

Jojobera Cement Plant Lafarge India Pvt Ltd.

Organization Profile : ENERGY MANAGEMENT AT JOJOBERA CEMENT PLANT

Unit Profile:

Lafarge India Pvt Ltd a subsidiary of Lafarge with its head quarters in Paris in France, which is leader in construction materials. It is spread in 75 countries with more than 85,000 employees and having a sales of 12.2 Billion Euro in 2000.

Lafarge has it leading positions in following divisions:

Division	World Ranking
Cement	No.1
Aggregates	No.3
Concrete	No.3
Roofing	No.1
Gypsum	No.4

The Jojobera Cement Plant, Lafarge India Pvt Limited (Formerly Jojobera Cement Plant, a part of Cement Division, The Tata Iron and Steel Company Limited) was primarily set up with a view to utilize the Slag being generated as a waste from the Steel Works of Tata Iron and Steel Company, Jamshedpur. Currently the production capacity of plant is 1.6 Million Tonne per Annum PSC and 1.4 Million Tonne per annum of PPC.

70% of the Clinker produced at our two sister units Sonadih Cement Plant and Arasmeta Cement Plant is transported to Jamshedpur by Rail and Ground along with Slag to produce Portland Slag Cement (PSC) and Fly Ash to produce PPC (Portland Pozzolana Cement). The plant has been set up with the primary objective of utilizing the waste product of Steel manufacturing slag and Fly Ash produced by Tata Power Limited which was being thrown out in the past and was an environmental hazard.

As a part of expansion of Lafarge operations in South East Asian Markets, it has acquired Jojobera Cement Plant in November 1999.

The 1.6 Million Tonne per Annum PSC and 1.4 Million Tonne per annum of PPC at Jojobera Cement Plant incorporates the latest state of the art technology comprising cement grinding system consists of a ball mill attached to roller press and classifier in hybrid circuit. The plant employs latest concept in instrumentation, which is fully automatic and centralized process control for operating the equipment.

Energy Consumption:

Jojobera Cement Plant is committed for Energy conservation. The trends of energy consumptions figures as mentioned below:

Parameter	Unit	Year		
		2001	2002	2003
Cement Production	Lakh MT	18.63	24.11	23.15
Total Electrical Energy	Lakh kWh	764	941	863
Sp.Electrical Energy Consp Cement	kWh/T-cement	40.91	35.78	34.42
Power Cost % of Manufacturing cost	%	15.1	14.6	13.5

Energy conservation commitment, policy and set up:

Lafarge India is committed for conservation of energy and same is reflected in the formulation of Corporate Environmental Policy and Integrated Management System Policy (inclusive of Quality Management System, Environmental Management System and occupational Health and Safety

Assessment Series) subjected to annual audits by external agencies. The energy consumptions in the plant is monitored in daily and reviewed under regular intervals. At the beginning of every calendar year targets are fixed for both electrical and thermal energy consumptions. The same parameters are closely monitored by concern Section Incharge as follows:

- Shift wise monitoring of specific power consumption for major units
- Monitoring of energy MCC wise based upon major drives
- Review of specific power consumption on daily basis and initiating necessary corrective actions as required

Jobbera Cement Plant has the advantage of having access to global knowledge base for innovation and improvement plant performance in terms of Energy Conservation. A well defined system exists to ascertain at all levels. Performance audits are carried out by qualified professionals from CTI, Lafarge, Lyon and plants are suggested for performance improvements in the respective areas. Projects are drawn from the identified improvements and validated for the returns. Accordingly the action plans are drawn upto commissioning and performance study. There was a remarkable improvement in terms of specific power consumption after acquisition by Lafarge. It has reduced from 50.4 kWh / tonne of cement in 1999 to 34.42 kWh/tonne of cement in 2003.

Energy Conservation Achievements:

As a result of implementation of Energy conservation measures there has been a steady decrease in Energy consumption over the period. The following measures have been taken:

- Use of variable speed control fan by v/f, for energy conservation.
- Optimisation of Compressors

PROJECT TITLE:	To reduce Power Consumption in Packing plant by replacing Motorised rotary feeder by Pneumatic flow control gate.	
1.1 SCHEME DESCRIPTION:	To reduce power consumption in Packing plant by replacing Motorised rotary feeder by Pneumatic flow control gate.	
1.2 ESTIMATED COST:	0.1 million Rs.	
1.3 PHASING EXPENDITURE:	In year-2004	
1.4 FOREIGN EXCHANGE:	Nil	
1.5 COMPLETION:	In year 2004	
PRESENT SITUATION:	At present the packing plant 3 Nos packer feeding system is operated by Pneumatic Flow control gate. Earlier the feeding system was motorised system called rotary feeder . The rotaryfeeder unit feed cement to packer machine hopper & from packer machine cement bags packing operation done.So the rotary feeder units feed the material as per the packer hopper requirement.Now we replace the sytem by Pneumatic flow control gate & the gate feed the cement to packer hopper as per the need.	
1.6		
1.7 CONSEQUENCES:	Extra power consumption	
2 WHY WE CAN NOT CONTINUE UNDER THESE SITUATIONS:		
2.1	Power consumption is optimised	
2.2 WHY THIS SOLUTION:	The flow control gate open / close as per the process requirement & no electrical power involve in it.	
2.5 SAVINGS:	0.229 Million Rs. Per annum	
2.6 a. OWNER OF THE SCHEME:		Mr. S. R.Joshi
2.7 b. USER OF THE SCHEME:	Logistic Department.	
2.8 MANPOWER IMPACT:	Nil	
2.9 SCHEMATIC DIAGRAM:	NA	

Savings:

**Motor KW is 5.5 KW. X 3 =
16.5kw**

Running load is 60%.

Yearly R Hrs. are 7200 hrs.

Thus Power kwh saved $P_2 = 16.5 \text{ kw} \times 7200 = 118800 \text{ KWH}$

Thus savins = $118800 \times 0.6 = 71280 \text{ kwh.}$

Yearly R Hrs=7200

Thus savings = $71280 \times 3.20 = \text{Rs } 228096$

Energy saving Project in Year 2003:

Following innovative measures are taken in our plant for energy conservation :

A. ELECTRICAL SIDE :i) Power Factor Improvement :

Installation of Capacitor Banks to improve power factor

ii) Lighting

- Automatic switching ON & OFF of Plant Lighting during day & night
- Fixing transparent sheetings wherever required
- Replacing 1000 watt Halogens by 400 W floodlight luminaries
- Replacing conventional chokes with electronic chokes

iii) Optimization of drives

- Reducing the installed kW of motor if load is less
- Replacing high RPM of motor with low RPM wherever high RPM is not required
- Reducing speed of drive by fixing suitable sizes of pulleys
- Installation of V/F control for controlling the speed.

B. OPERATION SIDE:i) Increasing the Automation :

- Automatic start, stop of Compressors from control room according to the requirement of the plant
- Changing the required logic to reduce idle run time of equipments

ii) Upgradation of Equipments :

- Belt Bucket Elevator
- High efficiency impeller fans

iii) Saving of Compressed Air:

- Stopping the leakages
- Shut-Off gates in Compressed Air line for different sections

Energy Conservation Plans and Targets:

The following measures have been planned for further reduction in specific energy consumption:

- Use of energy saving light fittings .
- Installing low watt loss tube lights
- Use of Furnace oil for fuel efficiency of HAG.
- Replacement of Rotary feeder for feeding cement in packer machine by Flow control gate