Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **1. Minimise Pressure Drop across dampers in identified fans –1) 1)Cement Mill ESP fans, 2) All cooler fans**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:

Removal of louver / butterfly dampers from suction side of identified fans as per the study of pressure losses. Installation of slide dampers in its place where ever required only.

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	 Louvre Damper from suction side removed as fan is operated by VFD

Agency that executed the project (with complete address and email): **Inhouse**

Total investment, Rs.: 15 Lacs	Year of implementation: **2007-08**

First year energy cost savings, **Rs.: 170.5 Lacs**

First year other savings, Rs.: Nil

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before					
Energy consumption after					
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address:
UltraTech Cement Limited,
Gujarat Cement Works,
PO Kovaya , Tah. Rajula
Dist. Amreli (Gujarat)

Contact person who could be contacted for more information:
Mr. P.K. Sinha , Dy. General Manager, Technical Services

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Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **2. Replacement of ordinary tube lights & filament bulbs with energy saving lights**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:

Replacement of ordinary tube lights & filament bulbs with energy saving lights in following areas : CCR, Admn. Building, Desp. Office, A,B,C type quarters, Co-operative store, Medical center, Bank & other commercial offices (1200 Nos. TJ tube lights & 400 Nos. of CFL lamps)

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **Inhouse**

Total investment, Rs.: 9 Lacs	Year of implementation: **2007-08**

First year energy cost savings, **Rs.: 13.14 Lacs**

First year other savings, Rs.: Nil

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	788				
Energy consumption after	263				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address:
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Dist. Amreli (Gujarat)

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Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **3. Installation of water cooler heat exchanger for Raw Mill-1 & 2 fan motors**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:
We used to face following problems in Raw Mill-1 & 2 motors due to inadequate cooling with forced air cooling method: a.Motor load restrisction b.High winding

So, replaced CACA cooling heat exchanger with CACW heat exchanger with leakage detector & flow switch safety. Earlier 2 Nos. of cooling blowers were used for cooling purpose which used to consume 15 KWH of power. We derived following benefits out of this : a.Motor efficiency increased , b.Motor optimum loading possible

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 18 Lacs**	Year of implementation: **2007-08**

First year energy cost savings, **Rs.: 9.90 Lacs**

First year other savings, Rs.: Nil

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	198				
Energy consumption after	00				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address:
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Dist. Amreli (Gujarat)

Contact person who could be contacted for more information:
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Annexure 'B'

Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **4. Installation of VFDs for Cement Mill-1,2,3 ESP fans**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:
Installation of VFDs for Cement Mill-1,2,3 ESP fans. Earlier ESP fans of Cement Mill 1,2 3 used to run by damper control. After installation of Variable Frequency Drive (VFD) for these fan motors, now fans are run by speed control which saves electrical power. (Installed power of each motor is 37 KW). After introduction of VFD, dampers from fan inlet have been removed.

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 9 Lacs**	Year of implementation: **2007-08**

First year energy cost savings, **Rs.: 7.20 Lacs**

First year other savings, Rs.: Nil

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	416				
Energy consumption after	144				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address:
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Contact person who could be contacted for more information:
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Annexure 'B'

Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **5. Replacement of old motors with High Efficiency motors**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:

Replacement of old motors with High Efficiency motors (40 Nos.) . Power rating --2.2 KW to 15 KW
Drive Motors of small equipments like pumps, blowers were old conventional motors which were drawing more power
By installing new energy efficient motors, power of drive reduced by 15 KWH
It was decided to procure new energy efficient motors after considering the efficiency advantages of the new motors.
The Power saving approx. 15 KWH for all the 40 motors combined

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 15 Lacs** | Year of implementation: **2007-08**

First year energy cost savings, **Rs.: 5.45 Lacs**

First year other savings, Rs.: Nil

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	1600				
Energy consumption after	1491				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address:
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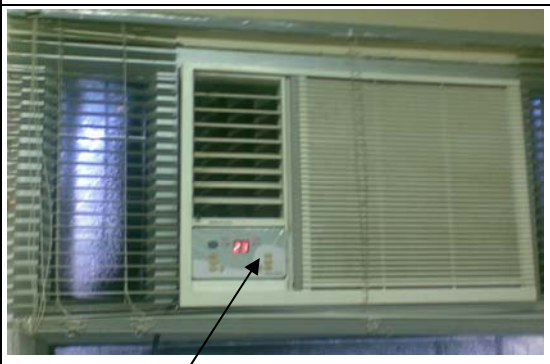
Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **6. Installation of sensitive remote controllers for window & split Air Conditioners**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:
Installation of sensitive remote controllers for window & split ACs --Total 15 Nos. These remote controllers switch off the A/C compressor when temperature reaches the pre-set temperature thus saving in power

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	 Sensitive Remote controller

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 0.30 Lacs**	Year of implementation: **2007-08**
First year energy cost savings, **Rs.: 1.08 Lacs**	
First year other savings, Rs.: Nil	

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	86				
Energy consumption after	64				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address:
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Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **7. Installation of AC drives for Raw Mill- 1 water spray pumps**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:
Installation of AC drives for Raw Mill- 1 water spray pumps. We derived following benefits by this.

1. **Constant flow rate**
2. **Less Maintenance in Pump & motor**
3. **Zero maintenance in Valve**
4. **Eliminate Valve operation & calibration**
5. **Process reliability increased**
6. **Valve spares inventory reduction**

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 2.12 Lacs**	Year of implementation: **2007-08**
First year energy cost savings, **Rs.: 1.80 Lacs**	
First year other savings, Rs.: Nil	

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	52				
Energy consumption after	16				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address:
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Gujarat Cement Works,
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Dist. Amreli (Gujarat)

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Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **8. Replacement of Ph-2 Kiln & Calciner string smoke gas fans with high efficiency & higher capacity fans**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:
Measured operating parameters of Ph-2 Preheater ID fans were : (1) Kiln string fan : 65-67 % , 132 m3/s, 612 mm WC, 1341 kW (2) Calciner string fan: 68-70 %.168 m3/s, 585 mm WC, 1540 kW. As these fans were operating at very low efficiency , replaced these fans with high efficiency fans with higher capacity to increase production rate also. After replacement of these fans with high efficiency fans, efficiency of these fan reached upto 80-82 % (App. Saving of 350 KWH)

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 100 Lacs** | Year of implementation: **2007-08**

First year energy cost savings, **Rs.: 139.43 Lacs**

First year other savings, Rs.: Nil

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	23,040				
Energy consumption after	20,151				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address:
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Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **9. Replacement of ordinary bags with membrane bags in Ph-1 Kiln Bag House to reduce pressure drop across bag house**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:

Replacement of ordinary bags with membrane bags in Ph-1 Kiln Bag House to reduce pressure drop across bag house. Earlier pr. Drop 150 mmWG, present pressure drop 120 mmWG. Power saving of 55 KWH achieved due to this. Also there is reduction in emission levels from stack as filtration efficiency of membrane bags is more as compared with ordinary bags.

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 24 Lacs**	Year of implementation: **2007-08**
First year energy cost savings, **Rs.: 22 Lacs**	
First year other savings, Rs.: Nil	

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	4,680				
Energy consumption after	4,240				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address:
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Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **10. Installation of Capacitor banks at various locations in plant**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:

New capacitors installed at following places : Coal Mill Ph-2 PCC2 / BusA, Coal Mill Ph-2 PCC2A / Bus A. Power factor improved from 0.88 to 0.91 after installation of these capacitor banks. We had not paid any penalty on account of poor power factor to state electricity board after this. In previous year (06-06) we had paid penalty of Rs. 75Lacs to power utility company.

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 30 Lacs**	Year of implementation: **2007-08**

First year energy cost savings, **Rs.: 75 Lacs**

First year other savings, Rs.: Nil

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before					
Energy consumption after					
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address: UltraTech Cement Limited, Gujarat Cement Works, PO Kovaya , Tah. Rajula Dist. Amreli (Gujarat) Contact person who could be contacted for more information: Mr. P.K. Sinha , Dy. General Manager, Technical Services	We authorise Bureau to use this information for dissemination Signature Date : 08-10-2008

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Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **11. Optimisation of air flow in Raw mill -1 & housing by bottom cone modification, reduction of pressure drop across Raw Mill-1& 2 cyclones by installing swiverlers with the help of CFD study**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:

Following modifications carried out in Raw Mill-1 & 2 circuit which resulted in increased production and reduced specific power consumption.

1) Mill housing inside bottom cone modification. With this modification , velocity across mill increased from 6.8 m/sec to 9.92 m/sec resulting in increase of production

2) Raw Mill-1 & 2 cyclones swiverlers installation:

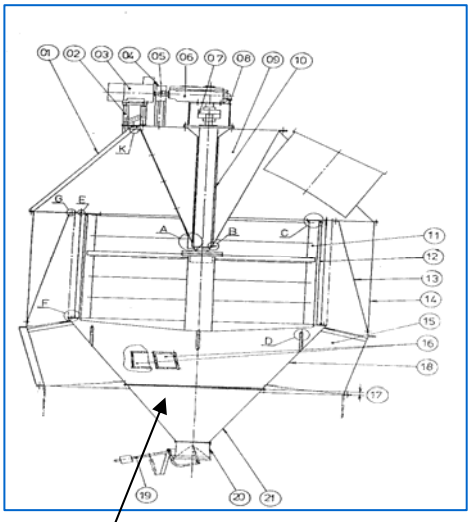
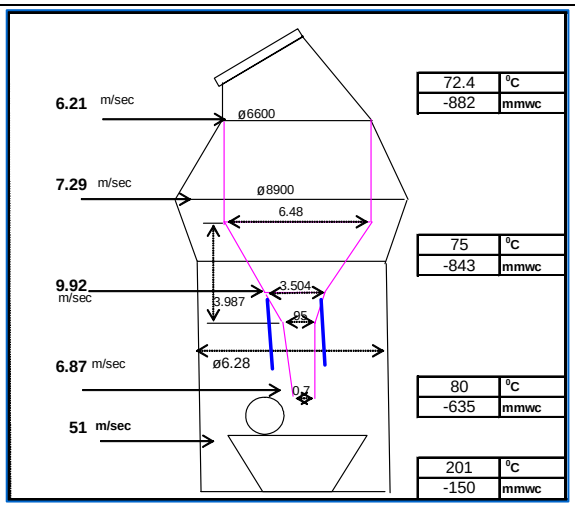
Cyclone is for separation of gas-solid mixtures. The principle behind separation at cyclones is difference in force intensities acting on fluids of different densities in a strongly swirling flow and flows down in cyclone.

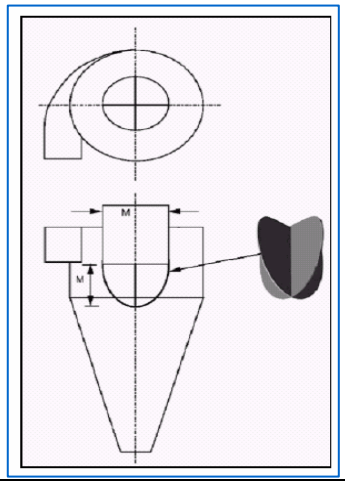
The CFD helps to understand the complex flow patterns in cyclones and provide information about stability of central vortex and its possible interaction within the cyclone.

The CFD analysis with existing parameters, it was observed that maximum cyclone separation efficiency and minimum pressure

drop can be achieved which involves cutting the dip tube height by 3000 mm from the bottom and providing a De-swirler.

By doing above modifications, power reduced by 50 KWH & mill production increased by 30 TPH

Picture/ sketch/ drawing before modification (if available) ---- Modification No. 1	**Picture/ sketch/ drawing after modification**
 **Spring loaded Cone valve removed from this point**	

Installation of swiverlers in cyclone dip tubes of Raw Mills	

Agency that executed the project (with complete address and email): **In house**					
Total investment, **Rs.: 6 Lacs**			Year of implementation: **2007-08**		
First year energy cost savings, **Rs.: 15 Lacs**					
First year other savings, Rs.: Nil					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before					
Energy consumption after					
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

Company complete address: UltraTech Cement Limited, Gujarat Cement Works, PO Kovaya , Tah. Rajula Dist. Amreli (Gujarat) Contact person who could be contacted for more information: Mr. P.K. Sinha , Dy. General Manager, Technical Services	We authorise Bureau to use this information for dissemination Signature Date : 08-10-2008

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Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **12. Installation of high efficiency fans for Raw Mill-1 & 2 with higher capacity**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:
Efficiency of Raw Mill-1 & 2 fans was in the range of 68-70 %. Also fans were not able to meet the increased demand of air flow for higher production. So, replaced both faans with high efficiency fans. Efficiency of new fans is 80-18 %. Energy saving of app. 200 KWH gained on each fan

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 80 Lacs**	Year of implementation: **2007-08**

First year energy cost savings, **Rs.: 120 Lacs**

First year other savings, Rs.: Nil

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before	48,000				
Energy consumption after	45,600				
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

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Energy Conservation Measure implemented in 2007-2008

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Title of the measure **13. Use of grinding aid in Cement Mills**	Sector **Cement**
Year to be filled by BEE		Technology **Indigenous**

Description of the energy conservation measure:
Grinding aid is chemical activator, which rupture or disintegrates the surface of fly ash during reaction and make fly ash more reactive. Ultimately helps increasing fly ash absorption in PPC, increase in mill output and thus reduction in specific power consumption of mill. We use grinding air supplied by Fosroc Chemicals (Product name : Cemax 333K).

Picture/ sketch/ drawing before modification (if available)	**Picture/ sketch/ drawing after modification**
	

Agency that executed the project (with complete address and email): **In house**

Total investment, **Rs.: 15.29 Lacs**	Year of implementation: **2007-08**
First year energy cost savings, **Rs.: 117 Lacs**	
First year other savings, Rs.: Nil	

On annual basis	kWh 000'	Coal (Tons)	Gas Nm^3	Oil (kL)	Other
Energy consumption before					
Energy consumption after					
Energy tariff, Rs/ kWh/ Ton/ Nm^3/ kL …	5.00				

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