

First Prize

Textile

INDIAN RAYON AND INDUSTRIES LIMITED
Rayon Division, Veraval (Gujarat)

Unit Profile

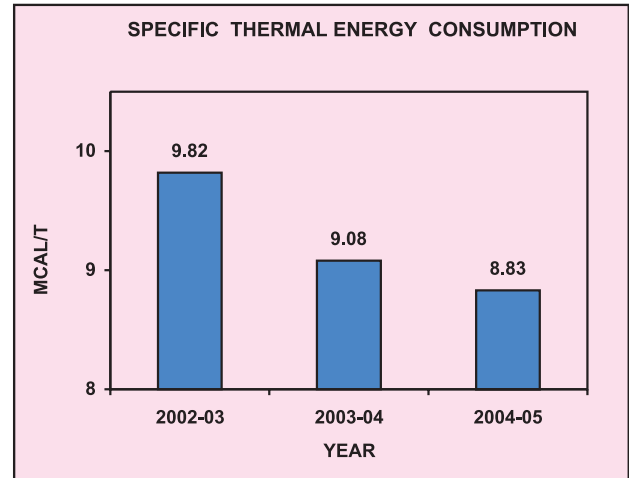
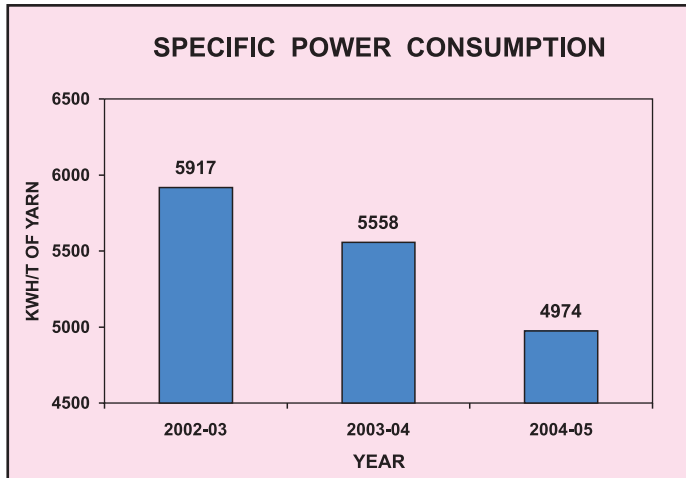
Indian Rayon & Industries Limited (IRIL) is an acknowledged market leader of VISCOSE FILAMENT YARN business. The Rayon division is one of the 9 divisions of Indian Rayon, located in Veraval Gujarat. The main product of Rayon division is the Viscose Filament Yarn apart from chemicals like SULPHURIC ACID, CARBON DISULPHIDE which are consumed in house and SODIUM SULPHATE, which is a by product. The total Production capacity is 45.0 TPD of Yarn, comprising 40 TPD pot spun yarn (PSY) & 5.0 TPD Continuous Spun Yarn (CSY). During the year 2004-2005, 16420 MT of yarn was produced with the capacity utilization of 102.63 %. The Veraval unit's annual sale turnover was Rs. 352 crores in the same year.



Energy Consumption

With the implementation of various energy conservation measures as ongoing practice, there is steady decline of specific energy consumption. Last three years specific energy consumption figures are shown below, which depicts continual reduction in energy consumption over last two years due to plant's sustained efforts in it with the implementation of various energy conservation measures and ideas to increase efficiency of equipments.

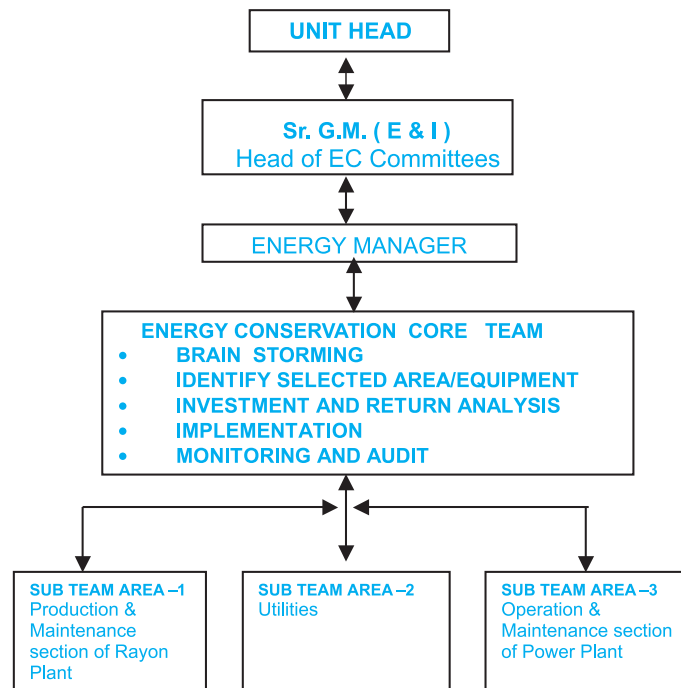
DESCRIPTION	UNIT	2002-03	2003-04	2004-05
Electrical Energy	KWH/T	5917	5558	4974
Thermal Energy	M Kcl/T	9.82	9.08	8.83
Total Manufacturing Cost	Rs. lakhs	19985	20735	24987
Total Energy Bill	Rs. lakhs	4299	4354	5095
Energy as %age of Total Cost of Production	%	21.5	21.0	20.39



Energy Conservation Commitment, Policy and Set up

IRIL visualized importance of energy conservation way back in 1990. Since then the plant has been involved in continuous improvement & energy conservation. The plant Core team led by unit head & headed by Sr.GM (E&I) constitutes 11 nos. of subcommittees in the plant. Subcommittee consist 2 to 4 members from different areas. All the team meet periodically for review & implementation of new identified energy saving schemes. At Indian Rayon & Industries Limited, energy cost accounts 20% of production cost and the unit gives utmost importance to energy conservation

ENERGY CONSERVATION TEAM STRUCTURE





INDIAN RAYON AND INDUSTRIES LIMITED
(RAYON DIVISION)
VERAVAL



ENERGY MANAGEMENT POLICY

Indian Rayon and Industries Limited, Veraval is committed to demonstrate excellence in Energy Management Performance on a continual basis. To achieve this, we are committed for -

- Monitoring and Control of consumption of Energy through effective Energy management System and periodic energy audits.
- Continuous Upgradation of process with energy efficient & eco-friendly technology to optimize the energy cost.
- Promoting & Propagating Energy Awareness among all the employees.
- Bench marking our performance with the best and endeavoring to be ahead in the world.

(K.C. Jhanwar)
EXECUTIVE PRESIDENT

Energy Conservation Achievements

During the period 2002 - 2005, the unit implemented 91 energy saving ideas generated through periodic brain storming sessions. Annual savings of Rs.787.38 lakhs was achieved with an investment of Rs. 509 lakhs with payback period of approx. six months only. It has resulted in percentage reduction of 15.94 % in electrical energy and 10.08% in thermal energy during last 3 years shown below.

YEAR	PRODUCT	KWH/TONNE OVER 2002- 03	%REDUCTION TONNE	MKCAL/ OVER 2002-03	%REDUCTION
2002-03	Viscose filament Yarn	5917	-	9.82	-
2003-04	Viscose filament Yarn	5558	6.07	9.08	7.54
2004-05	Viscose filament Yarn	4974	15.94	8.83	10.08

Major projects implemented for Energy conservation during 2004-05

1. Energy Saving By replacement of old & inefficient TG sets by energy efficient TG Set



Plant has stopped 3 Nos TG sets which were very old and inefficient by installing one no. 2.5 MW energy efficient TG Set. Specific steam consumption of old TG sets was around 12.8 KG/Kwh and with new TG set it is 10.5 Kg/Kwh.

Investment:Rs.325.00 lakh
Saving: Rs. 192.72 lakh

2. Installation of Energy Management System

The plant has installed computer based energy management system with around 350 Nos of high accuracy (class 0.5) energy meters with necessary software to monitor equipment wise, dept. wise and feeder wise power consumption on line as well as to get historical trends Investment Rs.25.00 lakh

3. Energy Saving by installation of PLC system for auto loading / unloading of instrument air compressor

Plant has installed PLC for automatic loading / unloading on inst. Air compressor (40 HP) in Engine room dept. for power saving .

Investment: Rs. 1.88 Lakh

Saving / Yr :Rs. 3.52 Lakh



4. Rain water harvesting in residential colonies

Plant has implemented rain water harvesting system for water conservation by recharging the wells and bore wells in residential colonies as well as in the near 53 villages in Veraval Taluka.



5. Installation of VFDs on Cooling water pumps.

Plant has installed VFDs on two out of three pumps of cooling water pumps to supply water as per the loading on double effect Vapour Absorption Machine in engine room dept. which operates in close loop as per the flow requirement.

Investment:Rs.9.00 Lakh

Saving: Rs. 10.28 Lakh



6. Installation of specially designed lighting transformer in 16.5 MW CPP

Plant has replaced 3 nos x 40 KVA high voltage & high losses lighting transformers by 1 NO. 250 KVA, 415 Volts / 380 volts low loss lighting transformer in 16.5 MW CPP.

Investment : Rs. 3.00 Lakh

Saving : Rs.2.97 Lakh



7. Energy saving by insulation of top electrode and isolation of Neutral from earthing of CS2 furnace.

Plant has 6 Nos transformers to supply the power to the Arc furnaces for the production of Carbon di sulphide. Plant has insulated the top electrode of all the furnaces from the body and disconnected the neutral from earthing to prevent the leakage of current and to minimize the losses.

Investment : Rs. 0.50 Lakh

Saving : Rs. 12.00 Lakh

Other Major initiatives taken for energy conservation during the year 2004-05

Sl. No.	Description	Savings (Rs.in Lakhs)	Investment (Rs.in Lakhs)
1	Replacement of old and high losses transformers	27.17	27.00
2	Installation of VFDs on various equipments to minimize losses	88.05	62.10
3	Replacement of electrical heaters by steam heaters	10.60	4.00
4	Replacement of ordinary tubelight by efficient one	18.50	9.60
5	Installation of PLC in Centrifugal Ice Machine	3.33	2.00
6	Installation of new capacitors in place of faulty capacitors	4.82	3.00
7	Optimisation of filter water consumption in 16.5 MW CPP	2.46	0.00
8	Optimisation of soft water consumption in 16.5 MW CPP	2.81	0.00
9	Conversion of fuel from LDO to HFO in 2x 2270 KVA DG sets	138.00	100.00
10	Installation of energy efficient Xanthomat in viscose dept.	1.45	5.00
11	Installation of auto pulp feeding system to mixer	0.00	20.50
12	Installation of plate type heat exchanger for process optimization	0.00	1.50
13	Arresting steam leakages from pipe lines through out the plant	9.00	1.00
14	Removal of idle steam headers within the section of plant	3.85	2.00
15	Installation of PLC in place of timers	0.00	4.50
16	Installation of photocells to switch off the ACs automatically	5.35	0.54
17	Replacement of pumps, motors by energy efficient pumps & motors 29.34	7.75	
18	Lighting circuit modification, optimization of voltage & installation of energy efficient Ballast	4.06	1.10
	Total	348.79	251.59

Major Plans and Targets for energy conservation for the year 2005-06

SNo	Department	Equipment	Scheme
1	Viscose	Dissolvers	Replacement of Dissolvers by grinder
2	Spinbath	Condensor	Smaller size mixing condensor for power saving
3	Air Washer	Air Washer	Replacement of existing spray type AW No.2
4	Air Washer	Air Washer	Heat recovery of AT effluent for saving Steam in Spg. AW
5	Power Plant	Boiler Feed water pump	Installing steam turbo drive for boiler feed water pump
6	- do -	ID Fans	Installing steam turbo drive for boiler ID fan
7	Engine Room	Vapour Absorption Machine	Installation of single effect VAM for Steam balancing
8	- do -	Vapour Absorption system	Installation of steam operated ammonia VA system for caustic lye chilling
9	Power Plant	Turbine	Utilising part of intermediate un controlled extraction from new Co-generation plant for double effect chiller
7	Power Plant	Instrument Air Compressor	Optimising the operation of sonic soot blowers to minimize air compressor
9	Rayon Plant	Steam pipe fitting	Insulation of bare steam pipe fitting in Rayon plant
10	- do -	Water pumps	Replacement of old and inefficient pumps with energy efficient pumps
11	Air Washer	Fan	Replacement of Cast Aluminium fan blades by Aero dynamically designed FRP blades
12	Boiler House	Deaerator	Reducing Deaerator temp. for reduction in auxiliary steam consumption
13	- do -	Crusher	Reducing un burnt in bottom ash by checking and reconditioning crusher internals
14	DPH	Jacket Cooling Water	Recovery of heat from DG jacket cooling system and utilizing the same for After treatment process heating.

Environment and Safety

The unit is committed to preserve its environment and safety of its employees. Following major improvements have been made during last three years :

a) Water Effluent

The effluent from various section of industry is led to the common effluent treatment plant. The acidic effluent flow are neutralized by addition of lime slurry and then fed to two zinc clarifiers for effective removal of zinc. The overflow from clarifier is fed to the mixing chamber where the effluent from other two drains also joined. The mixed effluent is then pumped to suspended solid clarifier. The overflows flows into a holding tank, from where it is disposed off to sea creek.

The quality of this treated effluent will within the prescribed norms of GPCB.

b) Air

Regarding control of air pollution the company has installed ESP & Bag filter in power plant & boilers, scrubbers in acid plant & caustic plant for dispersion of process gas. The industry has provided a stack of 52.5 mtrs height. The company is regularly monitoring the all polluting parameters of stack & also the ambient air quality surrounding the industry.

All the gaseous emission are always found well within the norms prescribed by GPCB norms.

c) Solid waste

Mainly lime sludge is generated & disposed as a solid waste in low lying land area.

The plant has got ISO 14001 & OHSAS certification and is committed to follow all the guidelines as per ISO standards.

KANCO OVERSEAS
Dholka, Ahmedabad (Gujarat)

Unit Profile

M/S Kanco Overseas is a BIS certified ISO 9001.2000 cotton spinning mill manufacturing 100 % combed cotton yarn of different counts for weaving and hosiery industries. The Installed spindle capacity of the mill is 27456 and targeted daily production is about 14 Tons. The company is equipped with latest machinery which are indigenous as well as imported make.

The power requirements of the company are fulfilled by a 2.5MW Furnace Oil Captive Power plant and having purchased power contract Demand of 1100KVA with Gujarat electricity board which is used at the time of emergency. Company also has 2x 1525KVA Skoda DG sets working on LDO which are kept as stand by.

Energy Management Policy

We at Kanco Overseas, Walthera (Gujarat) are committed to Minimize specific energy consumption for our products through the following Positive approaches:

1. Maximizing capacity utilization of machinery.
2. Wastage reduction with effective process control.
3. Regular scheduled preventive maintenance and spreading awareness in workers in machine utilization.
4. Technology up-gradation and adoption of energy efficient technologies & equipments.
5. Motivation and imparting training to our employees to reduce specific energy consumption.
6. Monitoring power consumption in different areas on regular basis.
7. Good House keeping and reduction of losses.
8. Promoting use of resources for protecting Environment and safeguarding society.

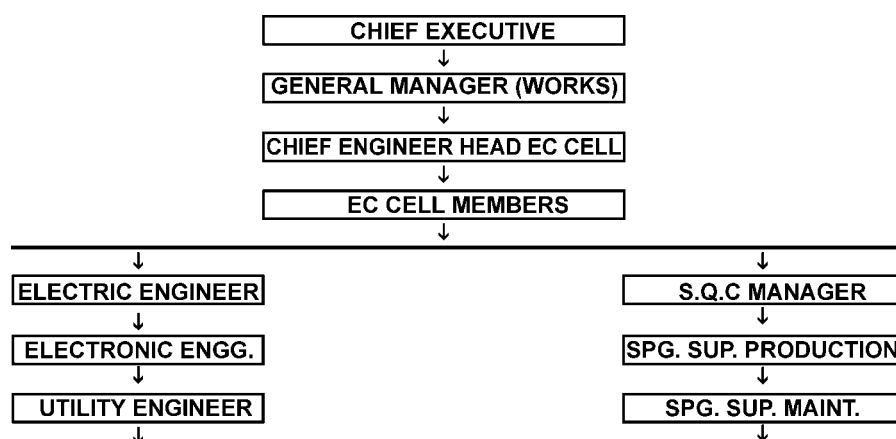
Energy Consumption

Power consumption details	Units	2002-2003	2003-2004	2004-2005
Annual production	Tons	4168.00	4315.80	4771.80
Total Energy consumption per Annum	Kwh Lakhs	203.86	200.42	199.03
Energy cost as % of manufacturing cost	%	11.33	9.04	10.46
Total Energy cost	Rs. Lakhs	543.99	524	591.86
Power consumption per Ton yarn	Kwh	4891	4644	4171
Annual Units saving	Lakhs	4.35	3.55	20.0
Annual Saving in Rs.	Lakhs	24.35	10.63	65.6
Annual Investment in Rs.	Lakhs	10.90	38.00	45.5

Energy Conservation Cell

The company has Energy conservation cell at plant which is headed up by the Chief Executive, assisted by the General Manager (W) and Chief Engineer and supported by a team of experienced Engineers. This team finds out various energy saving possibilities in their working area. Proposals are discussed jointly by the cell for further fine tuning operation & maintenance procedures continuously to achieve the savings in totality time to time Technology up gradation and adoption of energy efficient process and equipments are taken Care. The company is having daily monitoring energy accounting procedure for different department and engineering department. It is totally responsible to maintain records.

The Chief Engineer is responsible to take care for the energy conservation measures With good efforts of Engineers in a team spirit.



Energy Conservation Achievements

M/s.Kanco Overseas has implemented many energy saving proposals and intended to continue these efforts in future. Plant has conducted energy audit studies from the out-side agencies and implemented several suggestions, and achieved appreciable energy savings in the past three years i.e. Energy = 2726,436 KWH and Amount Rs. = 1,00,58,628/-

MAJOR ENERGY CONSERVATIONS PROJECT IMPLEMENTED DURING THE YEAR 2004-2005:

1. Installation of waste Heat Recovery Boiler:

Plant has Installed Waste Heat Recovery Boiler at the exhaust line of 2.5 MW DG set which is running continuously with this arrangement plant could recover 779300 Kcal/Hr heat which was earlier going in the ambient through stack. On the other hand plant has stopped Hot water generator working on LDO, Electric Heaters of F.O Storage tanks by incorporating steam heaters in all the tanks and eliminated infra heating Lamps from the production centers by installing steam heaters in the plants.



S.No	Description	Saving/year	
		Kwh	Rs.
1	Power saving by stopping Hot water generator	21600	64800
2	Power saving from yarn cond	21600	64800
3	Power saving by eliminating 100 kw electric heaters of YCP used for 15 days in year	7920	23760
4	LDO saving used in hot water generator 90 Ltr / Day	0	648000
5	Power saving by installing steam heaters and stopping Elect. Heaters for F.O heating of 4 nos. storage tanks	198000	594000
6	Power saving by installing steam heating batteries for dept. heating during winter and monsoon (180 days) Infra Heating Lamps (60 x 250 watts switched off)	16200	48600
	Total Saving	265320	1443960
	Investment Rs.40,00,000/-		

2. Installation of W-8 spindles Tapes on Ring frames m/c's.

Plant has replaced existing spindles tape by power saving W-8 spindle tapes which are developed by **M/s. HABASIT, Switzerland.**

First of all plant had taken studies with power saving tape on one m/c having 1056 spindles and found power saving of about 2 to 3%. Thereafter this activity extended and installed in other 17 m/c's.

Power consumption:

Before replacing W-8 tape : 22500 Units/day
 After replacing W-8 tape : 21395 units/day
 Saving/Day : 1105 unit/day
 Cost / Unit @ 3.00
 Net Saving per Annum : Rs.11,93,400/-
 Investment : Rs.3,06,000/-



3. Power saving from Compressors

Plant has eliminated a carbon filter which was installed in the pressure line after Air receiver. Further plant is checking and rectifying Air leakages of the m/c's on regular basis. Energy saving details are as under:

Before implementation	: 3160 unit/day
After eliminating carbon filters	: 2840 unit/day
Saving/ Day	: 320 unit/day
Cost / unit @ Rs.3.00	
Total Amount saving / Annum	: Rs.3,45,600/-
Investment	: Nil



4. Power savings from Waste collection System of VXL

Waste collection system of VXL is installed for the suction of carding m/c's LC 300 Lickerin and flats waste by maintaining suction pressure @ 10 Pascal. Now plant has reduced the pressure from 10 Pascal to 8 Pascal by reducing 45 kw motor fan speed. Power saving details as under:

Before reduction power consumption	: 40.5 Kwh
After replacing pulley and reduction	: 35.3 Kwh
Units Saving/ day	: 125
Cost / unit @ Rs.3.00	
Total Amount saving / Annum	: Rs.1,35,000/-
Investment	: Rs.1,500



5. Use of Cogged 'V' Belts in place of ordinary 'V' Belts

Plant has replaced ordinary 'V' belts by Cogged 'V' belts for various m/c's and power saving is achieved as under:

Before replacing cogged 'V' Belts	: 37.56 Kwh
After replacing cogged 'V' Belts	: 32.36 Kwh
Power saving/ day	: 125 unit / day
Cost / unit @ Rs.3.00	
Total Amount saving / Annum	: Rs.1,35,000/-
Investment	: Rs.12,000



6. Reduction of system power losses

The unit has improved plant power factor from 0.94 to 0.97 by installing New Momaya capacitors and repaired low rated cells for Asian capacitors. With this improvement of power factor, drop voltage between sending and receiving ends of main cables have reduced resulting improvement in system voltage and reduction in losses:

Voltage drop reduced from 5 volts to 2 volts
Saving / day : 84 units

Cost / unit @ Rs.3.00 & working days 360

Total Amount saving / Annum : Rs.90,720/-
Investment : Rs.90,000



7. Reduction of fan suction capacity of E-7/4 combers m/c's Waste Collection System

The unit has reduced suction of ventilator fan by reducing pulley from 194mm to 184mm and achieved power saving as under:

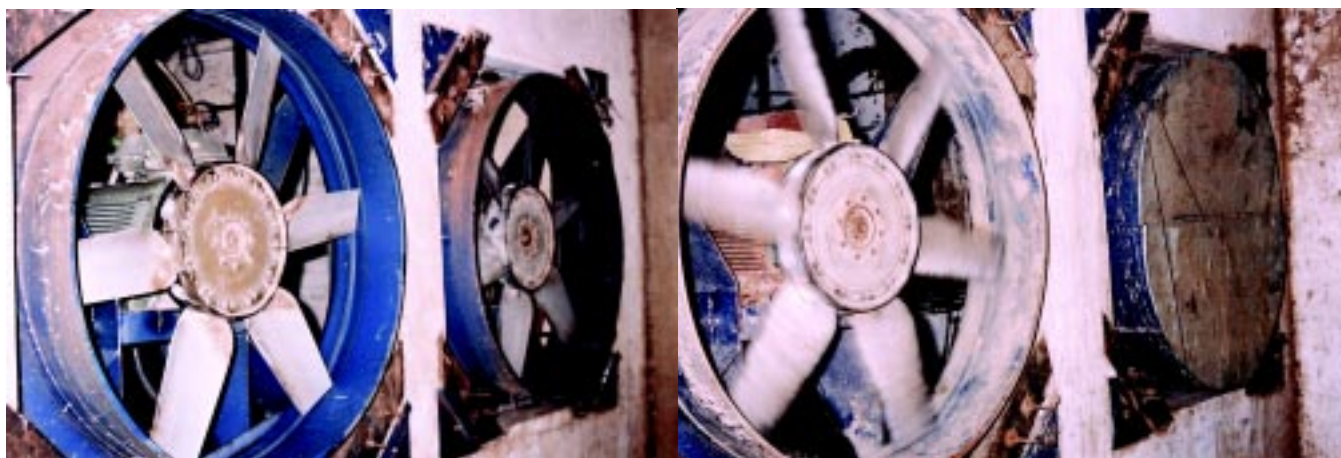
Before reducing pulley : 9.4 units/hour
After reducing pulley : 6.275 kw/hour
Saving/ day : 75 units
Cost / unit @ Rs.3.00
Total Amount saving / Annum : Rs.81,000/-
Investment : Rs.1,200



8. Power saving from humidification plant:

The unit has taken various measures as per the recommendation of SITRA for power saving from Humidification plants. Details are as under:

Sr. No	Measures recommended	Units saving/year		Action Plan	Remark
		Assessed	Achieved		
Prep H.Plant					
1	Reduction of S.A capacity	60000	59100	Blade angle reduced	cfm reduced from 176411 to 101363
2	Reduction of R.A capacity	200000	208405	Blade angle reduced	cfm reduced from 119000 to 80640
Spinning H.Plant					
1	Reduction of R.A capacity	280000	290600	Out of 3 fans 1 fan is stopped	cfm reduced from 248680 to 239950
T/W H.Plant					
1	Reduction of R.A capacity	232000	244000	Out of 2 fans 1 fan is stopped	cfm reduced from 104480 to 50600
Total Savings / year		772000	802105		



Energy Conservation Plans and Target

SPECIFIC ENERGY CONSUMPTION PLAN FOR THE YEAR 2005-2006 AND 2006-2007

FOR 2005-2006 PLANT:

1. Old type of ordinary motors to be replaced by high efficiency motors.
2. Optimizing timers for the waste collection system of Humidification plants.

Target for 2005-2006: Saving from above @ 555 units / day

Environment and Safety

Kanco Overseas is a 100% combed cotton yarn spinning mill where no hazardous chemicals are used. Unit has taken various precautions to keep environment clean by installing Rotary Air filters waste collection, Cyclones and Fiber Compactors at different processes. Special care is taken to monitor and maintain house keeping of best standards.

Unit is taking special care for the safety measures which are monitored and followed strictly. We are maintaining all safety devices of individual machine like door safety, Hood safety, stop motions, brakes, guards, etc.

RAYMOND LIMITED
Textile Division, Chhindwara (Madhya Pradesh)

Unit Profile

Raymond Limited under the flagship of JK Group (Western Division) is undoubtedly Numero Uno in the Indian Textile Industry comprises of four units. Textile Division-Chhindwara The plant is at a distance of 57 kms. From “Orange City” Nagpur and 70 kms. from Chhindwara on Nagpur-Chhindwara road. The 100-acre plot stands as a pioneer in the socio-economic development of this region is situated at Boregaon Industrial Growth Center, which became operational in April 1991. A composite plant manufacturing high quality, up market fabric in polyester-wool and polyester-viscose blends. It also has a subsidiary unit manufacturing furnishing fabrics. Unit has achieved 95.9% capacity utilisation in the year 2001-02 which is considered very high in the Textile sector. The company’s flourishing presence in this region is a tribute to the cooperation of the people here. The success has promoted other projects in this region and improved the quality of life in general. This all round growth is an ongoing process at RAYMOND.

Energy Consumption

With the help of regression analysis i.e. benchmarking and historical analysis, inspite of increase in non-productive connected load we have achieved better specific energy consumption. The specific energy consumption for the year 2000-2001 is 4.53 the increase in specific consumption was due to increase of non-productive connected load by 999 HP. For this year with judicious & effective use of energy, plant has minimized the specific consumption to 3.65.

Description	Unit	2002 - 03	2003-04	2004-05
Electrical energy	kWh/mtr	4.00	3.72	3.65
Thermal energy	Kcal/mtr.	4915.28	4787.89	4564.09
Total manufacturing cost	Rs. Lakhs.	18805.97	19199.30	23203.32
Total energy bill	Rs. Lakhs.	2614.89	2661.49	2513.252
Energy as % of total cost of production.	%	13.90%	13.86%	12.15%

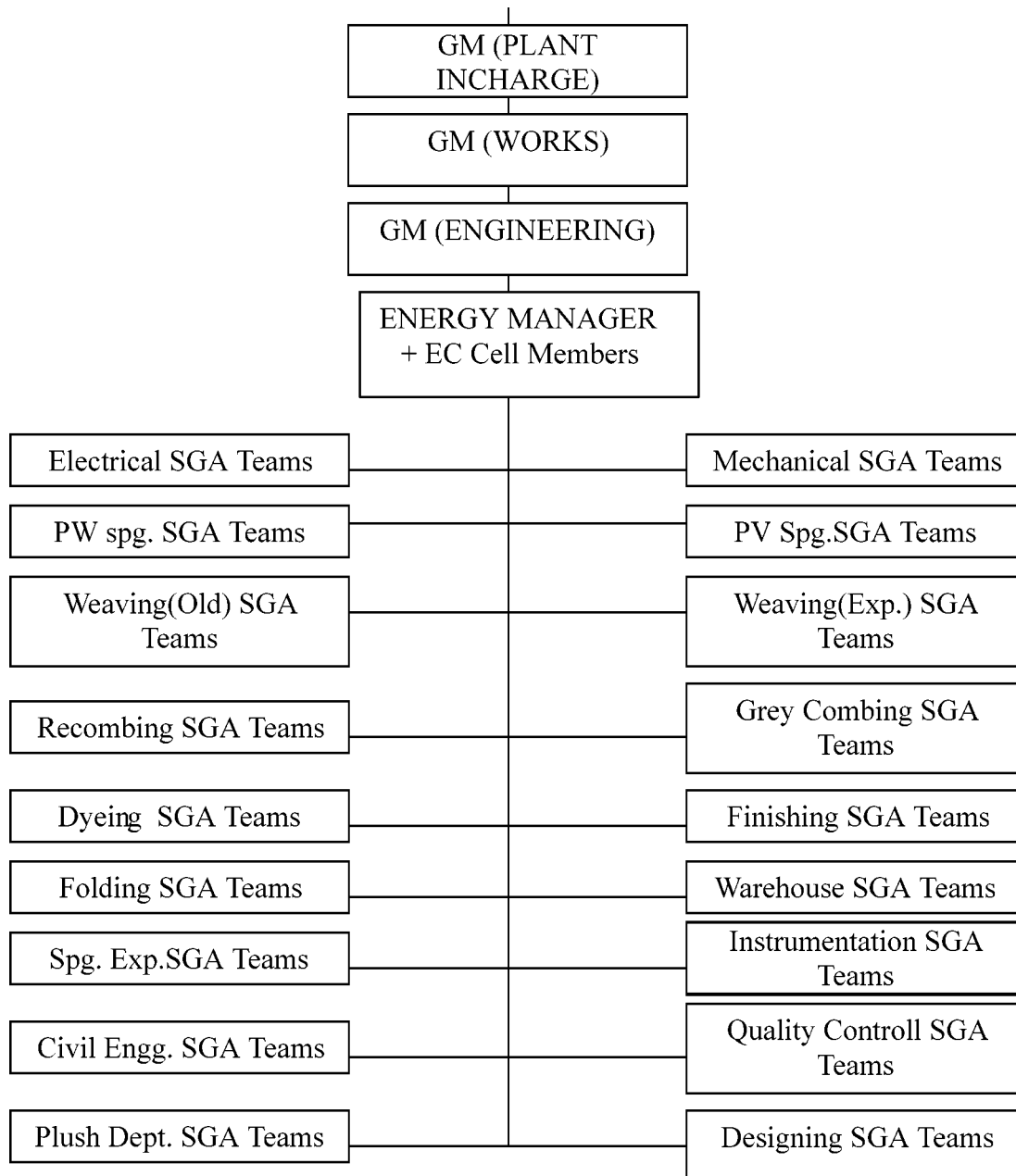
Energy Conservation Commitments, Policy & Set Up

A clear-cut strategy has been formulated and full-fledged Energy Conservation Cell has been formed at corporate level & at unit level also. The Energy Conservation Cell is being well equipped with measuring instruments like Digital Load Manager, Flue Gas Analyzer, Pyro Meter & See-Tech Software package, Hygro Meter, Anemo Meter, Digital Energy Meter, Lux Meter Digital calibration meter etc. The

implementation of energy conservation scheme through Energy Conservation Cell is given the highest priority. Based on the recommendation made by EC Cell and reviewed by various level committees, the decisions are taken for implementation of energy conservation programmes.

The Energy Conservation Cell at Raymond Ltd., Chhindwara is headed by General Manager (Engg.), who is reporting directly to Vice President (Textiles) & GM Plant Incharge. to carry out energy audit and find out potential areas where energy can be saved.

ENERGY CONSERVATION CELL STRUCTURE



Energy conservation achievements

“Knowing how much we are consuming where” is first step towards energy conservation

ENERGY CELL ACTIVITIES OVER THE YEARS

ENERGY CELL ACHIEVEMENTS & INVESTMENT DETAILS OVER THE YEARS

YEAR	ENERGY SAVING PER ANNUM		INVESTMENT RS. In Lakhs
	(Lakhs kWh)	Total Saving (Electricity + Fuel) Rs. In Lakhs	
2002 – 2003	35.52	179.02	53.49
2003 – 2004	37.87	183.90	67.31
2004 - 2005	18.50	82.29	67.60
TOTAL	91.89	445.21	188.40

“ BY- PRODUCT OF ENERGY CONSERVATION IS CLEANER ENVIRONMENT ”

Energy Conservation Plans and Targets

For Specific Consumption-

Year	Electrical kWh/Meter	Thermal kcal/Meter	Reduction over the year 2004-05	
			Electrical %	Thermal %
2004 – 2005 (Base Year)	3.65	4564.09		
2005 – 06	3.61	4518.45	1	1
2006 – 07	3.58	4472.81	2	2
2007 – 08	3.54	4427.17	3	3

Environment and Safety

Plant has identified major accident hazards and taken adequate step for Prevention and Control and provided to the persons working on the site; information, training, and equipment including antidotes.

Steps taken for environment upgradation

- Installed new Bag Filter assembly in our Thermopac Unit for improving the emission quality..
- Installed Pneumatic Ash handling system by which the ash emitted out of Boiler is stored and then discharged through the hopper & Conveyor automatically.
- Till now plant was treating wool scouring effluent in conventional manner and this procedure used to create sludge. Now plant has appointed a consultant, who will implement the “Effective Microorganism Technology” consisting of two stages of treatments, i.e. anaerobic bacteria followed by aerobic bacteria stages. The entire pollution load of this stream will be degraded considerably by this special type of bacteria. This technology is originally developed in University of Okinawa (Japan).
- Along with Comprehensive EIA study, plant is in the process of implementing ISO 14000 certification.