

# **National Energy Conservation Award**

# 2008

## **Binani Cement Limited**



Beauro of  
Energy Efficiency  
Ministry of Power,  
New Delhi

**Unit Profile &  
Brief Write up  
on Energy  
Efficiency**

# Binani Cement Limited

## Unit Profile

M/s Binani Cement Limited is one of the leading Indian cement manufacturers focused on the key markets of states in Northern India, Gujrat & Western India. The company is one of the leading players in Rajasthan with a market share of 13% in the state. The company has facility for manufacture of 4.5 MTPA cement & 70 MW power generation at Pindwara (Sirohi) & 1.5 MTPA of cement at Clinker Grinding Unit located at Neem Ka Thana, Distt. Sikar, Rajasthan.

This is the flagship company of the Braj Binani group, promoted by Mr. Braj Binani. The group has diversified business activities located across India and abroad with interests in Cement, Zinc, Composites and Glass Fibre.

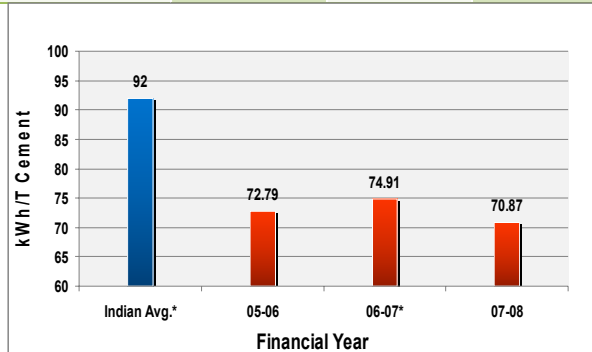
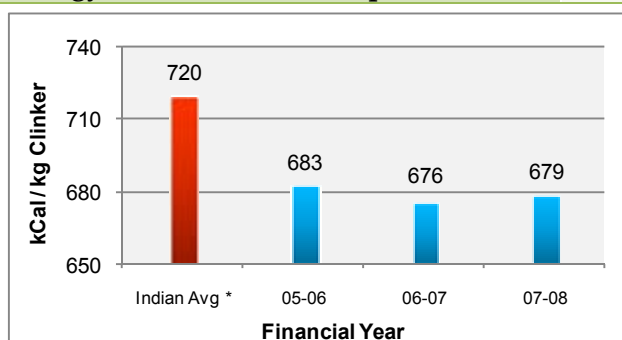
Company's cement is marketed under the brand name of 'Binani', which over the last 10 years, has established significant brand presence especially in the Rajasthan & Gujrat.

## Energy Consumption

The company, through its efficient energy management system, dedicated teamwork & by implementing various energy improvement schemes, has made significant improvement during a span of 11 years in its overall energy efficiency and has thus managed to reduce the Specific Power consumption from 92.7 to 70.87 (23.55%) and Specific Thermal Energy consumption from 737 to 676 Kcal/Kg Clinker (8.2%).

Details of specific consumption of these resources per unit of product output for the last 3 years are given below

Description	Unit	2005-06	2006-07	2007-08
Electrical Energy	kWh/T cement	72.79	74.91	70.87
Thermal Energy	KCal/T Clinker	683	676	679
Total Manufacturing cost	Rs. Lacs	29190.96	31454.45	44207.40
Total Energy Bill	Rs. Lacs	14585.74	15504.46	25378.24
Energy as % of total cost of production	%	49.97	49.29	57.41



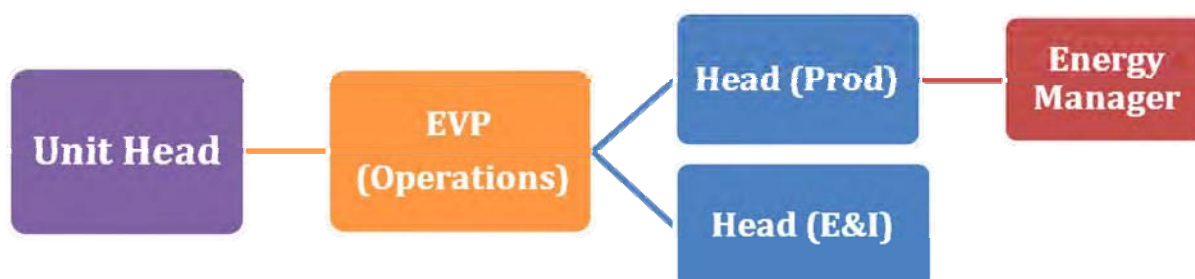
## Energy Conservation commitment, Policy & set up

We are committed to responsible energy management in partnership with our employees, clients and supply chain partners and to achieve energy efficiency in all areas where we have influence over consumption.

Company's resource use efficiency stems from its policies where the **need for optimization of the specific consumption of all natural resources** has been strongly conceptualized and communicated down the line including the men working at the shop floor level. At BCL, Energy conservation is accorded highest priority since the cost of energy alone accounts for more than 55% of the manufacturing cost.

The efforts started way back in 1997 with the formation of a dedicated Energy Conservation cell headed by EVP (Operations). The cell coordinates with different subcommittees, collects & disseminates information on energy usage in various activities throughout the plant and periodically reviews & implements the identified energy saving schemes.

### Organisational Setup of Energy Conservation Team



#### Functions of Energy Conservation Core Team

1. Brain Storming
2. Identifying areas for improvement
3. Collection of information & resource utilisation
4. Implementation of feasible schemes
5. Monitoring & Audit

Binani

BRAJ BINANI GROUP

**BINANI CEMENT LTD.****ENERGY POLICY**

We commit ourselves to conserve Energy up to the maximum extent without impairing the productivity of plant. We shall attempt continual improvement & shall abide by the following principles :

- \* Continuously monitor and benchmark our performance against best national & international Energy consumption levels.
- \* Comply with all regulatory and other requirements with respect to Energy conservation.
- \* Carry out regular Energy audits to identify areas of improvement.
- \* Adopt Energy conservation technology to enhance Energy efficiency.
- \* Minimise the wastage of Energy.
- \* Maximise the use of Renewable Energy.
- \* Promote awareness amongst all employees on the need for Energy conservation.

Date : 07.09.2007  
Place : BINANIGRAM

  
P. SHEORAN  
PRESIDENT (WORKS)

## Energy Conservation Achievements

During last 3 years, i.e. from 2005 to 2008, we implemented several energy saving schemes which were contributed by various sub sections functioning at different level of organization through brainstorming, Quality Circles etc. resulting into annual **savings of Rs.272.96 Lacs** by **investing Rs. 472.39 Lacs** with **pay back period of 1.75 years**. We, thus managed to reduce the Specific Power consumption from 72.8 kWh/T to 70.87 kWh/T (%) and Specific Thermal Energy consumption from 683 to 676 Kcal/Kg Clinker (%).

Year	Product	Electrical Energy		Thermal Energy	
		KWH/Ton	% Reduction from the base year (2005-06)	MKCAL /Ton	% Reduction from the base year (2005-06)
2005-06	Cement	72.79	-	0.575	-
2006-07	Cement	74.91	2.83% increase	0.554	3.65
2007-08	Cement	70.87	2.64% decrease	0.542	5.74

### Major Energy Conservation projects implemented during the year 2007-08 are summarized below:

1. Installation of variable speed drive on down hill belt conveyor for reduction in Energy Consumption & maintaining consistent product quality.



Variable Speed Drive was installed at the Down Hill Conveyor (Crusher Belt carrying crushed limestone to stockpile) was installed by replacing the conventional drive resulting into energy saving of 20 units/Hr.

Total Electricity Saving = 70786 kWh /year

Total Investment = Rs. 6.75 Lacs

Savings = Rs. 2.93 Lacs/year

Pay Back period = 2.6 Years

## 2. Installation of Variable Speed Drive on Lime Stone Crusher Apron Conveyor to reduce down time & Energy consumption.



Variable Speed Drive was installed on the Limestone Crusher Apron Conveyor by replacing the conventional drive resulting into saving of 15 Units/Hr

Total Energy Savings	=	53090 kWh per annum
Total Investment	=	Rs. 6.75 Lacs
Savings	=	Rs. 2.20 Lacs
Pay Back period	=	3.07 Years

## 3. Replaced hi-chrome table liner with sintered cast iron liners for Energy Savings as well as for smooth & consistent operation of Raw mill #1



With this modification in Vertical Roller Mill #1, Power savings of 60 Units/Hr. achieved.

Total Energy Savings=		445485 kWh/year
Total Investment	=	Rs. 44.3 Lacs
Savings	=	Rs. 18.44 Lacs/year
Pay Back period	=	2.40 Years

## 4. Production of PPC by using Wet Fly Ash



In the year 2007-08, 107200 tons of extra PPC was produced by utilizing 26800 tons of Wet Fly Ash. Details of saving are as under:

Total Energy Saving	=	1476948 kWh/year
Total Investment	=	Rs. 400 Lacs*
Total Saving	=	Rs. 221.95 Lacs/Year
Energy Saving	=	Rs. 61.15 Lacs/Year
Pay back period	=	1.8 Years

\* Amount incurred for installation of Wet Fly Ash feeding system.



**5. Analog DC drives of Cement mill no 1&2 clinker W/Fs replaced with Variable Speed drive.**



<b>Power saving</b>	=	<b>3 units/Hr./Mill</b>
<b>Total Energy Savings</b>	=	<b>43702 kWh/year</b>
<b>Total Investment</b>	=	<b>Rs. 1.80 Lacs</b>
<b>Savings</b>	=	<b>Rs. 1.81 Lacs/year</b>
<b>Pay back period</b>	=	<b>1 Year</b>

**6. Replacement of low capacity pumps with high capacity pump**



3 Nos. of low capacity pumps were replaced with single high efficiency pump at Malap for pumping water to Cement Plant resulting into

<b>Total Energy Savings</b>	=	<b>262800 kWh/year</b>
<b>Total Investment</b>	=	<b>Rs. 1.66 Lacs</b>
<b>Savings</b>	=	<b>Rs. 14.24 Lacs/year</b>
<b>Pay back period</b>	=	<b>&lt; 2 months</b>

**7. Modification of static part in ID fan suction duct in CPP - HT motor replaced with LT motor & V/F drive.**



**Total Energy Savings = 228140 kWh/year**

**Total Investment = Rs. 9.53 Lacs**

**Savings = Rs. 9.45 Lacs/Year**

**Pay back period = 1 Year**

## 8. Installation of Solar Heater panels in company's Guest House

One large Solar Heater of capacity 1 KL was installed resulting a saving of 120 kWh /day.

Total Energy Savings	=	43,800 kWh/year
Total Investment	=	Rs. 1.60 Lacs
Savings	=	Rs. 1.94 Lacs/year
Pay back period	=	10 months



## Other GREEN measures:

S. No.	Description
1.	Ventilation fans (12 Nos.) provided on the roof of new stores building to keep the air temperature inside the house at a steady temperature, so there is no need for any other air circulating or air conditioning systems – these fans require no electricity to operate.
2.	Various 'Awareness Programs' conducted to promote : 1. Awareness on purchasing products from local markets rather than procuring from long distances. 2. Reducing Carbon Foot Prints through Life Style changes 3. Conserving renewable sources of energy.
3.	Replacement of CRT monitors (100 Nos.) with energy efficient LCD monitors in office computers .

## Energy Conservation: Objectives & Targets (2008-09)

- To achieve the following levels of Electrical Energy & Thermal Energy Consumption by March 2009 :

Parameter	Cement Plant-1	Cement Plant-2	Combined
Elect. (kWh/T cement)	-	-	72.2
Elect. (kWh/T Clinker)	49.2	48	-
Thermal (Kcal/Kg Clinker)	678	710*	-

\* plant commissioned in July 2007.

- To Maintain the following levels of Electrical Energy & Thermal Energy Consumption in TPPs by March 2009 :

Parameter	TPP-1	TPP-2	TPP-3
Boiler Heat Rate (Kcal/Unit)	3482	3220	3220
Internal Power Cons. (%)	8.35 (equipped with Water Cooled Condenser)	12 (equipped with Air Cooled Condenser)	12 (equipped with Air Cooled Condenser)

- To continually improve the consumption of Fly Ash by producing more PPC.
- Replacement of incandescent tube lights with Compact Fluorescent Lamps (CFL) at all public places (1200 Nos.) by March 2009.

## Environment & Safety

### Environment

Binani Cement Limited acknowledges and supports the environmental interests of its customers, shareholders, employees and the surrounding communities.

We are an ISO 14001 certified company having policies and practices which ensure that our facilities operate in full compliance with all laws and regulations designed to protect the earth's natural resources and human health & safety.

#### 1. Efficient Air, Water & Noise Pollution Management

- (i) Maintaining stack emission **below 50mg/Nm<sup>3</sup>** since 1997; much lower than the prescribed RSPCB emission standards of 150 mg/Nm<sup>3</sup>. Average stack emission for 07-08 was 24.3 mg/Nm<sup>3</sup>.
- (ii) Sox & NO<sub>x</sub> gases in ambient air are maintained **below 10 micrograms/m<sup>3</sup>**, much lower than the prescribed RSPCB standards of 120 micrograms/m<sup>3</sup>.e.g. Average values of Sox & Nox for 07-08 were 3.07 & 9.0 micrograms/m<sup>3</sup> respectively.
- (iii) 100% of waste water is suitably treated and utilized for development of Green Belt and for spraying on haul roads for dust suppression and thus **Zero Discharge** status is maintained. Regular monitoring ensures that quality parameters are always well below permissible limits.
- (iv) Average Ambient air quality for the year 07-08 was 254.2 microgram /M<sup>3</sup>, much lower than the RSPCB norms of 500 microgram /M<sup>3</sup>.
- (v) Average ambient noise level (day time) for 07-08 was 67.6 dBA lower than the RSPCB standards of 75 dBA.

#### 2. Disposal of Hazardous waste generated from Textile Industries

The Sludge of **Common Effluent Treatment Plant (CETP)**, Pali, a potent hazardous waste, is being used by BCL under authorization from RPCB for last two years as part of company's Social Responsibility towards environment protection.

#### 3. Initiatives towards abatement of Green House Gases

Our CO<sub>2</sub> emissions per ton of product for last 3 years are as under:

CO <sub>2</sub> emission / Ton cement	2005	2006	2007
	0.683	0.682	0.624

#### 4. Water Consumption

Average Specific water consumption (tonnes/ton of cement produced) for last 3 years is 0.16 (against 0.28 tonnes/ton\*\* of cement produced for large scale sector)

*\*\* (Source: CSE-Green rating of Indian Cement Industry, 2005)*

#### 5. Initiatives Towards Water Conservation

We have installed **Air Cooled Condenser (ACC)** in our new Thermal Power Plants which reduced the water consumption to more than 90% as compared to the water consumed in traditional Water Cooled Condenser.

In addition, we have implemented several schemes for rainwater harvesting & artificial recharge of groundwater.

### Safety

BCL is an OHSAS 18001:2007 certified company with well defined & documented systems to identify, control and manage the OHS related risks and hazards.

A dedicated Safety Cell led by senior level executives is in place to monitor and ensure efficient management of safety at the work place.

