MADRAS CEMENTS LTD.,
Alathiyur

I. Unit Profile.

- The manufacturing unit at Alathiyur near Trichy was set up in two phases. The Line I has the designed capacity of 2200 TPD commissioned in the year 1997, Which was upgraded to 2950 TPD in the year 1999 and again upgraded to 3300 TPD in the year 2004. The Line II was designed for capacity of 3000 TPD, which comprises the South Asia's first SF Cross Bar cooler and largest Vertical Roller Mill for clinker grinding and commissioned in the year 2001 and upgraded to 3300 TPD in the year 2004. This is one of the very few energy efficient plants in the world and it is very friendly to ecology and environment.

- Plant has the State-of-the-Art Technology and equipment at every stage of production. Surface miners for mining, Energy efficient MMD crusher for limestone, Vertical roller mills for Raw materials and Clinker grinding.

- Madras Cements always believes in sustainable approaches for specific power and energy cost reduction**.** Already energy independent with largest wind mills with a capacity of **33 M.W** at 2 locations in Tamilnadu. Company has spent around **Rs.96 Crores** for installation of **2 X 18 M.W** Coal based Power plant to reduce the power cost.

- There is 20 MW (6MW * 2 & 4 MW * 2) captive power generation, which will meet 75 % of Plant Power demand.

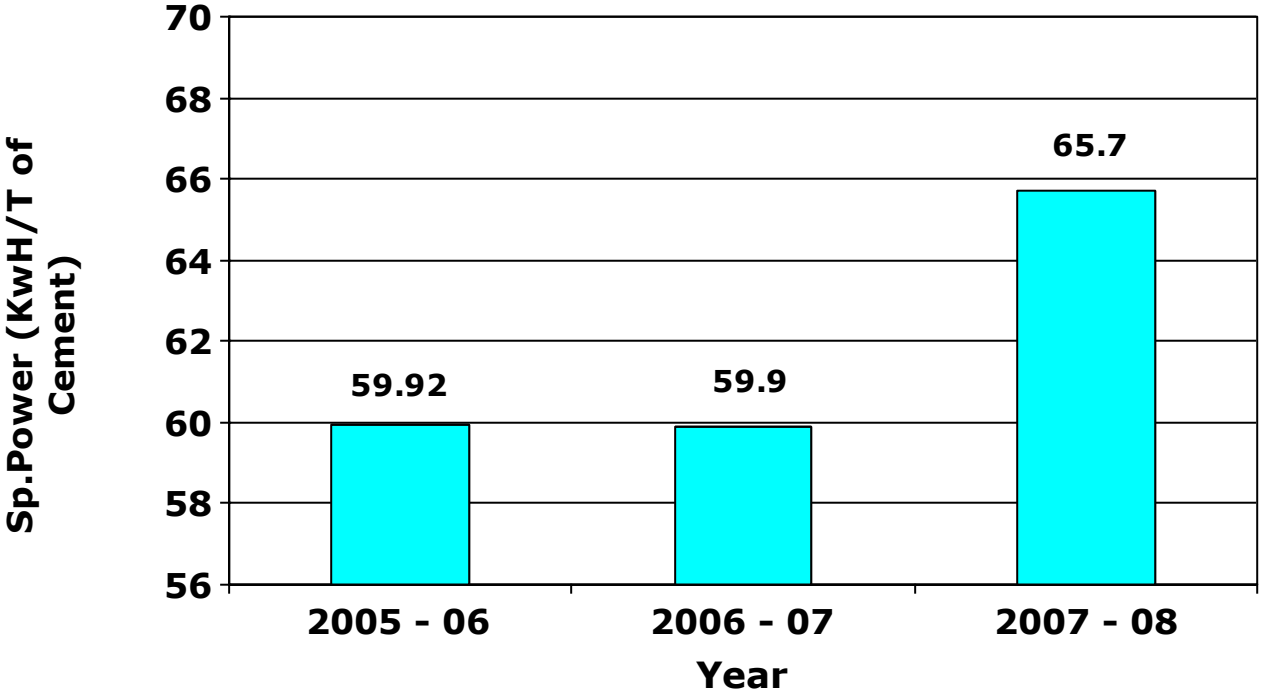
- **2 X 18 M.W** Coal based Power plant was installed to reduce the power cost.

- Operating efficiency of the equipment in each section in the plant range from 100 to 115 % of installed capacity.

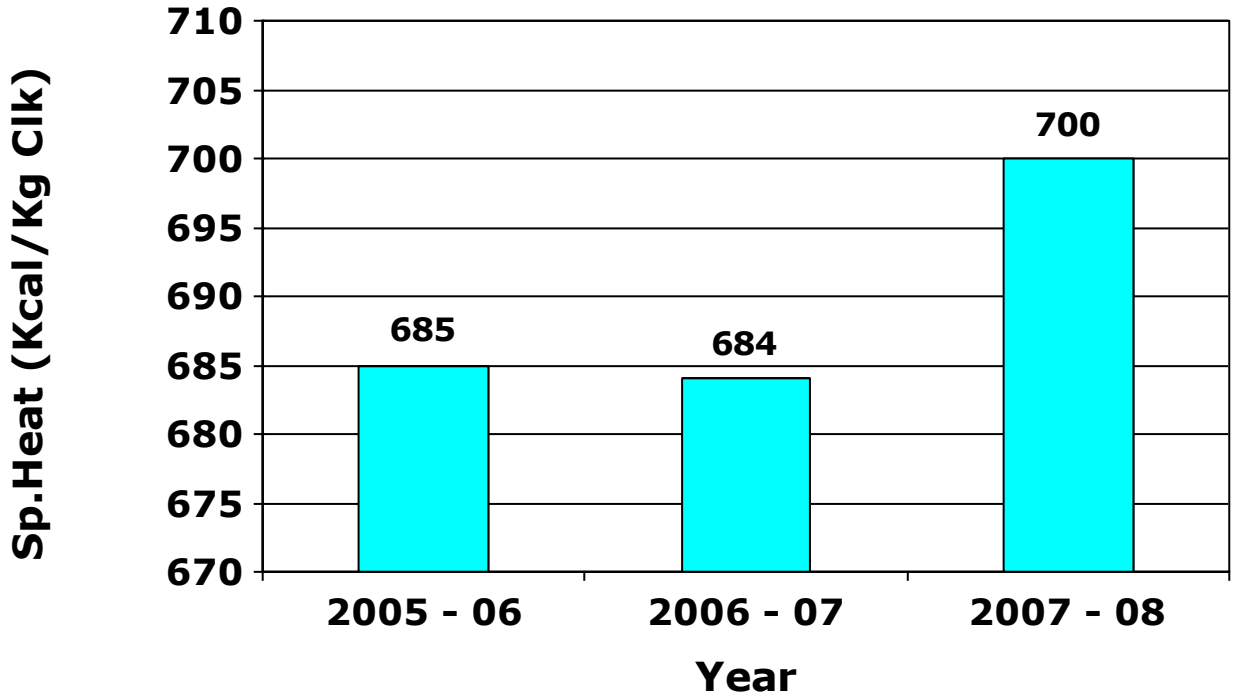
- The plant is ISO 9001 ,ISO 14001 & OSHAS 18001 systems certified.

II. Energy Consumption Pattern

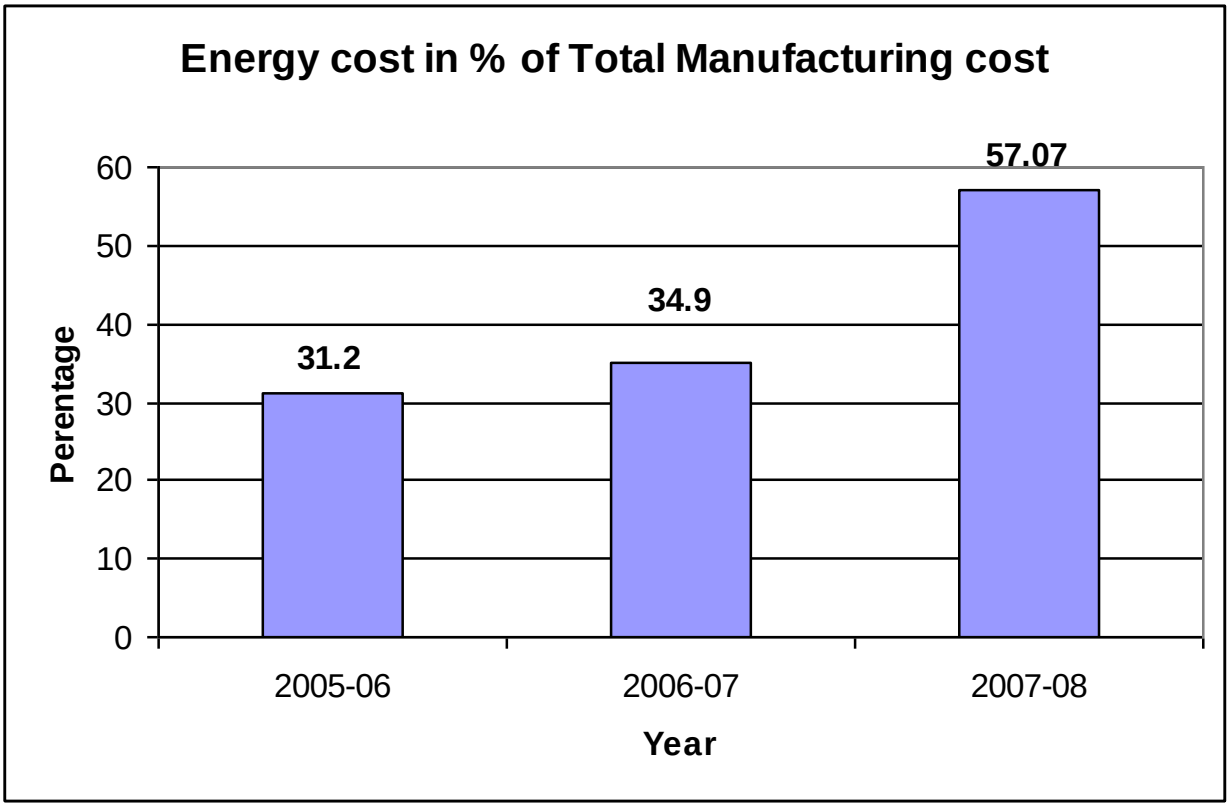
A. Electrical Energy Pattern



B.Thermal Energy pattern



III. Energy Cost in % of Manufacturing Cost



Comparison with National and International Benchmarks

	National	International	MCL
Specific Energy Consumption Thermal Kcal/Kg Clinker	**667**	**650**	**700**
Specific Energy Consumption Electrical Kwh/T of Cement	**69**	**65**	**65.70**

SOURCE :

Indian Cement and Construction Industries – Global Competitiveness , NCB–CMA Special publication presented in 8th NCB international seminar 2003

IV.Energy Conservation Commitment Policy & Setup

Top most priority has been given for implementing energy conservation ideas and proposals to conserve energy not only for the benefit of the organization, but also to conserve natural resources for the betterment of future generations. This goal is achieved by the energy conservation team headed by energy manager with the support of top management and managers to identify, monitor, control, implement the proposals.

Levels of Management	**Responsibility**
Sr.Vice President – Manufacturing Sr.General Manager – Works Sr.General Manager – Admin	Long term plans Targets setting Objects & Support, Review of Results, Cost control, Budget and Reward / Appreciate the achievements.
Sr.Manager – Maintenance Managers – Maintenance Dy.Manager – Maintenance	Plan, Do, Check, Act, Brain Storming, Quality circles, Energy management report, Payback analysis
Sr.Engineers - Maintenance Engineers - Maintenance Supervisors - Maintenance Workman - Maintenance	Implementation of Energy Products, Reporting, Brain storming, Quality circles, Suggestion schemes.
Sr.Manager – Production Officers – Production Workman - Production	Execution, Production Optimal production, maintaining optimal Parameters.

Innovative Projects

1. Modification in Cooling Tower fan blade angle

Increase in cooling tower fans Blade angle by 4 degree in 4 fans of our CBPP cooling tower.

Benefits:

Able to achieve adequate flow with 3 fans itself and one fan can be stopped intermittently results in a power saving of 40 Kw/hr for 12 hrs a day.

Savings:

Electrical energy	: 40 * 12 = 480 units / day.
Cost savings	: 480 * 330 Days *Rs.3.5
	: Rs. 0.554 Million /Year

Investment:

In terms of Money	: Nil
Idea	: By Encon Team Members

2. Optimization of ESP field in Coal based power plant

To stop the last field in our ash collection ESP of our CBPP without compromising SPM emissions, since no ash collection observed in the last field.

Benefits:

Power savings of 960 units per day.

SPM emissions : Before – 37 gm/m3
After - 37 gm/m3

Savings:

Electrical energy : 960 units / day.
Cost savings : 960 * 330 Days *Rs.3.5
: Rs. 1.11 Million /Year

Investment:
In terms of Money : Nil
Idea : By Encon Team Members

VI. Ultimate Target, Objectives & Strategies to sustain benchmarks

The company always believes in continuous up date of technology to improve the productivity and hence reduction in power and fuel consumption. The target being

Electrical Energy : 56.0 Kwh / T of Cement

Thermal Energy : 675 Kcal / Kg of Clinker

S.no	Energy conservation Measures (Planned)	Anticipated Savings in		Approx Investments Rs.Lacs	Project Completion year
		Kcal/Kg Clinker	Kwh/T		
1	Installation of High efficiency ID Fan		2.0	125	2008
2	New Generation, High efficiency Raw mill classifier		1.0	400	2009
3	Installation of Limestone Crusher to increase Productivity		0.7	309	2009
4	Installation of Sintercast liners in Cement mill		0.3	30	2009
5	Installation of Roto scale feeder for Kiln feed Raw meal and Coal	10	0.3	600	2009
6	Removal of Bypass duct insulation to Bag house		0.1	nil	2008
7	Installation of New bag house fan in Line -1 *	15	1.35	102	2008
8	Optimization of Raw mix by installing Bulk solid analyzer	7		300	2009
9	Modification of Fly ash feeding system in cement mill - 1		0.2	30	2008
10	Installation of SPRS for		0.5	85	2009

	Cement mill -2 fan				
11	Optimization of Cooling water system in Power plant		30 Kw/hr	nil	2008
12	Optimization of Compressor lines in Power plant		40 Kw/hr	nil	2008
13	Up gradation of preheater and Cooler optimization in Kiln - 2	10	1	1850	2008
* When Raw mill is in Down condition					

VII. Resource Utilization

Our organization has taken various initiatives for Resources Conservation, minimizations And Effective utilizations at various levels.

Some of salient features are:

1. Implemented the powerful ERP(Entrepreneurs Resource Planning) system, which helps us in planning at each levels.

2. Pet coke a refinery waste enables us to use our low grade limestone (SiO_2 – 16 to 20 %) about 2.0 Lac tones / Annum, which indeed extends the life of our mines.

3. Power plant waste Fly ash is being used for blended cements.

4. Waste oil generated from our heavy equipments at Mines is being reused in our conveying equipments (Drag Chains) at our LSS (Limestone storage shed, Coal storage shed and Additive storage shed)

5. Our colony generated Sewage is treated in the STP(Sewage treatment plant) and recycled to our colony for gardening purposes.

6. Bio waste fuels such as cashew shell, Ground nut shell is being used as alternative fuels.

7. Waste tyres and cut piece rubber which pollutes the atmosphere while disposal is fired in our kiln.

8. Commissioning of Power plant eliminates the usage of Gensets for power generation thereby consumption of Furnace oil and Diesel are nil.

9. Energy Managers accredited by BEE.

Role of Energy Manager

1. Study and implementation of suggestions from the suggestion schemes.

2. Quantification of fixed and variable energy consumption trends vis-à-vis production levels

3. Creating awareness of Energy Conservation and motivating to develop ideas on ENCON.

4. Identification of best practices (based on the external benchmarking data)

5. Conducting energy conservation audits, through internal and external auditors and implementing the audit findings in time.

6. Impart training to Field staff on energy conservation and Environmental improvement activities.

7. Preparation of Management reports and submission to Top Management.

VIII.Environmental Improvements

Clean environment is one of the major objectives of the organization. The plant is an ISO – 14001 and OSHAS 18001 Company . The emission levels speak of the eco & enviro-friendly environment in the plant, the following measures were taken to prevent and control pollution.

At Plant & Mines:

1. Green belt development in Plant and Mines.

2. Development of bituminous roads in and around the plant and mines, to suppress fugitive emission. Limestone from the pit is transported to crusher by means of dumpers. These vehicles are maintained leak-proof, not overloaded to avoid spillage from the vehicle. Water Sprinkling system were adopted to prevent dust generation from roads.

3. Rain water harvesting in both the plant and mines are carried out, so as to conserve the available water resources.

4. Output of the water treatment plant used for the plantation purposes in the Plant and in the mines.

5. Transportation of limestone to plant is done through closed belt conveyors of 3 km distance. There by avoiding usage of heavy vehicles and its fuel, spillages and fugitive emissions coming out from the vehicles. Also ensures safety by avoiding heavy traffic in the mines.

6. Installed Reverse air Bag house for venting Raw mill and kiln, Bag filter for coal mill and Cement mill and ESP for cooler venting gases.

7. All the material transfer points were connected to Unit bag filters.

8. The dust let - off in the stacks are well below the prescribed limits.

The results of test conducted by the TNPCB is given below:

Stack	TNPCB Norms (Mg/N Cu.m)	Actual results) (Mg/N Cu.m)	Equipment
Raw mill	**100**	**25**	**Baghouse**
Coal mill	**100**	**28**	**Bag filter**
Cooler	**100**	**15**	**ESP**
Cement Mill	**100**	**32**	**Bag Filter**
Power Plant	**100**	**35**	**ESP**

IX. Safety Measures

Madras Cements has the following arrangements for achieving zero accident in plant.

a. Employees should wear safety shoes and helmets in the plant.

b. The plant has safety & fire protection equipments.

c. Safety audits are conducted by (Internal) safety committee members.

d. An external auditor inspects the plant for safety measures implemented in the plant and report for improvements.

e. A hospital is arranged in colony to meet any emergencies.

f. Safety interlocks are provided for all equipments in the computerized plant operating system which ensures accident free operation in the plant.

g. **OHSAS 18001:2000** Safety Management system certified by BIS.

h. **ISO 9001:2000, ISO 14001:2004** systems certified by BIS.