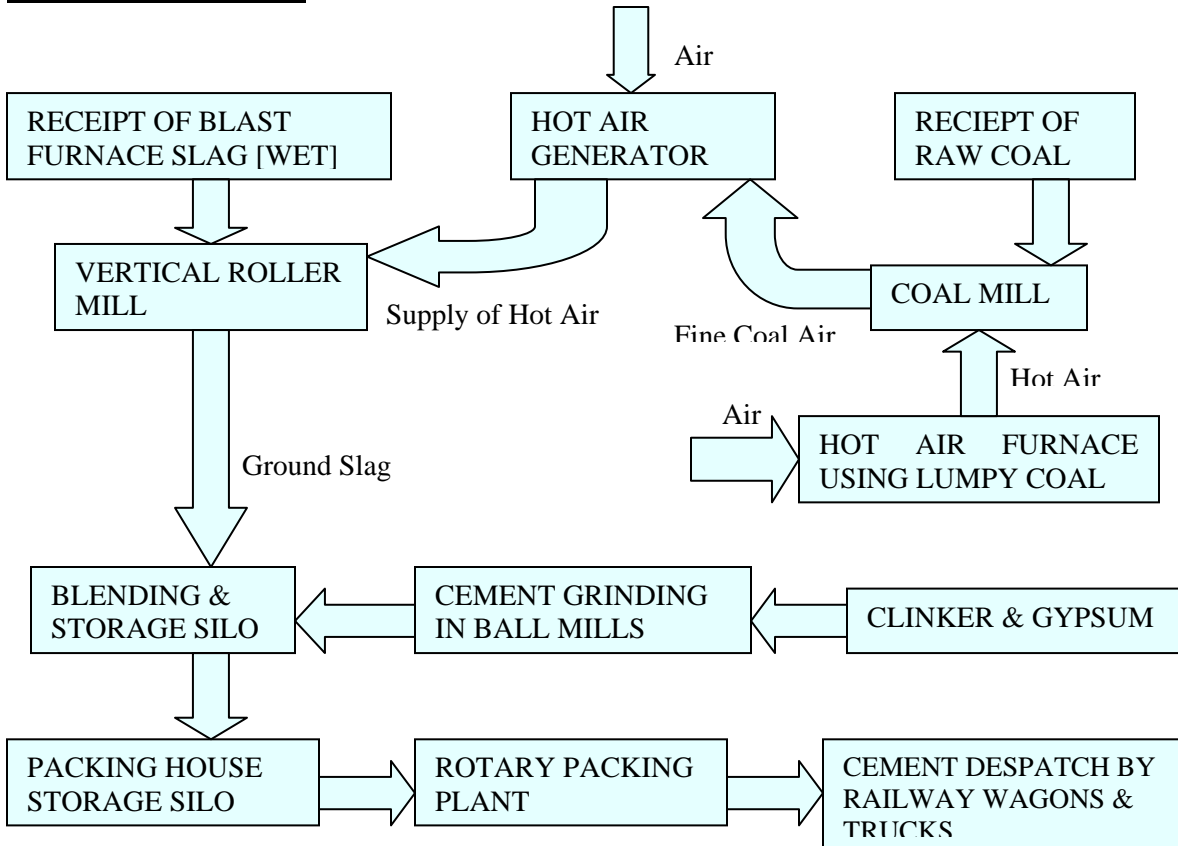


**THE ASSOCIATED CEMENT COMPANIES LIMITED**  
**Sindri Cement Works, Sindri, Dhanbad, Jharkhand**

**Unit Profile**

Sindri Cement Works, a part of The Associated Cement Companies Limited, is the manufacturer of Blended Cement (**Portland Slag Cement**) in the name of "ACC Super". The total annual sales turnover of the works for the financial year 2003-2004 is Rs. 21486 Lakhs. It is situated in Sindri, Dist. Dhanbad in Jharkhand state. It is an ISO 9001 & ISO 14001 certified unit. It got ISO 9001 certificate in February 2000 and ISO 14001 certificate in July 2002.

**Process Flow Chart**



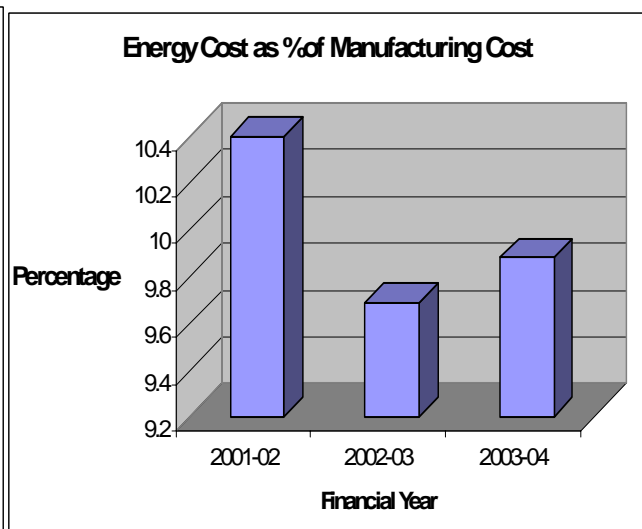
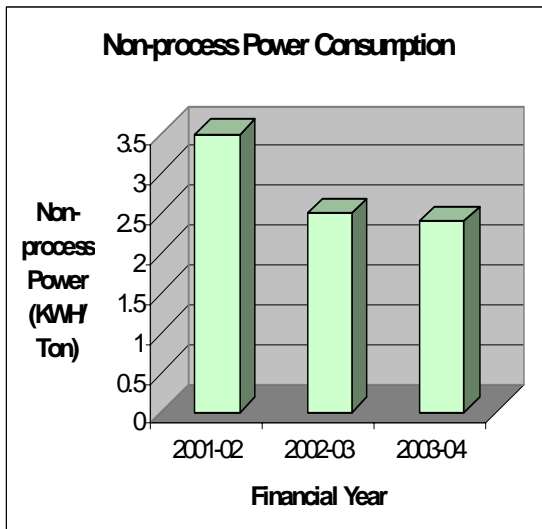
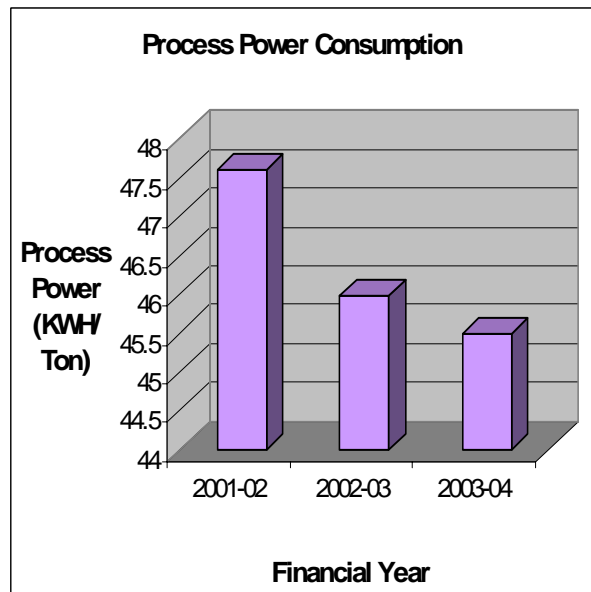
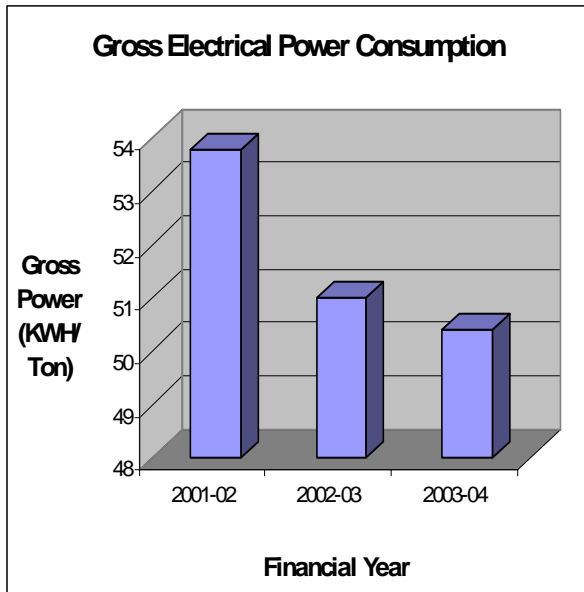
**Energy Consumption**

There has been a steady decrease in the Electrical Energy Consumption over the last few years, which is very much clear by looking into the graphs given below.

DESCRIPTION	UNIT	2001-02	2002-03	2003-04
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Annual Production	Lakhs Ton	6.47	7.08	7.3
Total Electrical Energy Consumption per annum	Lakhs KWH	348.307	361.667	367.720
Specific Electrical Energy Consumption	KWH/ Ton	53.83	51.08	50.37

YEAR	ELECTRICITY CONSUMPTION (KWH/ Ton)	% REDUCTION OVER 2001-02
2001-2002	53.83	--
2002-2003	51.08	5.11
2003-2004	50.37	6.43



## **Energy Conservation Commitment, Policy and Set up**

The ACC considers Energy Saving as a multi – disciplinary approach. Although the company's energy profile consists of mainly electrical energy, energy conservation projects still are being taken exclusively and budget is provided if required.

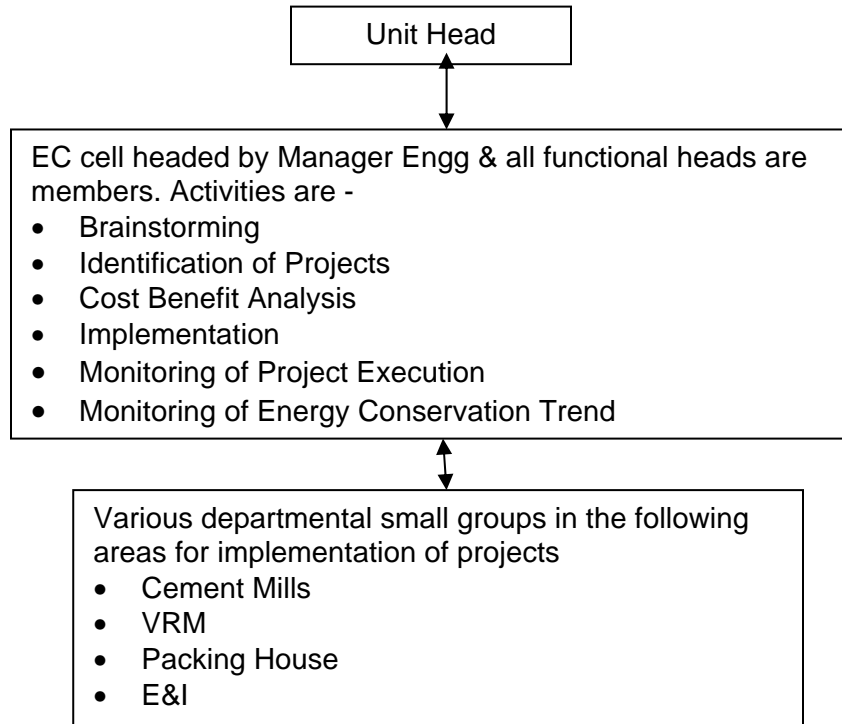
Energy Conservation week is celebrated every year from 14<sup>th</sup> December to 21<sup>st</sup> December. A poster, slogan and rangoli competition for children and ladies on energy saving and in – house programmes for employees are conducted. Suggestions on the energy saving are asked from the employees and the best ones are handsomely rewarded. One unique activity during this week is the honoring the housewife of the family having the least power consumption or best power saving record. The importance of the energy saving is emphasized through various SHE activities and TPM forum.

### **Energy Management Policy**

- Promote & encourage Energy Saving & conservation of natural resources.
- Create awareness among all people concerned with organization for Energy Saving.
- Encourage involvement through various training programme for conservation of Energy.
- Minimize wastage of any kind in daily activities in and around plant & colony.
- To make an effort to reduce the Energy cost on continual basis by adopting effective Energy Management.

### **ENCON Cell Structure**

EC Cell is headed by Manager Engineering & all the functional heads are member of the EC Cell. This cell meets everyday to monitor the power consumption pattern of previous day. Apart from this, monthly power consumption is also reviewed in meeting of all management staffs. This meeting is held every second Saturday and is chaired by Vice President. Projects evolved out of these meetings are executed in the departments by the departmental QC groups. The structure of the EC Cell is given below.



## Energy Conservation Achievements

### 1. Clinker Feeding in VRM

Before modification

- Output - 58 tph
- Sp. Power – 43.5 kWh/Tn slag

After modification

- Output - 60 tph
- Sp. Power – 42.1 kWh/Tn slag

Savings: 1.4 kWh/tn slag

Net savings = Rs. 14.4 Lakhs  
Investment = Rs. 12 Lakhs



## 2. Installation of fan for drying coal in Coal mill & thus stopping hot air furnace

Before modification

- Daily requirement of coal in Hot air furnace - 2.5 tns

After modification

- Daily requirement of coal in Hot air furnace - NIL

Savings: 840 tns of coal per annum

Net saving = About Rs. 24 Lakhs per annum

Investment = Rs. 1.3 Lakhs



## 3. Replacement of old separator of Cement Mill 4 with new high efficiency separator

Before modification

- Output of mill – 21.5 tph
- Running load of separator – 120 kW
- Sp. Power of mill – 38 kWh/Tn OPC

After modification

- Output of mill – 24.5 tph
- Running load of separator – 120 kW
- Sp. Power of mill – 33.5 kWh/Tn OPC

Savings: 10.98 Lakh unit

Net savings = Rs. 32.94 Lakhs per annum

Investment = Rs. 20 Lakhs



#### 4. Installation of Grit cone in VRM

Before modification

- Output - 60 tph
- Sp. Power – 42 kWh/Tn slag

After modification

- Output - 63 tph
- Sp. Power – 40 kWh/Tn slag

Savings: 2 kWh/tn slag

Net savings = Rs. 21.8 Lakhs per annum

Investment = Rs. 22 Lakhs



#### Other projects implemented during 2003-04

- Ø Automation of slag feed group for first 3 drives through PLC.
- Ø Packing House belt conveyor BC 6&7 connection changed from delta to star.
- Ø Interlocking of water pump with compressor at packing plant.

#### Energy Conservation Plans & Targets

Energy Conservation Plans	Anticipated Savings (Rs. Lakhs per annum)	Approximate Investment (Rs. Lakhs)	Completion year
Replacement of old inefficient separator of Cement Mill 3 with new high efficiency separator	30.45	25	2004
Mechanical Conveying of OPC	18.27	31	2004
Mechanical Conveying of PSC	40.6	90	2005
New burner in Hot Air Generator for burning high ash coal	52.8	3.5	2004
Monochamber conversion of Cement Mill 1 & 2	15.1	5	2005

Replacement of Low efficiency fans in Packing House by High Efficiency fans	0.93	1	2006
Installation of VFD for Circulating Air Fan, Recirculating Fan of Cement Mill 3, ID Fan of Cement Mill 3 & 4	23.2	8	2005

### **Environment & Safety**

The ACC is committed to the protection and betterment of the environment by Prevention of Pollution (emanating from all known sources of our process) and continual improvement in its environment performance by regular review of objectives and targets. The ACC is also committed to conserve water, energy, and natural resources, minimize and reutilize waste generation. The policy is communicated to all our employees and the same is being made available to public on request.

The company has successfully installed Environmental Management System and got the certification of ISO 14001 in July 2002. The company has installed Wastewater Treatment Plant to treat the water coming out of our plant and the colony. The company has also installed three nos. Rain Water Harvesting projects in plant and colony areas to conserve the water and taken afforestation projects in the same area to make the environment better.

Industrial Safety is an essential and integral part of every operation at ACC. The ACC Sindri Cement Work has a tremendous record in the field of safety and it has received the prestigious National Safety Award for year 2003. It follows the British Safety Council's 5 Star rating system for auditing. Objective of the Safety dept. is to ensure and attain a target to achieve zero accident.



### **3. Replacement of old separator of Cement Mill 4 with new high efficiency separator.**

The efficiency of the earlier separator of Cement Mill 4 was very poor. Increase of rpm of the separator or change of flow had very little effect on the rejects. Due to this, it was required to operate the cement mill almost in open circuit mode with very low velocity through mill in order to maintain quality. As a result we were losing in output. At this point, it was decided to replace this old separator with a new high efficiency dynamic separator so that there is better control on the product as well as we could operate the mill in close circuit mode with higher mill velocity so that our output goes up.

After this modification, the product residue has gone down from earlier 25 – 28 % to 10 – 12 % on 45  $\mu$ . Apart from this improvement in product quality, the output of the mill has also increased by around 3 tph. As a result there is an annual savings of 10.98 Lakh kWh of electricity. Net savings is around Rs. 32.94 lakhs per annum with an investment of Rs. 20 Lakhs.

### **4. Installation of Grit cone in VRM**

The VRM is used for grinding of blast furnace slag & it is designed by M/S Kobelco, Japan. As per the design, there was no grit cone & the reject from the in-built separator was directly coming on the table. Also due to counter-current flow on the table there was always short-circuiting of air-borne material on the table. This hampers VRM performance. Then it was thought to install a grit cone which will direct the reject on to the center & also that will reduce the short-circuiting of the air-borne material on to the table.

Installation of this grit cone has resulted into an increase of output of VRM & thus the specific power has reduced by 2 kwh/tn of slag. Net savings is around Rs. 21.8 lakhs per annum with an investment of Rs. 22 Lakhs.

### **5. Reduction of idle running of equipment by provision of proper interlocks & automation**

The operation of the entire plant was studied to reduce auxiliary power. This was done by doing modifications in the following areas.

- Ø Automation of slag feed group for first 3 drives through PLC
- Ø Packing House belt conveyor BC 6&7 connection changed from delta to star
- Ø Interlocking of water pump with compressor at packing plant

Net savings achieved is 0.5 Lakh kWh per annum with an investment of Rs. 0.9 Lakhs.