


## Energy Conservation Measure implemented in 2006-2007


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

ID to be filled by BEE	Title of the measure		Sector : Paper & Pulp		
Year to be filled by BEE	<b>Optimization of hot air flow through blowers at Laminating machine by installing VFDs</b>		Technology: Variable Frequency Drive		
<p><b>Description of the energy conservation measure:</b>                  2 nos. hot air supply fans were operated at laminating machine with manual damper operation for air flow control. Both the fans were operated at full speed of 1500 rpm. And the power consumption was around 54 kW &amp; 45 kW respectively.                  To eliminate the damper throttling, it was decided to install VFD on both the fans. Trials were conducted for speed requirement at different operating conditions after installing VFDs on both the blowers. The speed reduced to 1200-1300 rpm at desired production rate. A better control over the airflow was achieved with improved quality of product. The power consumption reduced by total 33 kW. Higher power savings could be achieved during small deckle of paper.</p>					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
					
VFD installed at Blower of Laminating Machine					
Agency that executed the project (with complete address and email): Internal Sources					
Total investment, Rs.: 4.0 Lakhs			Year of implementation: 2006-07		
First year energy cost savings, Rs.: 6.32 Lakhs					
First year other savings, Rs.: --					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	831.6				
Energy consumption after	554.4				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	2.28				
Company complete address: <b>Ballarpur Industries Limited, Unit: Shree Gopal,                  Yamuna Nagar – 135 001, Haryana                  Phone: (+)91-1732-251600, Fax: (+)91-1732-250352.</b>				We authorise Bureau to use this information for dissemination	
Contact person who could be contacted for more information: <b>Mr. D. P. Dhiman                  General Manager (Engineering)</b>				Signature  Date	

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ID to be filled by BEE	Title of the measure	Sector : Paper & Pulp			
Year to be filled by BEE	<b>Installation of 4 Nos. Energy Efficient aerators in ETP</b>	Technology: Energy Efficient aerator			
<p><b>Description of the energy conservation measure:</b>                  The Effluent treatment plant was having conventional design surface aerators. It was proposed to install new aerators with improved design to reduce power consumption. A study was carried out for the same &amp; 4 Nos. Aerators were replaced. Power consumption for those aerators reduced from 24 kW to 15 kW.</p>					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
			 <p style="text-align: center;">Energy Efficient Aerators at Installed ETP</p>		
Agency that executed the project (with complete address and email): Internal Sources					
Total investment, Rs.: 8.0 Lakhs			Year of implementation: 2006-07		
First year energy cost savings, Rs.: 6.13 Lakhs					
First year other savings, Rs.: --					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	201.6				
Energy consumption after	126.0				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	2.28				
Company complete address: <b>Ballarpur Industries Limited, Unit: Shree Gopal,                  Yamuna Nagar – 135 001, Haryana                  Phone: (+)91-1732-251600, Fax: (+)91-1732-250352.</b>				We authorise Bureau to use this information for dissemination  Signature  Date	
Contact person who could be contacted for more information: <b>Mr. D. P. Dhiman                  General Manager (Engineering)</b>					

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ID to be filled by BEE	Title of the measure	Sector : Paper & Pulp			
Year to be filled by BEE	<b>Interlocking of Broke chest agitator &amp; pump at PM-4</b>	Technology: Interlocking			
<p><b>Description of the energy conservation measure:</b>                  Agitators are continuously operated to ensure that there is no settling of pulp in the chest. However, the pumps for those chests are operated on the basis of requirement to transfer the pulp to another chest. It was observed that for half of the time in a day, we can stop running of the agitator when there is no transfer of pulp. For this, an interlocking arrangement was provided, so that the agitator will start up before 5 minutes of the pump, every time whenever required. As a result, the agitator running hours were reduced from 24 hrs. a day to 12 hrs. a day.</p>					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
			 <p style="text-align: center;">Interlocked pump &amp; Agitator</p>		
Agency that executed the project (with complete address and email): Internal Sources					
Total investment, Rs.: 0.20 Lakhs			Year of implementation: 2006-07		
First year energy cost savings, Rs.: 0.67 Lakhs					
First year other savings, Rs.: --					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	0.59				
Energy consumption after	0.29				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	2.28				
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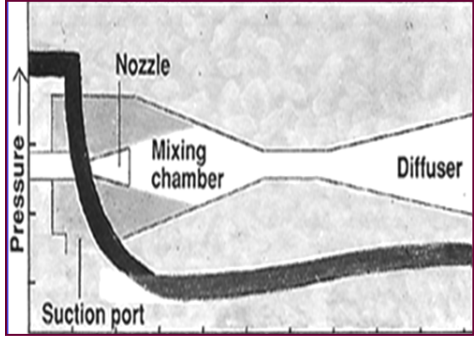
**Energy Conservation Measure implemented in 2006-2007**  
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ID to be filled by BEE	Title of the measure		Sector : Paper & Pulp		
Year to be filled by BEE	<b>Installation of VFD on couch pit &amp; seal pit pumps of PM 4</b>		Technology: Variable Frequency Drive		
<b>Description of the energy conservation measure:</b> Couch pit & seal pit pumps are operated continuously irrespective of the level in the pit. It is observed that the liquid level varies according to paper breaks & running condition of the paper machine. To optimize the running of these pumps it was decided to install VFDs with a feedback from level sensor in the pit. A considerable saving of 13 kW (9 kW for couch pit pump & 4 kW for seal pit pump) was achieved.					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
			 <p align="center">VFD at Seal pit Pump</p>		
Agency that executed the project (with complete address and email): Internal Sources					
Total investment, Rs.: 4.50 Lakhs			Year of implementation: 2006-07		
First year energy cost savings, Rs.: 2.50 Lakhs					
First year other savings, Rs.: --					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	386.4				
Energy consumption after	277.2				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	2.28				
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ID to be filled by BEE	Title of the measure	Sector : Paper & Pulp			
Year to be filled by BEE	<b>Installation of Thermo compressor based steam condensate recovery system to reduce steam consumption at PM-5</b>	Technology: Thermo-compressor			
<b>Description of the energy conservation measure:</b> Paper Machine 5 steam & condensate system was modified to take maximum advantage of the cascading effect at paper machine and to reduce steam consumption by boosting steam pressure with thermo compressor. Earlier a study was carried out by M/s. Forbes Marshall for the system optimization & modifications were done according to the outputs of the study. It resulted in reduction in steam consumption by 0.6 tonne / tonne of paper & better process control with a saving of 886 tonne of coal annually.					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
			 <p style="text-align: center;">Thermo-compressor schematic Diagram</p>		
Agency that executed the project (with complete address and email): Internal Sources					
Total investment, Rs.: 80.0 Lakhs			Year of implementation: 2006-07		
First year energy cost savings, Rs.: 30.0Lakhs					
First year other savings, Rs.: --					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before		5746			
Energy consumption after		4884			
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...		3463.4			
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ID to be filled by BEE	Title of the measure		Sector : Paper & Pulp		
Year to be filled by BEE	<b>Compressed air system efficiency enhancement by installation of screw compressor</b>		Technology: Screw Compressor		
<b>Description of the energy conservation measure:</b> Machine house 1 was supplied with compressed air generated from 2 nos. reciprocating air compressors. As, the specific power consumption for screw compressors is low as compared to reciprocating compressors, it was decided to install new screw compressors. The power consumption for the system reduced by 40 kW with the new screw compressors & minor modification in piping, while keeping one reciprocating compressor off.					
Annual energy saving : 3.36 Lakhs kWh Annual monetary saving : 7.66 Rs. Lakhs Investment made : 12.00 Rs. Lakh					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
			 Screw Compressor		
Agency that executed the project (with complete address and email): Internal Sources					
Total investment, Rs.: 12.0 Lakhs			Year of implementation: 2006-07		
First year energy cost savings, Rs.: 7.66 Lakhs					
First year other savings, Rs.: --					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	1386				
Energy consumption after	1050				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	2.88				
Company complete address: <b>Ballarpur Industries Limited, Unit: Shree Gopal, Yamuna Nagar – 135 001, Haryana Phone: (+)91-1732-251600, Fax: (+)91-1732-250352.</b>				We authorise Bureau to use this information for dissemination	
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