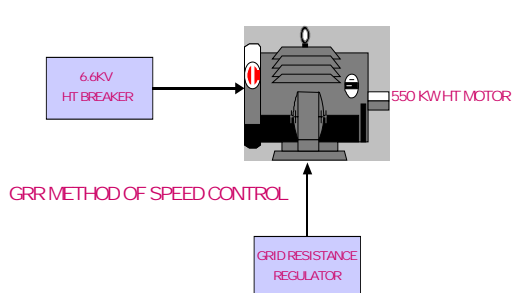
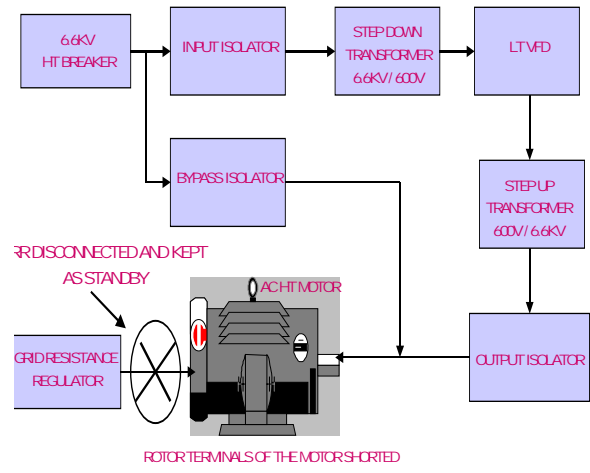
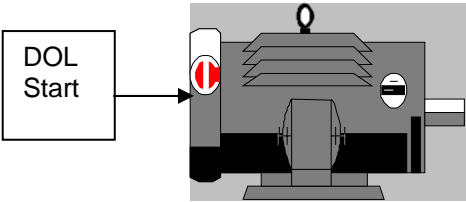
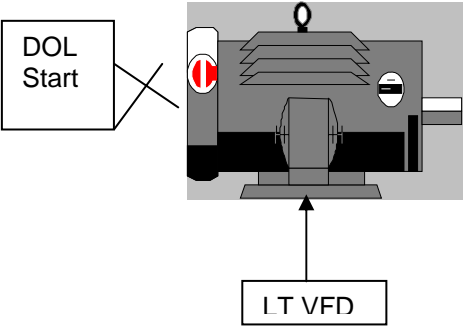


Energy Conservation Measure implemented in 2006-2007

ID to be filled by BEE	Title of the measure	Sector PPC Cement
Year to be filled by BEE	Installed VFD in 550KW HT Motor	Technology High Low High VFD L&T Make
<p>Description of the energy conservation measure:</p> <p>1.GRR used earlier for speed control of seperator fan. Following were the disadvantages:</p> <ol style="list-style-type: none"> a) Power Loss b) More Maintenance required. c) Less Accuracy of speed control. <p>2.Due to high variations in the Grid frequency, the speed of the seperator fan was also varying causing following problems:</p> <ol style="list-style-type: none"> a) Unstable Process Parameters. b) High Reject material from O-sepa Seperator. c) High Mill Loading. d) High Mill Elevator Loading and hunting. e) Reduction in Mill Throughput <p>BENEFITS:</p> <ul style="list-style-type: none"> ➤Saving of around 50 kW/hr by avoiding GRR losses. ➤Constant Speed resulting in Uniform fan flow, Stable process along with increased Mill throughput irrespective of variations in Grid frequency. ➤Power saving achieved after the installation of VFD is 0.35 kwh/ton of cement. ➤Total saving achieved per Annum is Rs 15.6 lacs. ➤Payback period is less than 2.5 years. ➤Low equipment as well as Spares cost as compared to Direct HT VFD.➤Lesser Maintenance as GRR is removed from circuit. ➤Higher accuracy of speed control as compared to GRR. ➤Higher Reliability of operation as compared to GRR. ➤12-Pulse Configuration reduced the Current Harmonics at the Primary side of the Input Transformer. ➤Have In-Built entire Motor protection parameters.➤Soft starting resulting in reduced mechanical stresses. ➤No abnormal Insulation stress. 		
Picture/ sketch/ drawing before modification (if available)	Picture/ sketch/ drawing after modification	
<p>NEWMETHODS & TECHNIQUES</p> <p>1. HI-LO-HI VFD FOR 550 KWSEPERATOR FAN</p> <p><u>BEFORE</u></p> 	<p>NEWMETHODS & TECHNIQUES</p> <p>- HI-LO-HI VFD FOR 550 KWSEPERATOR FAN</p> <p><u>AFTER</u></p> 	

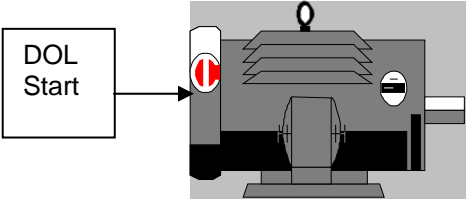
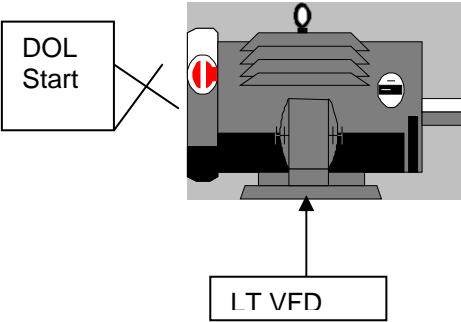
Agency that executed the project (with complete address and email): Birla Plus Cement Team					
Total investment, Rs.:31.2 Lacs			Year of implementation: 2006-2007		
First year energy cost savings, Rs.:15.6					
First year other savings, Rs.: NIL					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm ³	Oil (kL)	Other
Energy consumption before	3356130	NA	NA	NA	NA
Energy consumption after	2978400	NA	NA	NA	NA
Energy tariff, Rs/ kWh/ Ton/ Nm ³ / kL	4.13	NA	NA	NA	NA
... Company complete address: P.A.Nair (Sr.Vice President) ,Mobile-09814577737 Phone No.-09257257737,E-Mail-panair@adityabirla.com, Fax-(0164)2756316 Biirla Plus Cement (A Unit of Grasim Industries Ltd.) Post.Lehra Mohabbat ,Behind GHTP, Dist.Bathinda, Punjab				We authorise Bureau to use this information for dissemination	
				Signature	
				Date	
Contact person who could be contacted for more information:					

Energy Conservation Measure implemented in 2006-2007

ID to be filled by BEE	Title of the measure Installed VFD in for silo aeration blower	Sector PPC Cement
Year to be filled by BEE		Technology VFD L&T Make
<p>Description of the energy conservation measure:</p> <p><u>FLYASH SILO & CEMENT SILO EXTRACTION BLOWERS:</u></p> <p><u>BEFORE</u></p> <ul style="list-style-type: none"> •Roots Blowers run on continuous basis during plant operation. •Blow out of blower operated frequently with the Bin high level leading to wastage of power, wear and tear of Equipment. •Frequent Start/Stop Operation of blowers is not possible as it will lead to reduced life of motor insulation and more wear & tear in blowers <p><u>AFTER</u></p> <ul style="list-style-type: none"> •LT VFDs installed for silo extraction blowers. •Regulating Speed of above blowers helped in controlled extraction & flow of material from silo and feeding bin. •Helped in Maintaining requisite draft inside Flyash solid flow feeder. •Power saving achieved after installation of VFDs is 0.15 kWh/ton of cement. •Reduced maintenance cost of blowers. 		
Picture/ sketch/ drawing before modification <small>(if available)</small>	Picture/ sketch/ drawing after modification	
Before	After	
		
Agency that executed the project (with complete address and email): Birla Plus Cement Team		
Total investment, Rs.:3.15 Lakh	Year of implementation: 2006-2007	

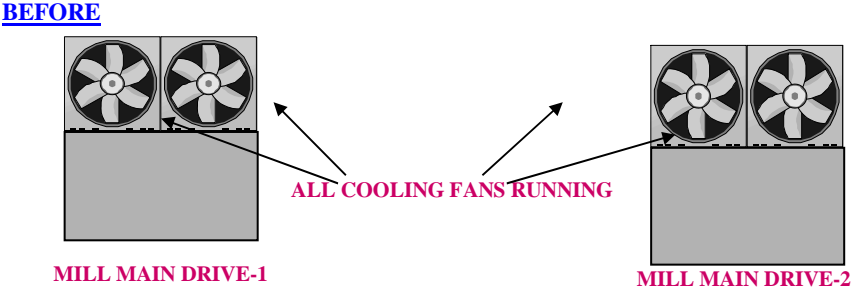
First year energy cost savings, Rs.: 768500					
First year other savings, Rs.: Nil					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm ³	Oil (kL)	Other
Energy consumption before	536500	NA	NA	NA	NA
Energy consumption after	350400	NA	NA	NA	NA
Energy tariff, Rs/ kWh/ Ton/ Nm ³ / kL ...	4.13	NA	NA	NA	NA
<p>Company complete address: P.A.Nair (Sr.Vice President) ,Mobile-09814577737 Phone No.-09257257737,E-Mail-panair@adityabirla.com, Fax-(0164)2756316 Biirla Plus Cement (A Unit of Grasim Industries Ltd.) Post.Lehra Mohabbat ,Behind GHTP, Dist.Bathinda, Punjab</p> <p>Contact person who could be contacted for more information:</p>				<p>We authorise Bureau to use this information for dissemination</p> <p>Signature</p> <p>Date</p>	

Energy Conservation Measure implemented in 2006-2007

ID to be filled by BEE	Title of the measure	Sector PPC Cement
Year to be filled by BEE	Installed VFD in for cooling tower fan	Technology VFD L&T Make
<p>Description of the energy conservation measure:</p> <p>BEFORE•Fan of high RPM needed frequent start/stop with respect to outlet water temperature, to control power consumption. This could lead to deterioration of winding insulation due to high starting current affecting useful operational life of motor.</p> <ul style="list-style-type: none"> •Failure of Motor bearing was observed. •Failure of coupling between motor and cooling tower gear box was observed due to high starting stresses. •Fear of Fatigue failure of gear box in due course of time. •Adjusting Blade angle of fan did not meet constant water temperature requirement due to wide variations in ambient temperatures. <p>AFTER•LT VFD Installed for Cooling tower fan</p> <ul style="list-style-type: none"> •Speed regulation (instead of Start-Stops) is provided with respect to water outlet temperature. •Reduced Overall Maintenance cost. •Power saving achieved is 0.03 Kwh/ton of cement. •Total savings achieved per annum is 1.4 lacs 		
Picture/ sketch/ drawing before modification (if available)		Picture/ sketch/ drawing after modification
<p style="text-align: center;">Before</p> 		<p style="text-align: center;">After</p> 
Agency that executed the project (with complete address and email): Birla Plus Cement Team		
Total investment, Rs.: 0.75Lakh		Year of implementation: 2006-2007

First year energy cost savings, Rs.: 140000					
First year other savings, Rs.: Nil					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm ³	Oil (kL)	Other
Energy consumption before	129903	NA	NA	NA	NA
Energy consumption after	96003	NA	NA	NA	NA
Energy tariff, Rs/ kWh/ Ton/ Nm ³ / kL ...	4.13	NA	NA	NA	NA
<p>Company complete address: : P.A.Nair (Sr.Vice President) ,Mobile-09814577737 Phone No.-09257257737,E-Mail-panair@adityabirla.com, Fax-(0164)2756316 Biirla Plus Cement (A Unit of Grasim Industries Ltd.) Post.Lehra Mohabbat ,Behind GHTP, Dist.Bathinda, Punjab</p> <p>Contact person who could be contacted for more information:</p>				<p>We authorise Bureau to use this information for dissemination</p> <p>Signature</p> <p>Date</p>	

Energy Conservation Measure implemented in 2006-2007

ID to be filled by BEE	Title of the measure Stop Two nos Cooling fan motor in Twin drive motor	Sector PPC Cement
Year to be filled by BEE		Technology Process Improvement.
<p>Description of the energy conservation measure:</p> <p>Problem : Power loss in running two cooling fans of Mill main Drive</p> <p>Observation:</p> <ul style="list-style-type: none"> ➤ Mill has a Twin Main Drive with Two nos Cooling fans each in parallel. ➤ Winding temperature of both the Main drives with both the cooling fans was 65-70degc. ➤ Trial taken by switching off one cooling fan each for both the drives and found the Winding temp Limits within the acceptable limits (80-82 degc) <p>Improvement done:</p> <ul style="list-style-type: none"> ➤ Outcome of the Brainstorming session to reduce Specific power consumption➤PLC Program modification done to start/stop one cooling fan each of both Main Drives. ➤ The cooling fan will start with winding temp. of 92 degC and will stop at 82 degC and only one cooling fan each of both main drives will run continuously. <p>Result:</p> <ul style="list-style-type: none"> ➤ Power saving achieved is 0.07 kwh/ton of cement. ➤ Total saving per annum achieved is Rs 3.4 Lacs. 		
<p>Picture/ sketch/ drawing before modification (if available)</p>		
<p><u>BEFORE</u></p>  <p>The diagram illustrates the state of two mill main drives before a modification. On the left is 'MILL MAIN DRIVE-1' and on the right is 'MILL MAIN DRIVE-2'. Each drive is represented by a grey rectangular box with two cooling fans mounted on top. All four fans are shown with motion lines, indicating they are all running. A central text label 'ALL COOLING FANS RUNNING' has four arrows pointing to each of the fans.</p>		

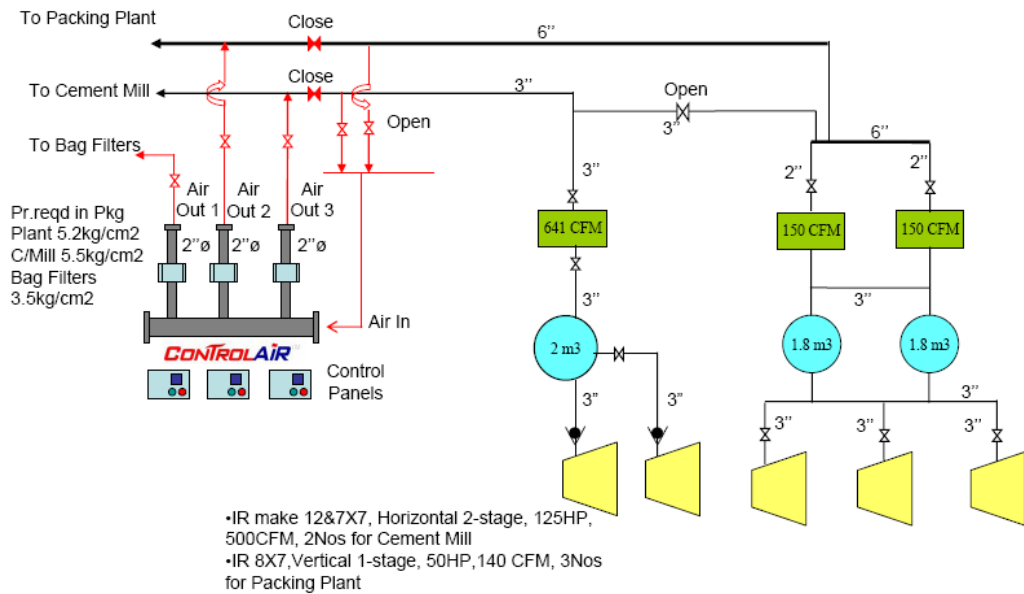
Energy Conservation Measure implemented in 2006-2007

ID to be filled by BEE	Title of the measure	Sector PPC Cement
Year to be filled by BEE	Installation of Control Air Optimizer in Compressed air.	Technology Process Improvement.
<p>Description of the energy conservation measure:</p> <p>We are Operating compressor with load and Unload Pressure 6 / 6.5 Kg/Cm² and Average plant pressure was 6.25Kg/Cm² .To reduce Electrical energy consumption we installed Godrej Control Air System-model-GE-10(A),which deliver a constant pressure optimum to our plant requirement .</p> <p><u>Advantages</u></p> <ol style="list-style-type: none"> 1.Saves Energy consumed by air compressors through reduction in artificial demand. 2.Isolates compressors from demand side peaks and trough. 3.Reduce load period of compressor. 		
Picture/ sketch/ drawing before modification (if available)		
<div style="text-align: right; color: red; font-weight: bold; font-size: 1.2em;">Godrej</div> <p style="text-align: center; font-weight: bold;">MAIN COMPRESSOR HOUSE</p> <p style="font-size: 0.8em;"> IR MAKE12&7X7, Horizontal 2stage 125HP, 500CFM IR 8X7, Vertical 1stage, 50HP, 140 CFM </p> <p style="font-weight: bold; border: 1px solid black; padding: 2px; display: inline-block;">Customer: BIRLA PLUS CEMENT, BATHINDA EXISTING SCHEMATIC PIPING OF COMPRESSED AIR-LINE</p> <p style="font-size: 0.8em;"> Symbols:- Compressor Valve Receiver Dryer NRV </p> <p style="text-align: right; font-size: 0.8em;">Page 1 of 4</p>		

Picture/ sketch/ drawing after modification



MAIN COMPRESSOR HOUSE



Customer: BIRLA PLUS CEMENT, BATHINDA PROPOSED SCHEMATIC PIPING OF COMPRESSED AIR-LINE

Symbols:- Compressor Valve Receiver Dryer NRV

Agency that executed the project (with complete address and email): **Godrej & Boyce Mfg Co Ltd , Electrical and Electronics Division, Pirojsha Nagar, Vikhroli, Mumbai –400079,India, Email- kcp@godrej.com**

Total investment, Rs.: **425000**

Year of implementation: **2006-2007**

First year energy cost savings, Rs.: **273300**

First year other savings, Rs.: **Nil**

On annual basis	kWh 000'	Coal (Tons)	Gas Nm ³	Oil (kL)	Other
Energy consumption before	679080	NA	NA	NA	NA
Energy consumption after	613380	NA	NA	NA	NA
Energy tariff, Rs/ kWh/ Ton/ Nm ³ / kL ...	4.13	NA	NA	NA	NA

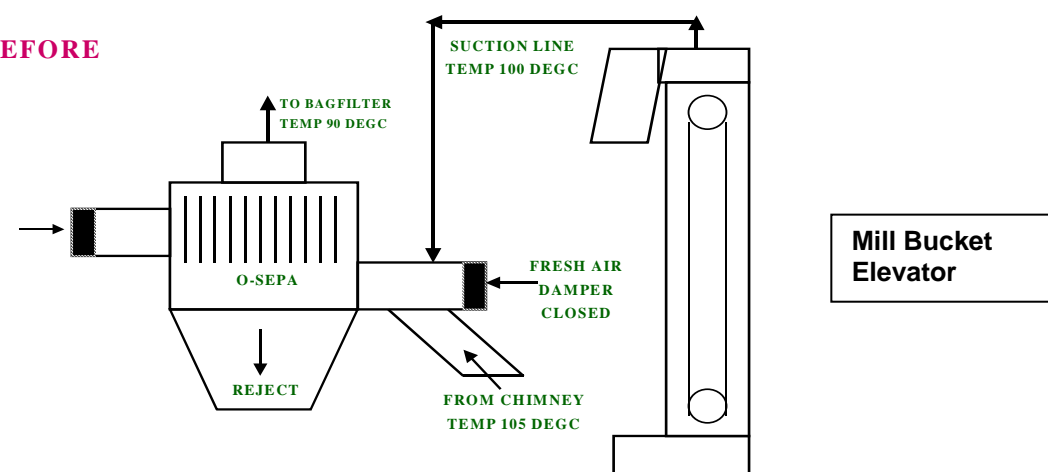
Company complete address: **P.A.Nair (Sr.Vice President) ,Mobile-09814577737 Phone No.- 09257257737,E-Mail- panair@adityabirla.com, Fax-(0164)2756316**
Biirla Plus Cement (A Unit of Grasim Industries Ltd.)
Post.Lehra Mohabbat ,Behind GHTP, Dist.Bathinda,
Punjab
 Contact person who could be contacted for more information:

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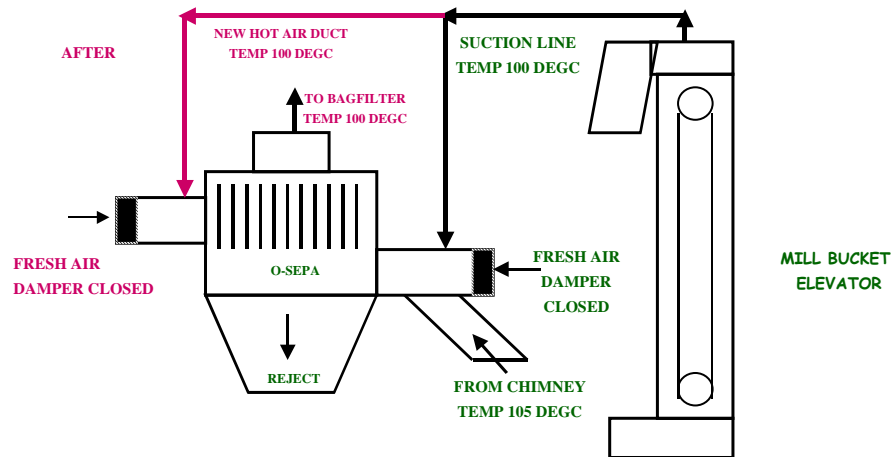
Signature

Date

Energy Conservation Measure implemented in 2006-2007

ID to be filled by BEE	Title of the measure	Sector PPC Cement
Year to be filled by BEE	To reduce power consumption fresh air damper sealed and Hot air at around 100C temperature connected from mill outlet bucket elevator (721 BE1) top by a pipe to O-sepa separator near fresh air inlet damper.	Technology Process Improvement.
<p>Description of the energy conservation measure:</p> <p>Problem : Product Bag Filter DP at higher side and Fan power losses.</p> <p>Observation:</p> <ul style="list-style-type: none"> ➤O-Sepa Separator fresh air inlet damper was at around 60 % open and cool ambient air was causing drop in inlet temperature by approximately 10 deg C. ➤Bag filter DP running high and Fan kW also high, due to low temp at fan inlet. ➤Bags getting chocked by moisture deposition at low temp of Bag Filter. ➤Partial chocking of bags was causing the DP to run at higher side. ➤Due to higher DP, Fan was taking high power. <p>Improvement done:</p> <ul style="list-style-type: none"> ➤Outcome of the Brainstorming session to reduce Specific power consumption➤Hot air at around 100°C temperature connected from mill outlet bucket elevator (721 BE1) top by a pipe to O-sepa separator near fresh air inlet damper. ➤Fresh air damper sealed completely <p>Result:</p> <ul style="list-style-type: none"> ➤Low temperature ambient air ingress stopped and bag filter outlet temperature increased by around 10°C from earlier level. ➤After increasing the temp, bag filter DP was reduced from 140mmwg to 110mmwg and bags were not getting choked. ➤Less compressed air requirement for purging the bags and to maintain the DP. ➤After this modification fan running at around 320 kW from earlier 340 kW and fan flow increased at low fan RPM. ➤Power saving achieved is 0.15 kwh/ton of cement. ➤Total saving per annum is Rs 7.5 lacs 		
Picture/ sketch/ drawing before modification		
<div style="display: flex; align-items: center; justify-content: space-between;"> <div style="color: red; font-weight: bold; margin-right: 20px;">BEFORE</div>  </div>		

Picture/ sketch/ drawing after modification



Agency that executed the project (with complete address and email): **Birla Plus Cement Team**

Total investment, Rs.: **25000**

Year of implementation: **2006-2007**

First year energy cost savings, Rs.: **750000**

First year other savings, Rs.: **NII**

On annual basis	kWh 000'	Coal (Tons)	Gas Nm ³	Oil (kL)	Other
Energy consumption before	2984800	NA	NA	NA	NA
Energy consumption after	2803200	NA	NA	NA	NA
Energy tariff, Rs/ kWh/ Ton/ Nm ³ / kL ...	4.13	NA	NA	NA	NA

Company complete address: **P.A.Nair (Sr.Vice President)**
,Mobile-09814577737 Phone No.-09257257737,
E-Mail- panair@adityabirla.com,
Fax-(0164)2756316
Biirla Plus Cement (A Unit of Grasim Industries Ltd.)
Post.Lehra Mohabbat ,Behind GHTP, Dist.Bathinda,
Punjab

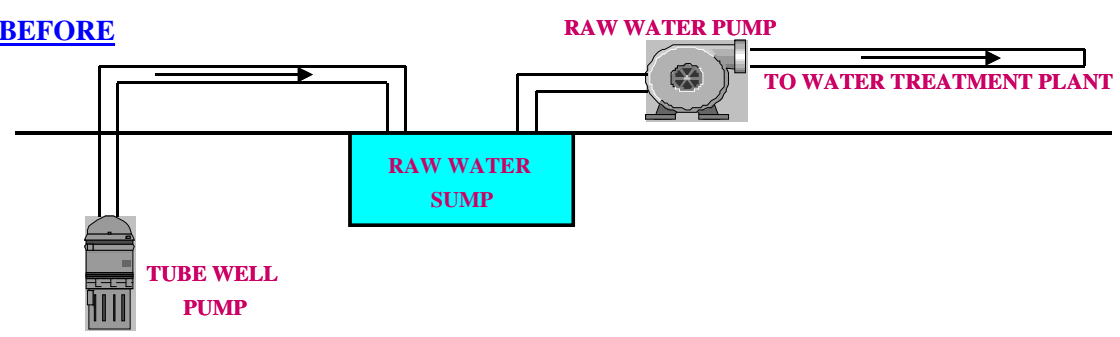
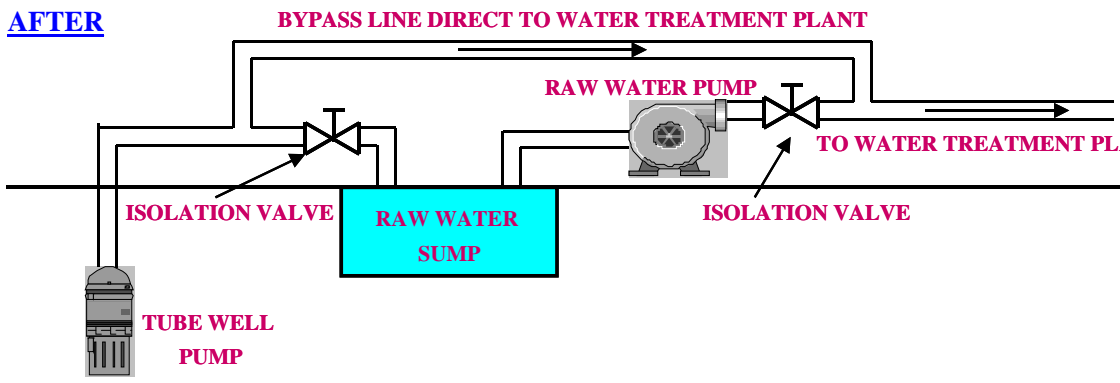
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Signature

Date

Contact person who could be contacted for more information:

Energy Conservation Measure implemented in 2006-2007

ID to be filled by BEE	Title of the measure	Sector ... PPC Cement
Year to be filled by BEE	Stop Two nos. water pump in water treatment plant	Technology : Process Improvement
<p>Description of the energy conservation measure:</p> <p>Problem : Power loss in supplying Raw water with Two pumps to Water Treatment plant. Observation:</p> <ul style="list-style-type: none"> ➤Two water pumps were operating to supply raw water from Tube-well to the Water Treatment Plant, thus consuming power of two pumps ➤Tube-well pump (Motor kW: 9.3) was lifting water from Tube-well to a Raw water sump located near Tube-well.. ➤Raw Water Pump (Motor kW: 5.5) was used to shift this water from the Raw water sump to Water Treatment Plant <p>Improvement done:</p> <ul style="list-style-type: none"> ➤Out come of Brain storming session to reduce specific Power consumption➤Laid pipeline to join Tubewell pump discharge to main supply line for plant to provide water directly from Tubewell Pump to the plant and isolated the Raw water pump from circuit by providing 2 Nos gate valves.Results:The tube well pump is now directly supplying water to the WTP and meeting the plant requirement effectively.Total saving achieved per annum is Rs 0.25 Lacs. 		
<p>Picture/ sketch/ drawing before and after modification (if available)</p>		
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><u>BEFORE</u></p>  </div> <div style="text-align: center;"> <p><u>AFTER</u></p>  </div> </div>		
<p>Agency that executed the project (with complete address and email):Brila Plus Cement Team</p>		

Total investment, Rs.: 10000		Year of implementation: 2006-2007			
First year energy cost savings, Rs.: 25000					
First year other savings, Rs.: Nil					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm ³	Oil (kL)	Other
Energy consumption before	84893	NA	NA	NA	NA
Energy consumption after	78840	NA	NA	NA	NA
Energy tariff, Rs/ kWh/ Ton/ Nm ³ / kL ...	4.13	NA	NA	NA	NA
Company complete address: : P.A.Nair (Sr.Vice President) ,Mobile-09814577737 Phone No.-09257257737, E-Mail- panair@adityabirla.com, Fax-(0164)2756316 Biirla Plus Cement (A Unit of Grasim Industries Ltd.) Post.Lehra Mohabbat ,Behind GHTP, Dist.Bathinda, Punjab Contact person who could be contacted for more information:				We authorise Bureau to use this information for dissemination Signature Date	