JSW Cement Limited

Vill : Bilakagudur
Mdl : Gadivemula
Dist. : Krnool - 518 508, A.P.
Phone : 08514 - 202304
08514 - 202305
Website : www.jswcement.in

JSWCL/NDL/ENV/2020-21 Dt: 21.09.2020

To
Environment Engineer,
A.P. Pollution Control Board
Shankar Shopping Complex,
Krishna Nagar-Main Road
KURNOOL, A.P

Sub: Environmental Statement Report (Form-V) for the year 2019-20-Reg

Dear Sir,

In accordance with EPA rules and Consent for operation conditions, we are herewith enclosing the three sets of Environmental Statement for **Cement Plant** for the year 2019-2020.

Kindly acknowledge the receipt of the same.

Thanking you,

Yours faithfully,
for **JSW Cement Limited**

(Arpan Parekh)
AVP (Oper)

Cc: Member Secretary,
A.P. Pollution Control Board,
D.NO:33-26-14 D/2, Near Sunrise Hospital,
Chalamvari Street, Kasturibaipet, VIJAYAWADA-520010, A.P

Encl: a/a

CIN-U26957MH2006PLC160839

Regd. Office :
JSW Centre, Opp. MMRDA Ground
Bandra Kurla Complex, Bandra(East)
Mumbai - 400 051.
Ph (Direct): +91 - 22 - 4286 5047
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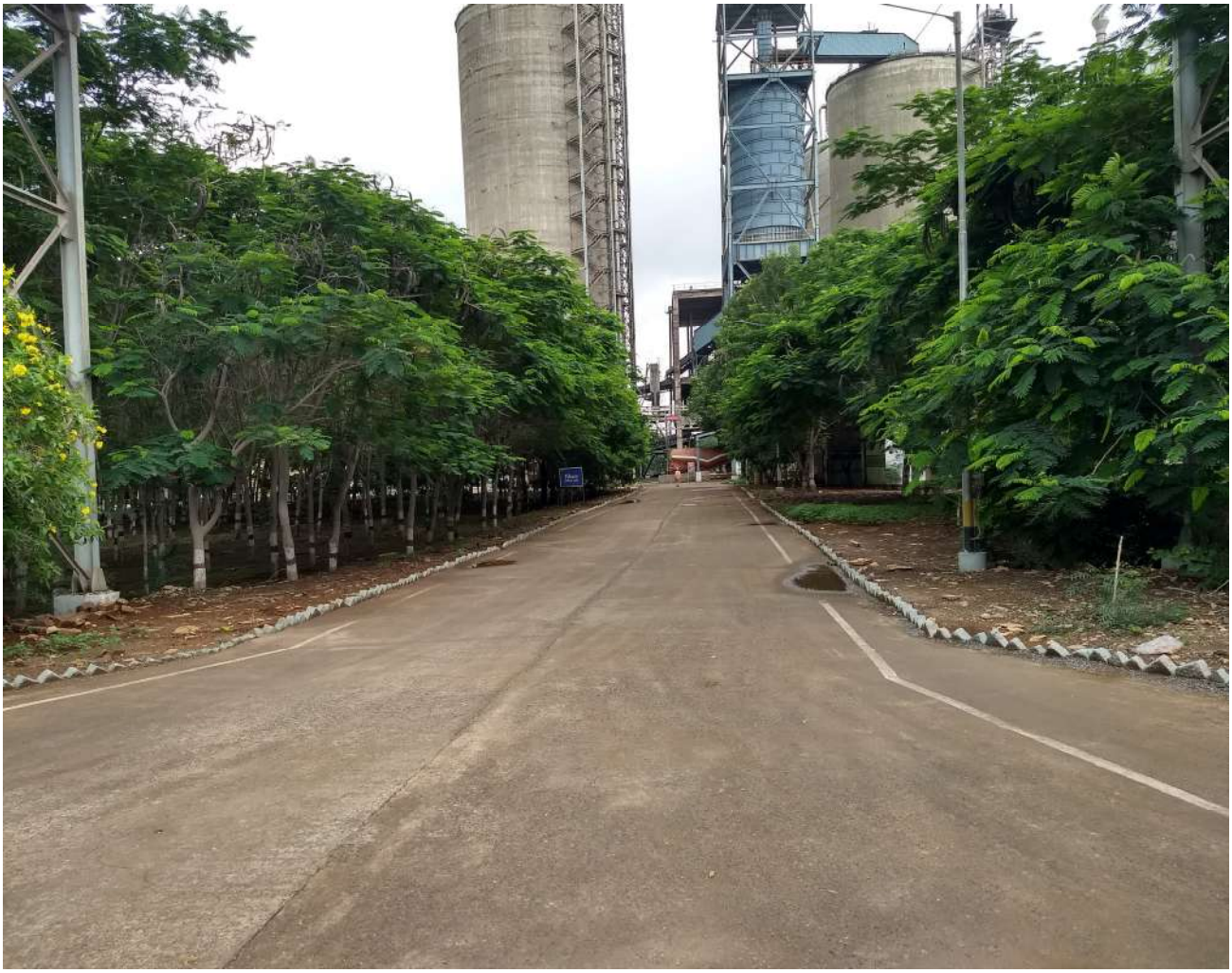
Part of O. P. Jindal Group

ENVIRONMENT STATEMENT

(Form-V)

YEAR 2019-2020



JSW CEMENT LTD

Village-Bilakalagudur, Mandal – Gadivemula Dist. Kurnool (A.P)

JSW Cement Ltd. (AP), Environmental statement for the financial year ending the 31st March 2020

LIST OF CONTENTS

1. Introduction

JSW Cement is the new diversification foray of JSW Group, a part of US$ 11 billion OP Jindal Group, has grown into a US$ 11 billion enterprises with interests across various core economic sectors – Steel, Energy, Cement, Maritime Infrastructure and IT. The group has plants located in various parts of the world.

JSW group is fast adding capacity in steel and power manufacturing. As a result, large quantity of slag and fly ash is being generated, disposal of which caused serious problem. In order to use both these waste materials i.e. slag and fly ash, cement manufacturing is one of the best options. Slag can be used as much as 50 - 70% of clinker in cement manufacturing while fly ash is limited to be used maximum up to 35%, usually restricted to 30%.

JSW Cement's first plant was set up at Vijaynagar, District Bellary in Karnataka with a capacity of 0.60 million tonnes per annum. During 2011, the company commissioned a most modern integrated cement plant of 4.80 million tonnes per annum dry process technology with 6 stage preheater system at Bilkalagudur Village, Dist.Kurnool in Andhra Pradesh. The plant uses the latest German Technology supplied by M/s KHD Humbolt Wedag. JSW Cement is a slag based blended cement, manufactured by using granulated blast furnace slag from the Group's steel plants, saving valuable natural resources. This is a giant step by the company towards providing cement that is strong, durable and at the same time eco-friendly.

Besides producing Portland Slag Cement (PSC), the company also manufactures Ground Granulated Blast Furnace Slag (GGBS) which is preferred by almost all concrete manufacturers across South India as an additive material for cement for better quality concrete. In order to achieve consistency in product quality, we have for the first time in the world adopted the technology of grinding both raw materials as well as cement by using Combi Flex Roller Press in finished mode with dynamic separator. This facility enables us to produce and supply much finer and uniform quality cement. The company has pioneered a modern plant for the first time in the world that uses Combi Finish model Roller Press Circuit for grinding and manufacturing both PSC and GGBS, in addition other machineries manufactured & supplied by M/s KHD Humboldt Wedag Germany are Rotary Kiln, Pyro Floor clinker cooler, Vertical coal mill (FLS) etc. The company has also installed hands free automatic packing & truck loading system supplied by M/s FLS Ventomatic Italy.

The slag cement not only preserves the natural resources but also helps in improving the Durability of the Concrete Structures. Use of Slag Cement to produce Concrete can significantly improve durability of the concrete in several ways and consequently extend the life of concrete structures. During the life of the structure, the compressive strength of Slag Cement significantly increases well beyond the 28 days specified strength more than the concrete made from OPC or PPC. Slag Cement has higher resistance to sulphate and chloride attack and also controls the expansion due to Alkali-Silica Reaction hence it is recommended for marine structures.

M/s. JSW Cement Limited has set up 2.5 MTPA clinkerization and 4.8 MTPA cement plant at village Bilakalagudur, Gadivemula Mandal, District Kurnool (A.P). The plant is a state-of- the-art technology supplied from the best vendors across the industry.

2. Objective of the study

The objective of the present study is to review the performance of overall Environment management system established by JSW Cement so as to identify opportunities for improvements which could be beneficial to both environment and its components. And also inserted by **rule 2 of the Environment (Protection) second Amendment & Rules, 1992 vide G.S.R. 329 (E), dated:13-3-1992, "**Every person carrying on an Industry, operation or process requiring consent under section 25 of the water (prevention and control of pollution) Act 1974 (6 of 1974) or under section 21 of the Air (Prevention and Control of Pollution), Act 1981 (14 of 1981) or both or authorization under the Hazardous Wastes (Management and Handling) Rules, 1989 issued under the Environmental (Protection)Act 1986 (29 of 1986) shall submit an environmental audit report for the financial year ending 31st March in Form – V to the concerned state pollution control board on or before the 30th day of September every year beginning 1993."

3. Benefits of Environmental Audit

Environmental audit helps the organization understand environmental interactions of products, services and activities and manage environmental risks. The key benefits of audits are:

a) It helps in reduction of raw material consumption by way of waste minimization and adoption of recovery of waste and recycles the same.

b) Determine performance of the process systems and helps to improve those systems.

c) Determine efficiency of pollution control systems.

d) Acquired data and information can be utilized for further improving the environmental performance of the facility.

e) It helps to identify the sources of pollution and also the measures for controlling pollution at the source.

f) It helps organisation understand how to meet its legal and other requirements.

g) It helps to meeting specific statutory reporting requirements.

h) It helps organisation understand how they can improve environmental/ energy performance and save money.

i) It helps the organization to determine the impact of its activities on the surrounding environment and identify suitable preventive measures.

j) Acquired data on fuel/ energy consumption can be used to implement energy/ fuel saving measures.

With this view, an in-depth study was conducted to review the process efficiency, quality & quantity of emissions/effluents generated, performance of air pollution control systems, mode of solid waste generation, collection & disposal and other associated activities having potential to impact the environment.

4. Location

M/s JSW Cement Limited is located at Bilakalagudur (V), Gadivemula (M), Kurnool (Dist) of A.P. The site is 28 km from nearest State Highway which is connecting to Hyderabad to Chennai via Kurnool-Kadapa. The total water requirement is drawn from bore well and used for plant utilities. The location map is shown in **Fig.1**. The land is flat terrain sloping towards Southeast. No major hills or mountains are there in the area.

5. Raw Material and products

Raw materials used and products produced in the financial year 2019-2020 are as follows:

5.1 Raw Materials

S. No.	Raw material	UOM	Quantity
1.	Lime Stone	MT	2213413
2.	Aluminum Laterite	MT	59644
3.	Flue Dust/ Accrued Dust	MT	21474
4.	Gypsum	MT	44613
5.	Coal	MT	65010
6.	Pet coke	MT	69,447
7	Slag	MT	891675
8	Alternative Fuels	MT	36506
9	Red mud	MT	49937

5.2 Products

S. No.	Products	UOM	Quantity
1.	Ordinary Portland Cement (OPC)	MT	717231
2.	Portland Slag Cement (PSC)	MT	1071323
3.	Ground Granulated Blast Furnace Slag (GGBS)	MT	893392
4.	Clinker	MT	1549491

6. Manufacturing process description of cement.

6.1 Limestone Crusher and Stacking of Material

The Company has an impact crusher (1200 TPH capacity) to crush the limestone sourced from its captive mines. The crushed material is transported to stock pile. There are stacker and reclaimer, stacker is used to stack the material received from crusher and the reclaimer is used for reclaiming and further feeding the material to the hoppers for further processing in the mills.

At LS crusher as well as in the material stacking area, we have installed sufficient number of bag filters wherever required to control the dust emission level below 30 mg/Nm³. Average stack emission levels achieved during 2019-20 was **11.400 mg/Nm³** or **9.5 kg/day** (Raw Mill & Kiln combined). The Process Flow Diagram of Crusher is shown in Fig-2.

6.2 Raw Mill

There are 2 sets of raw mills to convert the limestone to a very fine powder. The ground material is stored in Raw Mill silo of 20000 MT capacity.

In Raw Mill, we have installed the latest available technology. The Raw Mill consists of 2 Roller Presses, **Combi – Combi flux** with single separator and a Pulse Air Bag House. The Bag house is designed to

control the stack emission levels **below 30 mg/Nm³. JSW Cement Ltd. is the first company in the Indian Cement Industry to install this type of technology.**

Raw mill / Kiln stack is 140 M high with continuous online stack monitoring system. Average stack emission levels achieved during 2019-20 was **17.26 mg/Nm³** or **182.4 kg/day** (Raw Mill & Kiln combined). The Process Flow Diagram of Raw Mill circuit is shown in Fig -3.

6.3 Coal Circuit

The coal circuit comprises of unloading, storage and feeding systems. Grinding of coal is done by a 50 TPH capacity vertical mill supplied by M/s FLS, Denmark. After grinding to a desired level of fineness, the coal powder is stored in bins for onward feeding to Kiln circuit.

In the Coal Mill circuit, right from truck unloading to finish product storage (fine coal bins), nuisance bag filters and process bag filters are installed to control the emission levels below **30 mg/Nm³**. Coal Mill stack is also equipped with continuous online monitoring system. Average stack emission levels achieved during 2019-20 was **20.2 mg/Nm³ or 30.0 kg/day**. The Process Flow Diagram of Coal Mill circuit is shown in Fig-4.

6.4 Preheater and Kiln

The Kiln is fired with coal which is heated up to a desired temperature as per process requirement. Powdered raw meal from the rawmeal silo is fed into the Kiln through double string, 6 stage preheater system. The kiln and Calciner are fired with fine coal through specially designed burners. Raw meal is now sintered and converted into clinker which is cooled in Clinker Cooler. The cooled material is transported through deep pan conveyor and stored in covered clinker stockpile above the ground level. Pyro Clone Low Nox firing system is provided in the pre-heater to control NOx level in the flue gases from the pre-heater. Pre-calciner burner is provided in the Pyro-clone top, as usual.

In kiln feed, most of the cement industries use iron ore as an additive, whereas JSW Cement partly substitutes Iron Ore with Flue Dust, a byproduct from Steel industries.

The Process Flow Diagram of Preheater and Kiln is shown in Fig -5

6.5 Clinker Cooler

In Clinker cooler, the temperature of exhaust gases ranges from 320-350°C. These exhaust gases contain fine clinker dust and installation of Electro-static precipitator (ESP) as an air pollution control device is quite common among cement industries. ESPs are not suitable to control the dust emissions of the order of 30 mg/Nm³. In view of the above, JSW Cement installed Bag House to bring down the dust emission to the level of **30 mg/Nm³.** To accommodate the high gas temp, a **Heat Exchanger** is provided between cooler and bag house. Average stack emission levels achieved during 2019-20 was **15.90 mg/Nm³** or **113.52 kg/day**. The Process Flow Diagram is shown in Fig – 6.

6.6 Cement Mill

The plant has two types of mills, one is for grinding the clinker with 3-5% of gypsum and another for grinding the blast furnace slag. After grinding, both the products are kept separately in silos. Both the products are then mixed in a suitable proportion to make Portland Slag Cement (PSC).

The Cement Mill is also equipped with state-of-the-art technology having a circuit similar to that of Raw Mill, i.e. Combi–Combi Flex. In this mill, we are grinding clinker with 3-5% of gypsum and some small quantity of separator rejects are passed through the closed circuit ball mill. Material with about 3200 M^2/ Kg. Blaine (fineness) is separated from the separator and stored in cement silo of 15000 MT capacity. Average stack emission levels achieved during 2019-20 was **12.9** mg/ Nm^3 or **11.50 kg/day**. The Process Flow Diagram of Cement Mill circuit is shown in Fig.7.

6.7 Slag Mills

There are 2 sets of Combi – Combi Flex circuit without Ball Mill for Slag grinding. **JSW Cement Ltd. is the first company in the Indian Cement Industry to install this type of circuit.** In this system, de-dusting / bag filters / process bag house are designed at 30 mg/ Nm^3 emission level. In the slag mills, waste products/ byproducts such as Slag and LD Slag from Steel plants are ground with 4-5% Gypsum to produce GGBS (Ground Granulated Blast Slag). For manufacturing Portland Slag Cement (PSC), both OPC and GGBS (Granulated Ground Blast-furnace Slag) are fed into the blender in pre-determined quantity. Average stack emission levels achieved during 2019-20 was **18.97 mg/Nm^3** or **106.0kg/day**. The Process Flow Diagram of Slag Mill system is shown in Fig – 8.

JSW Cement plant is designed for manufacturing 100% Portland Slag Cement (PSC), eco-friendly green cement highly useful in coastal areas. PSC is very popular in other countries for last several years but in India it is now gradually becoming popular in construction industry.

6.8 Packing plant

The Company has installed 3 nos of latest technology Roto packers (FLS Ventomatic), each with 240 TPH capacity. Bag fixing to the rotary packer is also a mechanized process. It picks up the bags and fixes to the nozzle automatically. The bags, having filled with predetermined quantity, are discharged on to the conveyor and carried to the loading machine. In between, an online printer is installed for printing of MRP, Week No. & Year on every bag. Bags are loaded in the trucks in a systematic way just like palletization with each row having 10 bags. No humans need to touch the bags while loading into the trucks. The operators of the truck loader can fix the loading pattern on the truck automatically.

With such a system, the health of packing plant personnel is safeguarded against exposure to dust and other harmful pollutants. Average stack emission levels from all the 3 packers achieved during 2019-20 was **11.26 mg/Nm^3** or **3.48 kg/day**

7. Water Requirement

The total water consumption and its break up is given below:

Water consumption in m^3/day (2019-20)

Process	Nil
Cooling	575
Domestic	159
Others (Plantation & Misc.)	220
Total	954

All of the cooling water is evaporated and hence no waste water is generated from any of the industrial processes. The domestic requirement includes requirements of plantation and drinking as well as sanitation.

For treatment of domestic waste water, JSWCL has commissioned 2x 50 KLD capacity Sewage Treatment Plant (STP) within plant premises. The treated water is utilized for plantation and horticulture.

The water requirement is met by pumping ground water through bore wells. Bore well water analysis data are shown in **table 7.1** which indicate that due to plant and mining operations, there is no significant change in groundwater quality that can cause damage to the existing biotic system.

Table –7.1

BORE WELL WATER ANALYSIS DATA (mg/L)

S. No.	Parameters	Values
1.	pH	7.03
2.	Turbidity (NTU)	0.7
3.	Dissolved Solids	102
4.	Total Hardness as $CaCO_3$	24.75
5.	Alkalinity as $CaCO_3$	45
6.	Calcium as Ca	6.05
7.	Magnesium as Mg	6.0
8.	Chlorides as Cl	11.88
9.	Sulphates as SO_4	2.88
10.	Nitrates as NO_3	0.93
11.	Fluoride as F	0.18
12.	Iron as Fe	8.27

8. Pollution Control in the Plant

The industry has given utmost priority to pollution prevention measures. Therefore, all the sources that release particulate matter are provided with bag filters designed to control particulate emissions in the range of 30mg / Nm^3.

Measures for control of Sox and NOx from stacks are given in Section 8.2 below.

The present air quality in terms of stack particulate matters and ambient air data for PM_{10}, $PM_{2.5}$, SO_2 and NO_2 is observed to be well within permissible limits prescribed by Andhra Pradesh Pollution Control Board (APPCB) / CPCB / MoEF&CC.

Industry has installed 6nos online stack dust monitors and 3nos of continuous ambient air quality monitoring stations for estimation of emissions levels in the plant premises.

8.1 Waste water Sources and Monitoring

Water is mainly used for the purpose of cooling and in this process; most of the water is consumed / evaporated. The only source of waste water is from sanitary facilities of the plant. Domestic waste water is treated in Sewage Treatment Plant and the treated water is used for plantation and Greenbelt development.

8.2 Air Pollution Control

State-of-the-art bag houses with PTFE filtering media in all the production units (Kiln / Raw Mill, Coal Mill, Clinker Cooler, Cement Mills, Crusher, Packing House etc.) Bag filters at every material transfer point, water sprinklers in dump hoppers, fully covered conveyors, paved roads inside the plant and High pressure water spray systems installed at Coal & Lime stone yard. Thick green cover to maintain the ambient air quality within the prescribed limits

a) Measures for control on NOx generation

a) Low NOx inline calciner and Low Nox burner for coal firing in kiln.
b) Logic based kiln operation to ensure steady flame conditions without undue peaks.
c) Online NOx measurement analyzers to facilitate prompt actions in case of deviations.

b) Measures for control on SOx generation

Use of low Sulphur coal and raw material in pyro-processing helps to keep the Sox emissions at low levels. In addition, the raw mix with optimum CaO content absorbs entire sulphur in the form of sulphates thus preventing emission of Sox in flue gases.

8.2.1 Stack Emissions

Details of stacks and attached PCE are as under:

Section	Pollution Control Devices/ Systems installed at point sources
Raw Mill & Kiln	Pulse Air Bag House (with PTFE Glass Fibre filter bags) designed to operate at **99.99%** efficiency.
Clinker Cooler	Bag House (with Polyester needle felt PE filtering media with oil repellent finish) designed for **99.97%** efficiency.

	The Bag House is attached to a Heat Exchanger that reduces the Cooler exit gas temp. from 350 ◦C to 80 ºC
Coal Mill	Bag House (with PES fabric) designed for **99.96%** efficiency
Crusher	Bag House with (with PES fabric fibre) designed to operate at **99.96%** efficiency
Cement Mill	Bag House (with mixed felt 50% PE+50% Homopolymer) designed to operate at **99.998%** efficiency
Slag Mills (2nos)	Bag House (with mixed felt 50% PE+50% Homopolymer) designed to operate at **99.998%** efficiency
Packers (3 Nos.)	Bag Filters (with PES fabric fibre) designed to operate at **99.96%** efficiency

All the major stacks are provided with online dust monitors to measure online stack PM levels.

Table 8.1
Average values of Stack Emissions monitoring data during 2019-20

Source	Stack Height (m)	Stack Dia (m)	Velocity (m/Sec)	Attached to	SPM Conc. (mg/Nm^3)
Kiln /Raw mill	140.00	5.65	10.12	Bag House	17.26
Cement Mill	60.00	1.35	8.50	Bag Filter	12.85
Cooler	50.00	4.00	7.85	Bag House	15.91
Coal Mill	75.00	1.80	9.82	Bag House	20.23
Slag mill-I	62.40	2.80	14.35	Bag House	19.35
Slag mill-II	62.40	2.80	14.41	Bag House	18.60
Packer-1	32.0	0.85	7.75	Bag Filter	9.43
Packer-2	32.0	0.85	8.05	Bag Filter	11.63
Packer-3	32.0	0.85	7.92	Bag Filter	12.73
Crusher	30.0	1.50	7.05	Bag Filter	11.40

8.2.2 Ambient Air Quality

Ambient air quality monitoring is carried out on continuous basis through 3 nos. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) located as under:

1. Near Project office
2. Near MRSS Building
3. Near Workmen Colony

Ambient air quality is monitored continuously for the estimation of Particulate matter -PM_{10} and Particulate matter- $PM_{2.5}$. Average values for the parameters monitored are represented in Table 8.2 which suggests that the values for PM_{10}, $PM_{2.5}$, SO_2 and NO_2 are within the limits prescribed by the APPCB/ NAAQS.

Table 8.2

Average values of Ambient air quality data (µg/m³) during 2019-20

Location	Near old Security Gate	Near MRSS Building	Near Colony Gate	Near New Security Gate
Particulate Matter- PM 10	55.43	46.71	44.13	52.71
Particulate Matter –PM 2.5	29.57	24.43	23.43	30.00
Sulfur dioxide (So_x)	12.14	11.29	10.33	12.86
Nitrogen Dioxide (NO_x)	13.81	12.64	11.99	15.24

8.2.3 Ambient Noise Levels

Ambient Noise levels are measured at 4 locations in the factory on monthly basis. In addition, work zone noise levels are also monitored periodically recognizing the fact that high noise levels may have adverse impact on the workers health and also on the surrounding environment. Noise levels are measured using sound level meter. The results of ambient noise levels are presented in table 8.3 which shows that the observed values are well within the permissible limits.

Table 8.3

Average values of Ambient Noise Levels during 2019-20

S. No.	Location	Noise Levels in dB(A)	Noise Levels in dB(A)
		Day time	Night time
1.	Near New Security gate	67.4	58.2
2.	Near Colony	56.5	49.2
3.	Near MRSS Building	65.4	55.7
4.	Near old Security gate	60.8	53.3

Note: Day time is reckoned in between 6 am and 10 pm – Limit **75** dB (A)

Night time is reckoned in between 10 pm to 6 am – Limit **70** dB (A)

Measures adopted for control on Noise pollution:

1. Grinding of raw material and finished products is performed by Roller Press that generates less noise compared to traditional ball mills.
2. Single chamber ball mill for cement grinding; i.e. no crushing chamber to create high noise during cement grinding.
3. All major industrial fans are fitted with silencers.
4. DG sets are provided with acoustic enclosures & installed in enclosed rooms.
5. Sound barriers / walls provided at certain locations in coal mill area
6. Wobbler (in place of grizzly) has been installed in Limestone crusher
7. Compressors are installed within enclosed rooms

8. Thick greenbelt around the plant acts as a natural sound barrier and prevents propagation of noise waves from spreading into external environment.
9. Regular preventive maintenance of plant and machinery by competent staff.
10. Regular noise level monitoring to determine where actions are needed.

9. Greenbelt Development

Greenbelt development brings the following benefits.

a) Mitigation of fugitive emissions including odour
b) Noise pollution control
c) Partial sequestration of GHG
d) Prevention of soil erosion
e) Improving the landscape of the area
f) Aesthetics

JSW Cement has so far planted **38624 Nos. of tree saplings and 86,200 Nos. of shrubs and herbs** in and around the plant premises with 82% survival rate. As on date, the green belt to the extent of **35%** of the total plant area has been developed.

10. House Keeping

Proper cleaning of different sections is required to maintain healthy environment and also to avoid unnecessary production loss. JSW Cement, being an ISO 14001 & OHSAS 180001 certified company, maintains high standards of housekeeping. There are section level SMART teams to oversee housekeeping in their respective areas. In addition, all the areas are periodically audited by Internal as well as external auditors for compliance to the prescribed standards.

FORM – V
(See rule 14)

Environmental statement for the financial year ending the 31ST MARCH 2020

PART – A

1.	Name and address of the Owner / Occupier of the Industry, operation of the process.	**Mr.** Nilesh Narwekar**,** Director & CEO M / s. JSW CEMENT LTD., Bilakalagudur (V), Gadivemula (M), Kurnool (Dist), A.P -518 508
2.	Industry category NIC Code:	Cement manufacturing 23941 (Clinker) 23942 (Cement)
3.	Production Capacity	Clinker - 2.5 MTPA Cement (OPC , PSC& GGBS) - 4.80 MTPA
4	Year of establishment	2011
5	Date of the last environmental statement submitted	21.9.2019

PART – B

Water and Raw Material Consumption

(I) Water consumption in m³/day.

Process	Nil
Cooling	575
Domestic	159
Others (Plantation & Misc.)	220
Total	954

Name of products	**Process (cooling) Water consumption per unit of product output**	
	During the previous financial year (2018-19)	**During the current financial year (2019-20)**
	(1)	**(2)**
Portland Cement (OPC+PSC+GGBS)	0.0502 KL / Ton of product	0.04 KL / Ton of product

(II) Raw Material consumption

S. No.	**Name of raw material**	**Name of products**	**Consumption of raw material per unit output (Per Tonne)**	
			During the previous financial year (2018-19)	**During the current financial year (2019-20)**
1.	Lime Stone		0.5122 MT / MT Product	0.5518 MT / MT Product
2.	Coal		0.0379 MT / MT Product	0.044 MT / MT Product

3.	Gypsum	Product (OPC,PSC &GGBS)	0.0322 MT/ MT Product	0.030 MT/ MT Product
4.	Alumin. Laterite		0.0206 MT / MT Product	0.014 MT / MT Product
5.	Flue Dust+ Redmud		0.0148 MT / MT Product	0.017 MT / MT Product
6.	Slag		0.5992 MT / MT PSC	0.570 MT / MT PSC
7.	Furnace Oil		0.0039 KL / MT Product	0.0030 KL / MT Product

PART – C

Pollution discharged to environment/unit of output generated (Parameter as specified in the consent issued)

S. No.	Pollutants	Concentration of Pollutants in discharge			
a.	Water (Industrial)	Not applicable since no waste water is generated from the process			
	Water (Domestic)	Average values of Plant Domestic effluents treated in STP			
		Parameter		Prescribed Standard (mg / L)	Observed value (mg / L)
		pH		5.5-9.0	7.32
		TSS		200	54.25
		TDS		2100	962
		BOD		100	23.2
		Oil & Grease		10	3.0
b.	Air (Stack emission) Particulate matter	**Stack**	**Quantity of pollutants discharged (mass/day)** (kg / day)	**Concentrations of pollutants in discharges (mass/volume)** (mg / Nm^3)	**Percentage of variation from prescribed standards with reason**
		Kiln / Raw Mill	236.0	17.26	-42.46
		Cement Mill	19.77	12.85	-57.2
		Cooler	22.50	15.91	-46.9
		Coal Mill	12.57	20.23	-32.5
		Slag mill-I	144.8	19.35	-35.5
		Slag mill-II	70.25	18.60	-38.0
		Packer-1	3.88	9.43	-68.5
		Packer-2	3.37	11.63	-61.2
		Packer-3	3.20	12.73	-57.5
		Crusher	9.55	11.40	-62.0

PART - D

Hazardous Wastes

(As specified under Hazardous Wastes (Management and Handling) Rules, 2003) & amended as Hazardous Waste (Management, Handling & Transboundary Movement) Rules, 2008

S. No.	Hazardous Waste	Total quantity	
		During the previous financial year (2018-19)	During the current financial year (2019-20)
a.	From Process		
(i)	Used Oil & Grease (Kg)	6800	4000
b.	From pollution control facility	Nil	Nil

PART – E

Solid Waste

Sl. No.	Solid Waste	Total quantity (Kg.)	
		During the previous financial year(2018-19)	During the current financial year (2019-20)
a.	From Process	Nil	Nil
b.	From pollution control facility	Nil	Nil
c.	Quantity recycled or reutilized	Nil	Nil

PART – F

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

(i) Hazardous waste:

Description of Haz. waste	Qty. of waste generated during the year (Ltr.)	Qty. of waste disposed during the year (Ltr.)	Disposal Method	Equipment / Facility Used
Used/ Spent Oil & Grease		4000	Sold to authorized recyclers	Not Applicable

(ii) Other Solid waste generated and disposed during 2019-20

Description of waste	Qty. of waste generated during the year (MT)	Disposed (MT)	Disposal Method
Scrap steel	214.97	214.97	Sold to recyclers
Wooden scrap	4.32	4.32	Sold to recyclers
Bursted Bags (Nos)	50000	50000	Sold to authorized recyclers
PP Wrappers for goods packing	7	7	Buy Back system
Iron fines	2229.61	2229.61	Sold thru tender (for recycling)

PART – G

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

The plant is equipped with state-of-the-art Air Pollution Control devices such as Pulse Air Bag Houses, Jet Pulse Filters etc designed to control the emission (SPM) level below 30 mg / Nm^3 from any of the stacks installed at our plant.

In addition, we are successfully managing the ambient air quality below the prescribed levels by way of putting up Jet Pulse Filters at each of the transfer points, covered belt conveyors, water sprinklers and mostly paved surfaces for vehicular movement inside the plant premises.

All these systems have proved to be very effective in arresting and putting back the recovered material into the production line thus preventing the precious raw material, fuel, intermediate & finished products from getting lost in the atmosphere.

Additionally, the company has undertaken various energy efficiency improvement measures & process optimization which helped to significantly reduce the overall energy consumption to enable us to achieve our ultimate goal of GHG emission reduction and positive contribution towards reversing the effects of Climate Change.

Thus, the pollution abatement & other energy conservation practices adopted by us save precious raw material / product and greatly help in conserving valuable natural resources.

PART – H

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

Environmental improvement activities planned for 2019-20:

1. Construction of 4 nos of Rainwater Harvesting / groundwater recharges structures in plant area.
2. Use of 39.5% Pet Coke in Kiln.
3. Usage of alternative fuels 20.8% in place of coal.
4. Increase in replacement of natural gypsum with Chemical Gypsum
5. Increase in slag addition in PSC up-to 57%.
6. Plantation of 8000 saplings in Cement Plant area.
7. Concrete paving in truck parking yard outside security gate.

Any other particulars for improving the quality of the environment

Details of steps taken for improvement of environment during 2019-20

(i) Environment Management System improvement

1. Periodical review of EMS including compliance of environmental laws through periodic Management Review & Internal / external audits
2. Awareness promotion through various environmental competitions, workshops, presentations etc. on world environment day, Earth Day, Bio-diversity Day, Ozone Day etc.

(ii) AIR

Improvement in Ambient Air Quality through effective control on fugitive dust emission

(a) Completion of concrete roads from Coal BRU to Alternative fuel storage shed. Covering of Limestone Hopper discharge (Additive building) from 2 sides with rubber belt skirts to prevent fugitive emission.

(b) Lawn and garden developed infront of Admin Building office.

(c) Installation of rubber skirts on the sides of Raw mill hopper building.

(iii) WATER

a) Augmenting groundwater resources

During the year 2018-19, the company augmented the groundwater resources by constructing 3 nos. water harvesting cum recharge wells at coal storage shed inside plant premises. With the construction of these structures, our total artificial groundwater recharge potential has now increased to almost 1.5 times the amount of water we withdraw from the groundwater aquifer.

b) Waste water management

Sewage Treatment Plant to treat plant domestic waste water was commissioned in July'14. The final treated water was using for greenbelt development.

(iv) GREEN BELT DEVELOPMENT

JSW Product has so far planted 38624 Nos. of tree saplings and 86200 Nos. of shrubs and herbs in and around the plant premises with 82% survival rate. As on date, the green belt to the extent of **35%** of the total plant area has been developed.

(v) INDUSTRIAL WASTE/ BY-PRODUCT UTILIZATION

Year	Blast furnace slag (MT)	Chemical Gypsum (MT)	Flue Dust (MT)	Alternative fuels	Red Mud
2016-17	988582	15794	34250	1460	--------
2017-18	1238304	11175	35516	4704	8299
2018-19	1384148	17172	43837	16892	39558
2019-20	1009376	23323	21524	36506	49937

(vi) Significant energy saving measures implemented during 19-20:

1	Installation of LED Lamps
2	Coal mill baghouse inlet duct replaced with wear resistant plate instead of MS plate for minimising the wear to reduce the false air entry
3	Installlation of VFD for 431 BL1
4	Lifting of SKS separator reject bin to reduce frequent airslide jam and increased the inclination for airslides
5	Arresting false air through coal mill reject chute by introducing the pendulum flap
6	Arresting false air through coal mill reject chute by introducing the pendulum flap
7	Arresting false air through coal mill reject chute by introducing the pendulum flap
8	331BF3 & BF4 bagfilter discharge airslide connection to cyclone removed and connected with product airslide to reduce the ciruclation load across the system
9	Rawmill baghouse inlet dampers modification, bags coating cleaning and welding work done on cracks to arrest the false air
10	Pyro section false air arresting work

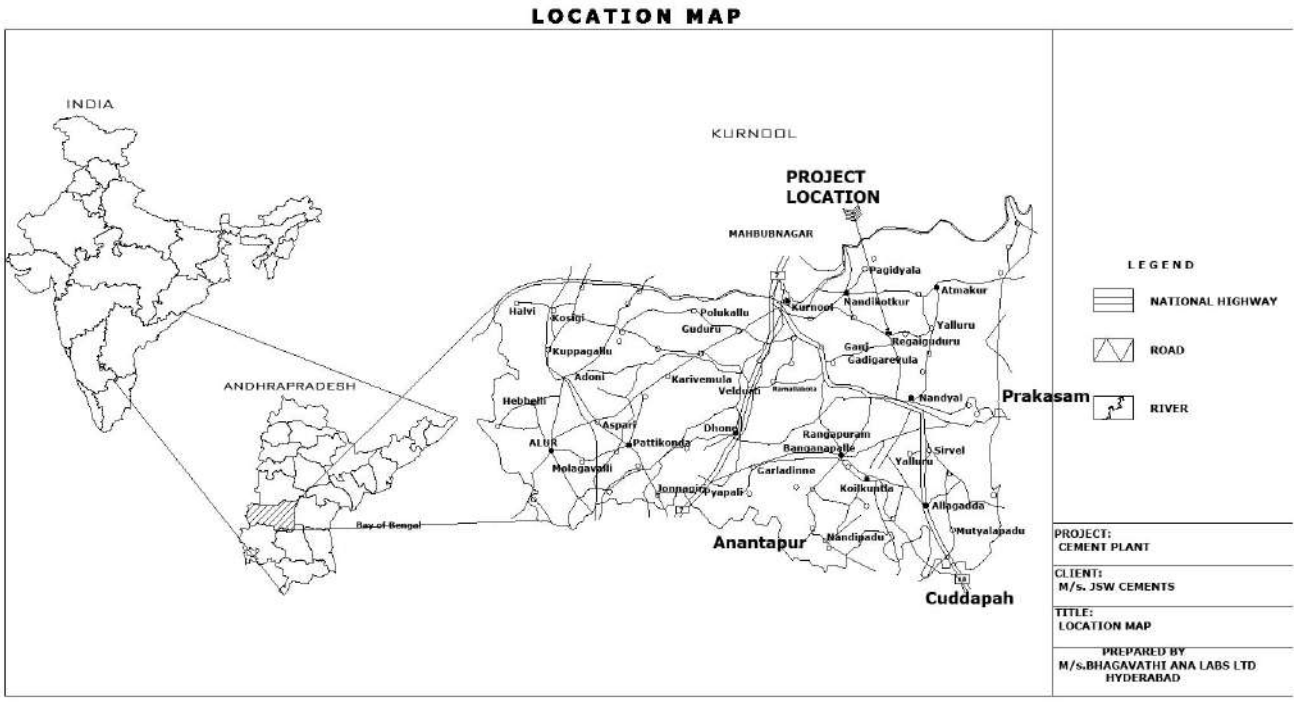
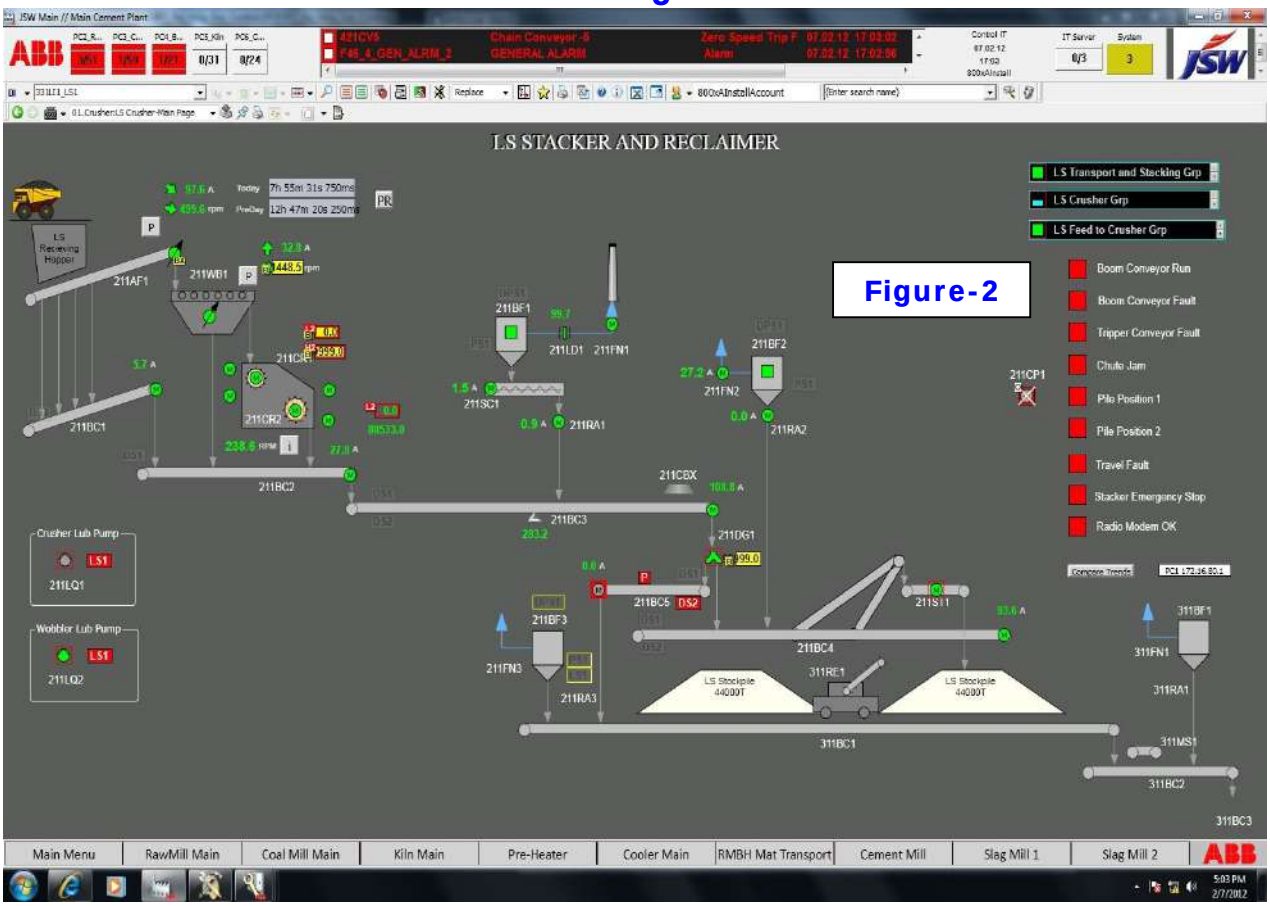

LOCATION MAP
INDIA
KURNOOL
PROJECT LOCATION
MAHBUBNAGAR
ANDHRAPRADESH
Prakasam
Anantapur
Cuddapah
Bay of Bengal
Pagidyala
Atmakur
Nandikotkur
Kurnool
Halvi
Kosigi
Polukallu
Guduru
Yalluru
Kuppagallu
Gani-Gadigareyula
Adoni
Karivemula
Veldurti
Nandyal
Hebbelli
Aspari
Dhone
ALUR
Pattikonda
Rangapuram
Banganapalle
Sirvel
Molagavalli
Garladinne
Jonnagiri
Pyapali
Koilkuntla
Allagadda
Mutyalapadu
Nandipadu
LEGEND
NATIONAL HIGHWAY
ROAD
RIVER
PROJECT:
CEMENT PLANT
CLIENT:
M/s. JSW CEMENTS
TITLE:
LOCATION MAP
PREPARED BY
M/s.BHAGAVATHI ANA LABS LTD
HYDERABAD

Figure-1


LS STACKER AND RECLAIMER
LS Transport and Stacking Grp
LS Crusher Grp
LS Feed to Crusher Grp
Boom Conveyor Run
Boom Conveyor Fault
Tripper Conveyor Fault
Chute Jam
Pile Position 1
Pile Position 2
Travel Fault
Stacker Emergency Stop
Radio Modem OK
Figure-2
Main Menu
RawMill Main
Coal Mill Main
Kiln Main
Pre-Heater
Cooler Main
RMBH Mat Transport
Cement Mill
Slag Mill 1
Slag Mill 2

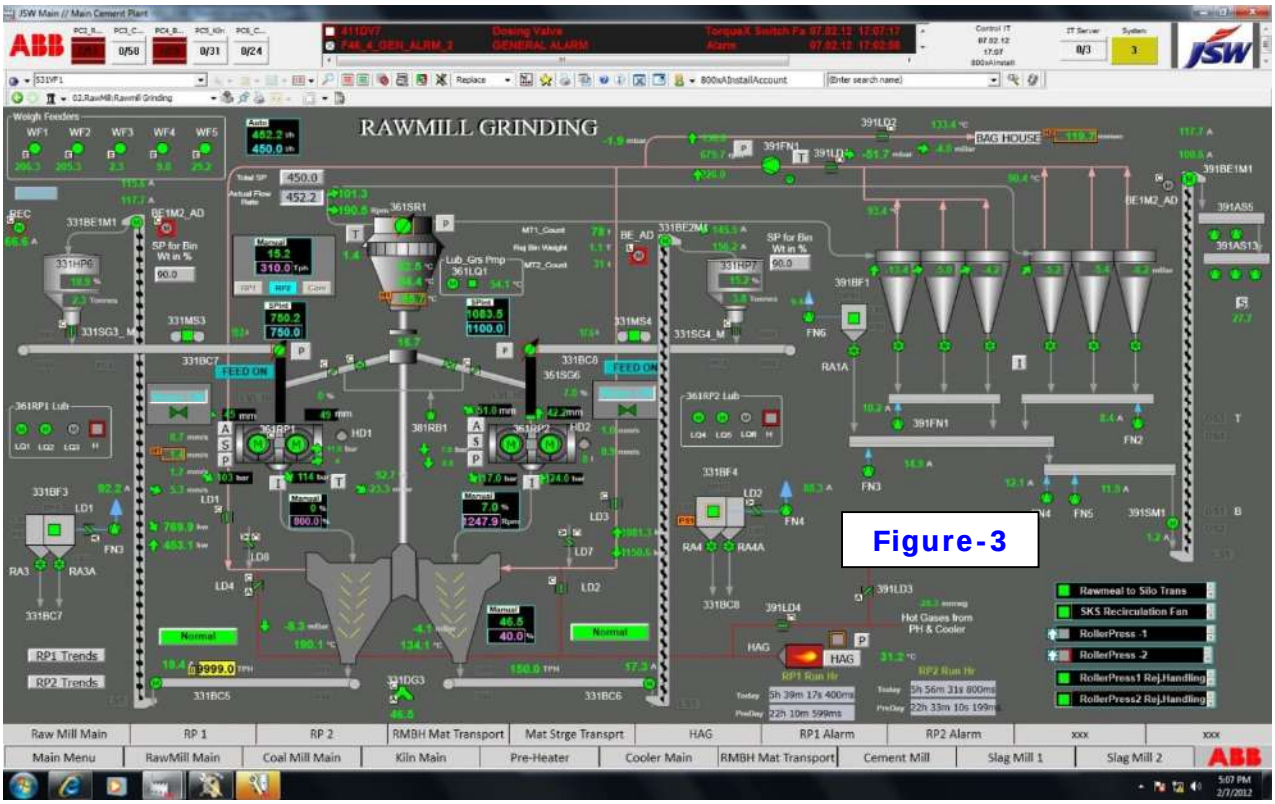


Figure-3

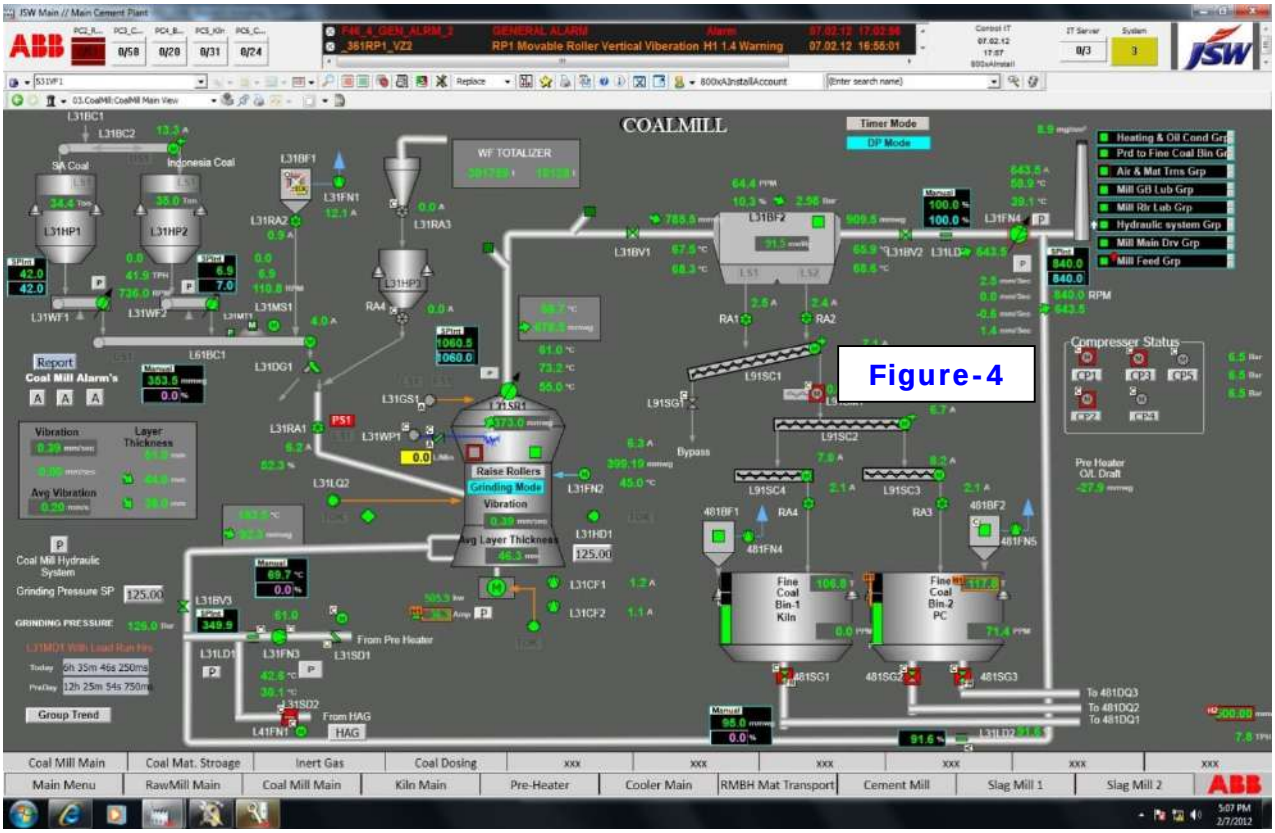


Figure-4

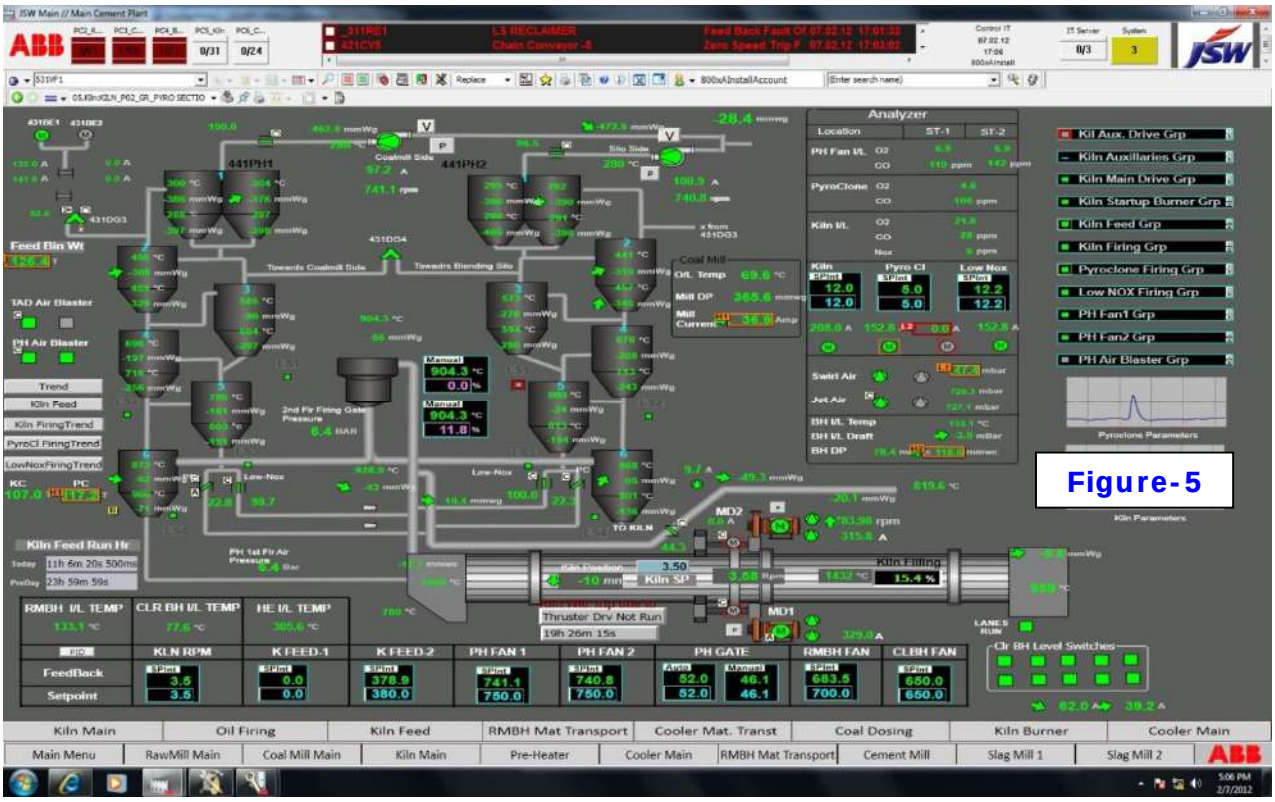


Figure-5

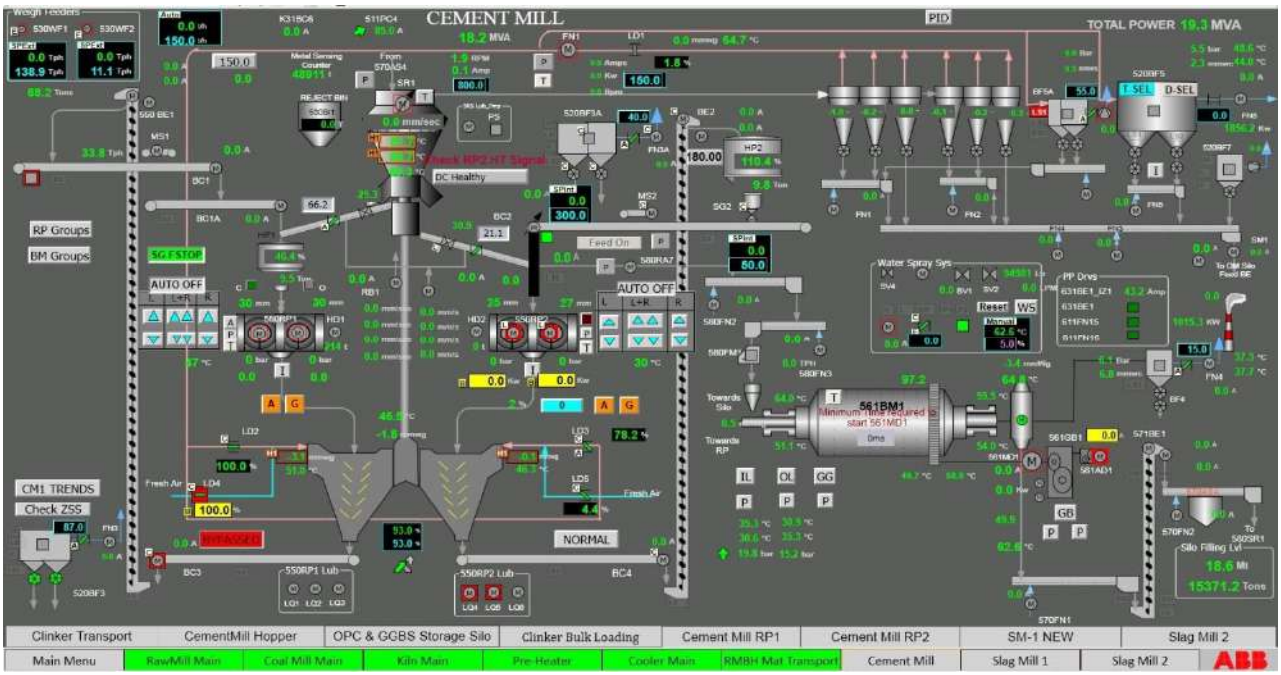
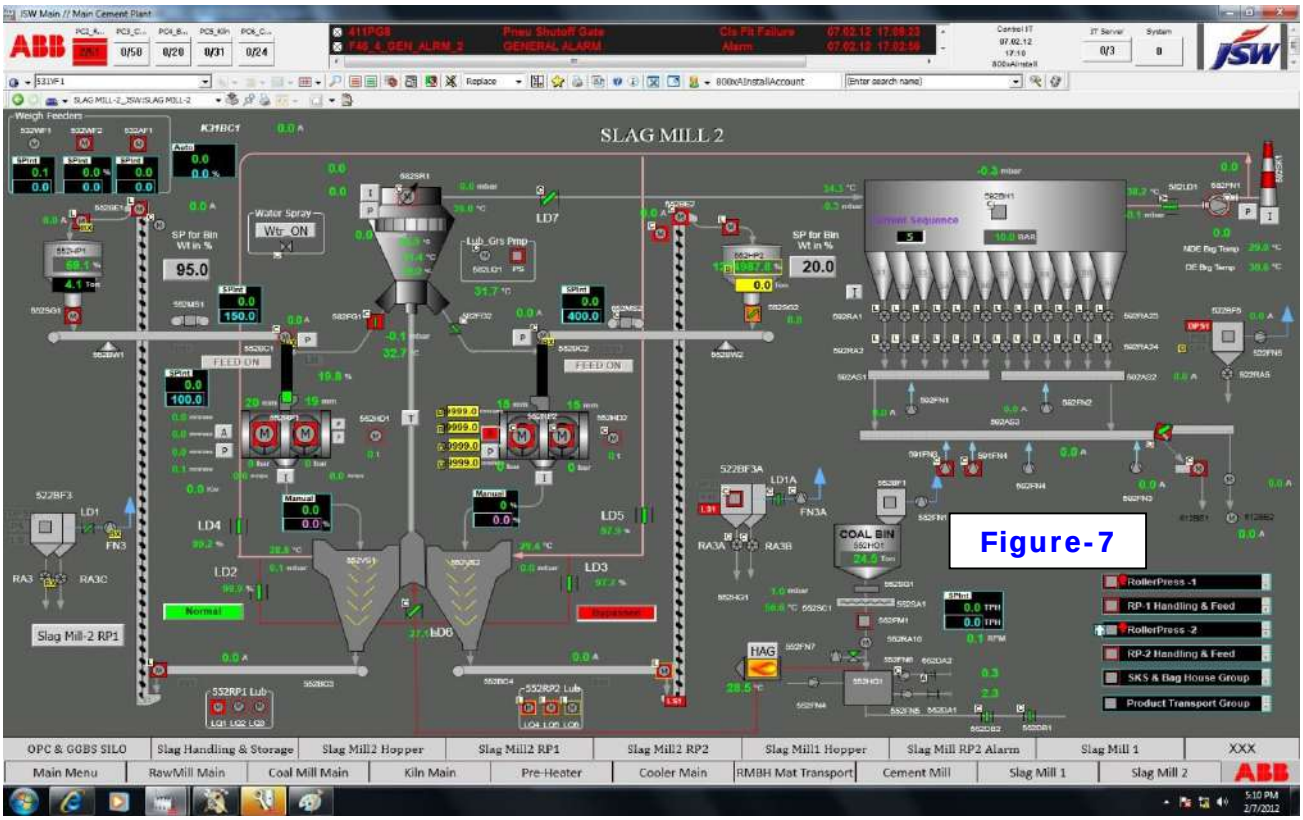
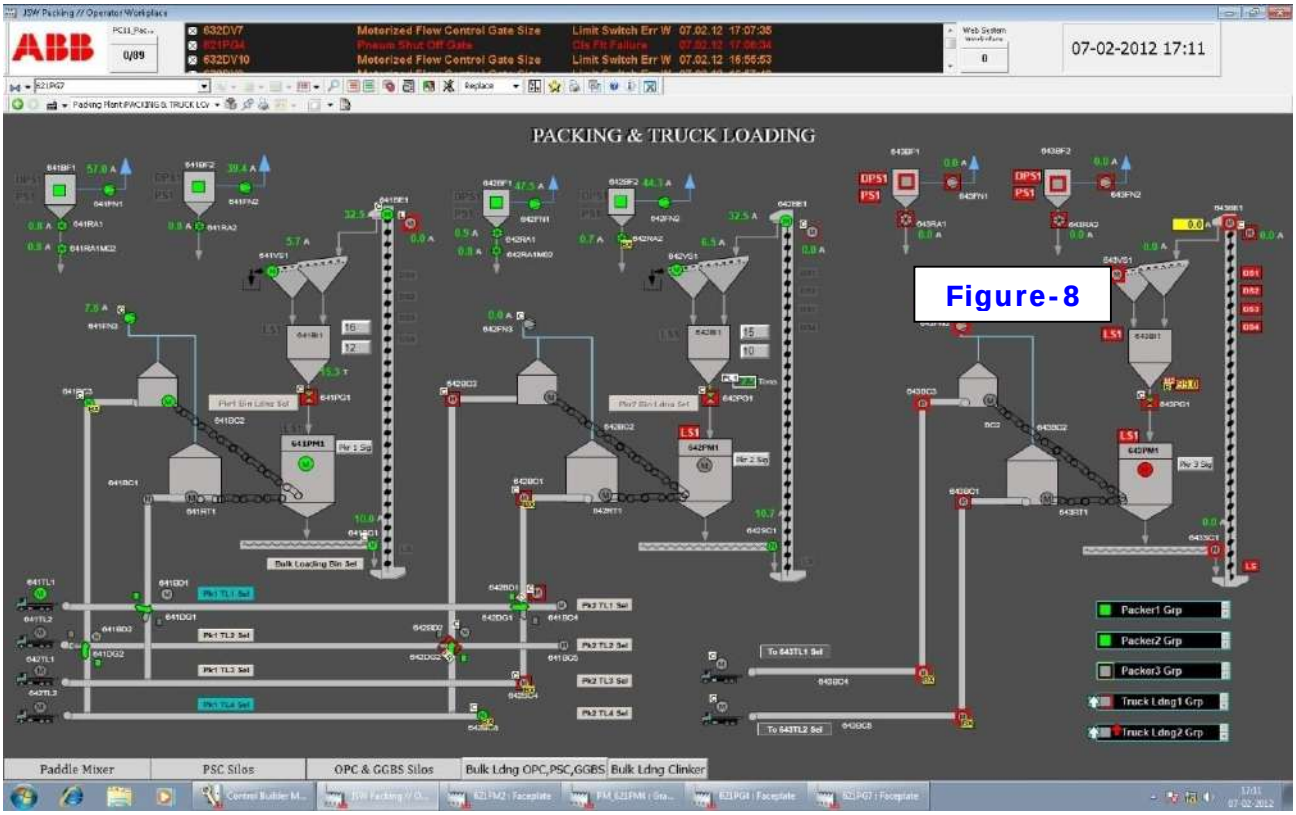


Figure-6


SLAG MILL 2
Figure-7


PACKING & TRUCK LOADING
Figure-8