

Energy Saving Calculation for UltraTech Cement, Hirmi for the FY 2007 - 08

As per refer Table 11 - (i) and Table – 16 of the award application format, the following are the details of the savings shown (total of Rs. 250.42 Lacs)

A. Production optimization

1. Optimization of Kiln process was done by

- Screen provided in Lime stone crusher to get the desired size of lime stone (<70mm), hence increased the productivity as well as operational stability of the Raw Mills. Granulometry analysis report is attached herewith.
- Lime Stone Reclaimer speed optimized in such a way that it could run continuously for optimum time and to maintain both Raw Mills hopper level, thus avoiding Raw mills stoppages on account of Hopper empty and frequent start/stop of reclaimer.
- Reducing the pressure drop across Raw Mill - 2 which reduced the cyclones draft from 130 mmwg to less than 100 mmwg thus saving in power up to 0.20 kWh / t material. Report is attached herewith.
- Introducing Dip tube in preheater bottom (5th stage) cyclones on both Kiln and Calciner string which in turns reduced the preheater exit gas temperature from 340°C to 325 °C as well as reduction in exit gas CO % , ultimately reduction in approx. 4.0 kcal/kg clinker as well as an increase of production approx. 5 tons.
- False air ingress reduction in Kiln system and Raw Mill system by continuous measurement and monitoring. Focus imparted towards identification of ingress points and taking corrective action as well as optimization of operational parameters.
- Six sigma study carried out for homogenization of Raw Mix as pile formation stage, grinding stage and at raw-meal blending stage to reduce standard deviation and to achieve steady operation and better throughput of kiln.
- Optimization of the cooler fan flow hence improve the operation of the cooler for effective heat transfer and avoidance of fine dust in tertiary air facilitating better recuperation of the cooler.

2. Optimization of Cement production by

- Direct feeding of fly ash system at mill discharge feeding to separator and removal of separable fines through separator has resulted in saving of grinding power of total fly ash.
- Increases the usage of fly ash from 27.0 % to 29.1 % as well as usage of slag as Performance indicator and hence the reduce clinker consumption factor hence the saving of around 25.01 Lacs kWh and offered the saving of about Rs. 108.5 Lacs

B. Modification or replacement of the electrical lighting system

- Replacement of the local switch to Photo switch and Timer switch and hence reduce the electrical consumption on the plant lighting system.
- Replacement of the ordinary bulbs by the CFL bulbs of 14 watt in the lighting system and this offered a saving of about Rs. 6.0 Lacs.
- Optimizing the cooling tower operation by stop one cooling tower fan, this was offered the saving of around Rs. 0.89 Lacs

Table with break up of total savings (in Rs. Lacs)

- **Power cost:** Rs. 4.34/ kWh
- **HFO cost:** Rs. 19114.45/ KL

Power saving

Av. Power cost (Rs./kWh)

4.34

Product	2006-07		2007 -08		Diif. In kWh/ ton	Savings in Lacs kWh	Savings in Rs. Lacs
	Production Lacs ton	kWh/tonne	Production	kWh/tonne			
LS Crusher	37.33	1.3	37.03	1.35	-0.05	-1.47	-6.38
Raw Meal	37.47	17.24	37.16	17.43	-0.19	-1.83	-7.95
Clinker	24.98	24.63	24.83	24.4	0.23	9.55	41.46
Coal	4.01	22.51	4.01	22.6	-0.09	-0.41	-1.76
Cement	17.46	30.94	16.95	29.2	1.74	45.12	195.83
Packing	17.49	2.32	16.87	2.25	0.07	2.61	11.33
						53.58	232.53

Replacement of ordinary bulb by CFL number

Av. Power cost (Rs./kWh)

4.34

No of Bulbs replaced	Ordianr Bulb kw	CFL KW	Total KW saved	Total KWH	Savings in Rs. Lacs
577	0.06	0.014	26.54	116253.96	5.05

Fuel Saving

Av. HFO cost (Rs. /litre)

19.12

HFO saving in Process heating	2006 - 07	2007 - 08	Saving in HFO (KL)	Saving in Rs. Lacs
	174.39	107.25	67.14	12.84