

Century Pulp and Paper Lakkua

COMPANY PROFILE :

Century Pulp and Paper, a unit of Century Textiles and Industries Ltd. Is flagship company of B.K. Birla group of industries . The company is an ISO- 9001 :2000 and ISO- 14001 certificated unit and has established it's brand very well in the domestic and overseas market ; with excellent quality of it's products i.e. Writing Printing Papers and Dissolving/ Paper Grade Pulp. The company has the following installed capacities:

Rayon Grade/ Paper Grade Pulp : 31320 TPA
 Writing & Printing Papers (wood) : 37250 TPA
 Writing & Printing Papers (Bagasse) : 84600 TPA

A State Of The Art Technology for Bagasse pulping, sound Environment practices and excellent Product Quality are the core competencies of the company.

Energy Consumption :-

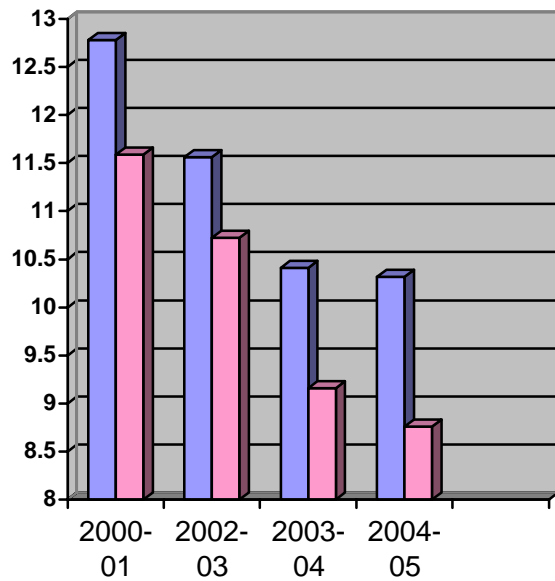
The power requirement of the plant is met by a 7500 MVA grid connection from UPCL and 21 MW & 6.8 MW own turbo generator sets. The plant consumes approx 6 lakhs units per day, 90% of which is met by own generation . The daily thermal energy inputs are from 600 tons of coal and RFO. Black Liquor & Pith generated as liquid & solid wastes are also used for meeting steam and power requirements of the mill.

The annual energy bill of the company is **16.78** % of the manufacturing cost.

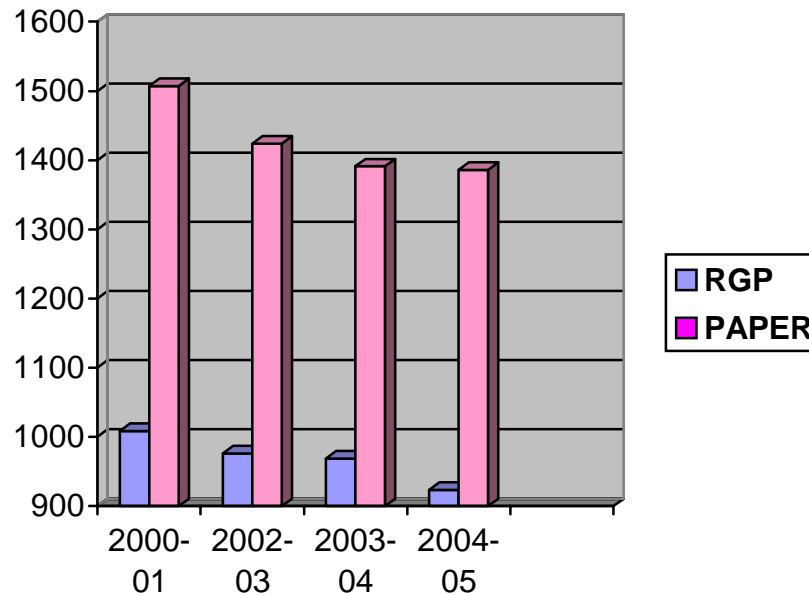
Because of continuous energy conservation efforts , plant optimization and adopting technological advances, there has been a continuous reduction in specific energy consumption.

ENERGY CONSUMPTION TRENDS :

UNITS/TON	2000-2001	2001-2002	2002-2003	2003-2004	2004-05
RGP	1009	1012	976	969	924
PAPER	1507	1483	1424	1391	1386
STEAM/TON	2000-2001	2001-2002	2002-2003	2003-2004	2004-05
RGP	12.78	12.68	11.56	10.41	10.32
PAPER	11.59	11.24	10.72	9.16	8.76



STEAM CONSUMPTION TREND



POWER CONSUMPTION TREND

ENERGY CONSERVATION COMMITMENT POLICY AND SET UP

CPP has accorded high priority for energy conservation from the inception. Accordingly for energy conservation, a cell consisting of all energy producers & consumers is formed. The objective of the cell is to coordinate the steam and power requirement of the mill, study the causes of variance in consumption figure with targets on daily basis and take corrective measures. The cell also identifies energy conservation schemes and monitors their progress.

The energy conservation is a part of our environmental policy. Some of the major energy saving projects implemented by us are :

- Capacity utilization continuously increased
- Fine tuning of pumps and motors
- Installation of VFD'S
- Optimization of voltages & frequency of own generation.
- Optimization of operating procedures for Agitator, pumps, Depithers
- Energy efficient lighting practices

CPP also believes that apart from energy conservation lot of savings can be generated by utilization of plant capacities. The thrust is on continuous plant operation without any unscheduled stoppages.

Major Energy conservation measures implemented by us are

WEAK BLACK LIQUOR CLARIFIER



effective

We have three Pulp mills for Rayon Grade Pulp, Wood Paper, Bagasse Paper which process Hard Wood, Bamboo and Bagasse. The cooking methods are different and accordingly the WBL generated also has different characteristics. The mixed WBL consists of lot of solids in the form of fractional fibers, earthy and siliceous material. These suspended solids on evaporation cause scale formation on the heating surface thereby reducing the capacity of evaporation and affecting the steam economy. It also requires frequent stoppages of Evaporators.

To overcome this problem we installed storage cum clarifier of 2000 m³ capacity where suspended solids along with fractional fibers and earthy materials settle down by gravity and are withdrawn from the bottom of clarifier and clear Black Liquor with 300 ppm suspended solids is available resulting in better heat transfer and reduced steam consumption.

The scheme required an investment of Rs 120 lacs and resulted in an Annual Savings of Rs 9.29 lacs.

DIVERTER FOR PITH CONVEYOR

For producing Bagasse Paper we consume 1200 Tons of Whole Bagasse daily. This whole Bagasse consists of approx 65% Fiber which is used for manufacture of paper. The balance 35% is Pith which is removed during the dry and wet depithing and is used as a substitute of Coal. The pith separated during dry depithing is carried to Pith yard by a conveyor. From the discharge of the conveyor the pith is shifted and stacked by Pay Loaders. It was later transported to Coal Fired Boilers by Tractor Trolleys. These trolleys were filled by pay loaders and during loading yard stones got mixed with pith.

To overcome this problem direct feeding of pith to Boilers was thought of. Accordingly three Diverters were provided on the main conveyor such that the trolleys could be directly filled without the pith coming in contact with the ground. Pith devoid of stones caused removal of screens in the Boiler resulting in increased utilization of waste Biomass and reduced coal consumption. This direct feeding of pith also reduced handling of pith in yard resulting in savings in Pay loaders operations.

The investment was 0.5 lacs resulting into a saving of Rs 52.5 lacs through diesel & Pay loader hiring charges and Rs 97 lacs through higher utilization of Biomass and savings of coal.

PRODUCER GAS PLANT

We have got two rotary Lime kilns to recalcine Lime sludge which is a waste material generated during Chemical Recovery process. The lime produced is used in process. In this process the energy is supplied for drying, pre heating & calcining through the firing of R.F.O. In both the Lime Kilns about 36 tons of oil is consumed per day.

Considering the spiraling cost of oil we decided to install a Producer Gas Plant as a fuel substitution measure.

Producer Gas is generated by gasification of coal in extended shaft gas producer. This required an investment of Rs. 338.0 Lacs. The project is executed in April 2003 and resulted into a saving of Rs 196.0 lacs.

VACCUUM PUMPS IN WPP

In Paper plant, Vacuum pumps are used for dewatering from pulp or paper sheet.



Large amount of power is consumed by them .These pumps were evaluated and found to be operating at low efficiency.10 pumps were substituted by high efficiency pumps

	Before consumption	after consumption	savings
Pulp mill	180 kw	136 kw	44kw
Paper m/c	1274kw	1040 kw	234 kw

This required an investment of Rs 63 lacs and resulted into a savings of Rs 51.18 lacs

IMPROVED HEAT TRANSFER IN PAPER M/C DRYING CYLINDERS

FOR obtaining uniform moisture profile across the deckle and reduction in steam requirement for drying, the surface of dryer cylinders were ground and polished for paper m/c I this resulted in reduced steam consumption with improved Moisture profile . The project required an investment of Rs 107 lacs and an annual savings of Rs 30.4 lacs

VARIABLE FREQUENCY DRIVES

Several fans and pumps in plant have variable flow requirements. This is achieved by valve throttling/ damper consumption decreases but at the same time the efficiency of the equipment decreases drastically. RPM reduction by VFD is closest to ideal capacity control. 43 Equipments (for applications of pulp Stock, chemical dozing, back water supply, FD & PA fans) were identified and provided with VFD"s. this required an investment of Rs 53.0 lacs and resulted into a saving of Rs 35.3 lacs.

NEUTRAL COMPENSATOR

Lighting loads are single phase loads and are difficult to balance. An unevenly loaded Phase circuit results in different phase to neutral voltage and heavy return current in Neutral. It is difficult to balance it and energy is lost through Uneven voltage and Neutral current.

To make such loads evenly distributed a Neutral Compensator is installed. A neutral compensator is a specially wound transformer and establishes Neutral point symmetrical with respect to phase voltage, resulting in balance voltages in all three phases and reduced Neutral current.

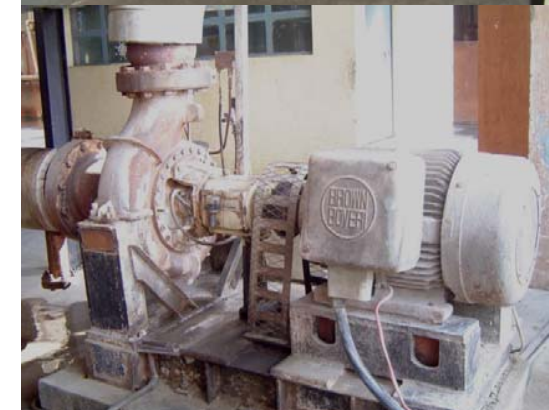
Four Neutral Compensators were installed with an investment of Rs 0.78 lacs and resulted into an annual saving of Rs1.5 lacs

LIQUOR CIRCULATION PUMP

The liquor circulation pump in WPP Digester No 4 was installed since 1984. On evaluation it was found to be operating at low efficiency. The pump was replaced by Sulzer make high efficiency pump resulting into an annual savings of Rs 1.92 lacs with an investment of Rs 17 lacs.

OPTIMIZATION OF CAPTIVE GENERATION

For a generation of 18.5 MW from Double Extraction Condenser Turbine significant quantity of steam was passed through the condenser and the Process steam requirement was met



by PRDS. This caused partial utilization of steam energy and reduced efficiency. In order to recover both Thermal and Power energy from steam optimum utilization of Extraction was done and the condenser was utilized for Process variations only. The Reduced generation was made up from UPCL grid, at a tariff of Rs. 1090/ kwh. This resulted into

- ✓ Full extraction of steam at 10.5 Kg/cm² from Turbine which helped in arresting steam through PRDS.
- ✓ Higher Power generation from Process Steam
- ✓ Avoided venting of steam at 3.5 Kg / cm² due to process fluctuations.
- ✓ Stop one coal fired boiler of 23 TPH capacity
- ✓ Steam to Dearator was reduced
- ✓ one boiler Feed pump of 150 Kw was stopped

savings :

- Coal - @2700 MT/ month resulting in annual gains of Rs 583 Lacs.
- Power - 350 KW Load i.e. 2.8 MKwh/annum resulting in annual gains of Rs 56 lacs



ENHANCED POWER GENERATION BY IMPROVED WATER TREATMENT

21 MW TG had scale formation resulting into a washing cycle every 3-4 months. Turbine scale indicated presence of Sodium and Phosphate which was due to addition of CAUSTIC SODA to increase pH OF boiler water. To minimize scale formation caustic soda was substituted by Indion 1605 as a PH Booster. After the treatment the washing cycle could be extended to 11-12 months. Gain of power generation equivalent to 700 kw was achieved i.e. equal to Rs 106 lacs / annum.

OTHER MEASURES

- ✓ Replacement Of 40 W Tubes.
- ✓ Use Of Energy Efficient Ballasts
- ✓ Use Of Low Loss Capacitors
- ✓ Optimization Of LT Operating Voltages
- ✓ Use Of Low Watt HRC Fuses
- ✓ Use Of LED Indicating Lights
- ✓ Optimum Utilization Of Plant

ACHIEVMENTS:

We have identified and implemented **127 schemes in the last 3 years with an investment of Rs 1562.3 lacs and resulting into a savings of Rs 2202.7 lacc .The specific energy has a reducing trend .**

Appreciating our efforts

- IPMA awarded us **ENERGY CONSERVATION AWARD** for the year 2002 – 03 & 2003 - 04.
- CII identified us as “**Energy Efficient Unit** “ for the year 2003-2004
- Awarded **National Energy Conservation Award** for 2003 – 04 by **G.O.I.**

ENERGY CONSERVATION PLANS & TARGETS:

The following measures are planned to be undertaken in future:

- 1) Implement automation of our Rayon Grade Pulp Mill and Wood Paper Pulp Mills to reduce steam consumption and optimize chemical consumptions. The scheme requires an investment of Rs 526.0 lacs and an anticipated savings of Rs 205 lacs.
- 2) Replace 14 nos reciprocating compressors by 2 nos Centrifugal Compressors to achieve better energy efficiency. The scheme requires an investment of Rs 142.0 lacs , and would result in an annual savings of Rs 39.74 lacs.
- 3) We generate pith as solid waste and at present partially is used as fuel. The rest is disposed. We are installing a pith fired boiler to reduce our coal consumption. The project requires an investment of Rs 2000 and will result into a savings of 793.59 lacs
- 4) Retrofitting of Rotary Lime Kiln to improve the production and reduce Heat losses requiring an investment of Rs 200 lacs and would result in savings of Rs 98.50 lacs
- 5) Retrofitting of Mud filter for improved Dryness of Lime mud for reduced consumption of FO in Lime Kiln. The scheme requires an investment of Rs 200 lacs and would result in savings of Rs 58.06 lacs
- 6) Retrofitting of Blow Heat Recovery system in WPP Pulp Mill for enhanced heat recovery requiring an investment of Rs 58.96 lacs and would result in savings of Rs 38.92 lacs.

LIST OF SOME ENERGY CONSERVATION PROJECTS UNDERTAKEN IN 2004-05

WEAK BLACK LIQUOR CLARIFIER

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To overcome this problem we installed storage cum clarifier of 2000 m³ capacity where suspended solids along with fractional fibers and earthy materials settle down by gravity and are withdrawn from the bottom of clarifier and clear Black Liquor with 300 ppm suspended solids is available resulting in better heat transfer and reduced steam consumption.

The scheme required an investment of Rs 120 lacs and resulted in annual Savings Of Rs 9.29 lacs.

DIVERTER FOR PITH CONVEYOR

For producing Bagasse Paper we consume 1200 Tons of Whole Bagasse daily. This whole Bagasse consists of approx 65% Fiber which is used for manufacture of paper. The balance 35% is Pith which is removed during the dry and wet depithing. The pith separated during dry depithing is carried to Pith yard by a conveyor. From the discharge of the conveyor the pith is shifted and stacked by Pay Loaders. It was later transported to Coal Fired Boilers by Tractor Trolleys. These trolleys were filled by payloaders and



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The investment was 0.5 lacs resulting into a saving of Rs 52.5 lacs through diesel & pay loader hiring charges and Rs 97 lacs through higher utilization of Biomass and savings of coal.

IMPROVED HEAT TRANSFER IN PAPER M/C DRYING CYLINDERS

FOR obtaining uniform moisture profile across the deckle and reduction in steam requirement for drying, the surface of dryer cylinders were ground and polished for paper m/c I this resulted in reduced steam consumption with improved Moisture profile. The project required an investment of Rs 55 lacs and an annual savings of Rs 9.0 lacs.

VARIABLE FREQUENCY DRIVES

Several fans and pumps in plant have variable flow requirements. This is achieved by valve throttling/ damper operations. By this method the reduction in power consumption decreases but at the same time the efficiency of the equipment decreases drastically. RPM reduction by VFD is closest to ideal capacity control. 16 Equipments (for applications of pulp Stock, chemical dosing, back water supply, FD & PA fans) were identified and provided with VFD's. this required an investment of Rs 22.0 lacs and resulted into a saving of Rs 12.6 lacs.

VAPOUR PHASE FOR RGP COOKING

In RGP Digesters Vapor phase was adopted because of which the quantity of black liquor injected into the digester was reduced thereby resulting in reduced steam consumption. The scheme required an investment of Rs82.85 lacs and resulted in savings of Rs 79.20 lacs.

IMPROVEMENTS IN COMPRESSED AIR SYSTEM

In compressed air system following improvements were done

- ✓ 6 nos air receivers were installed,
- ✓ 15 nos Zero loss drain valves were used.
- ✓ Existing HOC air drier was replaced by refrigerated air drier.
- ✓ 2 nos Air Managers were used for accurate control of pressure.
- ✓ These measures required an investment of Rs 34.7 lacs and resulted into a saving of Rs 13.0 lacs.

Energy Conservation Projects (Planned)	Anticipated Savings in		Approx inv (Rs lakhs)	Project Commencement & Completion year
	Energy Value (specify Units)	Rs Lakhs		
Installation of Pith fired Boiler for enhanced Biomass utilisation	41810 T of coal	794.39	2000	2004-05
Replacement of 14 nos Reciprocating compressors by 2 nos Centrifugal compressors	19.87 lacs kwh per annum	39.74	142	2004-05
Installation of VFD for Trim blowers, agitators and vacuum pumps	6.33 lacs kwh	12.66	22	2004-05
Retrofitting of Rotary Lime kiln	700 T of FO 0.80 kwh per annum	87.9 1.60	200.0	2004-05
Optimize process control to suit process changes	2.00 lacs kwh	4.00	0.50	2004-05
Automation of WPP Pulp Mill to reduce steam consumption and optimize chemical consumption (savings refer to energy only)	2160 T of coal	41.31	200.0	2004-05
Automation of RGP Pulp mill to reduce steam consumption and optimize chemical consumption (savings refer to energy only)	3200 T of coal	60.00	326.0	2004-05
Replacement of frequent rewound low Efficiency motors by Level1 motors	2.53 lacs kwh per annum	5.06	12.0	2004-05
Retrofitting of Mudfilter for improved Dryness of lime mud for reduced consumption of FO in Lime Kiln.	462 T of FO per annum	58.06	200.0	2004-05
Retrofitting of Blow Heat Recovery System in WPP Pulp Mill	2015 T of Coal	38.92	58.96	2004-05