

Garware Polyester Limited

Naigaon, P.O.Waluj, Aurangabad-Pune Road, Aurangabad

Unit Profile

Garware Polyester Limited is the pioneer in the field of polyester film. The Company has developed different types of films and are exported to various countries. The company has excellent infrastructure and committed to quality, energy and environment.

The company has highly knowledgeable, skilled and experienced technical human resource employed in the field of product development, manufacturing, energy, environment etc.

The company has set up strong Energy Conservation Cell, which focuses on energy improvement. The company recognizes the importance of energy conservation, not only to improve the bottom line but also to help the environment and society at large.

Company has commissioned Poly-plant for production of 4500 MT of chips per month in Aug 2006.

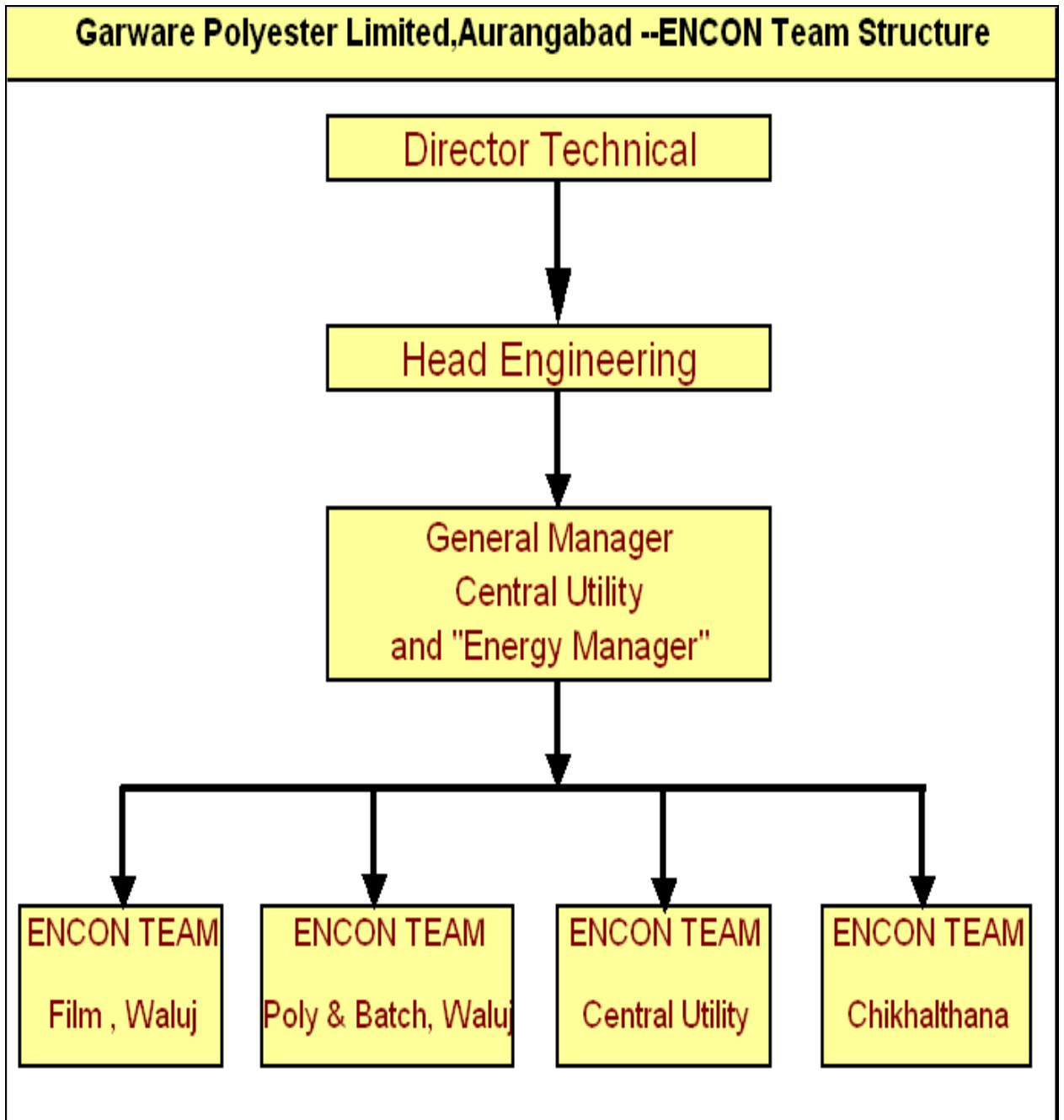
Company has saved more than Rs. 400 lacs by maintaining unity power factor incentive benefit in the monthly electricity bill since April 2004 to till date. Company gives thrust on identification & improvement in under performance equipments and processes.

Garware Polyester Limited, Waluj Plant



The Company has converted majority of electrical heating applications to Thermic fluid heating/ steam heating. The details of few projects are appearing in the list of ENCON Projects for last three years. Company has implemented Encon projects to reduce Furnace Oil consumption remarkably during last 3 years and more efforts are being put by installing briquette fired Boiler which will amount to aprox 5000 CER.

Organization Chart



GARWARE POLYESTER LIMITED

**Naigaon,
Aurangabad-Pune Road,
Waluj, Aurangabad**

Date: 01/09/2007

ENERGY MANAGEMENT POLICY

Garware Polyester Limited plays vital role for producing variety of products with high level of quality standard and prioritizes energy value for the final product.

Our mission is:

- ❖ To produce products with minimum use of energy.**
- ❖ Use of cleaner technologies wherever possible and ensuring efficient and uninterrupted supply of utilities to plants.**

This, we plan by following ways.

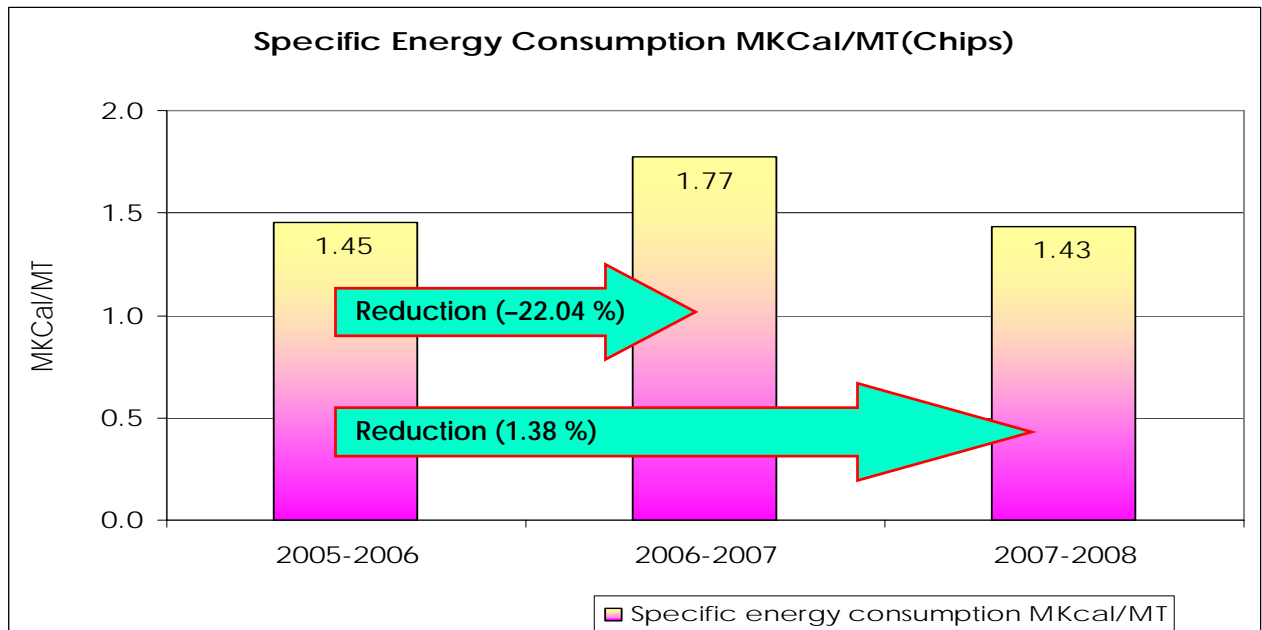
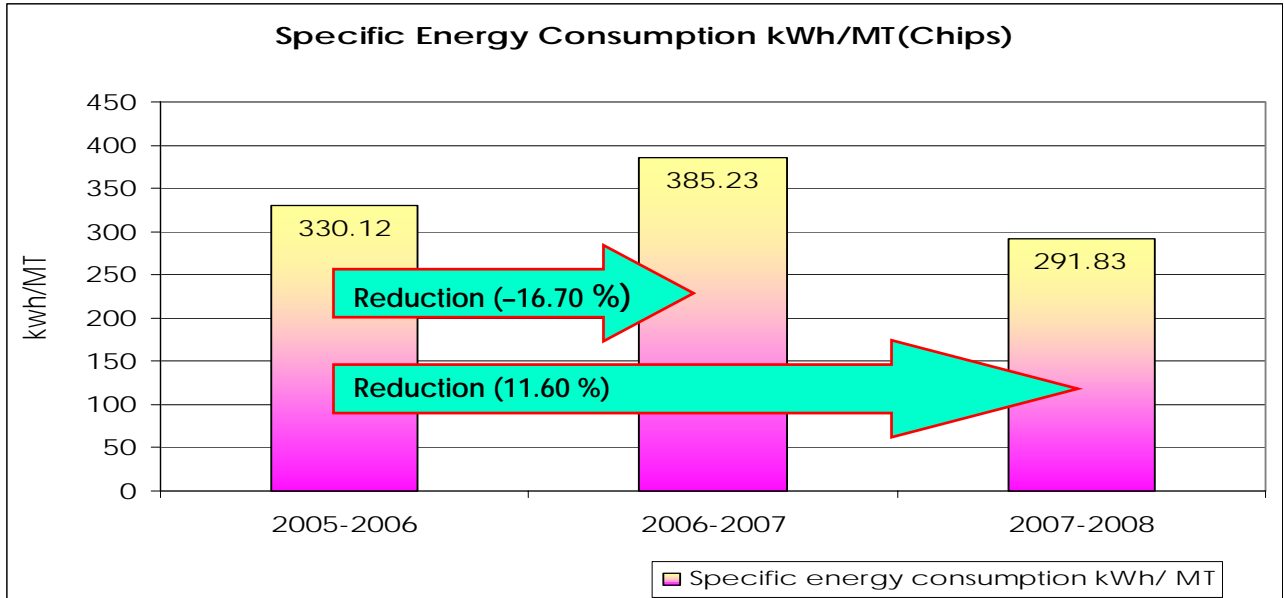
- ❖ Efficient energy generation, utilization and distribution.**
- ❖ Continuous evaluation of performance of plant equipments and processes to achieve most efficient, high standard quality products.**
- ❖ Targeting the under-performance equipments and processes for improvement.**
- ❖ Monitoring and targeting the specific energy consumption to achieve best possible as compared to past performance.**
- ❖ Use of internal and external expertise to achieve targeted performance.**
- ❖ Train employees and implement ideas of energy conservation thorough small ENCON teams.**

**M.S.Adsul
Director - Technical**

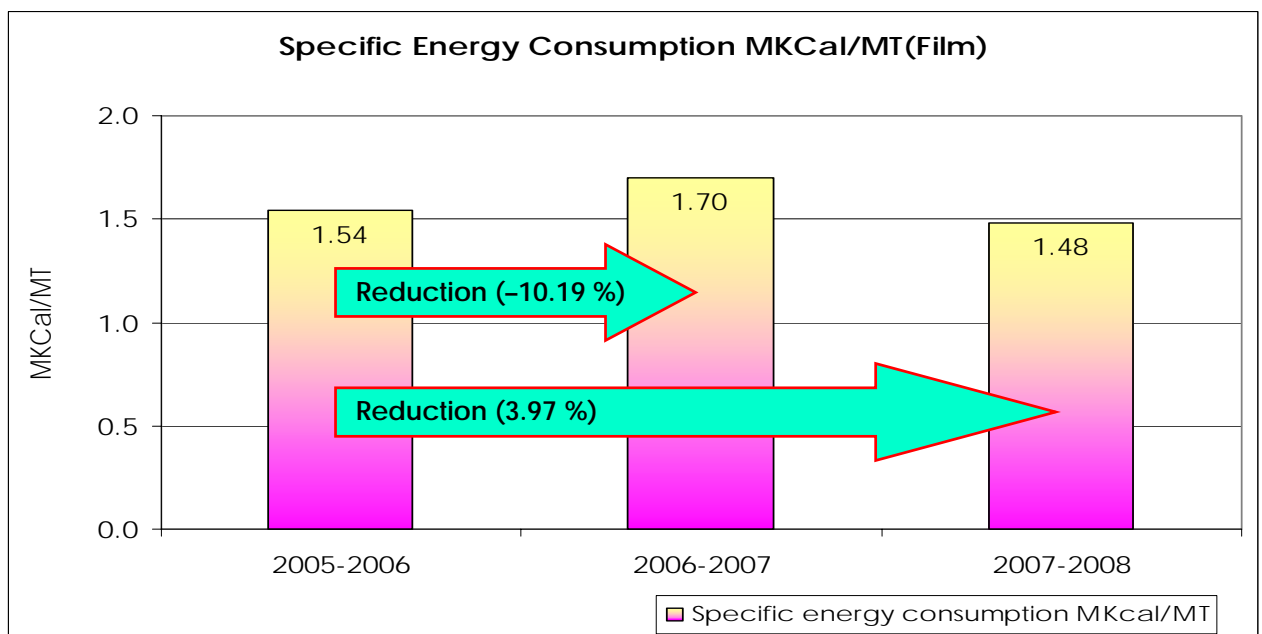
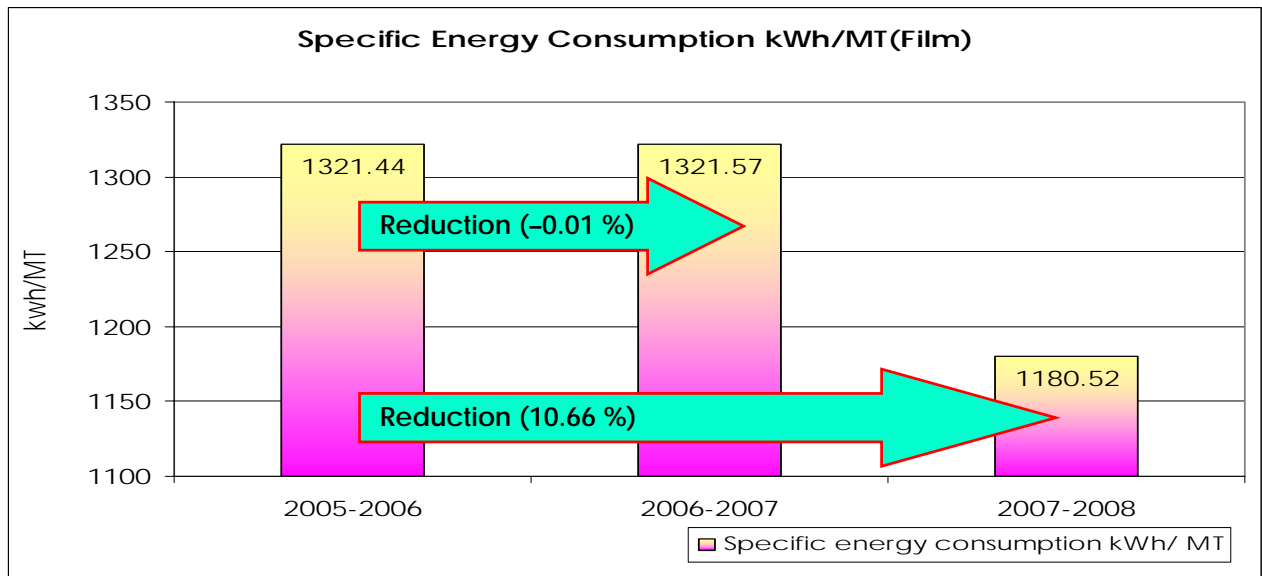
Energy Conservation Achievements

Year of Commissioning of the projects	Project description	Achievement of energy savings per year basis					Total savings in (Rs. Lakhs)	Investment incurred on the project (Rs. Lakhs)
		Electricity	Fuels*			Total (fuel) in Mkal		
		(Lakhs kWh)	Coal (tonnes)	F.Oil (KL)	Gas (lakhs m ³)			
2005-2006	24 Nos.	34.66	—	62.45	—	498.35	114.75	9.65
	Sub Total	34.66	—	62.45	—	498.35	114.75	9.65
2006-2007	17 Nos.	21.15	—	202.65	—	1617.15	109.58	30.75
	Sub Total	21.15	—	202.65	—	1617.15	109.58	30.75
2007-2008	08 Nos.	-3.48	—	2196.24	—	17525.95	393.70	65.70
	Sub Total	-3.48	—	2196.24	—	17525.95	393.70	65.70
	Grant total of 3 years	52.33	—	2461.34	—	19641.45	618.03	106.10

SPECIFIC ENERGY CONSUMPTION FOR CHIPS PRODUCTION



SPECIFIC ENERGY CONSUMPTION FOR FILM PRODUCTION



ENCON PROJECTS (2006-2007)

Year of Commissioning of the projects	S. No.	Project description	Achievement of energy savings per year basis				Investment incurred on the project (Rs. Lakhs)
			Electricity	F.Oil	Others	Total savings in	
			(Lakhs (kWh))	(KL)		(Rs. Lakhs)	
2006-2007	1	Condenser cooling water pump replaced with high efficient pump.Film Plant, CHK	0.49	0	0	1.78	0.30
	2	Increasing efficiency of heater thereby reduction in F.Oil. Film Plant,CHK..	0	96	0	15.34	0.35
	3	Optimisation of Brine system provided for line-2 DX Unit.Film Plant,CHK..	0.67	0	0	2.45	4.50
	4	Stoppage of holding tank agitator by 20 Hrs./ Day.Film Plant,CHK..	0.78	0	0	2.83	0.00
	5	Optimisation of AHU -3 & 4 water pump with adequate size pump.Film Plant,Waluj.	0.45	0	0	1.66	0.30
	6	Replacement of Boiler feed water pump with high efficient pumps & less flow. CU,Waluj.	1.28	0	0	4.67	2.05
	7	Replacement of VAHP cooling water pump with energy efficient pump.CU waluj.	0.31	0	0	1.12	0.30
	8	Stopping of FO line heating steam to tankfarm. CU, Waluj.	0	106.66	0	17.04	0.00
	9	Stopping of CKD compressor & commissioning of CP plant Compressor. CU, Waluj.	9.58	0	0	34.97	14.00
	10	Reducing power requirement for polyester chips material conveying by using LPC instead of DPC at feeding Silo No. 4 Erema.Film Plant, Waluj.	0.33	0	0	1.21	1.10
	11	Optimisation of air quantity & use of energy efficient blower for Line-4 Pull roll, Winder & Slitter.Film Plant, Waluj	1.22	0	0	4.45	4.00
	12	Optimisation of air quantity & use of energy efficient blower for Line-4 MDO & Chill roll.Film Plant, Waluj.	1.32	0	0	4.82	3.00
	13	Conversion of electrical heating to steam heating for hot water & Alkali bath at filter room. Film Plant, Waluj.	0.69	0	0	2.52	0.05
	14	Line-2 MDO secondary pump RPM reduced to 1500 from 3000 RPM. Film Plant,CHK..	0.23	0	0	0.83	0.10
	15	Line-2 Chilled water pump to replaced with high efficient pump. Film Plant, CHK..	0.97	0	0	3.54	0.45
	16	Raw water pumps and water treatment plants operation optimization. CU waluj.	1.87	0	0	6.83	0.25
	17	1.25 MVA transformer isolated, Film Plant, CHK.	0.96	0	0	3.52	0.00
		Sub Total	21.15	202.66	0.00	109.58	30.75

ENCON PROJECTS (2007-2008)

Year of Commissioning of the projects	S. No.	Project description	Achievement of energy savings per year basis				Investment incurred on the project (Rs. Lakhs)
			Electricity	F.Oil	Others	Total savings in (Rs. Lakhs)	
			(Lakhs (kWh))	(KL)			
2007-2008	1	Provision of VFD for VAHP Cooling tower Fan.Central Utility, Waluj.	0.52	0	0	1.81	0.20
	2	Conversion of VAHP m/c.from single effect to double effect. Central Utility, Waluj.	0	1123.12	0	207.55	60.00
	3	Commissioning of 40TR & 60TR VCC Chiller m/c. C.U. Waluj.	-10.58	313.60	0	20.91	4.00
	4	Conversion of Boiler from furnace oil to Bio-coal firing.Central utility, Waluj.	0.00	231.52	0	42.78	0.20
	5	Provision of cooling water to poly plant cutter instead of chilled water. Poly Plant, Waluj	0	528	0	97.57	0.50
	6	Optimisation of ejector cooling tower. Poly Plant, Waluj.	5.04	0	0	17.64	0.50
	7	Palletizing return water pump replaced by high efficiency pump. Film Plant, CHK.	0.35	0	0	1.23	0.30
	8	K.G.Khosla compressor operation stopped by taking portable compressor in line. Film Plant, CHK.	1.20	0	0	4.20	0.00
		Sub Total	-3.48	2196.24	0.00	393.70	65.70

Waluj Plant Encon Projects- 2007-2008

Title: Provision of VFD for VAHP cooling tower fan. Central Utility, Waluj.

Investment: 0.20 Lacs.

Saving: 1.81 Lacs / Annum

Picture/ sketch/ drawing before modification
(if available)

Picture/ sketch/ drawing after modification



VFD for VAHP cooling tower

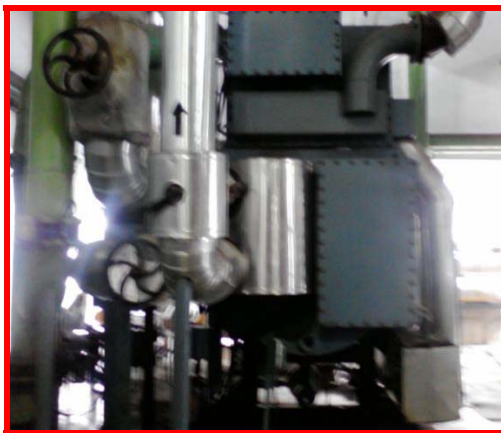
Title: Conversion of VAHP m/c. from single effect to double effect. C. Utility, Waluj.

Investment: 60.00 Lacs.

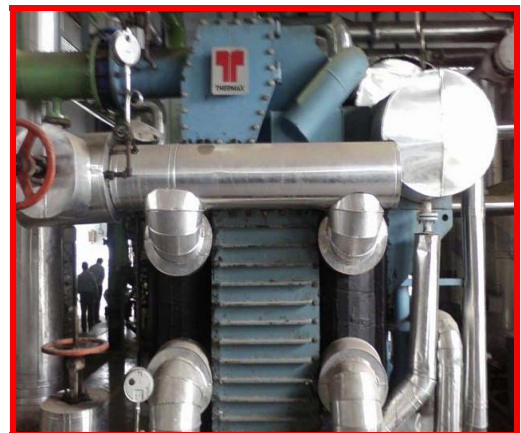
Saving: 207.55 Lacs / Annum

Picture/ sketch/ drawing before modification
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Single Effect VAHP m/c.



Double Effect VAHP m/c.

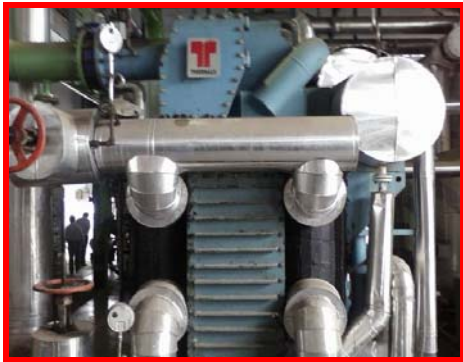
Waluj Plant Encon Projects- 2007-2008

Title: Commissioning of 40TR & 100TR VCC Chiller m/c. Central Utility, Waluj.

Investment: 4.0 Lacs.

Saving: 20.91 Lacs / Annum

Picture/ sketch/ drawing before modification
(if available)



VAHP machine

Picture/ sketch/ drawing after modification



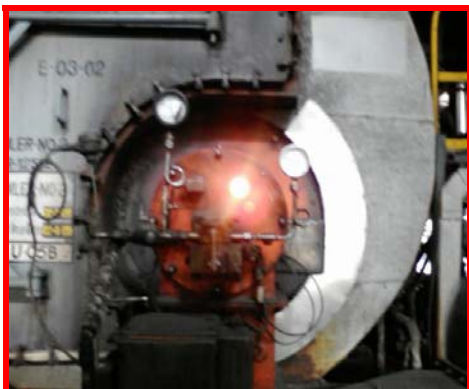
VCC m/c. 40TR & 100TR

Title: Conversion of Boiler from furnace oil to Bio-coal firing. Central Utility, Waluj.

Investment: 0.20 Lacs.

Saving: 42.78 Lacs / Annum

Picture/ sketch/ drawing before modification
(if available)



Furnace Oil fired Boiler

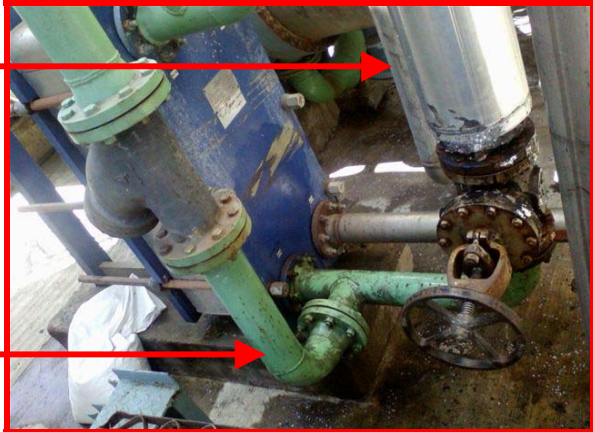
Picture/ sketch/ drawing after modification




Bio-Coal fired Boiler

Waluj Plant Encon Projects- 2007-2008

Title: Provision of cooling water to poly plant cutter instead of chilled water Poly Plant, Waluj.
Investment: 0.50 Lacs.
Saving: 97.57 Lacs / Annum

Picture/ sketch/ drawing before modification (if available)	Picture/ sketch/ drawing after modification
<p align="center"> Poly cutter chilled water supply <hr style="border-top: 1px dashed black;"/> Poly cutter cooling water supply </p>	 <p align="center">Poly cutter with cooling water & chilled water provision.</p>

Title: Optimization of ejector cooling tower. Poly Plant, Waluj
Investment: 0.50 Lacs.
Saving: 17.64 Lacs / Annum

Picture/ sketch/ drawing before modification (if available)	Picture/ sketch/ drawing after modification
<p align="center"> Only one pump is in </p>	 <p align="center">Ejector Cooling tower</p>

Chikhalthana Plant Encon Projects- 2006-2007

Title: condenser Cooling Water Pump Replacement by Energy Efficient Pump, Chikhalthana.
 Investment: 0.30 Lacs.
 Saving: 1.78 Lacs / Annum

Picture/ sketch/ drawing before modification
 (if available)



Old inefficient pump, Chikhalthana Plant

Picture/ sketch/ drawing after modification



New High efficiency pump, Chikhalthana Plant

Title: Heater efficiency improvement, Chikhalthana.
 Investment: 0.35 Lacs.
 Saving: 15.34 Lacs / Annum

Picture/ sketch/ drawing before modification
 (if available)

Picture/ sketch/ drawing after modification



Thermic Fluid Heater – TP 15,
 Chikhalthana Plant

Title: Optimisation of Brine system, Chikhalthana.

Investment: 4.5 Lacs.

Saving: 2.44 Lacs / Annum

Picture/ sketch/ drawing before modification
(if available)

Picture/ sketch/ drawing after modification



Brine system of 5 TR capacity, Chikhalthana Plant

Title: Condenser Cooling Water Pump Replacement, Chikalhthana.

Investment : 0.30 Lacs.

Saving : 1.78 Lacs / Annum

Picture/ sketch/ drawing before modification
(if available)

Picture/ sketch/ drawing after modification



Title : Stoppage of ETP Tank Agitator, Chikhalthana.
Investment : NIL.
Saving : 2.83 Lacs / Annum

Picture/ sketch/ drawing before modification
(if available)

Picture/ sketch/ drawing after modification



Chikhalthana Plant ETP incoming effluent tank agitator.

Waluj Plant Encon Projects- 2006-2007

Title : Optimisation of AHU, Water Pump with Adequate Size pump, Film Plant, Waluj

Investment : 0.30 Lacs.

Saving : 1.66 Lacs / Annum

Picture/ sketch/ drawing before modification
(if available)



Picture/ sketch/ drawing after modification



Title : Replacement of Boiler Feed Pump, Central Utility, Waluj

Investment : 2.05 Lacs.

Saving : 4.68 Lacs / Annum

Picture/ sketch/ drawing before modification
(if available)



Picture/ sketch/ drawing after modification



Title : Replacement of VAHP cooling water Pump, Central Utility, Waluj
 Investment : 0.30 Lacs.
Saving : 1.12 Lacs / Annum

Picture/ sketch/ drawing before modification
 (if available)



Picture/ sketch/ drawing after modification



Title : Stopping of Furnace Oil Line Heating Steam, Central Utility, Waluj
 Investment : NIL.
Saving : 17.04 Lacs / Annum

Picture/ sketch/ drawing before modification
 (if available)



Steam supply ON.

Picture/ sketch/ drawing after modification



Steam supply to FO tank coil & jacketed line stopped.

Title : Stopping of HT Screw Compressor & Commissioning of LT Reciprocating Compressor, Central Utility, Waluj
Investment : 14.00 Lacs.
Saving : 100.77 Lacs / Annum

Picture/ sketch/ drawing before modification
 (if available)



HT screw compressor capacity 5000NM3/Hr

Picture/ sketch/ drawing after modification



2 Nos. of LT reciprocating compressor of lower capacity 600NM3/Hr. were installed

Title : Reduction in Power for Polyester Chips Material Conveying Film Plant, Waluj
Investment : 1.10 Lacs.
Saving : 1.21 Lacs / Annum

Picture/ sketch/ drawing before modification
 (if available)



Picture/ sketch/ drawing after modification

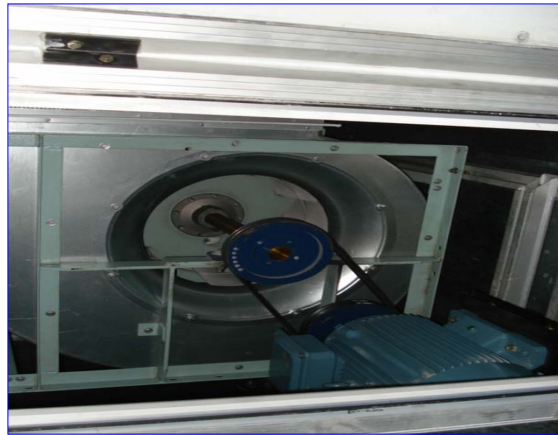


Title : Optimisation of Air Quantity and use of energy efficient blower for MDO & Chill Roll, Film Line 4, Waluj
Investment : 4.00 Lacs.
Saving : 4.45 Lacs / Annum

Picture/ sketch/ drawing before modification
 (if available)



Picture/ sketch/ drawing after modification



Title : Optimisation of Air Quantity and use of energy efficient blower for Pull Roll, Winder & Slitter in Film Line 4 , Waluj
Investment : 3.00 Lacs.
Saving : 4.82 Lacs / Annum

Picture/ sketch/ drawing before modification
 (if available)



Picture/ sketch/ drawing after modification

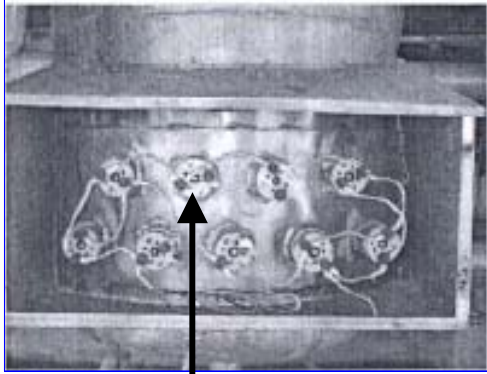


Total investment, Rs.: 3.00 Lacs

Year of implementation: Aug-2006

Title : Conversion of Electrical Heating to Steam Heating, Film Plant, Waluj
Investment : 0.05 Lacs.
Saving : 2.52 Lacs / Annum

Picture/ sketch/ drawing before modification
(if available)



ELECTRICAL HEATING.

Picture/ sketch/ drawing after modification



STEAM HEATING

ENERGY CONSERVATION CELL – FUTURE PLANS AND STRATEGIES

- Detailed external energy audit by NPC /MEDA / Equivalent.
- So far we have been looking at ENCON through medium - small investments / no investments. In future we shall look at ENCON project with attractive paybacks requiring medium to large investments.
- We shall try and collect benchmark figures for energy from Domestic as well International players in similar products.
- We shall cultivate energy efficiency culture right down to workmen level through
 - Trainings.
 - Competitions.
- We are already promoting various suggestion schemes, employee awarding and it shall be focused and improved upon.
- To study the Energy Conservation abstracts of highly energy efficient Organisations through their balance sheets.

Environment and Safety-

Company is committed to environment and safety of its employees. Every plant has its own safety organization and one safety committee for all plants. Mock drills, people audits, safety audits are conducted periodically as per schedule and unsafe conditions, acts are rectified timely. Safety & EMS committee meetings are held every month, which is chaired by Director of the company. Incidents, accidents, near misses, people audits are discussed in meeting and corrective, preventive actions are implemented to avoid the recurrence of the incident and accident.

Water and effluent-

Pollution parameters are discussed and corrective, preventive actions are implemented in case of requirement. Effluent reduction, water consumption reduction activities are taken up regularly and company has achieved approx 43.72% water consumption reduction during last year.

Air-

Stack, ambient air pollution parameters are monitored regularly through MOEF approved agency. Company has planned briquette fired boiler commissioning to reduce Sulphur dioxide emission through boiler stack.

Solid waste-

Company has taken membership for disposal of hazardous waste and identified hazardous waste is disposed off to MPCB approved site.

Company has following achievements in safety management system in last 3 years.

Safety Awards Received at State & National Levels:					
National Level – (a) From National Safety Council of India, Mumbai & (b) DGFASLI Govt. of India, Ministry of Labor & Employment, New Delhi.					
State Level – From Maharashtra Chapter of NSC, Mumbai.					
Sr. No.	Awards Title	Organized by	Year	Winner Category	Plant
1	Suraksha Puraskar Award – 2005	NSC	2005	Suraksha Puraskar (3 rd)	DMT Plant, Waluj
2	National Safety Awards – 2005	DGFASLI	2005	Runner for Scheme V & VI	DMT Plant, Waluj
3	Maharashtra Safety Awards – 2005	NSC - MC	2005	Certificate of Merit	DMT Plant, Wlj. & CP Plant Chk.
4	National Safety Awards – 2006	NSC	2006	Certificate of Merit	CP Plant Chk.
5	National Safety Awards – 2007	DGFASLI	2008	Runner for Scheme III	Film Plant, Waluj
6	Maharashtra Safety Awards – 2007	NSC - MC	2008	Plaque & Certificate of Merit	Film Plant Chk & Chips plant Waluj.

SAFETY POLICY

Garware Polyester Ltd.

SAFETY, HEALTH AND ENVIRONMENT POLICY

Garware Polyester Ltd. (mentioned as "The Company" in this statement elsewhere) believes in good Health & Safety of its employees and the conservation of environment, equally important as other primary objectives.

It is the policy of The Company to take utmost care of the Health and Safety of its employees and of other persons (including Contractors) working in its Plant and give due regard to the conservation of the environment. This objective is well reflected in our Safety Procedures / Guidelines as stated in our Safety Manuals.

The Safety Measures / Procedures are designed to prevent accidents and damage to health and environment. We believe that it is the responsibility of all employees to follow the Safety Procedures.

Training, information and communication are essential elements in achieving Safety. The company organizes training, which is a continuous activity. We also provide channels of communications at every level in the Organization (Management Safety Committee, Departmental Safety Committee, Zonal Head System, etc.).

All employees are equally responsible for their own Safety & Health, and that of others. Their attitude towards Safety shall be a factor in determining their career advancement.

We have developed system to report all injuries, accidents and incidents endangering human being and environment. These are thoroughly investigated and precautionary measures are implemented to avoid recurrence. Various Safety Audits including Procedural Compliance, Risk Analysis Studies etc. form important tools in maintaining high Health, Safety and Environment Standards in our Organization.

We keep pace with the Technological Advances and update our information w.r.t. Safety, Health and Environment.

Housekeeping is given equal importance to maintain workplace clean and tidy. This is an essential requirement for Safe and Healthy working.

I firmly believe that this policy and important points mentioned above are of equal benefit to the individual employees and the company.

Date : January 01, 2004



S. B. Garware

Chairman & Managing Director