

**BIRLA CORPORATION LTD.(Cement Division)  
BIRLA VIKAS CEMENT  
Satna (M.P)**

**COMPANY PROFILE :**

After establishing itself as a major Cement producer the then Birla Jute & Industries Ltd., commissioned its second unit at Satna (M.P.) in 1982 under the name BIRLA VIKAS CEMENT (BVC). In keeping with the technological innovation at that time. The plant was setup with a dry process Kiln with a 2- string Preheater and a separate line Precalciner. This was the first plant supplied by M/S F.L.Smidth in India , based on coal fired precalciner technology. With a rated capacity of 0.80 Million Tons ,BVC has always been operating at a higher capacity. The BVC unit also has been conferred with ISO-9001 and ISO-14001 certification in recognition of its performance in quality management and environmental management systems. Besides the conventional general purpose Cement OPC 33G, 43G and 53G, Birla Vikas Cement manufactures PPC utilizing Flyash. In consonance with its commitment to quality, necessary instrumentation facilities including X-Ray analyzer and X-Ray diffractometer are provided for monitoring and controlling quality of Raw materials and Clinker/Cement. While domestic market requirements the met with our products under the brand name "BIRLA CEMENT KHAJURAHO" and "BIRLA SAMRAT".



**ENERGY CONSUMPTION:**

The company has always accorded top priority for minimization of energy consumption by putting consistent efforts towards optimization of operating/process parameters, efforts have been made for reducing energy consumption, wherever possible, by adopting appropriate technology and suitably modifying the process stream with installation of necessary equipment /machinery etc.

Year	Total Energy consumption		Total cost of The energy used for the production	Energy consumption in terms of % of manufacturing cost
	Electricity Lakhs / year	Thermal Million Kcal / year	Rs. Lakhs / year	
<b>2003-2004</b>	972.52	79.57 x 10 <sup>4</sup>	6577	35.22 %
<b>2004-2005</b>	931.92	75.13 x 10 <sup>4</sup>	6591	28.53 %
<b>2005-2006</b>	994.97	78.61 x 10 <sup>4</sup>	6879	26.50 %

Year	Specific Energy Consumption	
	Electrical Energy (Kwh/tonne cement)	Thermal Energy (Kcal/kg Clinker)(On NCV Basis)
<b>2003-2004</b>	94.42	842
<b>2004-2005</b>	94.68	843
<b>2005-2006</b>	91.29	847

### **ENERGY CONSERVATION COMMITMENT, POLICY AND SET UP :**

With a view to sustaining energy conservation efforts, an "Energy Conservation Cell" has been instituted headed by President himself and comprising engineers from Production, Mechanical and Electrical departments. The cell has been entrusted with the responsibility of monitoring both Electrical & Thermal energy consumption on a continuous basis, advising concerned departments for taking corrective actions, wherever necessary and implementing energy saving schemes.

Our energy management policy is as follows:

### **Energy management Policy**

We, at Birla Corporation Limited are committed to continuously improve the energy performance in all our activities and services to maximize reduction in energy consumption and to conserve energy resources for future generations without impairing productivity. To accomplish this, we will –

- Set targets and continuously monitor the energy consumption pattern and take corrective actions.
- Upgrade the process, technology and equipment to reduce the cost of energy and increase the profitability of the organization.
- Make energy conservation a mass movement by creating awareness and encouraging the employees participation at all levels.
- Enhance the use of non-conventional and renewable forms of energy wherever possible.
- Explore the possibility of waste heat recovery in the plant
- Ensure energy efficient Captive generation.

### **ENERGY CONSERVATION ACHIEVEMENTS**

During the period between 2003-2005 Birla Vikas Cement has implemented many proposals received by workmen's suggestions, In house energy audits by EC etc. This resulted in to saving of Rs.169 Lakhs. This has resulted in a reduction of 3.31% in specific electrical energy consumption.

### **Energy Conservation measures taken in year 2005-2006 :**

#### **a) Replacement of Light fittings and lamps**

In plant 16 nos. 125 & 3 nos. 250W mercury vapour lamps have been replaced with 70 W Metal Halide lamps. 50 nos. 60W ordinary lamps have been replaced with 15W CFL lamps.

Before installation

Power consumption per annum = 10038 kWh

After installation

Power consumption per annum = 4855 kWh

**Saving of power per annum = 5153 kWh**

Total investment = 0.46 lakhs

#### **b) Provision of interlocking of BDC fan with Packer to avoid idle running of BDC Fans (4 nos.)**

Idle running of BDC fans had been observed during the energy audit of packing plant. Start and stop of the BDC fan was manual. Interlocking of all four nos. BDC fans have been done with Packer to stop the BDC fan automatically. Whenever Packer stops and hopper above packer is full BDC will trip after 5 minutes. This interlocking has avoided 3 hrs. of idle running per day.

Installed load of 4 nos. Fan motors	=	180 KW
Running load of 4 nos. Fan motors	=	148 KW
Idle running per day	=	3 hrs. Per day
<b>Power saving per annum</b>	=	<b>162060 kWh</b>
Total investment	=	0.01 Lakhs

**c) Replacement of 2 nos. 3.7 KW air sluice with flap valve**

Before installation

Actual load of 2 nos. motors	=	7.4 KW
Running load of 2 nos. motors	=	4.0 KW
Power consumption per annum	=	13140 kWh

After installation of Flap gate

Power consumption per annum	=	Nil
<b>Power saving per annum</b>	=	<b>13140 kWh</b>
Total investment	=	0.20 Lakhs

**d) Providing solenoid valve and interlocking it with temperature in PLC to control the use of compressed air in Cement Mill water spraying system.**

5.0 Kg of compressed air is used for water spray in the cement mills. Compressed air was being given to nozzle continuously through one inch pipe. Water pump was interlocked and was starting and stopping with temperature automatically but compressed air was not interlocked. Now solenoid valves have been provided in the compressed air lines at the mill inlet and outlet and these valves have been also interlocked with temperature. Now whenever temperature exceeds water and compressed air simultaneously goes in to the nozzle for water spray. Rest of the time compressed air is blocked with the solenoid valve.

Before installation

Average Power consumption of 2 compressors	=	39205 kWh
Used for water spraying per month		
Power consumption per annum	=	470460 kWh

After installation

Average Power consumption of 2 compressors	=	14178 kWh
Used for water spraying per month		
Power consumption per annum	=	170144 kWh
<b>Saving of power per annum</b>	=	<b>300316 kWh</b>
Total investment	=	0.20 Lakhs

***ENERGY CONSERVATION PLANS AND TARGETS:***

The plant management and staff are committed to improving their energy efficiency further by setting still lower energy consumption targets; and this an on-going journey towards achieving excellence in energy consumption. Our plans for Energy Conservation is as follows:

Energy Conservation plans	Anticipated saving			Approx. Investment (Rs. lakhs)	Project completion Year
	Energy Value				
	KWh/ Tonne	Kcal/Kg	Rs. Lakhs		
Capacity enhancement from 2900 to 4000 TPD clinker	10.40	50	722.74	7041	Year 07-08
Reduction of Packing Plant BDC fan speed (4 nos. fan)	1.54	-	5.58	0.20	Year 06-07
Installation of Invertor modules in Cooler Fans	9.27	-	33.65	18.00	Year 06-07
Changing of connection of 4 nos. Screw Conveyor motor in Packing Plant from Delta to Star	0.51	-	1.86	0.20	Year 06-07

***ENVIRONMENT AND SAFETY :***

Besides the energy conservation measures, the company has also given due attention towards environmental control in mines as well as plant site. As mentioned earlier, BCL - Satna has been awarded with an International recognition "ISO-14001" certification for implementing Environmental Management System. Following additional measures were taken for improving the environmental performance in the year 2005 - 06: -

- 1) For environment friendly storage and handling of Clinker, we have constructed a new 7000 Ts. capacity clinker storage silo along with direct wagon loading facilities at a cost of Rs – 687.28 lacs. To take care of the pollution, one high efficiency Bag dust collector and four cassette filters are also provided with the system.
- 2) For further bringing down the emission from the latterite crusher, one additional Bag dust collector has been provided with the crusher.
- 3) For the pollution free storage of raw materials and finished products, existing SCW clinker and coal storage yard capacity has been increased from 60000 to 80000 Ts by providing roofing and side covers.
- 4) For ensuring a clean and pollution free environment in the vicinity, thick green belt has been developed in and around the factory, colony and mines area. In this direction we have planted 12745 trees during 2005 – 06. Thus from the beginning, we have planted 4.11 lac. trees in our premises.
- 5) As a part of other environment control measures good house keeping practices were followed, constructed additional raw material and finished products storage facilities, improved the performance of existing pollution control equipments like ESP's and Bag filters through regular maintenance and up gradations.
- 6) As per the directives of the MoEF, during 2005 – 06, we have consumed 227083 tones of fly ash for cement manufacturing. Out of this, 39726 Ts was own generation and the rest has procured from the near by thermal power plants.

### **A NOTE ON THERMAL ENERGY CONSUMPTION**

#### **SATNA CEMENT WORKS :**

Specific fuel consumption depend on various factors like Coal quality with respect to Calorific value, ash content and moisture content. Specific Fuel consumption in terms of Kcal/kg Clinker was more during the year 1998-1999, while percentage consumption of coal was lowest. This is due to more UHV and low coal ash content in coal during this year, as compared to other two years. In 1999-2000, fuel consumption was more than 1998-99, due to low UHV of coal than previous and manufacturing Low Alkali sulphate resistant Cement for Export. To Produce Low Alkali Clinker, Fuel consumption increases due to running of Alkali By-pass System to extract Alkali dust from Kiln inlet at 1000 deg. C. A Comaprative table below confirms above statement.

	Unit	19978-1998	1998-1999	1999-2000
Specific Heat Consumption	Kcal/kg Clkr.	659	684	680
Coal Consumption	%	16.67	16.01	16.52
Specific Heat of Coal (UHV)	Kcal/kg coal	3950	4270	4116
Ash content	%	33.70	31.28	31.87
Moisture content	%	2.17	2.27	2.80
Coal Consumption	Tons	138921	118055	149470

### **A NOTE ON THERMAL ENERGY CONSUMPTION**

#### **BIRLA VIKAS CEMENT:**

During year 1998-99, when this was "Modility" period for Cement Industry and there was a production cut of 25% for BVC, Kiln had faced no. of stoppages to restrict the production and during this year , in Feb.1999, CIS/CFG Retroffit cooler was installaed. Due to this and Higher UHV of coal, Kcal/Kg of Clinker was more but decrease in coal consumption. Besides above, a strict supervision by the plant personnel , has also helped to bring down the thermal energy consumption. A guaranteed saving of 35 Kcal/kg clkr. Was envisaged by retrofitting , but performance guarantee test is yet to carried out , hence this saving is yet to be established.

	Unit	19978-1998	1998-1999	1999-2000
Specific Heat Consumption	Kcal/kg Clkr.	754	760	746
Coal Consumption	%	18.43	18.00	17.99
Specific Heat of Coal (UHV)	Kcal/kg coal	4089	4223	4145
Ash content	%	31.97	30.97	31.22
Moisture content	%	2.89	2.92	3.24
Coal Consumption	Tons	143829	105582	153256