

CHETTINAD CEMENT CORPORATION LTD

Unit Profile

COMPANY PROFILE:

CHETTINAD CEMENT CORPORATION LTD., is having the registered office at

Rani Seethai Hall Building
PB NO.748,
603, Annasalai, Chennai – 600 006

Telegram: Best Cement
Telephone: 28272727
Fax: 28274224

The factory is located at about 35km from Karur on Karur – Dindigul state high way at the following address.

CHETTINAD CEMENT CORPORATION LIMITED,

Rani Meyyammai nagar,
karikkali post – 624 703.
Gujiliamparai- 624 703,
Telefax: 04551 – 234440

Phone: 04551 - 234431,234441,234604
Telegram: "NEW CEMENT"

In the year 1968 wet plant was started in puliyur near Karur with the capacity of 4lakhs tons per annum. And, in the year 1988 dry pant was started with the capacity of 6lakhs tons per annum. In the year 2001 CHETTINAD CEMENT CORPORATION LIMITED, decided to install one green field factory in KARIKKALI., with the capacity of 1.1lakhs tons per annum. In the year September – 2001, the plant was commissioned with full stream. The company was installed with advance equipment from L&T which is subsidiary of FL SMIDTH and LOESCHE, WEST GERMANY. The vertical roller mill, for RAW MILL and COAL MILL was supplied by LOESCHE.

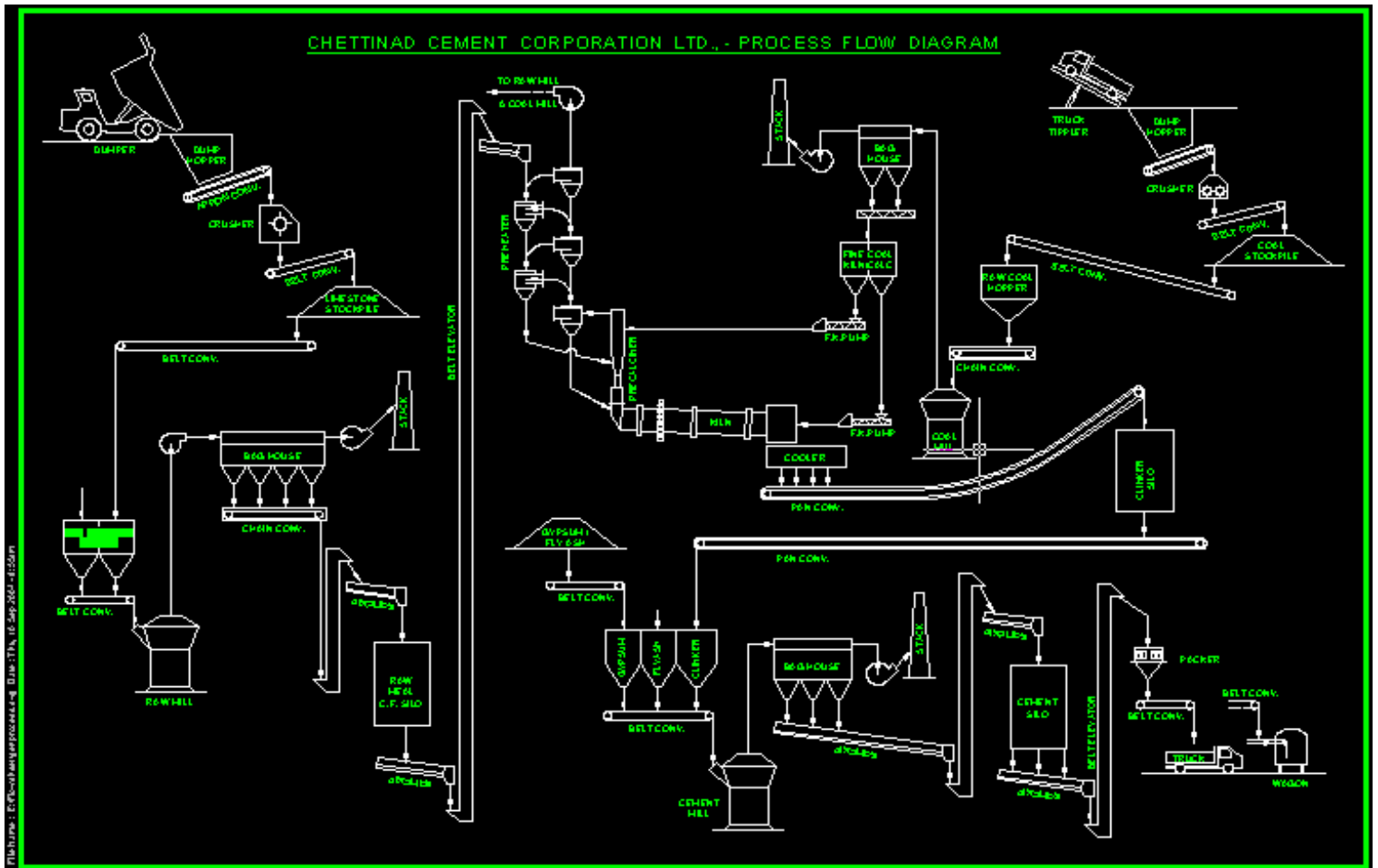
The Pyro processing consists of five stage pre – heater with low pressure cyclone and cooler with Coolax cooler. To avoid the pollution, Karikkali plant was installed with all bag filters except cooler ESP. The stack emission was recorded below 50 mg. The plant is equipped with modern cross belt analyzer, procured from THERMO ELECTRON CORPORATION, USA. This gives continues quality of limestone available in the stacker. The cross belt analyzer was installed before raw mill to control raw mix .This is the first plant in India to have on – line control for both stacker and raw mill. In additional to the cross belt analyzer, we have x –ray fluorescent analyzer for analyzing the clinker and cement quality .The MALVERN 2000 analyzer for analyzing particle size distribution in cement. The automation process is one of the most advance instrumentation control is installed.

All the sub control system is linked with MODBUS & PROFIBUS communication.

KARIKKALI has variable frequency drive, with maximum of 3150KW. Field IO PANNEL is located at site, which is unique for cement industry. All transformer and HT motors are protected by electronic relays. Power was monitored through MODBUS communication and all the readings are available in the central control room.

Chettinad group is consistently bagging awards constituted by the government of India Ministry of Power and other agencies such as National Centre for Cement and Building materials for energy efficiency in cement manufacture.

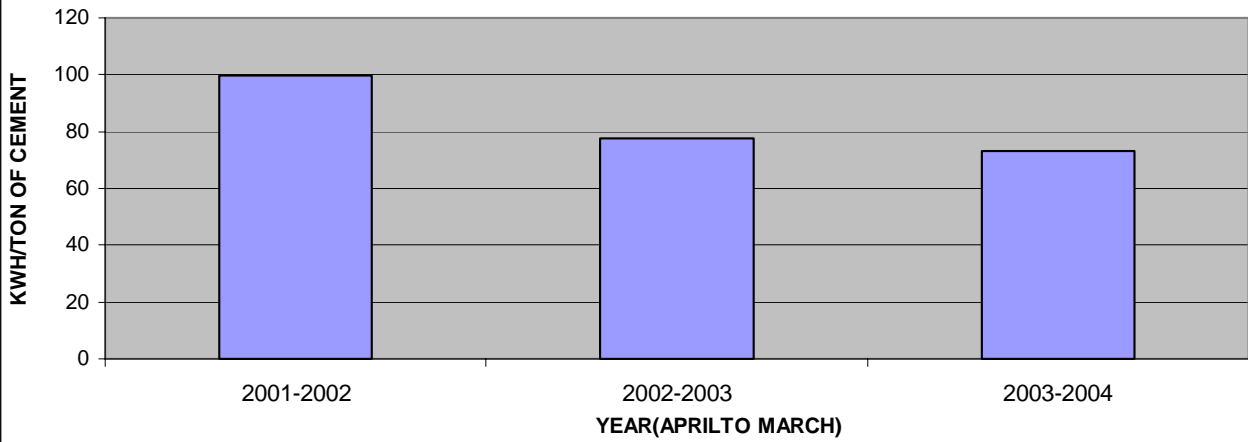
CEMENT PROCESS FLOW DIAGRAM



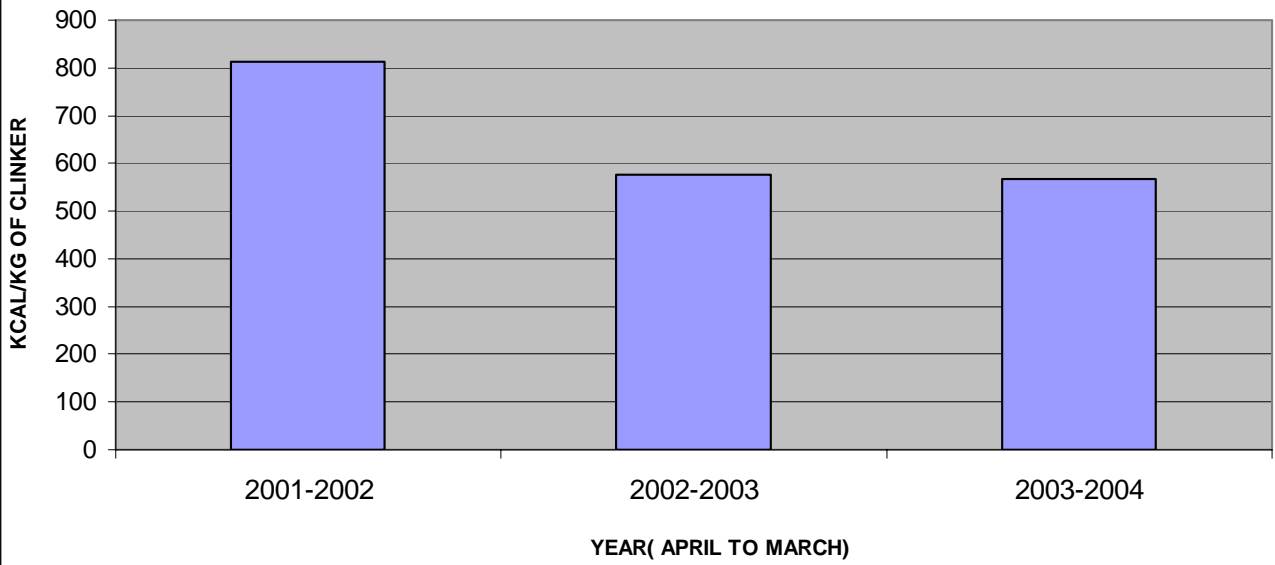
Energy Consumption

There has been a steady decrease in Electrical and Thermal energy consumption per ton of cement produced by carrying out various energy conservation measures.

SPECIFIC ELECTRICAL ENERGY CONSUMPTION



SPECIFIC THERMAL ENERGY CONSUMPTION

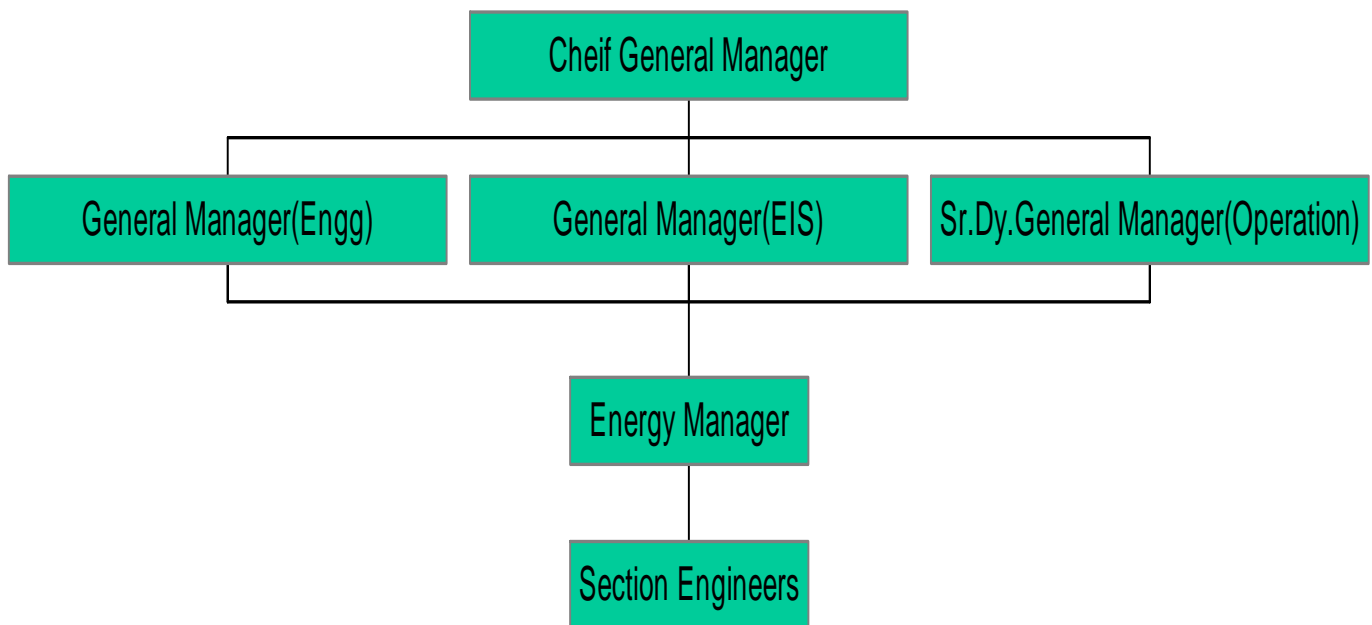


Energy Conservation commitment, Policy and Set up

Energy manager coordinates energy management cell and meeting is conducted once in a month. The steering committee is headed by Chief General Manager and designated persons from each department, will review the past performance with respect to fixed norms, targets and review the methodology of monitoring and controlling energy consumption for reduction in consumption as suited. Energy manager is responsible for the following functions.

- Working out energy management plan
- Setting section wise annual targets
- Monitoring of the targets
- Creating information base for overall energy management programme.
- Deputing specialized training in energy conservation.
- Creating mechanisms for providing incentives for energy conservation at unit level.

Encon Structure



2. INSTALLATION OF AC VARIABLE FREQUENCY DRIVE FOR CEMENT MILL BOOSTER FAN

BEFORE DRIVE INSTALLATION

Power consumption per Day: 110 KWH

Type of Starting: Direct Online

Rated Speed: 989 RPM

% of Damper Opening: 25 – 30 %

AFTER DRIVE INSTALLATION

Power consumption per Day: 50 KWH

Type of Starting: VFD

Rated Speed: 740 RPM

% of Damper Opening: 100 %

Saving in Energy: 1440 KWh per day
: Rs. 6480 per day

SAVING: Rs, 21,38,400 per Annum



3. INSTALLATION OF LT CAPACITORS.

Capacitors of various capacities are added across motor terminals and MCC s to improve the system Power Factor to Unity.

BEFORE INSTALLING LT CAPACITORS

System power factor = 0.986

TNEB INCENTIVE = 2% of total Energy Charges

AFTER INSTALLING LT CAPACITORS

System power factor = 1.000

Maximum Demand Reduction = 200 KVA

TNEB INCENTIVE = 2.5% of total Energy Charges



BENIFITS:

1. Demand Reduction 200 KVA

Savings per Annum Rs. 7,20,000

2. TNEB INCENTIVE 0.5 % of Total Energy Charges

Savings per Annum Rs. 14.4 Lacs



4.Installation of New Compressor for Packing Plant

From the actual air requirement for packing plant operation of 8-9 cu.m/min, decided to install a separate compressor for the packing plant having a capacity of 9 cu.m/min that helped in switching off the compressor during non working period of packers.

We installed a new compressor with the following specifications:

Make: Atlascopco screw compressor

Model: GA 55

Capacity: 9 cu.m/min

Power rating: 55 kW

For plant operation including packing section
Normally three numbers of GA160 Model Atlas
Capco Make 200KW capacity compressor are
operated. Power consumption is around 7500
units /day . After installation of one no of GA55
Atlas Capco Compressor for Packing House
Operation, Process people are instructed to
operate one No of GA160 and GA55 instead of
Three Nos of GA 160 Compressors running.
Drastic Power reduction of around 2000Units
Per day is achieved.

Annual Savings : 29,70,000.00



5.INSTALLATION OF SYNTHETIC FLAT BELTS IN PLACE OF V-BELTS FOR BLOWERS.

The plant is having 5 Nos. of blowers of 45 to 125 KW rating, which were driven by motors through V-belts transmission. It was proposed to replace V-belt transmission with flat belt, to improve transmission efficiency and conserve energy. The blower provided with flat belt are given below:

Conversion of V-belt to flat belt: Rs. 10,000 .00

Annual Energy saving: Rs. 71,280.00



Other Projects implemented during 2003-2004

- 1.Regulating dampers removed for all major fans connected to Variable frequency drive.
- 2.On a trial basis one of the roots blower 'V' belt was changed to synthetic flat belt.
- 3.Variable frequency control installed for air handling unit in the conference hall
- 4.Replacing 400W HPSV with 400W HPMV fittings and 125W HPMV with 70W metal halide fittings.
- 5.Delta connections changed to star connections for more than 20 Rotary air locks.
- 6.Switched off one of the transformer of having 1600KVA.
- 7.Provided shut off valves to automatically close the air-line to the particular section when not in operation.
- 8.Pressure setting of the compressors for loading and unloading changed as per requirement.
- 9.Resizing of the compressors was done in the crusher after studying the compressed air requirement to reduce the unloading time power consumption.
- 10.Crusher control operation was shifted from local operator station to Central control room, and PLC was shifted to common Centralized AC room. We switched off on 3 ton split AC.

Energy conservation plans and Targets

Sl. No	Energy Conservation Measures	Anticipated savings in energy		Approx. investment	Project Commencement and Completion Year
		Value	Rs in Lakhs		
1	Installation of higher capacity fine coal bin.	Fuel cost saving	7.25 lakhs/annum	25 lakhs	October 2004
2	Modification of Louvre ring for cement vertical roller mill.	5% increase in capacity and power saving.(1.4 million units)	63 lakhs/annum	10 lakhs	Dec 2004
3	Modification of cement silo extraction.	Better tolerance in bag weights	8 lakhs	7 lakhs	Oct 2004
4	Replacement of 'V' belts with synthetic flat belts for the balance three blowers.	Power saving 25000 units/annum	1.12 lakhs/annum	0.9 lakhs	March 2005
5	Replacement of high efficiency classifier for vertical coal mill.	10% increase in capacity. Power saving 2.7 lakhs units/annum	12.15 lakhs	15 lakhs	March 2005
6	To install star –delta starters for long belt conveyors from direct on line starters.	Power saving 48,000 units per annum.	2.16 lakhs	1.5 Lakhs	March 2005
7	To install a Variable Frequency drive for Reverse air fan for main bag house.	Power saving 66000 units/annum	3 lakhs	8.5 lakhs	November 2004
8	To install a variable frequency drive for Primary air fan.	Power saving 158000 units/annum	7.1 lakhs	8.5 lakhs	March 2005
9	To provide demand expander type compressor air control systems.	Power saving 1.28 lakhs units/annum	5.76 lakhs	15 lakhs	March 2005
10	Relocation of Analytical lab to second floor.AC blower can be switched off during night time	power savings will be 15000 units per annum	0.67 lakhs	Rs 50,000	Dec 2004

11	Shifting of PLC from packing house to centralized AC system in load centre	Power savings will be 35000 units per annum	1.57 lakhs	Rs 1.5 lakhs	March 2005
12	Solar water heater system for Guest house	Power savings will be 6000 units per annum	0.27 lakhs	Rs 50,000	March 2005

Environment and Safety

- **Ours is a Green Field plant having stack emission level of below 50 mg/Nm³**
- **Our plant is one among the very few plants having this low emission level in India as well as in Asia.**
- **We have installed latest high efficiency Alstom Reverse Air Bag House for our Raw mill and Kiln combined operation and also for bag houses of coal mill and cement mill**
- **We have taken up Green Field Development in 25% of our total area in plant and colony.**
- **Under Green Field Development programme, we have planted 9345 Nos. of saplings in the year 2001-02. From April 2002-December 2002, The unit has planted 3800 Nos. of saplings . From January 2003 – July 2003 the unit has planted 2187 Nos of Saplings.**
- **We have laid concrete roads inside the factory and surrounding areas linking to the entry to avoid fugitive emission due to vehicle movement.**
- **All material feeding conveyors have been covered to arrest fugitive emission.**
- **Cooler vent hot gas is fully utilized for drying and grinding operation in Cement mill.**
- **The unit has installed bag filters to arrest emission in all transfer points in material handling systems.**
- **The unit is operating online opacity meter for continuous monitoring of Suspended Particulate Matter (SPM) in all the stacks.**
- **Six Nos. of permanent Ambient Air Quality monitoring System have been installed in and around the factory.**

- We have banned the use and throw of plastics inside the factory premises and installed boards in all the entry gates to create awareness among staff and workers.

Compressor Audit Report by TERI :

A Summary list of Recommendations , the saving potential and Implementation cost is given below :

S.No	Proposal	Annual savings potential		Cost of Implementation, Rs. lakh	Simple payback period, Years
		Energy L.kWh	Value Rs.Lakh		
SHORT TERM MEASURES					
1	Improving the performance of compressed air generation	1.20	5.40	2.00	0.40
2	Installation of synthetic flat belts in place of V-Belts for roots blowers	0.46	2.07	1.50	0.72
MEDIUM TERM MEASURES					
3	Shifting the screw compressors from Mines to Packing plant.	0.44	1.98	3.00	1.50
4	Providing appropriate controls and storage at the users for proper compressed air management.	1.53	6.88	20.00	2.90
GRAND TOTAL		3.63	16.33	26.50	1.60