SHREE CEMENT LTD UNIT II

1) **UNIT PROFILE:** Shree Cement is an energy conscious and environment friendly sustainable business organization. Company is accredited with ISO 9001-2000, Quality Management System; ISO 14001, Environment Management System, OHSAS 18001 Occupational Health and Safety Management System certifications and **SA 8000, Social Accountability** has been awarded.

Under benchmarking studies, Shree Cement is consistently highest rating company by Whitehopleman, UK. Taking a proactive stance towards sustainability,

Unit II was commissioned in 1997 with installed capacity of 1.24 million tons/annum. **It has track record of 100% capacity utilization since inception**. In 2007-08, it registered production of 19.75 lacs tons of 122% capacity utilization against industry average 95%.

The remarkable performance in energy conservation, economic, environmental and social areas has been achieved by consistently moving ahead on a sustainable path and this journey of the company is well recognized by various reputed institutions such as TERI, BEE, NCCBM, etc.

A few landmarks in climate change activities are as follows:

- Shree became the first Indian Cement Company to join Cement Sustainability Initiative (CSI), World Business Council for Sustainable development (WBCSD).

- Shree Cement has developed three successful CDM under Kyoto mechanism of UNFCCC. **Shree cement has become the first company to have CER issued for 'Optimal utilization of Clinker'** project.

- Under benchmarking studies, Shree Cement is consistently highest rated company by Whitehopleman, UK.

- Shree Cement was appointed as leader of Cement Sector Task Force by BEE, Ministry of Power, Govt. of India.

- We are member of Asia Pacific Partnership (APP) of Cement Task Force. This Partnership was announced in July 2005, in Laos. Ministers from Australia, China, India, Japan, Republic of Korea and the United States launched the Asia-Pacific Partnership on Clean Development and Climate.

- Shree endorsed Global Roundtable Joint Statement on Climate Change.

- Shree is also a member of Global Reporting Initiative (GRI) and first Cement plant in India, continuously published CSR report in accordance with GRI guidelines since 2004.

These efforts make Shree Cement energy efficient, low cost producer and environment friendly sustainable business organization.

2) **Energy Consumption**: Shree Cement strives to reduce energy consumption. It regularly invests in adoption of new technology and practices for reducing its usage of power. It installed and replaced a range of energy efficient equipment during the year such as high efficiency fans and motors, variable frequency drives etc. It continually looks at ways to reduce the idle running of equipment.

The power consumption during the year has increased from 63.57 units to 69.39 per ton of cement. This was mainly due to slag used as replacement of iron source in raw material which is much harder to grind compare to Laterite and quality improvement initiative undertaken during the year. More finer grinding of cement led to higher power consumption.

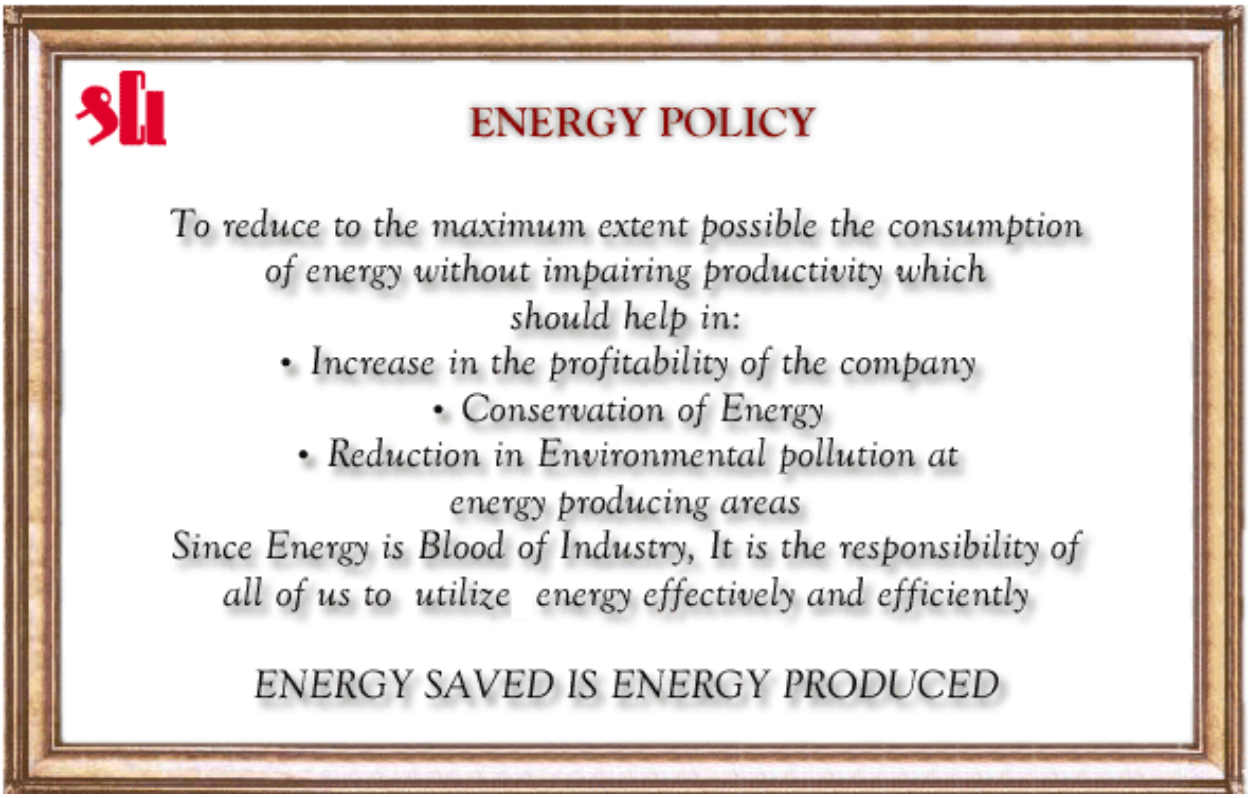
Shree R&D centre efforts and manpower training have helped in achieving new heights in reducing energy consumption and use of alternate fuel and raw material which is considered to be a difficult task for cement industry. Efforts have been recognized by various National & International agencies.

Name of Wastes	2005-06	2006-07	2007-08
Mill Scale	31673	13597	9653
Pb-Zn slag	0	0	30506
Flyash (Raw meal)	63120	66443	54447
Flyash Pozzolana	458444	633194	517468
Petcoke	124351	123012.7	128992.84
Agro fuel	417	14669	0

DESCRIPTION	UNIT	2005-06	2006-07	2007-08
Electrical Energy	kWh/Ton Cement	65.48	63.57	69.39
Thermal Energy	Kcal/kg Clinker	738.10	710.21	735.12
Energy as %age of Total Cost of Production	%	25.30	22.67	25.49

3) ENERGY CONSERVATION, COMMITMENT, POLICY AND ORGANISATION SETUP

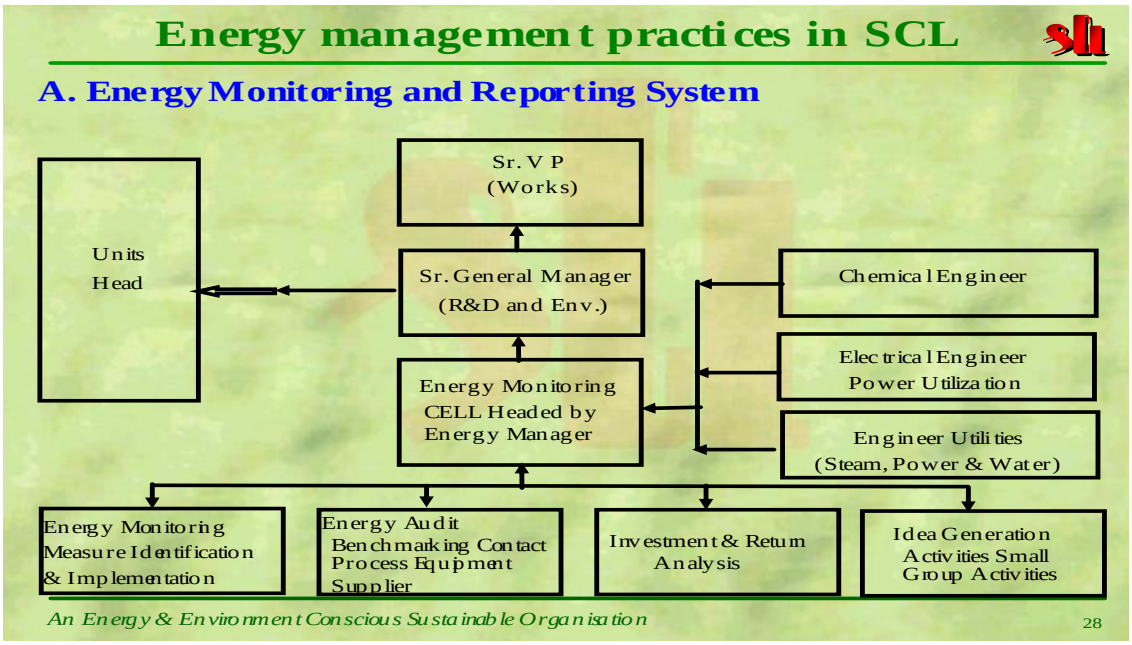
A clear-cut energy policy has also been formulated by the company in order to give more inputs on energy conservation. The statement of the policy is written on hard boards and displayed at various locations of the company.



Shree firmly believes that its employees are its most important, vital & valuable asset. The potential of Human Capital is optimally utilized by providing cohesive & creative work environment. Due attention is paid for development of this resource & sharpening of the skill through continuous Training & Development for developing competencies as well as providing avenues for self & organizational development. Shree provides ample opportunity of growth both vertically & horizontally to self-drivers & gives freedom for taking initiatives for modification in plant, machinery,

equipments & work procedures. Shree Cement Limited considers Energy Saving as a multi disciplinary approach. Even the smallest cost reduction is going to add directly to its profits in bottom line. For this purpose Shree Cement Limited has an Energy Conservation (EC) cell.

The organization set-up is given here:



1) ENERGY CONSERVATION ACHIEVEMENTS

Energy Saving THROUGH

- **Benchmarking and Audit:** Shree Cement is consistently four stars rating company by Whitehopleman, UK. Energy audit has been conducted in 2007-08 under the project diagnostics by Japan under the umbrella of APP-7 (Asia Pacific Partnership). The partnership is important initiatives that engage the key greenhouse gas emitting economics in the Asia Pacific region on practical clean development and climate action.

- **Incorporation of energy efficient equipment:** During 2005-2008 Shree has implemented several number energy saving project at unit-II. The increasing consciousness for energy conservation and steps taken towards effective monitoring, better operational control and process

optimization in addition to various modifications/ retrofitting of energy efficient equipments have contributed greatly in energy conservation.

The abstract of various project executed during the reference year are given below:

a)

Replace the Existing Raw Mill Fan with Higher Efficiency Fan

Energy saving: 22.53 lakh Kwh/annum

Total saving: 57.47 Lakh/annum

Total investment: 97.00 Lakh

b).

I. Introduction Star-delta RBLS-11

Project: Installed star-delta starter in RBLS-11 belt.
Motor rating: 110 kW
Running load: 90 kW
Total running hrs. : 15 hrs.
Motor running hrs. in star mode : 3 hrs.
Saving: Power consumed in DOL mode: 90 kW
Power consumed in star mode: 60 kW
Saving: 30 kW (Star mode)
Saving in rupees: Rs.114390/- per annum,
Investment: Rs. 1.5 Lac

II. Introduction star-delta starter in BCLS-8 belt

Project: Installed star-delta starter in BCLS-8 belt.
Motor rating: 110 kW
Running load: 90 kW
Total running hrs. : 15 hrs.
Motor running hrs. in star mode : 3 hrs.
Saving: Power consumed in DOL mode: 105 kW
Power consumed in star mode: 70 kW
Saving: 35 kW (Star mode)
Saving in rupees: Rs. 133455/- per annum
Investment: Rs. 1.5 Lac

c). **By direct coupled the motor (Removing the Pully System) in cooler fan-15 and coal mill vent fan**

Energy saving: 4.22 lakh Kwh/annum

Total saving: 9.05 Lakh/annum

Total investment: Nil

d) **Using Power Boss in Seal Air Fan Motor**

Energy saving: 0.09 lakh Kwh/annum

Total saving: 0.22 Lakh/annum

Total investment: 0.03 Lakh/annum

e) **By Appling the Energy Efficiency Motor in Clinker Elevator**

Energy saving: 1.99 lakh Kwh/annum

Total Saving: 4.79 Lakh/annum

Total investment: 2.70 Lakh/annum

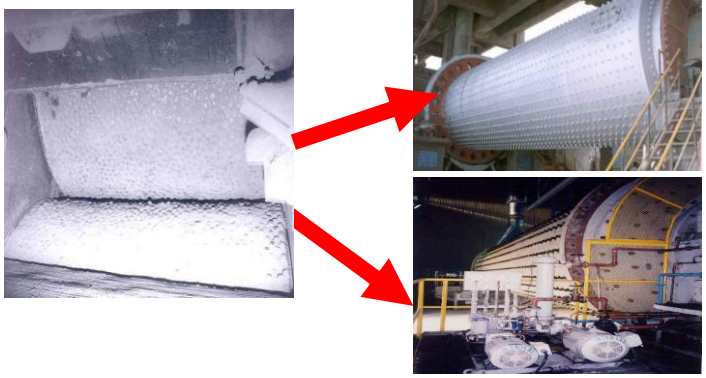
f)

Augmented Production & Reduced Energy Consumption by Transferring the Reject of SEPAX to CM-II

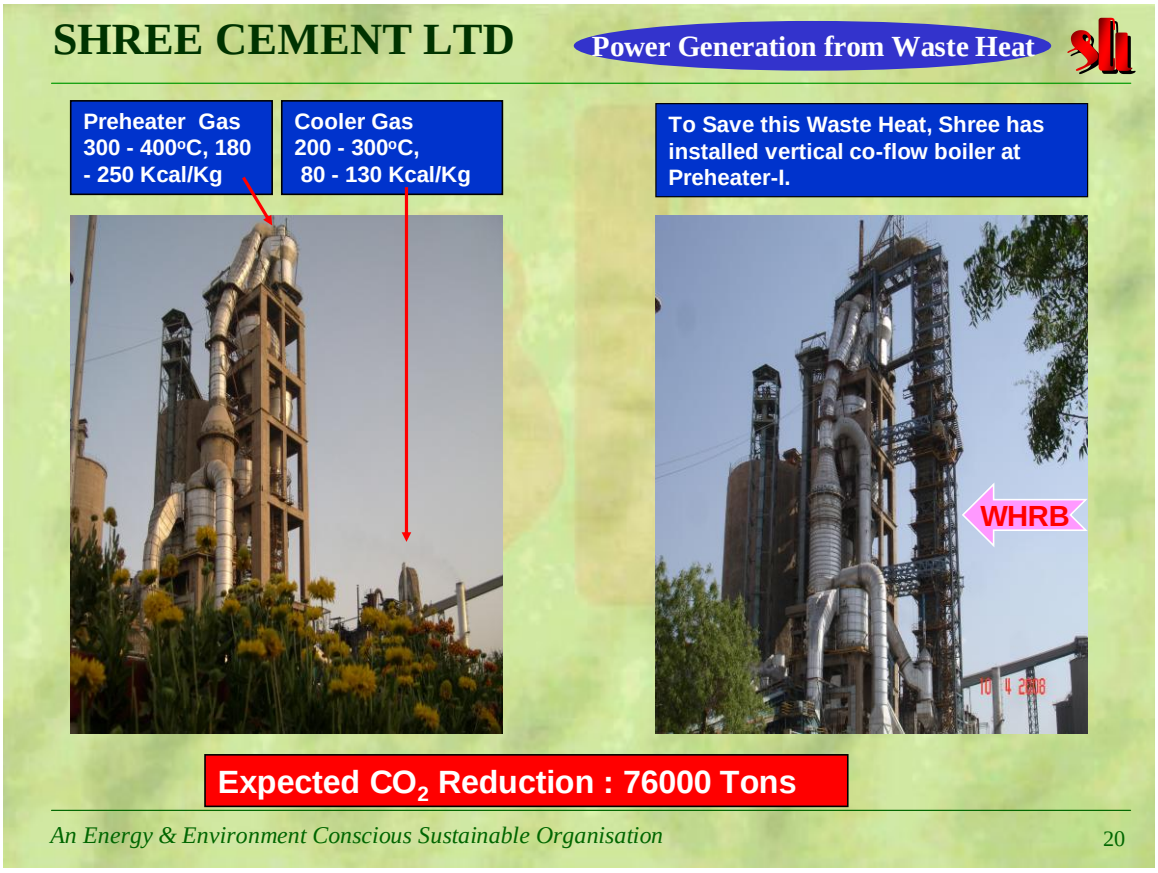
Energy saving: 19.75 lakh Kwh/annum

Total saving: 43.05 Lakh/annum

Total investment: 16 Lakh/annum



7. Installed WHR system for Power Generation



Installation of Waste Heat Recovery Boiler

As a part of Shree's commitment to conservation of natural resource, Shree installed a Waste Heat Recovery Boiler for utilizing the waste heat from the pre-heater exit gases for generating steam and for saving of water in the Gas Cooling Tower (GCT). This makes available us saving of fuels & water consumption on top of this environment protection through reduction of 76000 tonnes CO2 emissions.

- Temp. of Preheater exit gases reduces after coming out from WHRB. This reduces water spray quantity from avg. 1000 KLD to avg. 280 KLD. Resulted in water saving of approx 720 KLD.
- Steam generated through WHRB is being used in Power plant. This reduces fuel consumption at Power plant from avg. 6.2 ton/hr to avg. 5.3 ton/hr. Resulted in saving of fuel approx 14040 ton/annum.

5) Energy Conservation Plans and Targets:-The company is consistently engaged in marching ahead for further reduction of electrical as well as thermal energy consumption in plant because we believe the key of the success in cement business is minimum input energy (electrical, thermal and human) with maximization production of good quality. With quest for excellence the company ahead to achieve lower energy consumption in the plant. The energy conservation plans and targets for achieving lower energy consumption are:
Energy Consumption Plans:

Energy Conservation Measures (Planned)	**Anticipated savings In**		**Approx. investment (Rs. Lakhs)**	**Project commencement & completion year**
	Energy Value (Lac units)	Rs. Lakhs		
Identification and replacement of motor with high efficiency motor.	15.18	45.54	Under estimation	2008-09
Installation of high efficiency ESP Fan	11.56	52	115.27	2008-09
Installation of high efficiency PH Fan	11.22	33.66	75	2008-09
Replacement of high power loss capacitor with low loss capacitor	Under estimation	-	-	2008-09
Improvement of power factor at individual section level up to 0.99.	Under	-	-	2008-09

	estimation			
Installation of Connectgia for load which are not in PLC for continuous monitoring and energy conservations	Under estimation	-	2.5	2008-09
Replacement of low efficiency reciprocating compressors with screw compressor	Under estimation	-	-	2008-09
Replacement of low efficiency pumps with high efficiency pumps	14.96	44.88	75	2008-09
Increase height of cooler ESP chimney	1.2	3.6	Under estimation	2008-09
Replacement of high chrome plates with omega plates	Under estimation	-	-	2008-09
Replacement of conventional lamps with CFL	0.34	1.02	1.17	2008-09
Installation of Solar Water Heater	2.77	8.31	20	2008-09
Ordinary indication lamps to be replaced by LED	0.77	2.31	1.2	2008-09

Energy Conservation Targets for the year 2007-08 & 2009-10:

Year	Electrical* Kwh/ton of cement	Thermal* Kcal/ kg of Clinker	Reduction over the year 2007-08	
			Electrical %	Thermal %
2007-08(base year)	69.39	735.12	-	-
2008-09	68.70	720.00	1.00	2.05
2009-10	68.01	705.00	1.00	2.08

- **Small group activities**: few achievements are listed below.
  - Burning frequency of LT.MOTORS minimized..
  - Power consumption, down time & over time reduced.
  - Productivity Increased.
  - Better housekeeping/Healthy environment.
  - Save lubrication oil.

- **Jo Soche Woh Paave Scheme**: Implementation of idea generation activities led to following result.
    - Employees to think like leaders by providing them a platform
    - To communicate ideas
    - To bring all the members of the Shree Family into the mainstream
    - To encourage active participation
    - To tap into the latent potential of employees, reduce costs, increase productivity and ultimately, profits.

- **Changing product mix**

Year	Cement production (Ton)		CO2 reduction (Ton)
	OPC	Blended cement	
2006-07	187668	1835247	601534
2007-08	480676	1494120	491595

- **Energy awareness program:** Awareness among children and employees.

6) ENVIRONMENT AND SAFETY

Environment:

The company's policies (energy policy, water policy, environment policy, human resource policy, etc.) and the hunger for sustainable development demonstrate the inclination of management towards environment. Development of an Integrated Management System (ISO 14001, OHSAS 18001 and ISO 9001), bold **decisions of management on its 7R philosophy which includes**:

- Raise Production
- Reduce Consumption
- Release Less Emissions
- Realise value out of waste
- Replace conventional fuel & raw material
- Restore to nature what you take
- Research & maintain Records

Shree Cement is inculcating the concept of Sustainable Development which has become a driving force in obtaining objectives and making it the first Indian company to join Cement Sustainability Initiative of World Business Council for Sustainable Development. The commitment towards low carbon economy has resulted the company in gaining carbon credits for Optimal Utilisation of Clinker first time in the world.

Safety:

Safety of employee is never compromised at Shree: Shree Cement is committed for providing the safe working environment of its employees and to work within rules and procedures that facilitate their protection. There is a complete system of tracking accidents and causes of such accidents. Shree Cement has separate health and safety committee comprising of workers and management representatives for cement plant, mines and power plant. The key responsibility of safety committee is to create safety awareness among all workers suggesting ways and means to avoid reoccurrence of accidents and discussion of recommendations made in safety audit reports and ways to implement them. Various hazardous areas like coal yard, packing bag godown, oil storage areas and gas storage rooms are classified as 'no match box areas'. All electrical fitting and installations like pump and motors are of flame proof type in hazardous areas. Equipments, pipelines and tanks are properly grounded.

Recognition by various National & International forms for the year 2007-08:

- 2007-08 Best Employer Award for Rajasthan for the year 2007
- 2007-08 Golden Peacock Award for Excellence in Corporate Governance in Manufacturing Sector.
- 2007-08 Second prize for National Energy Conservation by Bureau of Energy Efficiency in cement sector for the year 2007.
- 2007-08 National awards for Excellence in Water Management as "Water Efficient Unit" by CII, 2007.
- 2007-08 NCCBM award for Best Improvement Electrical Energy Performance during year 2005-06.
- 2007-08 NCCBM award for Best Improvement in Thermal Energy Performance during year 2006-07.
- 2007-08 NCCBM award for Best Environmental Excellence in Plant Operation during 2006-2007
- 2007-08 NCCBM award for 2nd Best Quality Excellence during year 2006-07.
- 2007-08 India Manufacturing Excellence award by Frost and Sullivan for the year 2007.
- 2007-08 9th Golden Peacock Award for Environment Management Award 2007.
- 2007-08 Greentech Environmental Excellence Award 2007.
- 2007-08 Golden Peacock Award for excellence in Corporate Governance 2007.

NCBM award for best environmental excellence in

BEE 2nd best Energy Conservation Award in cement

Golden Peacock corporate Governance Award