	Distribution of Groceries Tribal Community & Meal at truckyard - COVID-19	5.40
10	Plantation work at near Devapur village	0.17
11	White washing and painting at Dhyankendra - Devapur	0.30
12	Procurement of Desktop Computers and Printers for ZPSS School/Stationary – Govt. school	0.96
13	Making pathway and flooring work inside of ZPSS school Devapur	1.17
14	Painting to Dhyankendra adjacent to Rampur village	0.10
15	Development of village park - Nayakapugudem, Devapur	1.04
	TOTAL	422.92

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 growing one of the most technologically advanced in the cement industry. The Plant was established in the year 1982 with line-I 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 Assurance and Environmental Pollution Control. The plant personnel carry out routine environmental monitoring to ensure environmental quality assurance 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 South-East.

3. RAW MATERIAL AND PRODUCTS

3.1 Raw Materials

The main raw materials are Limestone from Captive Mining, Additives like Laterite & Al. Laterite, Fly ash and Gypsum and Fuel is Coal from Singareni Collieries, Imported Coal and Petcoke. The quantities of raw materials consumed for the financial year 2020-21 is furnished below table.

Raw materials consumed for the financial year 2020-21

S.No.	Raw Materials	Consumption in MT/ Annum
1	Lime Stone	2892373.57
2	Laterite - I	93361.100
3	Laterite - II	94.640
4	Laterite - III	66389.860
5	Gypsum	56739.494
6	Coal (Cement Plant + CPP)	319334.22
7	Fly Ash	439078.644
8	Petcoke	39917.086

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 2020-21 is furnished below table.

Other materials consumed for the financial year 2020-21

S.No.	Other materials	Consumption
1	Packing bags	30009026 No.s
2	Lubricating oils	43790 Ltrs
3	Grease	18191.10 Kgs
4	Refractory bricks	110673 Nos

3.2 Products

The product manufactured during the financial year 2020-21 was Ordinary Portland (OPC) and Portland Pozzolana Cement (PPC) and Clinker as the intermediate product in cement manufacturing. The Production during financial year 2020 - 21 is furnished below table.

Products produced during financial year 2020-21

S.No.	Products	Production in MT/ Annum
1	Clinker	2050705
2	Cement (OPC + PPC)	1961785

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 2020-21 is furnished below table.

Fuels consumption during financial year 2020-21

S.No.	Products	Consumption
1	Coal (CPP + Cement plant) (MT)	319334.22
2	HSD (Ltrs.)	1640526

3.3.2 Power

The required electrical power for the plant and colony is supplied from TSTRANSCO and in house 2 X 25 MW Captive Power Plant. The annual consumption of electrical energy in the plant and the colony during financial year 2020-21 is furnished below

Power consumption during financial year 2020-21

S. No.	Products	Consumption
1	Internal (CPP) (KWH)	165771000
2	External TSEB (KWH)	7741245

4. PROCESS DESCRIPTION

Materials:

Limestone + Additives → Raw meal
(95%) (5%)

Rawmeal (1.48 Ts) → Clinker (1.00 T)

(Sintering 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 - 1450°C 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.

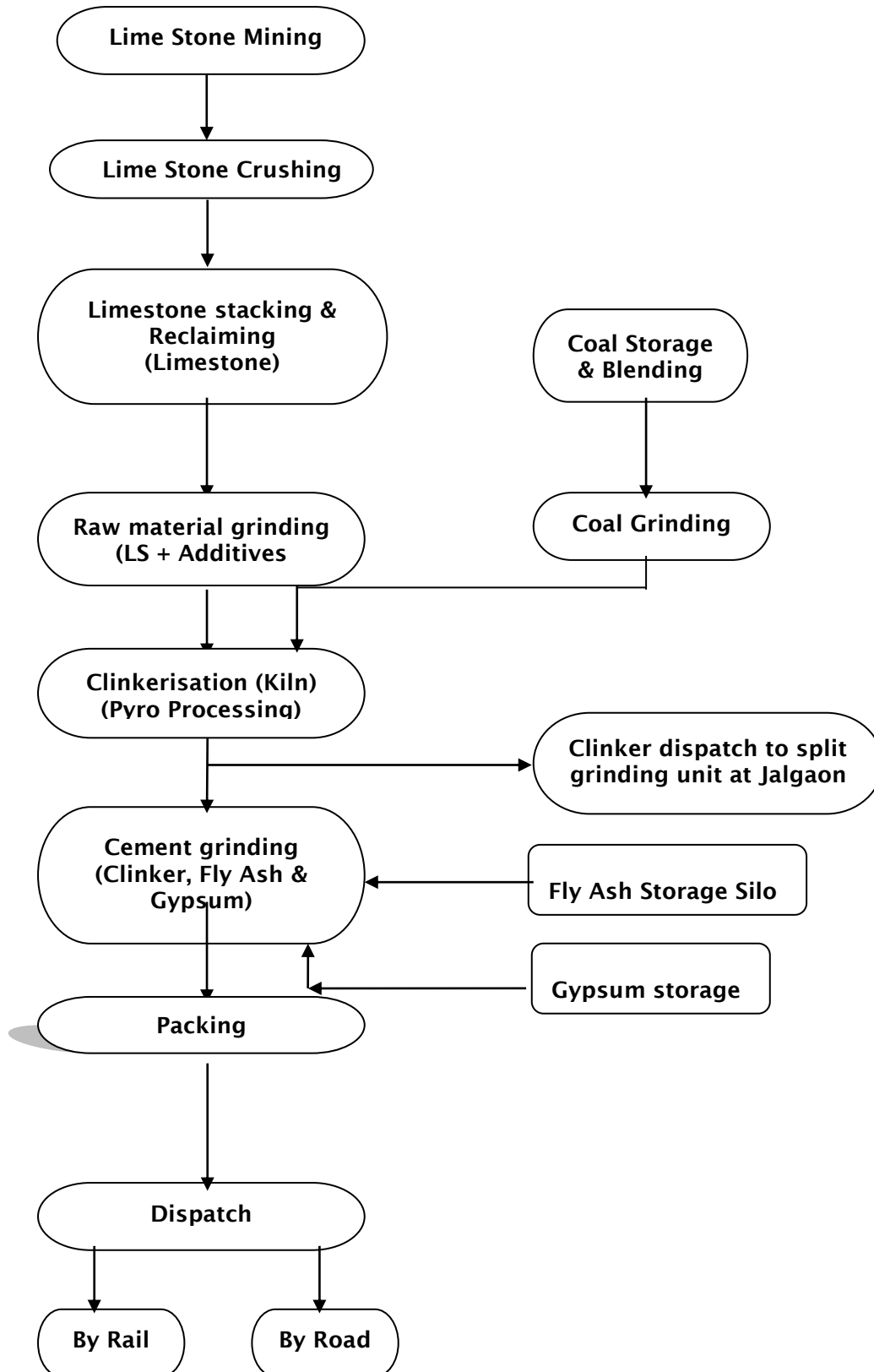
Cement grinding: Clinker from CSP and Clinker Storage Silos will be conveyed to clinker hopper. Gypsum (out source material) will be filled into gypsum hopper. Closed circuit ball mill with dynamic separator and Pregrinding Roller Press System will grind clinker and gypsum fed to it in required proportion. 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 2114 m³/day and the details are given below:

Water consumption (m³ /day) : 2114

1. Process	}	-	1401 m ³ /day
2. Washings			
3. Boiler feed	}	-	301 m ³ /day
4. Boiler make up/Cooling			
Make up/ Humidification/			
Water spraying			
5. Domestic		-	404 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) (2020-21)
1	3600 TPD Rotary Kiln-1 & Raw Mill - 1	ESP	23.77
2	2800 TPD Rotary Kiln-2 & Raw Mill - 2	ESP	24.81
3	4200 TPD Rotary Kiln-3 & Raw Mill - 3	Bag House	23.02
4	FBC Boilers of capacity 2 X 115 TPH	ESP	33.27
5	Cement Mill – Line 1	Bag Filter	19.20
6	Cement Mill – Line 2	Bag Filter	18.03
7	Coal Mill – Line 1	Bag Filter	17.94
8	Coal Mill VRM– Line 1	Bag Filter	16.49
9	Coal Mill – Line 2	Bag Filter	21.61
10	Coal Mill – Line 3	Bag Filter	13.78
11	Clinker Cooler – Line 1	ESP	17.51
12	Clinker Cooler – Line 2	ESP	18.71
13	Clinker Cooler – Line 3	ESP	15.99

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 emitting into atmosphere 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 2020 – 2021

Direction	1	2	3	4
Particulate Matter – PM10 Concentration (ug/m ³)	59.1	61.3	62.2	51.2
Particulate Matter – Concentration PM 2.5 (ug/m ³)	20.6	22.5	22.3	16.8
Sulfur dioxide Concentration (ug/m ³)	8.7	10.8	11.0	8.7
Nitrogen dioxide Concentration (ug/m ³)	19.3	21.8	19.6	18.7
Lead (Pb)	0.1	0.1	0.1	BDL
Carbon monoxide (Co)	BDL	BDL	BDL	BDL
Ammonia (NH ₃)	BDL	BDL	BDL	BDL
Ozone (O ₃)	5.7	7.8	7.5	3.1
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 (µg/m³)

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 echo-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



Coal Storage Shed



Limestone Storage Shed



Laterite Storage Shed



Gypsum Storage Shed



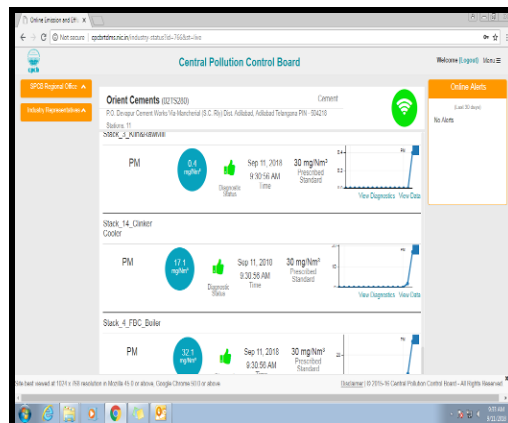
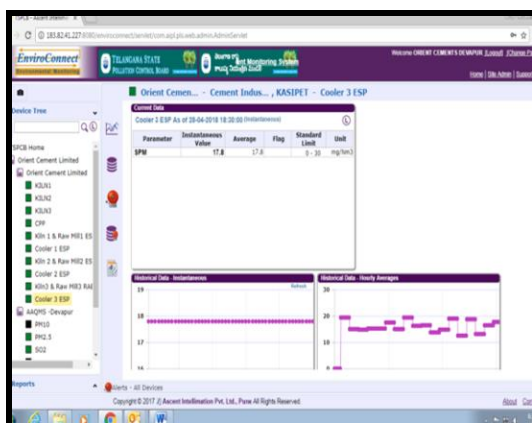
Clinker Silo



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:



R.V.R.Murty
Sr. Vice President (Works)
Orient Cement Ltd.