


## Energy Conservation Measure implemented in 2007-2008

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



ID to be filled by BEE	<p style="text-align: center;">Title of the measure</p> <p>Optimisation of power consumption of compressed air system by interconnecting 8 Nos. of air compressors and controlling by programmable logic controller.</p>	Sector : <b>Automobile</b>
Year to be filled by BEE		Technology .....
<p><b>Description of the energy conservation measure:</b></p> <p>Study of compressed air requirement (pressure and CFM) for various types / groups of machines was conducted. This study was conducted using flow meters and pressure transducers at different nodes. From study we concluded:</p> <ol style="list-style-type: none"> <li>1) 40% machines require compressed air at higher pressure (5.9 Kg / Sq. cm; 1200 CFM) and remaining machines can be operated at low pressures (5.2 Kg / Sq. cm; 1400 CFM).</li> <li>2) Capacity of dedicated compressors was not fully utilised, the compressors were running unloaded, for considerable time.</li> <li>3) No. of compressors running could be reduced by automating the operation of compressors as per requirements.</li> <li>4) Power consumption saving potential is around 10%.</li> </ol> <p>To optimize total system and avoid wastage of power and having 8 compressors available with us we worked out implementation of following PLC based system.</p> <ul style="list-style-type: none"> <li>• High pressure (HP) line and low pressure (LP) line to be separately laid to cater to respective group of machines.</li> <li>• For HP requirements, 2 Nos. dedicated compressors are to be allocated (CP2HN2 1200 CFM and GA55 300 CFM)</li> <li>• For LP requirements, 4 Nos. dedicated compressors are to be allocated (BTDRM 1000 CFM, GA30 200 CFM, CP-1 and CP-2 300 CFM each)</li> <li>• For TRIM requirements, 2 Nos. dedicated compressors are to be allocated (GA160 1000 CFM and GA75 500 CFM) to cater to HP as well as LP side for compensating variations.</li> <li>• All 8 compressors are to be interconnected for controlling from one place using PLC system.</li> </ul> <p>System is implemented in Mar-07                  Investment: Rs 17.00 lacs.                  Power saving actualized in 07-08 is 4.65 lacs. KWH i.e. Rs 20.94 lacs.</p>		
<b>Picture/ sketch/ drawing before modification</b> (if available)	<b>Picture/ sketch/ drawing after modification</b>	
<p>In earlier system, compressed air was fed at 5.9 kg/cm<sup>2</sup> using 3 Nos.1000 CFM compressors.</p> <p>3 Nos. compressors (300 CFM each) were connected to dedicated machines.</p> <p>Remaining two compressors were standby.</p>		

Agency that executed the project (with complete address and email): <a href="#">PLC supply and programming by M/s Optimair Bangalore and execution by our team.</a>					
Total investment, Rs.: <a href="#">17.00 lacs</a>			Year of implementation: <a href="#">Implementation completed in Mar 2007 ; Savings actualized Apr-07 onwards</a>		
First year energy cost savings, Rs: <a href="#">20.94 lacs</a>					
First year other savings, Rs:					
On annual basis	kWh	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	<a href="#">3095279.7</a>				
Energy consumption after	<a href="#">2629824.1</a>				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	<a href="#">4.5</a>				
Company complete address: <a href="#">Ashok Leyland Ltd, Plot No 1 M I D C Area, Gadegaon, Dist Bhandara 441 904 (M.S.)</a>				We authorise Bureau to use this information for dissemination	
Contact person who could be contacted for more information: <a href="#">Mr S B Joshi - Senior Manager - Plant Engg. Ashok Leyland Ltd, Plot No 1 MIDC Area ; Gadegaon, Dist : Bhandara 441 904 (M.S.) Tel No. 07184-274430 / 36 ; Fax No 07184-274431 Email ID : <a href="mailto:sbj.alb@ashokleyland.com">sbj.alb@ashokleyland.com</a></a>				Signature	
				Date	

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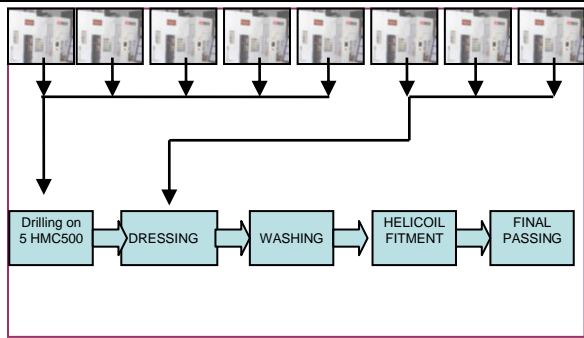
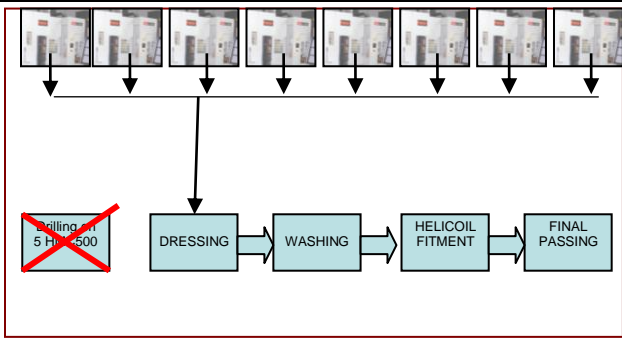
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ID to be filled by BEE	Title of the measure <b>Installation of Energy Management Software.</b>	Sector : <b>Automobile</b>			
Year to be filled by BEE	Technology .....				
<p>Description of the energy conservation measure:                  In order to make Energy management system on-line and system dependant all energy meters are inter-connected to dedicated computer using Energy Management Software.                  Since installation of energy management software in Mar-08, we could derive following benefits:</p> <ol style="list-style-type: none"> <li>1) Availability of total and area wise energy data in the form of reports for analysis.</li> <li>2) Maintaining area wise power factor always above 0.99 to improve voltage regulation and obtain incentive from MSEDCL.</li> <li>3) Restricting Max. Demand to 4700 KVA against contract Demand of 5000 KVA.</li> </ol> <p>Reports and history trends of various electrical parameters like Current, Voltage, Frequency, Power factor, Max. demand are available for analysis and further improvements.</p>					
<b>Picture/ sketch/ drawing before modification</b> (if available)		<b>Picture/ sketch/ drawing after modification</b>			
In earlier system, energy meter reading only (KWH consumption) was noted and logged in manually.		<div style="display: flex; justify-content: space-around;">   </div> <p>With software, parameters like Current, Voltage, Frequency, Power factor, Max. demand etc are available on real time basis as well as in daily report form.</p>			
Agency that executed the project (with complete address and email): <b>M/S Conzerv Ltd. Bangalore</b>					
Total investment, Rs.: <b>244000 /-</b>			Year of implementation: <b>07-08</b>		
First year energy cost savings, Rs:					
First year other savings, Rs:					
On annual basis	kWh 000'	Coal (Ton s)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	--				
Energy consumption after	--				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	--				
Company complete address:				We authorize Bureau to use this information for dissemination  Signature  Date	
Ashok Leyland Ltd, Plot No 1 M I D C Area, Gadegaon, Dist Bhandara 441 904 (M.S.)					
Contact person who could be contacted for more information:					
Mr. S B Joshi - Senior Manager - Plant Engg. Ashok Leyland Ltd, Plot No 1 MIDC Area ; Gadegaon, Dist : Bhandara 441 904 (M.S.) Tel No. 07184-274430 / 36 ; Fax No 07184-274431 Email ID : sbj.alb@ashokleyland.com					

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ID to be filled by BEE	<b>Title of the measure</b>	Sector : <b>Automobile</b>			
Year to be filled by BEE	Energy conservation by using energy efficient tooling in Casing Line.	Technology .....			
<p>Description of the energy conservation measure:                  Through implementation of energy efficient tooling on high speed Mazak machining centers (8Nos), use of five nos. of less energy efficient HMC machining centers could be eliminated. Optimised cutting parameters reduced cycle time per component from 31.45 min to 21.73 min i.e. 31 %. Thus, power consumption per component is reduced from 5.55 KWH to 3.83 KWH.                  One time investment : Rs 8.61 Lacs                  Payback period: - 16 months (Considering energy saving only).                  In addition to saving in power consumption, productivity also increased.</p>					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
					
<p><b>Earlier Process:</b> All 8 Mazak and 5 HMC machining centers were in use.</p>			<p><b>Optimised Process:</b> Use of 5 Nos HMC machining centers is eliminated and operation is distributed on 8 Nos Mazak machining centres by optimising cutting parameter, and use of energy efficient tooling.</p>		
Agency that executed the project (with complete address and email): <b>In-house</b>					
Total investment, Rs.: <b>861000</b>			Year of implementation: <b>07-08</b>		
First year energy cost savings, Rs: <b>648000</b>					
First year other savings, Rs: <b>1612000</b>					
On annual basis	kWh 000'	Coal (Ton s)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	<b>524.857</b>				
Energy consumption after	<b>362.643</b>				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	<b>4.5</b>				
Company complete address:				We authorize Bureau to use this information for dissemination	
Ashok Leyland Ltd, Plot No 1 MIDC Area, Gadegaon, Dist Bhandara 441 904 (M.S.)				Signature	
Contact person who could be contacted for more information:				Date	
Mr. S B Joshi - Senior Manager - Plant Engg. Ashok Leyland Ltd, Plot No 1 MIDC Area ; Gadegaon, Dist : Bhandara 441 904 (M.S.) Tel No. 07184-274430 / 36 ; Fax No 07184-274431 Email ID : sbj.alb@ashokleyland.com					



## Energy Conservation Measure implemented in 2007-2008

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ID to be filled by BEE	Title of the measure Optimisation of power consumption by controlling cooling tower fan operation using temperature controller. ( 3 Nos)	Sector : <b>Automobile</b>			
Year to be filled by BEE		Technology .....			
Description of the energy conservation measure: Earlier System: Cooling tower fan was in operation all the time when cooling tower is ON. New System: Cooling tower fan is controlled using temperature controller. With this modification, fan is getting switched OFF when required temperature is attained. Thus, without disturbing process requirement, excess running of cooling tower fan is avoided and energy saving is achieved. Temperature controller is introduced for 3 Nos cooling towers in Heat Treatment shop. Investment : Rs 21,000/- Payback period : 6 months					
<b>Picture/ sketch/ drawing before modification</b> (if available)		<b>Picture/ sketch/ drawing after modification</b>			
Cooling tower fan was remaining ON continuously, before introduction of temperature controlled operation of fans.		 <p style="text-align: center;">Cooling tower in Heat treatment shop is being controlled thru' temperature controller</p>			
Agency that executed the project (with complete address and email): <b>In-house</b>					
Total investment, Rs.: <b>21000</b>		Year of implementation: <b>07-08</b>			
First year energy cost savings, Rs: <b>47740</b>					
First year other savings, Rs:					
On annual basis	kWh 000'	Coal (Ton s)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	35.640				
Energy consumption after	25.920				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	4.5				
Company complete address: Ashok Leyland Ltd, Plot No 1 M I D C Area, Gadegaon, Dist Bhandara 441 904 (M.S.)				We authorize Bureau to use this information for dissemination  Signature  Date	
Contact person who could be contacted for more information: Mr. S B Joshi - Senior Manager - Plant Engg. Ashok Leyland Ltd, Plot No 1 MIDC Area ; Gadegaon, Dist : Bhandara 441 904 (M.S.) Tel No. 07184-274430 / 36 ; Fax No 07184-274431 Email ID : sbj.alb@ashokleyland.com					

## 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 <b>Optimization of capacity of electrical motors to suit the load i.e. conversion of Delta connected motors to Star connection in case of under utilized motors.</b>	Sector : <b>Automobile</b>			
Year to be filled by BEE		Technology .....			
<p>Description of the energy conservation measure:</p> <p>During electrical motor load survey of machines, it was noticed that, 8 nos hydraulic motors (50 HP) of vertical broaching machines and 4 nos motors of hydraulic presses (5 HP) are under loaded. In both the cases, original motors were in operation in delta connection. Vertical broach motor was controlled by automatic Star-Delta starter and hydraulic press motor by DOL starter. Considering max. 40-50% loading of motors during machining operation, all motors terminal connections changed over to star from deta. With this change over, line current reduced and without affecting motor performance like, temperature rise, machining operation found ok.</p> <p>Investment : Nil</p>					
<b>Picture/ sketch/ drawing before modification</b> (if available)		<b>Picture/ sketch/ drawing after modification</b>			
<p>8 Nos vertical broach machines were running with delta connected 50 HP motor using automatic star-delta starter.</p> <p>4 Nos hydraulic presses having 5 HP motors delta connected running with DOL starter.</p>		 50 HP Motor for vertical broaching machine	 5 HP motor for hydraulic press.		
Agency that executed the project (with complete address and email): <b>In-house</b>					
Total investment, Rs.: <b>Nil</b>			Year of implementation: <b>Vertical broach m/c:06-07</b> <b>Hydraulic press:07-08</b>		
First year energy cost savings, Rs: <b>108000 (Considering only hydraulic press)</b>					
First year other savings, Rs:					
On annual basis	kWh 000'	Coal (Ton s)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	<b>42.240</b>				
Energy consumption after	<b>18.240</b>				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	<b>4.5</b>				
Company complete address:				We authorize Bureau to use this information for dissemination	
<div style="border: 1px solid black; padding: 5px;">                 Ashok Leyland Ltd,                  Plot No 1 M I D C Area, Gadegaon, Dist Bhandara                  441 904 (M.S.)             </div>				Signature	
Contact person who could be contacted for more information:				Date	
<div style="border: 1px solid black; padding: 5px;">                 Mr. S B Joshi - Senior Manager - Plant Engg.                  Ashok Leyland Ltd, Plot No 1 MIDC Area ; Gadegaon,                  Dist : Bhandara 441 904 (M.S.)                  Tel No. 07184-274430 / 36 ; Fax No 07184-274431                  Email ID : sbj.alb@ashokleyland.com             </div>					

## Energy Conservation Measure implemented in 2007-2008

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ID to be filled by BEE	Title of the measure <b>Energy conservation by optimizing cutting parameters in machine tools (Cooper Hobbing M/c)</b>	Sector : <b>Automobile</b>			
Year to be filled by BEE		Technology .....			
Description of the energy conservation measure: <b>Earlier System:</b> In input shaft line, cycle time for spline hobbing operation was 6.76 minutes on Cooper hobbing machine. Energy consumption per component was 1.73 KWH. <b>New system:</b> Cutting parameters (increase in cutting speed & feed) optimized such that, cycle time for same operation on same machine is reduced to 6.25 minutes and per component power consumption reduced to 1.6 KWH. Parameter optimisation was done with introduction of special coating tools which have more life between resharping. Thus increase in cost of recoating is nullified by enhanced life of tool. With this modification, there is no adverse impact on machine performance and component quality. Productivity improvement is additional benefit.					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
			 <p style="text-align: center;"><b>P254 Cooper hobbing m/c in Shaft soft line</b></p>		
Agency that executed the project (with complete address and email): <b>In-house</b>					
Total investment, Rs.: <b>630000</b>			Year of implementation: <b>07-08</b>		
First year energy cost savings, Rs: <b>26438</b>					
First year other savings, Rs: <b>120000 towards tool recoating.</b>					
On annual basis	kWh 000'	Coal (Ton s)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	<b>77.8752</b>				
Energy consumption after	<b>72.000</b>				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	<b>4.5</b>				
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ID to be filled by BEE	Title of the measure Energy conservation by modification of Quench oil cooling system in 02. No BGL furnace.	Sector : <b>Automobile</b>			
Year to be filled by BEE		Technology .....			
<p>Description of the energy conservation measure: In Continuous Gas Carburizing Furnace (CGCF) material at 830 °C. temperature, is to be quenched in the quench oil chamber for attaining required material properties. As a result, quench oil temperature increases. For cooling this oil, heat exchanger is used, through which oil flows continuously using oil circulation pump. Water is being circulated for heat dissipation from quench oil which was controlled by pneumatic valve and temperature controller combination. In normal condition small quantity of water flows through the heat exchanger but when the oil temperature rises then pneumatic valve operates and large amount of water flows. Thus oil temperature reduces.</p> <p>Existing system observations:-</p> <ol style="list-style-type: none"> <li>1. Oil circulation pump was continuously running whether oil temperature is low / high leading to wastage of power.</li> <li>2. Water flow through heat exchanger was varying as per the temperature controller setting thru' pneumatic valve operation.</li> </ol> <p>Modified system:</p> <ol style="list-style-type: none"> <li>1. Removal of pneumatic valve &amp; direct water flow in heat exchanger, thus, electro-pneumatic operation is eliminated.</li> <li>2. Instead of switching pneumatic valve through temperature controller, oil circulation pump itself is being controlled, thus, on attaining set temperature, oil circulation pump stops and thereby energy saving is achieved.</li> </ol> <p>Investment : Rs 800 (only for pipe line correction &amp; control wiring modification)</p>					
<b>Picture/ sketch/ drawing before modification</b> (if available)	<b>Picture/ sketch/ drawing after modification</b>				
Agency that executed the project (with complete address and email): <b>In-house</b>					
Total investment, Rs.: <b>800</b>	Year of implementation: <b>07-08</b>				
First year energy cost savings, Rs: <b>145745</b>					
First year other savings, Rs:					
On annual basis	kWh 000'	Coal (Ton s)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before	35.489				
Energy consumption after	3.102				
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	4.5				
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ID to be filled by BEE	Title of the measure Energy conservation by auto switch off the Hydraulic unit motor during idle time (during Lunch/dinner/tea break /shift change) in Heat Treatment Shop	Sector : <b>Automobile</b>
Year to be filled by BEE		Technology .....
Description of the energy conservation measure: 04 Nos. Gleason press quench machines are used to press quench the synchro components to prevent the deformation of physical dimension. After press quenching, component is to be fixed on the bunk, which is pressed on the hydraulic press. Hydraulic motor of press quench & hydraulic press (both) were running continuously, even in idle condition, which was leading to wastage of power. Electrical circuit is modified such that, both hydraulic pumps should automatically switched off during idle period. This modification is done using electronic timer & control circuit modification. Investment: Rs 15,000/-. Payback period : 18 days.		
Picture/ sketch/ drawing before modification (if available)		Picture/ sketch/ drawing after modification
Agency that executed the project (with complete address and email): <b>In-house</b>		
Total investment, Rs.: <b>15000</b>		Year of implementation: <b>07-08</b>
First year energy cost savings, Rs: <b>321116</b>		
First year other savings, Rs:		
On annual basis	kWh 000'	Coal (Ton s)
Energy consumption before	<b>302.227</b>	
Energy consumption after	<b>230.868</b>	
Energy tariff, Rs/ kWh/ Ton/ Nm <sup>3</sup> / kL ...	<b>4.5</b>	
Company complete address: <div style="border: 1px solid black; padding: 5px; margin-top: 5px;">                     Ashok Leyland Ltd,                      Plot No 1 M I D C Area, Gadegaon, Dist Bhandara                      441 904 (M.S.)                 </div>		We authorize Bureau to use this information for dissemination  Signature  Date
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