



Century Rayon Shahad



i) Unit Profile:

Century Rayon Shahad, a unit of Century Textile & Industry Ltd commenced its operation in 1956 with an initial capacity of 5 tons of viscose filament yarn per day. Today, after successive capacity expansions, Century Rayon is one of the largest VFY producers in the country commanding 30% of the Indian VFY market. The quality of its yarn is acknowledged not only in India but also in many overseas markets as well. With an annual turnover of about 500 crores. Century has a record of posting uninterrupted handsome profits year after year since 1956. The company's diversified product mix today includes the following types of yarn and chemicals:

Products	Annual Capacity		Annual Production	
	Licensed MT	Installed MT	Actual (2006-07) MT	
Pot Spun Rayon Yarn			16255	
Continuous Spun Rayon Yarn	25000	25000	2177	23706
Tyre Yarn			5274	
Caustic Soda	28426	20000	20410	
Chlorine	10500	17000	17300	
Hydrochloric Acid	47241	19241	3296	
Carbon-di-sulphide	10500	18000	16900	
Sulphuric Acid	58000	71000	64981	
Hydrogen Gas (Compressed) M ³	4000000	5000000	592365	

ii). Energy Consumption

With the implementation of various energy conservation measures as ongoing practice, there is a steady decline in specific energy consumption.

Energy Cost as percentage of Manufacturing Cost

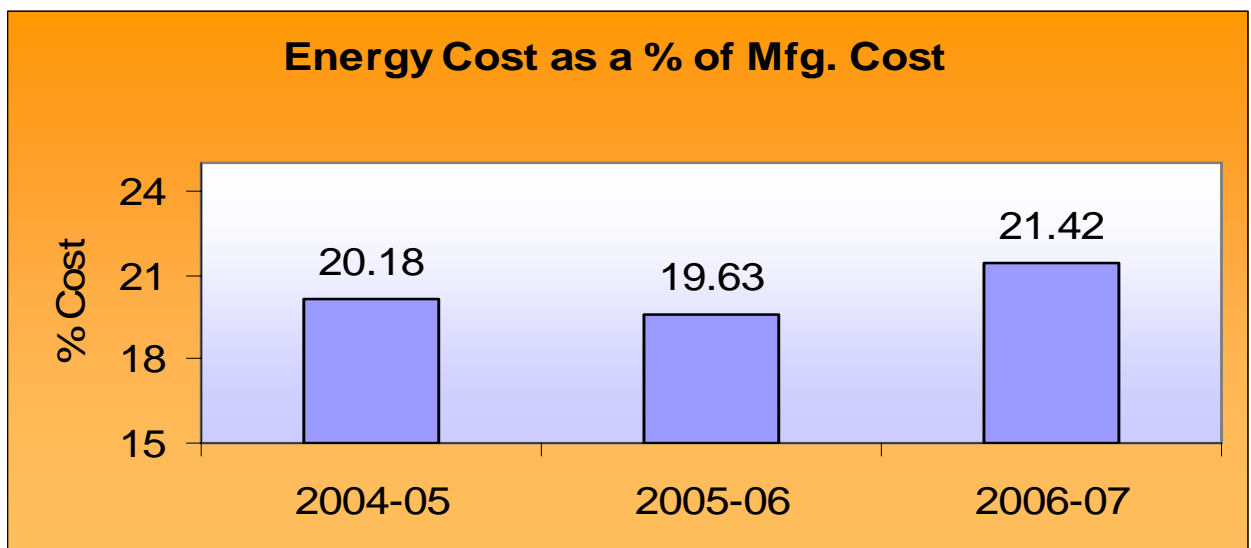
Year	Cost, Rs. Lakhs		Percentage
	Manufacturing	Energy	
2004 - 2005	33809.16	6820.98	20.18
2005-2006	35988.31	7066.17	19.63
2006-2007	40532.09	8683.72	21.42

The percentage increase in the energy cost is marginal 2 % only.

This is in spite of steep rise in cost as under:

		% Rise
i) Coal	: From Rs 3314/MT (2005-06) to Rs 3693/MT (2006-07)	11.43
ii) Fuel Oil	: From Rs 14467/KL (2005-06) to Rs 19173/KL (2006-07)	32.52
iii) Electricity	: From Rs 3.10 (2005-06) to Rs 3.48 /kWh (2006-07)	12.26

Energy Cost as a % of Mfg. Cost



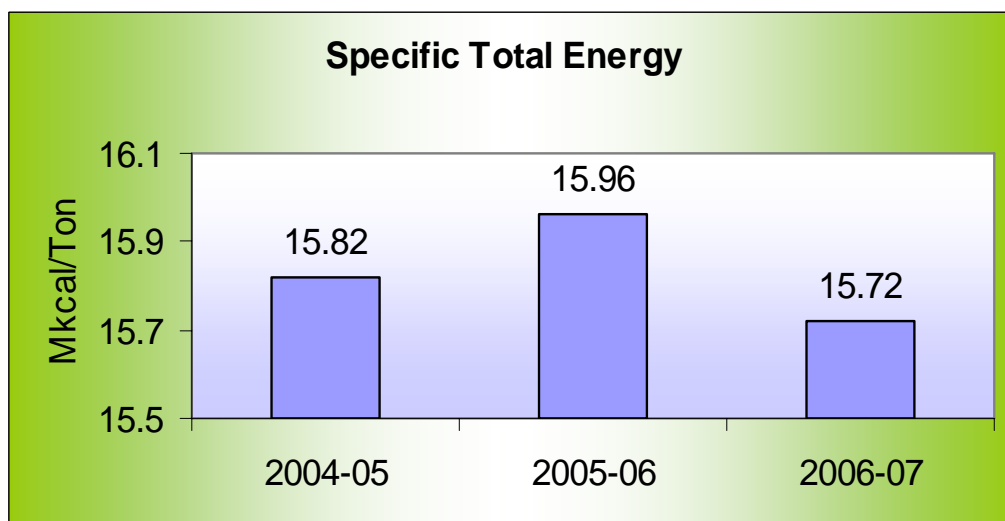
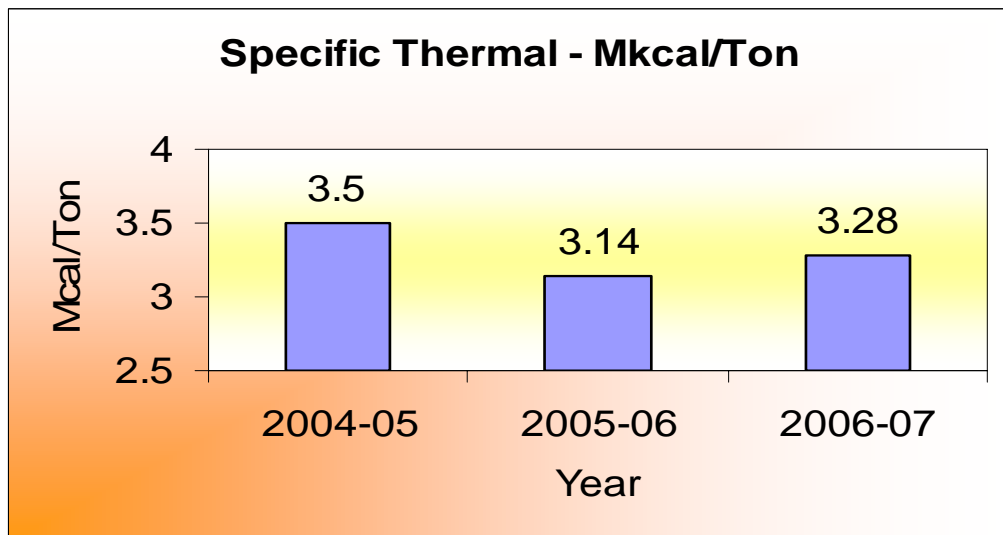
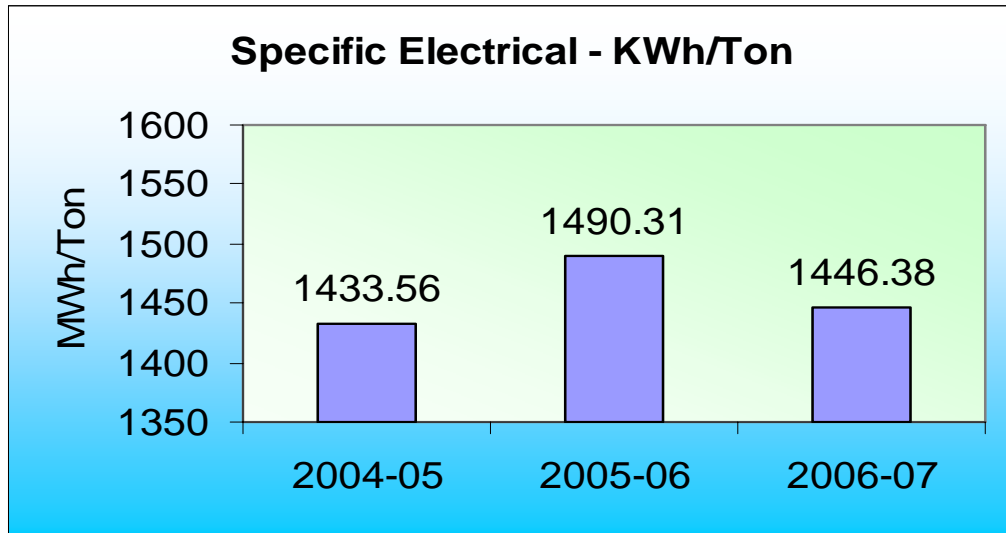
TOTAL ENERGY CONSUMPTION DETAILS

Year	Electricity (Lakhs)		Coal (Lakhs)		Oil (Lakhs)		Total Cost (Rs. Lakhs)
	Kwh	(Rs.Lakhs)	Tons	(Rs. Lakhs)	KL	(Rs. Lakhs)	
2004-05	471.38	1602.88	0.88	2637.41	23952.18	2684.04	6924.33
2005-06	719.36	2324.40	0.83	2735.79	14428.42	2087.42	7147.61
2006-07	809.73	3025.94	0.76	2424.11	16408.59	3146.02	8596.07

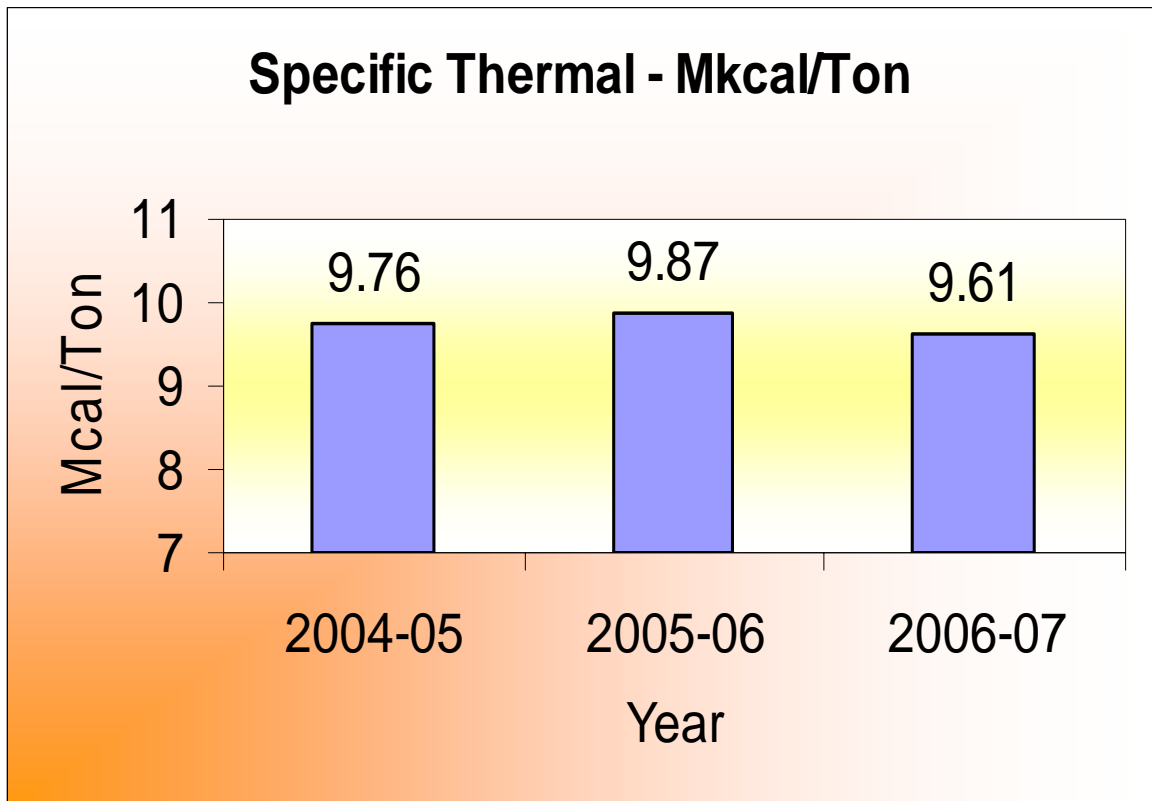
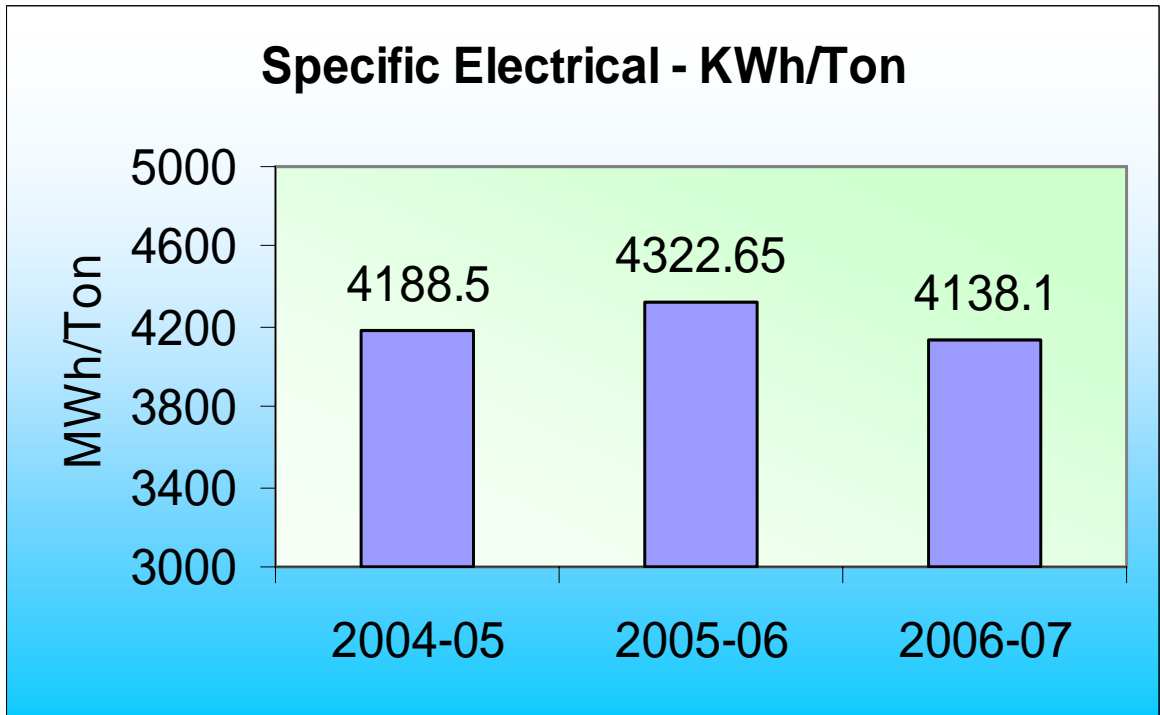
SPECIFIC ELECTRICAL + THERMAL ENERGY CONSUMPTION

Year	Prod	Electrical Cons.	Equivalent Thermal	Thermal Cons.	Total Energy	Specific Electrical	Specific Thermal	Spec. Total
	MT	Lakhs Kwh	M. Kcal	M. Kcal	M. Kcal	Kwh / Ton	M Kcal /Ton	M Kcal /Ton
2004-05	118717	1701.88	1463617	415353	1878970	1433.56	3.50	15.82
2005-06	116032	1729.24	1487146	364675	1851821	1490.31	3.14	15.96
2006-07	125997	1822.40	1567264	413752	1981016	1446.38	3.28	15.72

Trend of Specific Energy Consumption per Ton of Total Production Period: 2004 – 2007



RAYON VISCOSE FILAMENT YARN





B K BIRLA GROUP OF COMPANIES

iii) Energy Conservation Commitment, Policy & Organisational Set Up

COMMITMENT

Century Rayon is committed to total energy management & prevention of energy wastage. Energy conservation means use of lesser energy for same level of industrial activity. Conservation of energy is the choice option – as the results are immediate and non-expensive. It is vitally important for the company that measures of energy efficiency by its up-gradation and conservation are undertaken on a faster rate than what has been done before to avoid wastage of energy. Energy saved is energy produced. This dictum is effectively applied for realization of the objective of energy management in our organization.

Century Rayon accords high priority to energy conservation and the same has reflected in steady decline in terms of specific energy consumption for our main products as mentioned in the forthcoming pages. This decreasing trend is the outcome of our concerted and well-planned efforts at energy conservation and energy efficiency upgradation.

ENERGY POLICY

“Energy saved is energy produced. So, no effort will be spared to achieve highest levels of efficiency in managing and conserving the energy resources. Both financial and human resources coupled with technological up-gradation will be provided for the purpose.”

SET UP

Energy Conservation Cell is headed by Sr.Vice President (Rayon & Aux.). He is supported by a designated Energy Manager under whom Task Force Units are created one each for:
Rayon Plant, Tyrecord & Cont. Spun Yarn Plant, Chemicals, Auxiliaries, Boiler House & Power House

This internally created Energy Conservation Cell is responsible for

- (a). Identification of energy conservation areas on a continuous basis around the year
- (b). Implementation of approved energy conservation schemes
- (c). Time to time auditing from external agencies.
- (d). Monitoring of schemes under progress.
- (e). Interaction with equipment suppliers.
- (f). Getting abreast with technological developments in the field of energy conservation.

The overall set up for Energy Management & Conservation is illustrated in next sheet:

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REFER FILE

Organization Structure.doc

iv) Energy Conservation Achievement.

Energy Conservation Project:

In the fast changing industrial scenario, keeping pace with the latest is of prime importance. Rayon manufacturing technology is as such very-very old, but to meet the variety demands of today's fashion world and to be in the cut-throat competition, we have to update process, procedures and equipment to keep pace with latest in vogue. The changeover must be economical, feasible, user and eco-friendly and above all energy-saver. Working on these guidelines, we have been, in last so many years, bringing the latest trends and developments in our company. Some of the energy conservation schemes for the year 2006-07 are given as follows

SCHEME: I:

Replacement of Magma Pump by optimizing capacity in Spin bath in T.C. Plant

Preamble

The Magma pump is used in Calcination Plant for pumping of concentrated Sodium sulphate slurry for Receiver to the Settler tank. From the Settler the slurry is fed to Centrifuges & Rotary dryer to obtain anhydrous sodium sulphate. The capacity of Magma pump is 36 m³/hr and average power consumption is about 6.5 KW / Hr.

The capacity of Magma pump is based on the 36 TPD Calcinations plant. However due to reduction in the Tyre yarn machines the present Calcined salt production is only about 17.5 TPD.

Action

The existing Magma pump of 36 m³/hr was replaced with a smaller capacity and energy efficient pump of 20 m³/hr capacity.

Benefit: Reduction in Power consumption by 43.2 kWh/ day.

Economics:

Investment	: Rs. 0.65 Lacs
Savings (43.2 Kwh/day x 330 days x Rs. 3.48/Kwh)	: Rs. 0.50 Lacs
Payback period	: 16 Months



SCHEME: II:

Installation of Plate cooler for dissolver lye cooling in T. C. Plant.

Preamble

Dissolver lye is prepared in caustic room & pumped to dissolver lye cooling tank. In dissolver lye cooling tank it is circulated through plate coolers to bring down it's temperature from 31⁰C to 20⁰C with the circulation pump for 24 Hrs.

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Action

Now dissolver lye is pumped to dissolver lye cooling tank by passing through a plate cooler to bring down it's temperature from 31⁰C to 11⁰C. Due to this circulation pumps in both cooling tank 1 & tank 2 were stopped

Benefit:

Due to this circulation pumps which were running continuously for 24 Hrs were stopped & hence resulted in power saving. Also low temperature of dissolver lye was achieved for better dissolving of xanthate in dissolver lye & less process variation during to high dissolver end temperature

Economics:

Investment : Rs. 4.0 Lacs
Savings (85.2 Kwh/day *365 days*3.48 Rs/Kwh) : Rs. 1.08 Lacs

Payback Period : 44 Months

SCHEME: III:

Replacement of old booster and ejector system in FD by energy efficient system in T C. Plant

Preamble

In Tyre Cord viscose department FD is used for removing dissolved air and also partial evaporation of water from viscose. The existing system was old and developed problems during operation. It was decided to replace the system with an energy efficient system.

Action

The system was replaced with an energy efficient system designed with revised process conditions.

Benefit: Lower steam consumption.

Economics:

Steam consumption of old system	20 TPD
Steam consumption of new system	14 TPD
Net savings	6 TPD
Equivalent Coal Saving (6/ 4.7)	1.27 TPD
Saving in Rs./day (Rs.3693*1.27)	4690
Loss in gen. (128 kwh*6*4.5)	3456
Net Saving (4690-3456) in Rs/day	1234
Net Saving/ annum (1234*365/10 ⁵)	Rs. 4.5 Lacs
Investment	: Rs. 5.0 Lacs
Payback period	: 13 Months



SCHEME: IV:

Stoppage of settler tank agitator in Spin bath 20 meters.

Preamble

The Magma pump is used in calcination plant for pumping of concentrated sodium sulphate from receiver to the settler tank. In the settler tank the slurry crystals are allowed to settle and the concentrated slurry is fed to centrifuge and rotary dryer to obtain anhydrous sodium sulphate. The settler tank is provided with slow speed agitator to prevent deposition of sodium sulphate particles on the vessel wall. The average power consumption is about 2.7 kW/ hr.

Action

The settler agitator was kept stopped for two months in Feb & Mar 07 to observe any change in deposition pattern of sodium sulphate to note any other problem faced. However no significant problems were observed. Hence the settler agitator has been disconnected and kept out of use.

Benefit: Reduction in power consumption.

Economics:

Investment	: Nil
Savings (2.7 Kwh x24x330 days x Rs. 3.48/Kwh)	: Rs. 0.74Lacs
Payback Period	: Nil



SCHEME: V

Replacement of Bleach station pumps by energy efficient pumps in After Treatment Section in Rayon Plant

Preamble

New A.T., 10 mtr level, Kishore C.I. Rubber lined pumps are installed for bleach wash. They are of low efficiency pumps (54% effy) due to rubber lining. Also because of lining, failure rate of these pumps is high. Slightly damage or removal of rubber lining expose the metallic parts and the bleach solution starts eating them resulting in pump breakdowns. Except bleach stations, all other washing stations have S.S. Pumps (KSB Make). These are energy efficient pumps. We have already installed 3 S. S. Pumps on stations no. 12 of all 3 lines and they are found to be suitable for pumping of bleach solution. Since efficiency of this S. S. Pump is 82 % (other specifications of both type pumps are same except Motor HP) there will be saving in power consumption.

Action

These pumps & motors were replaced by energy efficient pumps & motors.

Benefit: Reduction in power consumption

Economics

Power cons. of old pump	:420 Kwh
Power cons. With energy eff. Pump	:360 Kwh
Saving in power units	.150 Kwh
Saving (150KWh/day x 355 days x Rs. 3.30/KWh)	: 1.85Lacs
Additional saving in maintenance of pump	: 0.15 Lacs
Total saving	: 2.00 Lacs
Investment	: Rs. 1.80 Lacs
Payback Period	: 11 Months



SCHEME: VI:

Replacement of old boiler feed pump 01 no. AUX Plant.

Preamble

Boiler feed pump is used to feed the hot water to 4 nos. boilers in acid plant no. 1 & 2. Three nos. boiler feed pump are available, out of which one is running and other two pumps are standby. These pumps are multistage KSB make pumps. The capacity of each pump is 13.6 m³/hr having 170 meter head and power consumption 12.9 kW.

Action

In view of high consumption of power, one pump has been replaced with energy efficient “Grundfos” make pump having capacity 15 m³/hr & head 167 meter. This pump consumed 9.88 kW power only (Efficiency of 64.6 %).

Benefit

- 1) Pump having high efficiency hence low power consumption
- 2) High efficiency motor is supplied along with pump.
- 3) Pump casing is made from sheet metal work hence smooth surface is provided at inner surface of casing.
- 4) Pump is installed in vertical position hence less chances of eccentricity of shaft.
- 5) Mechanical seal is provided in place of gland hence no leakage through gland.

Economics

Investment	: Rs. 1.25 Lacs
Power saving in kw(12.9-9.88)	: 3.02 kW
Saving (3.02kw*24hrs*365daysX@ Rs. 3.48)	: Rs. 0.92 Lacs
Payback Period	: 16 Months.

SCHEME: VII:

Installed VFD to control the H₂ compressor speed to compress the excess Hydrogen gas which is venting to open air in Chemical Plant.

Preamble

Presently we are getting H₂ gas production about 15000 to 16000 m³/ day and about 800 to 1000 m³/ day is venting in open air. We have taken 2 Nos. VFD from Tyre cord and installed on compressor no. 1(A & B) and we analyzed that by reducing the RPM of Motor we are able to maintain the plant pressure normal as well as we are getting additional Hydrogen gas 800 to 1000 m³/ day.

Action

Initially installed VFD for Compressor no. 1 and after successful running we will install for no. 2 as a standby to compress the excess hydrogen which will vent to open air during any abnormality with compressor no. 1.

Benefit

This has resulted in additional Hydrogen gas by 800 m³/ day

Economics

Investment	: Rs. 10.0 Lacs
Saving in extra prodn. H ₂ gas 800 m ³ /day*365days* Rs. 15/m ³	: Rs. 43.8 Lacs
Power Savings (611Kwh/day x 365 days Rs. 3.48/ Kwh)	: Rs. 7.70 Lacs
Power Cons. (700Kwh/day x 365 days Rs. 3.48/ Kwh)	: Rs. 8.89 Lacs
Labour Charges (Rs. 1200/ day)	: Rs. 4.38 Lacs
Net Saving (43.8 + 7.7 – 8.89- 4.38)	: Rs. 38.23 Lacs
Payback Period	: 3 Months

(v) Energy Conservation Plans and Targets

Sr No	Energy Conservation Measures (Planned)	Anticipated Savings per annum			Approx. Investment (Rs. Lacs)	Project commencement & completion year
		Lacs Kwh	Coal Tones	Rs. Lacs		
1	Installation of LP Vapour absorption refrigeration machine in TC plant.	64.13	-	67.08	73.0	2007-08
2	Installation of plate cooler in dissolver lye cooling tank in CSY plant.	0.43	-	1.41	2.50	2007-08
3	VFD for 8 Nos. storage pumps in Spin bath in Rayon Plant.	6.20	-	23.56	27.1	2007-08
4	VFD for 2 Nos. Hot well pumps in Spin bath in Rayon Plant	1.34	-	5.09	7.8	2007-08
5	Replacement of Spinning exhaust fan No. 2 & 6 in Rayon plant.	3.00	-	11.40	17.0	2007-08
6	Replacement of spinning exhaust fan 12 by energy efficient fan in Rayon Plant.	2.52	-	9.58	14	2007-08
7	Replacement of old water pump to feed chlorine (2 nos.) in AUX plant..	0.27		1.0	1.5	2007-08
8	Installation of VFD in 507, 502 & 210 Pumps in CC plant	1.92	-	7.7	6.0	2007-08
9	Solar Water Heating System for Factory Canteen	0.12	-	0.39	3.0	2007-08
10	Solar Water Heating System for Guest House	0.08	-	0.26	0.86	2007-08
11	Installation of FBC Boiler in Power Plant	-	13860	512.0	548.0	2007-08
12	Repl. Of Spg. A.W. no. 2 fan with energy efficient fan in T.C. Plant	0.16	-	0.53	3.60	2008-09
13	Optimize the operation of spray water pumps in spg. Air Washer in Rayon Plant.	0.62	-	2.36	5.0	2008-09
14	Centralised VRR with continuous filter GCF II stage in Rayon Plant.	0.31	-	1.18	278	2008-09
15	Modification of Furnace Transformer No. 7,8,9 & 10 in CS ₂ Plant	5.76		19.01	16.00	2008-09

(vi) Environment and Safety

ENVIRONMENT & SAFETY POLICY

This policy is an indispensable and integral part of our organization's core policy of Quality, Productivity, and Customer Satisfaction.

“We are committed to provide safe and healthy working conditions on the work premises as also to assure a safe and eco-friendly neighborhood. To achieve this objective:-

- *All statutory norms related to safety, health and environment shall be adhered to in letter and spirit.*
- *Required resources – man, material and money – shall be made available to ensure a state of full preparedness at all times.*
- *Extensive training and awareness programs shall be conducted regularly.*

Everyone, therefore, would carry out his assigned responsibility and contribute in effective implementation of this policy.”



B K BIRLA GROUP OF COMPANIES

CERTIFICATE



Management system as per
ISO 14001 : 2004

In accordance with TÜV CERT procedures, it is hereby certified that

CENTURY RAYON

Works : Murbad Road, Shahad – 421 103
Dist. Thane, Maharashtra, India



applies an environmental management system in line with the above standard
for the following scope

**Manufacture & Supply of Viscose Filament Yarn,
High Tenacity Tyre Yarn, Rayon Tyre Cord Fabric
& Industrial Chemicals**

Certificate Registration No. **44 104 070184-E3**
Audit Report No. **2.5-1198/1994**

Valid until **10.09.2010**

TÜV CERT Certification Body
at TÜV NORD CERT GmbH

Mumbai, **11.09.2007**

This certification was conducted in accordance with the TÜV CERT auditing and certification
procedures and is subject to regular surveillance audits.

TUV India Pvt. Ltd., 801, Raheja Plaza – 1, L.B.S. Marg, Ghatkopar (W), Mumbai 400 086, India. www.tuvindia.co.in



TGA-ZM-30-96-80





B K BIRLA GROUP OF COMPANIES

CERTIFICATE



Management system as per
OHSAS 18001 : 1999

In accordance with TÜV CERT procedures, it is hereby certified that

CENTURY RAYON
Murbad Road, Shahad - 421 103
Dist Thane, Maharashtra
India



applies a management system in line with the above standard for the following scope

**Manufacture and supply of viscose filament yarn, high tenacity tyre yarn,
rayon tyre cord fabric & industrial chemicals.**

Certificate Registration No. 44 116 071404
Audit Report No. 3501 8490

Valid until 2010-09-04


TÜV CERT Certification Body
of TÜV NORD CERT GmbH

Essen, 2007-09-05

This certification was conducted in accordance with the TÜV CERT auditing and certification procedures and is subject to regular surveillance audits.

TÜV NORD CERT GmbH

Langemarckstrasse 20

45141 Essen

www.tuev-nord-cert.com



SCESm 008



CERTIFICATE



FORSCHUNGSINSTITUT HOHENSTEIN
Schloss Hohenstein · D-74357 Bönningheim

Institute of the International Association for Research and
Testing in the Field of Textile Ecology

CERTIFICATION BODY HOHENSTEIN INDIA PVT. LTD.
Asha House · 28 Suren Road, Andheri-Kurla Road · Mumbai 400 093 · INDIA

The company

Century Rayon Ltd.

Post Box No. 22, Murbad Road

Shahad - 421103, Dist. Maharashtra, INDIA

is granted authorization according to Oeko-Tex Standard 100 to use the
Oeko-Tex mark, based on our **test report 07.0.54705**



for the following articles:

**Viscose filament yarn - pot spun & continuous spun yarn;
bright, dull & spun dyed; white and in different colours.**

The results of the inspection made according to Oeko-Tex Standard 100,
product class II have shown that the above mentioned goods meet the
human-ecological requirements of the standard presently established for
products with direct contact to skin.

The certified articles fulfil the requirements of the existing European
legislation regarding the use of azo-dyes.

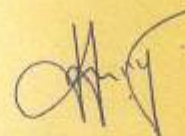
The holder of the certificate, who has issued a conformity declaration
according to EN ISO 17050-1, is under an obligation to use the Oeko-Tex
mark only in conjunction with products that conform with the sample initially
tested.

This authorisation is valid until 30.09.2008

Mumbai, 12.10.2007



Dr. Stefan Mecheels
Head of the Institute



Jacob Kutty
Head of the Certification Body

Safety

Safe working has become part of our culture. The safety implementation program includes trainings, inspection rounds, safety committee, suggestion schemes, safety week celebration & exhibition, safety audits, 5S implementation, safety quizzes. Century Rayon has got ISO 14001 & OHSAS 18000 certification and committed to follow all the guidelines as per ISO standard.

Plantation

Century Rayon lays high emphasis on Environmental improvement program like trees planting in its premises and surrounding areas. A record number of 25080 saplings have been planted during last 10 years. The company spends an approximate sum of Rs. 2 Lakhs every year on plantation. Century Rayon has developed dense and beautiful gardens at the famous



Ganpati temple at Titwala. A children's park namely Shivaji Udyan opposite to famous Vithoba Temple with hundreds of trees and lot of greenery is a testimony to the company's commitment in this regard.

Pollutants Management

Air pollutants – SO_2 , CS_2 , H_2S , SPM, Cl_2 , HCl are main air pollutants from our plant. To take care of these, we have installed SO_2 scrubbers, chimneys, ESP and sensors for detection, since beginning of the plant.

Water effluent – Total suspended solids, COD, BOD, Zinc, Oil, are maintained within statutory requirement. In the year 1999, we have achieved zero-effluent status of our Chemicals plant after stopping mercury cells for caustic.

PROCESS FLOW DIAGRAM OF RAYON YARN



Energy Policy of the Company

“Energy saved is energy produced. So, no effort will be spared to achieve highest levels of efficiency in managing and conserving the energy resources. Both financial & human resources coupled with technological up-gradation will be provided for the purpose.”