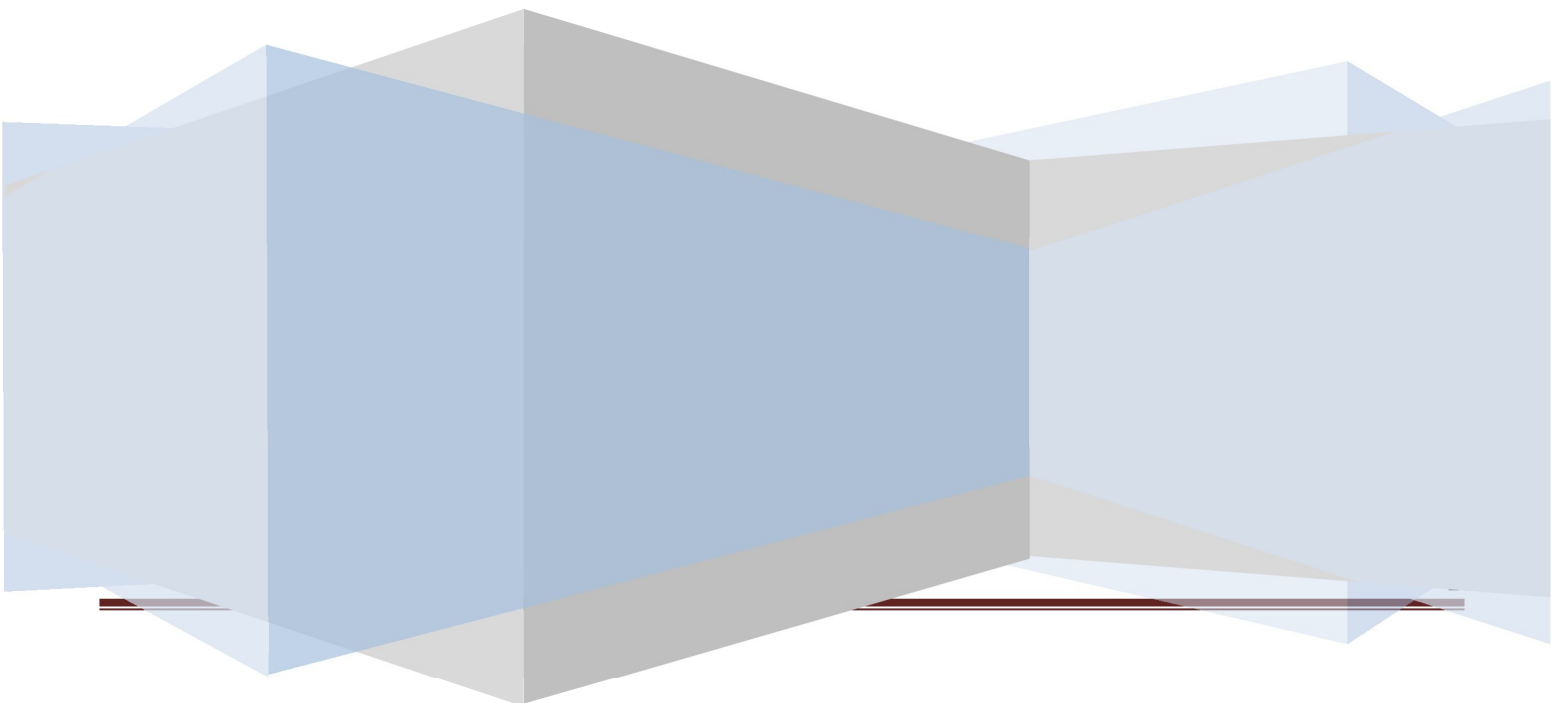


JK Cement Works, GOTAN

(Unit of J.K. Cement Ltd.)

PROJECT REPORT

Project proposal for “NEW CEMENT PRODUCTION LINE”



J. K. Cement Works, Gotan

Project proposal for New Cement production line:

Preamble

J K Cement Works is taking up the expansion project of completely “**New Production Line**” capacity 1425000 TPA clinker per annum and cement grinding capacity of 1952250 per annum.

In this project, we are installing completely “NEW PRODUCTION LINE” in the existing plant, as brownfield field project. While proposing expansion “new cement production line” of the Plant, care has been taken to keep a check on the pollution load, which can be seen and analyzed while going through the process. We are adopting the latest technology for the proposed new production line which will be helpful for reducing the pollution. Our vision is “optimum resources utilization, minimum energy and less pollution”.

J.K. Cement Works is having existing Cement Production capacity 471900 tons per annum (TPA) and 262500 tons per annum Clinker.

This makes the annual capacity of the plant as below:

Product	Existing production line Capacity TPA	Proposed New production line capacity in TPA	Total Capacity After Expansion of plant in TPA
Cement	471900	1952250	2424150
Clinker	262500	1425000	1687500

- $5113.63 \text{ MT} \times 330 \text{ days} = 1687500 \text{ MT}$ clinker per annum
- $7345.91 \text{ MT} \times 330 \text{ days} = 2424150 \text{ MT}$ Cement per annum

The brief note on each section for project for “New Production Line” cement production capacity is as below:

Product	New Proposed production line capacity in TPA
Cement	1952250
Clinker	1425000

1 Crusher

- Main Lime Stone Crusher:

For new line **1425000** TPA clinker production, the required raw mix is $(1425000/330) \times 1.5 = 6477.27 \text{ t/d}$ and limestone requires is about $6477.27 \text{ t} \times 0.83 \approx 5376.134/\text{d}$. As mines is restricted for only day time operation we allocated 16hrs/day according to limestone availability. But due to truck change, availability of truck and maintenance works the average running hour comes down to 13hrs/day. By

considering the factor of taking the average running hours is 13hrs/day which means $5376.134/13 \approx 413.54/h$ is required. Thus we are proposing for a new separate crushing system of 550 TPH for the proposed up gradation of the clinker production.

2 Raw Mill

For new line **1425000** TPA clinker production the requirement of raw Mix is about 2223000 TPA. We require approx. 336.82 TPH with 20 hrs. /day and 330 days running in a year. Thus we propose New Raw mill of capacity 425 TPH is which can be either Vertical roller Mill or Roller press based in order to obtain the proposed Clinker production.

3 Kiln

For new line **1425000** TPA clinker production, the requirement of kiln capacity is the key factor to decide the plant production capacity. The details are as under:

1425000TPA requirement of kiln capacity is $(1425000/330/24=179.91)$ 180 TPH.

Thus we propose separate **New Kiln line** of capacity 200 TPH for fulfil the production capacity 1425000 TPA of clinker requirements.

- A new closed clinker storage is also planned to restrict the emission during storage

4 Fuel preparation and firing

For New Kiln & Calciner Firing System – Indian coal, Petcoke & lignite shall be considered for firing of Kiln & calciner. But for Start-up or Stopping of operation only LDO or HSD will be used.

It is proposed to install as required new coal/petcoke grinding plant and also a new burner/system for pulverized fuel firing. The requirement of Hot air for this mill will be taken from the main Kiln circuit, thus reducing the load on the main pollution control equipment.

5 Cement Mill

For new line cement production capacity of 1952250 TPA We require approx. 295.79 TPH with 20 hrs. /day and 330 days running in a year.

Thus we propose separate new mills of capacity 300 TPH for fulfil the 1952250 TPA (300x20x330) for achieving the capacity.

Cement grinding is considered 50% for internal grinding of the clinker produced by this proposed plant and remaining 50 % clinker will be outsourced to grinding Units. For OPC Cement: 5% of gypsum is used with clinker for cement grinding. For PPC Cement: 5% of Gypsum and 30-35 % of fly ash are used with clinker for cement grinding.

6 Packing Plant

We propose separate new packer of capacity 400 TPH for fulfil the new line production for achieving the capacity.

7 Diesel Generator:

We proposed one DG Set of 2000 KVA in replacement of our present two inefficient DG sets (2x2270 KVA) for emergency power supply.

8 Electric power requirement: 132 kV Switch Yard and 6.6 kV S/S

For proposed expansion new line we require the necessary switchgear and Yard for 132 kV will be installed in the power system- estimated power requirement is 16000 Kw.

Purchase from existing power sources:

- Purchased from AVVNL
- Purchased from Open Excess Power (IEX)
- JK White Power Plant = 7.5 MW,

Requirement of excess power will be fulfilled by purchasing power supply from AVVNL & Open excess power (IEX).

9 Instrument / Automation

It is proposed to install necessary automation for added section/equipment through PLC for better maintenance and control.

10 Land requirement

In order to have a fair idea about the land requirement for proposed grey cement project, existing plant layout at Gotan and area for operational requirement considered. Existing land is 51.82 hectares which includes plant and colony. In this expansion project, there is a requirement of additional land of 17.17 hectares, which are our adjoining plots. After expansion, total land area will be 68.99 hectares.

Following sections are considered for the expansion:

1. Lime Stone crushing
2. Crushed Lime Stone storage & reclaiming
3. Limestone grinding mill (Raw Mill)
4. Raw Meal storage Silo
5. Pre heater
6. Air Heater
7. Kiln, cooler
8. ESP, Bag houses
9. Coal Mill
10. Coal Storage
11. Clinker Storage Tank/Silo
12. Gypsum & Fly ash storage
13. Cement Mill
14. Cement Storage Silo

15. Packing Plant & Truck Loading/Rail bay
16. Compressor house
17. Water treatment plant and pump house
18. HT sub station
19. LT sub station
20. MCC rooms
21. Central Control room(CCR)
22. Overhead water tank
23. DG House (Emergency power supply)
24. Weigh bridge
25. Laboratory
26. Technical building
27. Canteen
28. Truck parking area
29. Toilets and washing facilities
30. Green belt development

Staff Residential Area:

For staff residence, we have quarters in current residential area shall be utilized, and further more residential quarters are considered for further requirement.

11 Raw material Sourcing

The Limestone is the major constituent of production of grey Cement. It constitutes approx. 80% of total composition. Thus it is very important that Limestone is sourced locally. J K has already getting the limestone from Mines at “Dhannappa” which is 13 Km, “Tunkaliya” which is 10 Km & “Basni” which is 22 Km from the plant site. However due to a higher capacity plant, we also approached to “Rajasthan Mines & Minerals” for long term lime stone contract.

Also under process of acquiring new Limestone Mines for the additional requirement for the new Line. Laterite, Bauxite & silica Sand are another raw material which is used in very small quantity & can be sourced locally. Gypsum, fly ash are the other material used for cement manufacturing. Fly ash will be sourced from nearest Thermal power plants such as Suratgarh (Raj.), Barmer & Barsingsar. Various options for firing of Kiln & calciner firing such as Coal, Petro coke, Lignite, Imported coal/coke. Source for the coal is from Kota & Pet coke from Jamnagar (Guj.) Lignite from Matasukh. As we have already railway siding and one more line is proposed, will be used for Lignite / coal/petro coke unloading at site by wagon tippler/truck tippler

12 Water Requirement-

The estimated water requirement for the proposed project is 500 KL/day. We are planning to use Reverse Air Bag house process instead of conditioning towers to reduce the water requirement for plant operation. As this cement production is dry process and does not require water for any process operations. However some quantity of water consumption is estimated for compressor / bearings cooling. This water will be in circulation and only evaporation loss replenishment water will be required daily.

Further the water is also required for domestic consumption & Green belt development. At present we have obtained Ground water NOC is 1166KL/day. So this water requirement will be fulfilled by present ground water NOC & hence no additional water requirement as per water balance diagram.

13 Man Power requirement

The Gotan area is fairly industrialized. There are many cement plant installation within 100 Km from this location. Thus the availability of skilled/semi-skilled/unskilled manpower will not be an issue. Contractors of good capability and experience are available, part of the operations and services can be offloaded to such contractors.

The plant is designed to have good automation of process. Thus the requirement of manpower for plant operation will be minimal.

The plant has capacity to generate employment and business opportunity for approximately 2000 people directly or indirectly. Some of the employment / job opportunity are, mining activity, transportation, raw material preparation units, temporary works, housekeeping, gardening, domestic work etc.

14 Environment

The entire process vent will pass through filters so that only clean air is discharge in the atmosphere. Domestic effluent will be treated and treated water will be utilized for green belt development, dust suppression. For Dust emission proper ESP, Bag House & dust collectors, nuisance filters, other aux. equipment viz. hoists, and elevators etc. shall be considered for the complete plant. The most of the process ducts and equipment's will be kept under negative pressure to avoid any dust leakage issues. The equipment will be selected for low energy consumption. The special technology area will be selected for low NOX generation. Necessary clearances will be taken from the state pollution control board before initiating the site work.

To minimize the environmental impacts, 33% of total plant area is considered for green belt development. This will be located during project planning stage itself, to be more effective.

15 Conclusion

In this project, we are installing completely "NEW PRODUCTION LINE" in the existing plant, as brownfield field project. While proposing expansion "new cement production line" of the Plant, care has been taken to keep a check on the pollution load, which can be seen and analyzed while going through the process. We are adopting the latest technology for the proposed new production line which will be helpful for reducing the pollution. Our vision is "optimum resources utilization, minimum energy and less pollution".

After the expansion project total cement production capacity of plant is 2424150 TPA (2.424 MMTPA).

(New line production capacity is 1952250 TPA and existing capacity is 471900 TPA)

Estimated Cost proposed projects Cost: 1250 crore

Date: 15.09.2017

Place: Gotan

(Rajeev Sharma)
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(Unit of J K Cement Ltd.)