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,
Telefax: 04551 – 234440

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

The history of the group " House of Chettinad" is linked with the 9 decades old saga. In 1912 took birth the house of chettinad through a visionary, idealist and born entrepreneur Dr.Rajah Sir Annamalai Chettiar who believed in social transformation through business. The founder of the house of chettinad envisaged his companies providing the stimulus for industrial growth and conceived business as a means of improving the living standards of People.

Following the footsteps of his father Dr.Rajah Sir Annamalai Chettiar, Dr.Rajah Sir M.A Muthiah chettiar continued to contribute to the nation building cause and combined his business acumen to establish the company Chettinad Cement Corporation Limited in 1962 to cater to the growing demand of cement in the country. The company's first manufacturing unit located at Puliyur, Karur District, in Tamil Nadu commenced production in April 1968.

To day the group is being steered under the versatile, dynamic pragmatic leadership of Dr. M.A.M. Ramaswamy and his son Sri M.A.M.R. Muthiah based on the footstep of Dr.Rajah Sir M.A. Muthiah Chettiar. Apart from cement, the chettinad house is today engaged in activities as diverse as granite, Engineering, Silica, Garnet, Information Technology, Plantations, shipping, Transportation, Stevedoring, Clearing and forwarding and logistics having a combined turnover of about Rs 8,500 million.

From a modest beginning of 2 lakhs tones capacity per annum, it has gradually increased to 15lakhs tones today. Presently the plant employs the Modern Dry Process Technology and it has the most advanced, sophisticated, computer controlled state–of–art Loesche Mill for grinding for Raw Meal, Loesche Lignite mill (First of its kind in India), a five stage pre heater kiln & electronic packing plant. Equipped with centralized control room for process control, the advanced instrumentation and elaborate display screens give up to the minute information on the production process so that any deviation can be corrected.

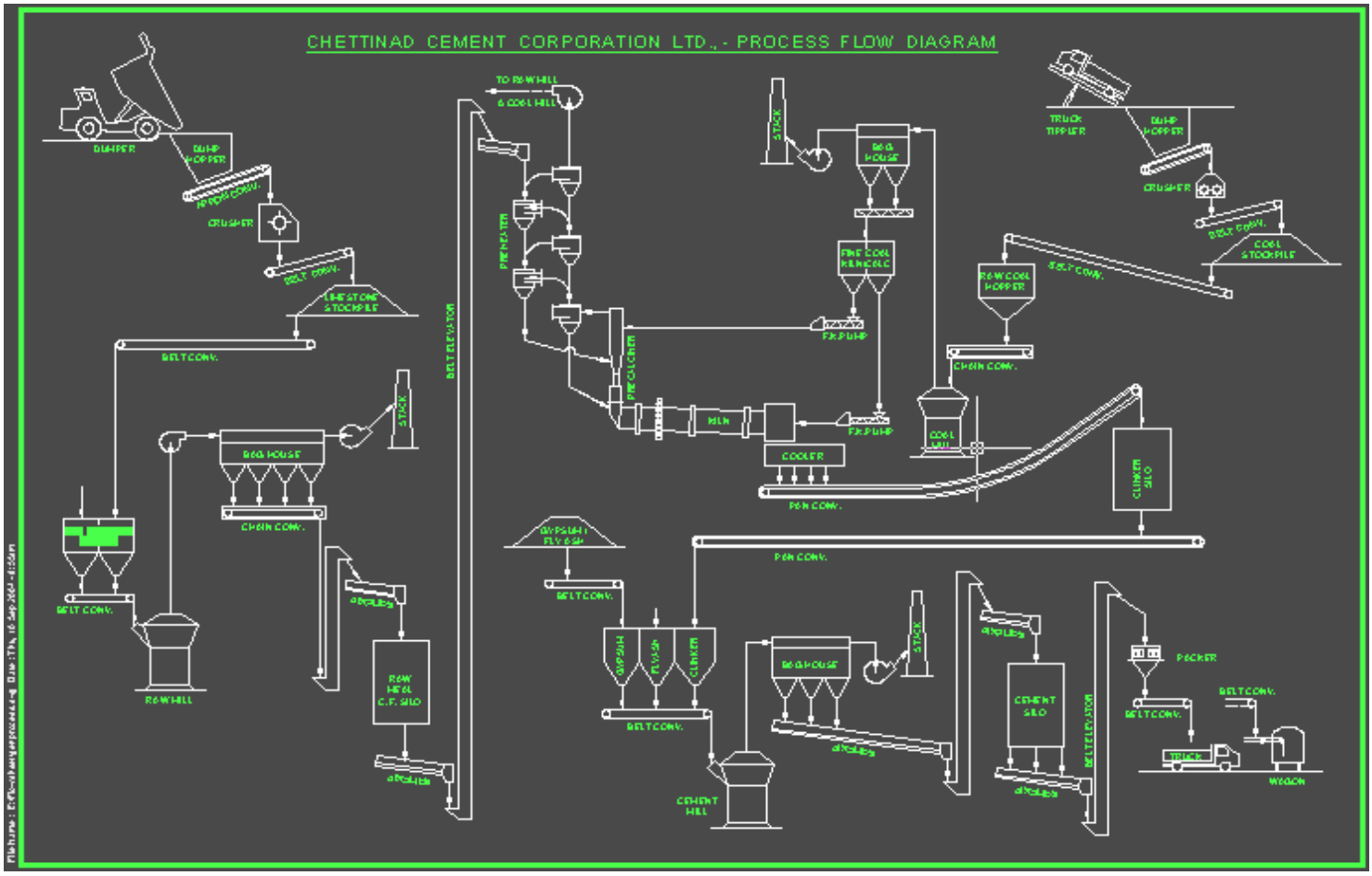
The company, which has always been striving for Total Quality, possesses International Certificate ISO 9002 and ISO 14001 and takes pride in being acclaimed as one of the major player in a highly competitive cement industry in India. The company added another feather to its gap by installing and commissioning a giant, sophisticated, high-tech and power efficient O

&K cement mill resulting in a quantum leap in production to touch one million ton mark. The company has achieved many laurels through award for Best Performance in the cement industry issued by National Productivity Council. Besides it has been customary to receive National Safety Awards.

Chettinad cement has attached great importance to social responsibility and Environmental values. This is manifest installation of the latest pollution control equipment in the plant.

The company's new state of art green field cement plant in Karikkali village, Tamil Nadu commenced commercial production in October 2001 with a capacity 0.9 Million Tons Per Annum. It is equipped with ABB's latest knowledge based solution package right from the treatment of raw materials to the packing of cement, making it one of India's Most Modern and Efficient Plant.

CEMENT PROCESS FLOW DIAGRAM



Trend setter

BACK GROUND OF THE PROJECT:

Chettinad Cement Corporation Ltd, for the first time in India introduced variable frequency Drive for HT Squirrel Cage Induction Motor to sustain power consumption even lower throughput of the plant. Further the use of Squirrel Cage Induction Motor leads to less maintenance & losses as compared to Slip Ring Induction Motor. Squirrel cage induction motor has an added advantage of continuous rpm control as compared to step control available in Slip Ring Induction Motor.

OBSERVATION MADE:

Being the first in India, Variable Voltage Variable Frequency introduced in HT Motors, no major problems encountered and substantial savings could be realized but could not be estimated as it was taken up during inception of the plant.

TECHNICAL & FINANCIAL ANALYSIS:

Detailed technical investigation were done with the help of Holtec Consulting India Pvt., Ltd at the project stage followed with the assurance given from M/s ABB being the supplier of the panels, CCCL decided to implement the above project though it was financially little expensive as compared to the conventional system as it had promising pay back.

Drive is basically a three-phase converter for Squirrel Cage Induction Motor. Sophisticated microprocessor system is used for monitoring the motor electromagnetic status. These data and Direct Torque Control enable state of art sensor-less Motor Control. Nearly sinusoidal converter output voltage makes the ACS 1000 ideally suited for retrofit applications with existing standard induction motors without the need for de-rating

ACS 1000 features a fuse-less protected medium voltage drive. This patented design uses the new power semi conductor- switching device, IGCT for Circuit Protection. The IGCT that is placed between the DC link and the rectifier, directly isolate the invertors of the drive system from the power supply side within 25 Microseconds, making it 1000times faster than the operational performance of Fuses.

IMPACT OF IMPLEMENTATION

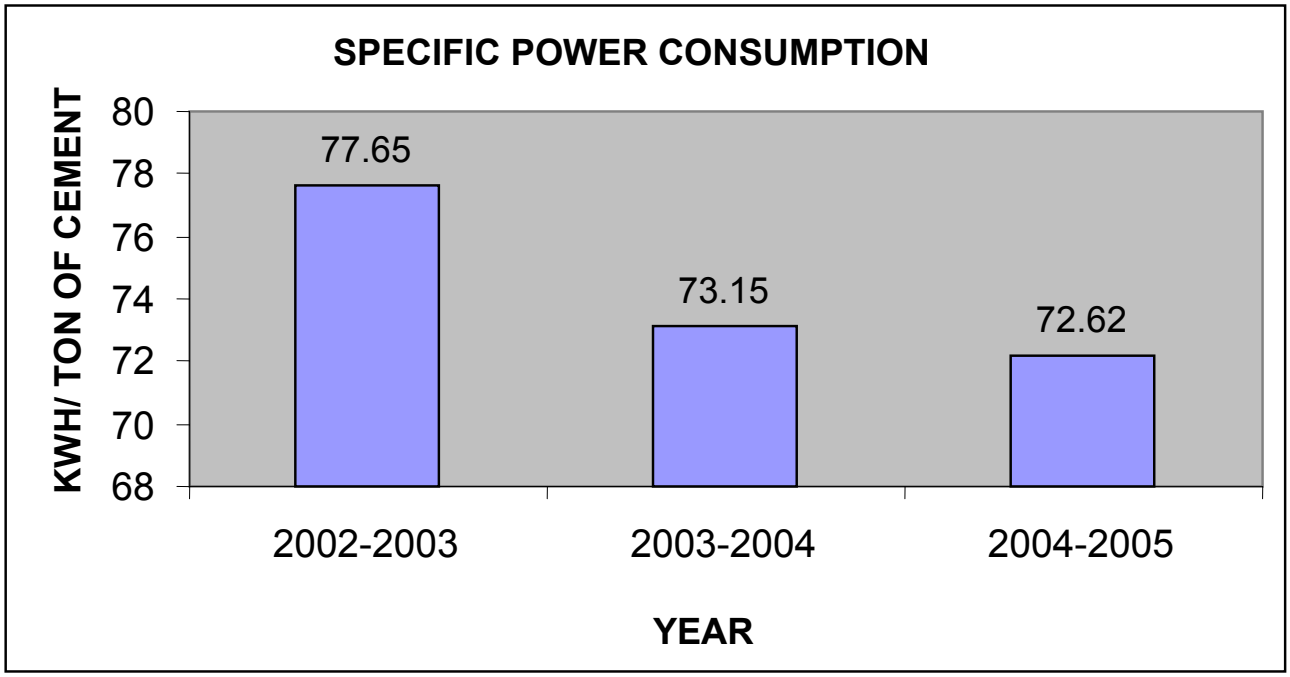
1. Substantial energy Savings could be achieved though it is first time supplied by M/sABB, with no catastrophic failures.
2. Substantial savings in terms of maintenance as the motor does not require /demand replacement of wear parts as compared to conventional slip ring Induction Motor
3. It is also envisaged that the life of the motor will substantially increase as compared to slip ring induction motors.

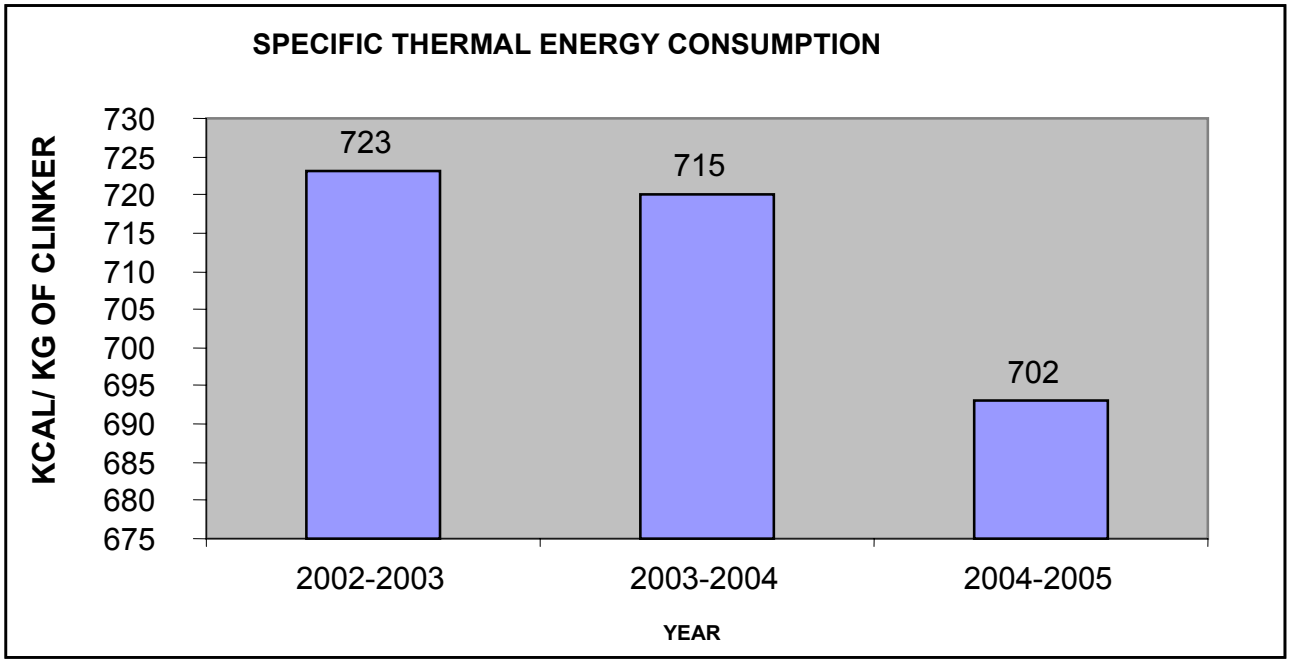
Variable Frequency Drive for Cement Mill fan and Raw Mill fan

Variable frequency drive for Bag House Fan and Pre-heater fan

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.





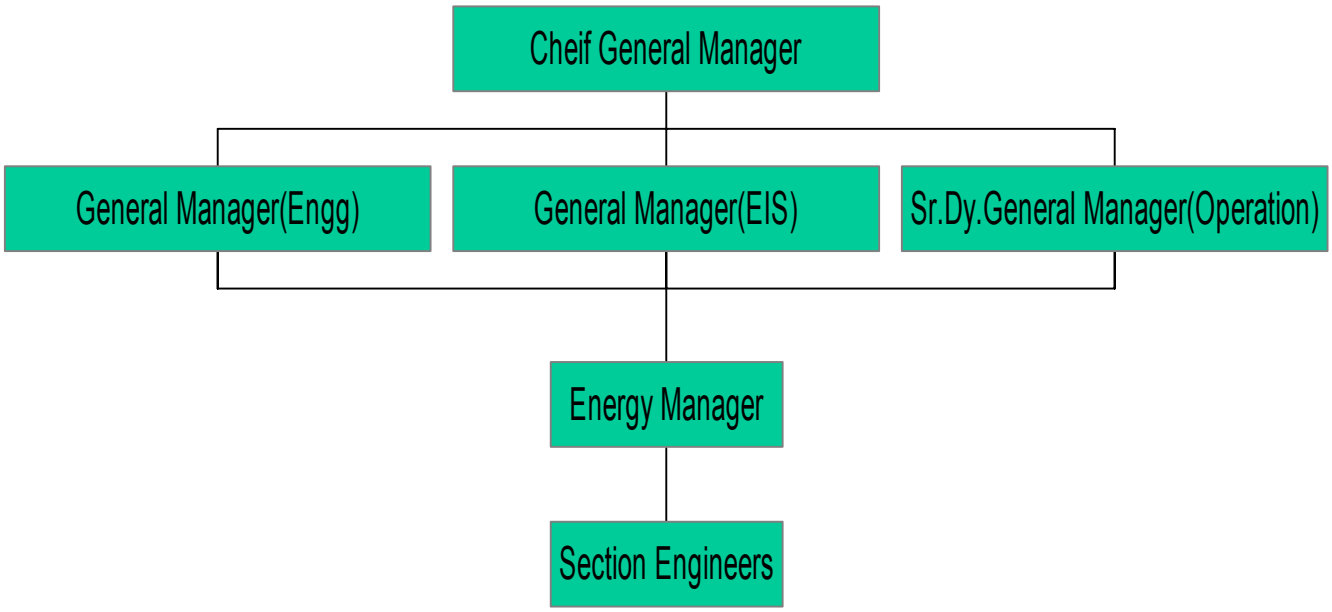
ANNEXURE-3

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/ 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.

- Prepare an annual activity plan
- Establish an energy conservation cell
- Initiate activities to improve monitoring and process control to reduce energy costs.
- Analyze equipment performance with respect to energy efficiency
- Ensure proper functioning and calibration of instrumentation
- Prepare information material and conduct internal workshops about the topic for other staff.
- Improve disaggregating of energy consumption data down to shop level or profit center of a firm.
- Establish a methodology how to accurately calculate the specific energy consumption
- Develop and manage training programme for energy efficiency at operating levels.
- Co-ordinate nomination of management personnel to external programs.
- Create knowledge bank on energy efficiency technology and management system and information dissemination
- Develop integrated system of energy efficiency and environmental up gradation.
- Co-ordinate implementation of energy audit/efficiency improvement projects through external agencies.
- Establish and/or participate in information exchange with other energy managers of the same sector through association

Encon Structure



Energy management policy

- To promote energy saving measures and to conserve natural resources.
- Utilization of Non-conventional energy.
- Use of alternative fuels
- To adopt energy efficient systems and technology.
- To Create awareness and involvement among employees to promote energy conservation by conducting training programmes.

ENERGY CONSERVATION ACHIVEMENTS

MAJOR PROJECTS 2003-2004

1. INSTALLATION OF AC VARIABLE FREQUENCY DRIVE FOR COAL MILL BOOSTER FAN

BEFORE DRIVE INSTALATION
Power consumption per Day: 78 KWH
Type of Starting: Direct Online
Rated Speed: 989 RPM
Percentage of Damper Opening: 25 – 30 %

AFTER DRIVE INSTALATION
Power consumption per Day: 35 KWH
Type of Starting: VFD
Average Speed: 700 RPM
Percentage of Damper Opening: 100 %

Saving in Energy: 1032 KWh per day
: Rs, 4644 per day
SAVINGS: Rs, 15,32,520 per Annum

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

BEFORE DRIVE INSTALATION
Power consumption per Day: 110 KWH
Type of Starting: Direct Online
Rated Speed: 989 RPM
Percentage of Damper Opening: 25 – 30 %

AFTER DRIVE INSTALATION
Power consumption per Day: 50 KWH
Type of Starting: VFD
Rated Speed: 740 RPM
Percentage 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 common compressors during non working period of packers.

BEFORE INSTALLATION:

For plant operation including packing section normally three numbers of GA160 Model Atlas Capco Make 200KW capacity compressor are operated. Power consumption was around 7500 units /day .

AFTER INSTALLATION:

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

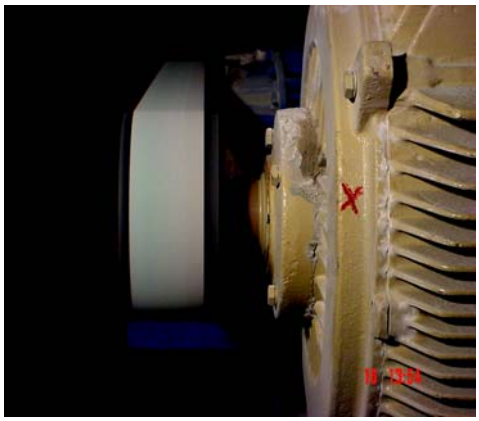
Operation of compressors of GA55 and GA160 combination had substantial saving of 2000 units per day and an annual savings of Rs29 lakhs could be realized.

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.Provided shut off valves to automatically close the air-line to the particular section when not in operation.

7.Pressure setting of the compressors for loading and unloading changed as per requirement.

8.Resizing of the compressors was done in the crusher after studying the compressed air requirement to reduce the unloading time power consumption.

MAJOR PROJECTS 2004-2005

RAW MILL REVERSE AIR FAN
INSTALLATION OF VARIABLE FREQUENCY DRIVE

The unit has installed reverse air bag house for controlling pollution during Raw Mill and Kiln operation. The purging air is being drawn to the system by reverse air fan. The unit has conducted the study of reverse air fan operation, purging air pressure and found scope for energy saving in Reverse Air Fan by installing the VFD drive instead of fixed speed. Earlier the fan was running at full speed with partial damper opening. The unit has installed VFD drive to reduce the power of Reverse Air Fan by operating to the required level. This installation was carried out in the year 2004-2005 that has resulted into the energy saving of 7.06 Lakhs and smooth operation of reverse air bag house.

1.INSTALATION OF AC VARIABLE FREQUENCY DRIVE FOR RAW MILL REVERSE AIRAN

BEFORE DRIVE INSTALATION

Power consumption per Hour:80 Units
Power consumption per Day:640 units per day
Type of Starting: Direct Online
Rated Speed: 1440 RPM
Percentage of Damper Opening: 85 %

AFTER DRIVE INSTALATION

Power consumption per Hour: 20.5 Units
Power consumption per Day: 164 Units

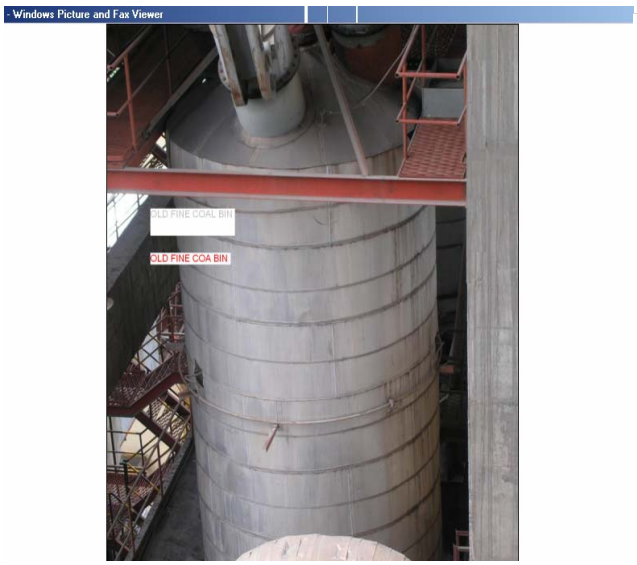
Rated Speed: 864 RPM
Damper Opening: 100 %
Saving in Energy: 476 KWh per day
SAVING: Rs, 7,06,8600 per Annum

Cost of Panel: 8.39 Lakhs
Pay back period: 1.2 YEAR

2. INSTALLATION OF HIGHER CAPACITY NEW STANDBY FINE COAL BIN

The usage of furnace oil for light up and heat up of kiln after shutdown was high for the last four years mainly due to inadequate capacity of fine coal bins. The unit was having three fine coal bins, with dedicated bins for Kiln, PC & one for standby having capacities of 35mt, 35mt &25mt respectively. Due to fine coal bin capacity constrain, coal firing was used for shorter duration of three hours before taking feed out of eight hours heat up time. The consumption of furnace oil was at the level 15 KL for light up and to reduce the cost of fuel it was proposed to increase the capacity of standby bin up to 100mt. Accordingly during the year 2004-2005 installed New Fine Coal Hopper at the cost of 25 lakhs and brought to operation from Aug 2004 onwards. Augmenting the capacity has resulted into the saving of furnace oil purchase to the level of 5 KL Per Month.
Rs 5,23,260 for the year 2004-2005**.**

BEFORE MODIFICATION **AFTER MODIFICATION**



3. INSTALLATION OF DRY FLY ASH SILO AND FEEDING SYSTEM

With the increased demand for blended cement use of wet fly ash was becoming highly cost prohibitive during kiln stoppage while keeping cement mill in operation, as it needs furnace oil for driving out the moisture in the fly ash. Taking in to consideration of above facts the unit proposed to install dry fly ash silo and feeding system for cement mill. The system was commissioned and operation was stabilized during the year 2004-2005. The unit was using furnace oil of around 120 KL monthly for running clinker grinding VRM Operation with HAG. After installation of dry fly ash silo and feeding system, the unit reduced the wet fly ash quantity during HAG operation to a level 4% from 25% which has resulted in to the furnace oil saving of 60 KL every month and unit has reduced the purchase of 60KL and saving money 7.57lakhs per month.

1. Total Investment: Rs 500 lakhs

2. Annual Furnace oil : 720 KL
   Saving

3. Cost saving : 720 x 12630
=Rs 90.90 lakhs per annum

Other Projects implemented during 2004-2005

1.Operation of both 1600KVA Cement mill auxiliaries' transformers in parallel.
2. 750 KVAR HT Capacitor installed for PF compensation and LT capacitors are switched off.
3. Sufficient LT capacitors switched off to reduce excess PF compensation at Crusher
4. 125W MV fittings replaced with 70W Metal halide fittings in packing house ground floor, pre heater top and CF silo top.
5.150W SV street light fittings in colony replaced with 36W CFL fitting.
6.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.
7.Relocation of Analytical lab to second floor A/C switched off during night- time.

ANNEXURE-5

Compressor Audit Report by TERI**:** 2003-2004

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	Implementation status As on 01/09/2005
		Energy L.kWh	Value Rs.Lakh			
SHORT TERM MEASURES						
1	Improving the performance of compressor air generation	1.20	5.40	2.00	0.40	Completed
2	Installation of synthetic flat belts in place of V-Belts for roots blowers	0.46	2.07	1.50	0.72	Two blowers implemented
MEDIUM TERM MEASURES						
3	Shifting the screw compressors from Mines to Packing plant.	0.44	1.98	3.00	1.50	Completed
4	Providing appropriate controls and storage at the users for proper compressed air management.	1.53	6.88	20.00	2.90	Materials received and waiting for implementation
	GRAND TOTAL	**3.63**	**16.33**	**26.50**	**1.60**	

LIST OF ENERGY SAVING PROPOSALS BY TCE-2004-2005

Sl No	Energy Saving Proposals	Annual Savings (Rs,)	Investment (Rs.)	Payback (Period In Months)	Implementation status as on 01/09/2005
1	Down Size Identified Motors To Improve Load Factor & Efficiency	150000	**	-	Feasibility study is going on
2	Install Energy Efficient Motor for Packing House Roots Blower	19000	30000	19	High efficiency motor ordered.
3	Down Size 241 FN1 Fan Motor @ Crusher Plant	21000	-	-	Feasibility study is under progress
4	Operate Both the 1600KVA Cement Mill Axillaries Transformers In Parallel	73000	-	-	Completed
5.	Install HT Capacitors for PF Compensation and Switch OFF LT Capacitors	78000	**	-	Completed
6.	Reduce Excess Power Factor Compensation @ Crusher	22000	-	-	Completed
7.	Install ON / OFF Type Compressor for The Crusher	120000	100000	10	Feasibility study is under progress
8.	Install Next Lower Size Impeller for the Plant Main Water Supply Pump	128000	40000	4	Waiting for the new cement mill installation.
	Total	611000	170000	8	

** Investment is not taken into account since the resources is available inside.

ANNEXURE-6

Energy conservation plans and Targets : 2005-2006

Sl. No	Energy Conservation Measures	Anticipated savings in energy		Approx. investment	Project Commencement and Completion Year	Status of implementation 01/09/2005
		Value	Rs in Lakhs			
1	Installation Energy efficient motor for packing house root blower.	To improve efficiency of the motor	0.19 lakhs/annum	0.30 lakhs	December 2005	High Efff motor awaited
2	Installation of on/off type compressor for LS crusher in the place of screw type compressor.	To improve efficiency of compressor	1.2 lakhs	1 lakh	December 2005	Feasibility study is under progress
3	Replacement of 'V' belts with synthetic flat belts for the balance Two blowers.	Power saving 16000 units/annum	0.75 lakhs/annum	0.6 lakhs	January 2006	Two blowers implemented
4	Installation of next lower size impeller for main water pump		1.28 lakh/annum	0.4 lakhs	March 2006	Waiting for the new cement mill installation
5	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 2006	Completed