

JK PAPER LTD
Unit : Central Pulp Mills
Fort Songadh, Dist. Surat (Gujarat)

Unit Profile

JK Paper Ltd is one of the largest paper manufacturing company in India having manufacturing operations in two units (i) JK Paper Mills in Orissa (ii) Central Pulp Mills in Gujarat. Central Pulp Mills is an integrated pulp and paper mill with an installed capacity 47000 TPA of writing and printing papers utilizing bamboo and hardwood as the raw materials. It was originally installed in 1966 and taken over by JK Organisation in 1992. The unit was rehabilitated in 1993-94. It is an ISO –14001 and ISO 9001 certified unit manufacturing various varieties of writing and printing papers e.g. SS Maplitho, Copier, Ledger, Parchment, Base Paper, MICR Cheque Paper etc. Its product JK Easy Copier is much in demand. It is the largest integrated pulp and paper mill in Western India.

The Mill has a Chipper House where bamboo and wood is cut into small chips, which are cooked in Pulp Mill having process automation. The pulp is then processed in Stock Preparation plant and thereafter it goes to two Paper Machines producing paper @ 160 MT/day.

The utilities consist of 3 coal fired boilers of capacities 20, 30 & 50 tph at 42 Kg/cm², 410⁰ C and 3 TG sets of capacities 2 X 3 MW, and 1 X 12 MW with water supply, DM Plant & compressed air system. In addition to this, there is one Soda Recovery Waste Heat Boiler, which produces steam at 42 Kg/cm², 410⁰ C utilizing the black liquor produced in the process of pulping. The organic matter is burnt in the furnace producing steam for process and power generation and inorganic matters which are the chemicals used for cooking of chips, are recovered for recycling.

Energy Consumption

The Pulp and Paper industry is highly energy intensive. The primary inputs are in the form of coal, furnace oil and electricity. With the installation of one no.12 MW TG set in 2000-01 the mill has achieved 100 % self sufficiency on the power front. The annual current (2003-04) energy bill of CPM is around Rs. 23.51 crore which is 22.97 % of the total manufacturing cost as against 25.62 % in 2000-2001 indicating a reduction in energy expenses as compared to the previous years inspite of the soaring prices of fuel which has become possible by optimising the process parameters, technology innovation, inhouse R & D and continual efforts in the area of energy conservation.

The following table gives the major energy inputs during the past 3 years and the reduction in energy bill as percentage of total manufacturing cost.

Year	Prodn Year MT	Total Energy Bill			Total Mfg Cost Rs. Crore	Specific figures		% of Energy bill wr to mfg cost
		(Coal+ F.Oil) Thermal Bill Rs. Crore	Electricity Bill Rs.Crore	Total Energy Bill Rs. Crore		Energy Bill / MT Rs./MT	Mfg cost MT Rs./MT	
2001-02	51010	10.98	17.58	28.37	110.74	5561	21709	20.43
2002-03	51743	9.56	15.69	25.25	112.17	4879	21678	18.05
2003-04	50423	11.08	16.43	27.51	119.75	5455	23749	17.18

Energy Conservation, Commitment, Policy and Setup :

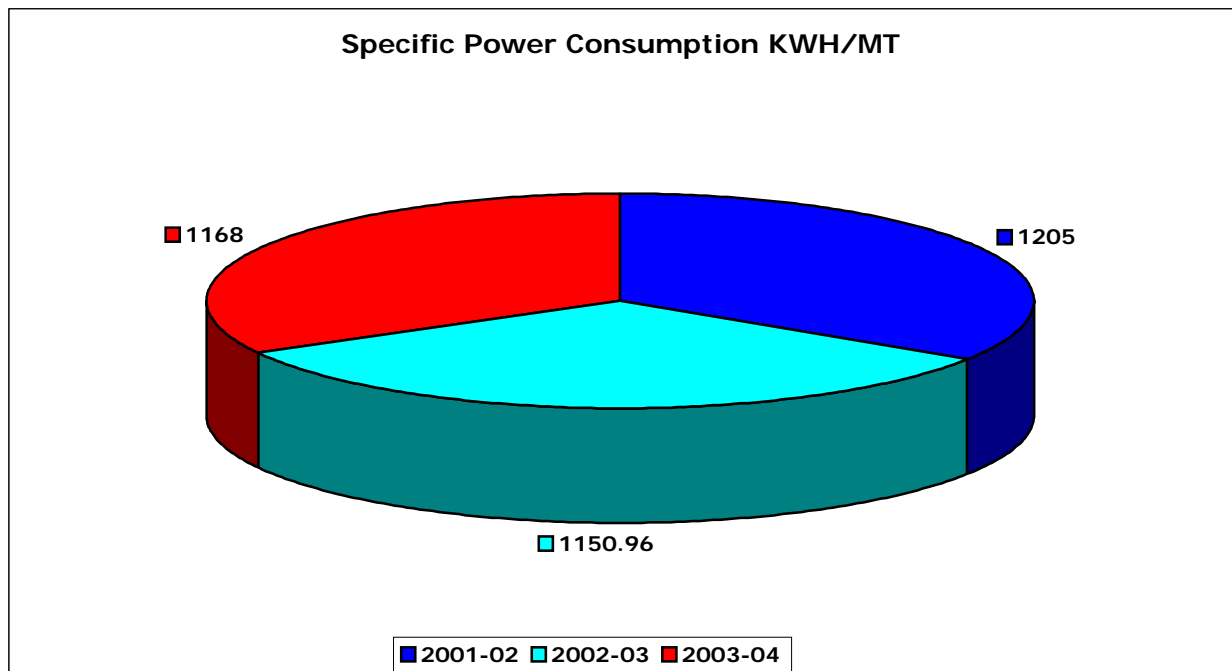
The company accords high priority for energy conservation, which has emerged as one of the major thrust areas for cost reduction. In order to achieve the goal a full fledged energy conservation cell headed by a GM and supported by a core team of various executives of cross functional areas has been formed for close monitoring and control of energy consumption parameters. The losses through the distribution network are monitored on regular basis and analysed for preventive and corrective action.

Energy performance parameters of the plant are prepared by the department on daily basis, analysed and discussed in the daily production meeting. The philosophy of energy conservation is followed right at the design stage to avoid rework at a later date. At the beginning of the financial year sectionwise energy consumption targets are fixed and all efforts are made to keep the consumption norms within targeted figures. The variances are discussed in the Monthly Operating Review meetings held every month at Corporate level.

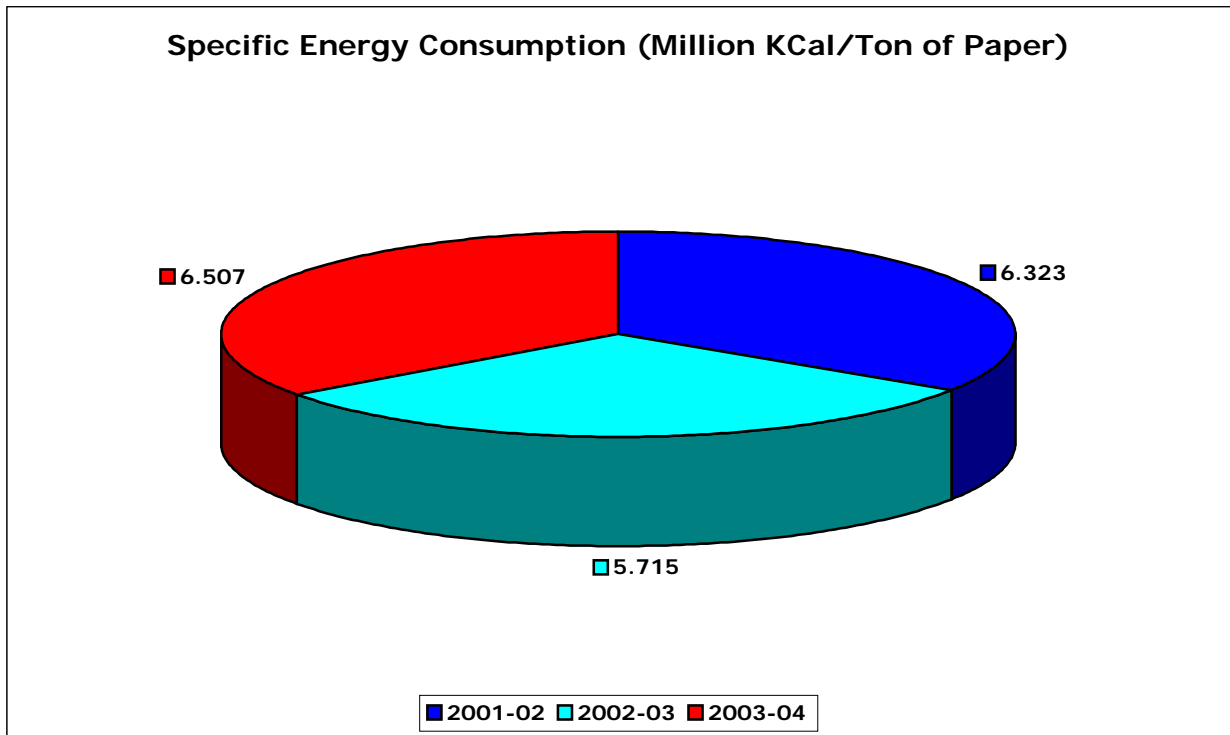
Energy Conservation Achievements:

Various Energy Conservation schemes- in house and suggested by external agencies were taken up on continuous basis, resulting in steady decline in the energy consumption in various sections as under:

Year	2001-02	2002-03	2003-04
Specific Power Consumption (kWH/MT)	1205.00	1152.96	1168.00



Year	2001-02	2002-03	2003-04
Specific Energy Consumption (Million kCal/T of paper)	6.323	5.715	6.507



Energy Conservation achievements

- Partial replacement of medium pressure steam at 10 Kg/cm² with LP steam at 4 Kg/cm² in Digester House.
- Installation of Vecoplan drum chipper of higher capacity replacing 4 Nos. inefficient old bamboo disc chippers and 2 Nos. wood chippers.
- Replacement of 12 Nos. inefficient rotary siphons of PM-II dryer section.
- Replacement of 4 Nos. inefficient pumps with energy efficient pumps in Pulp Mill and causticizing plant.
- Utilization of Paper Machine - I flash vapours for pocket ventilation air heating.
- Reduction of speed of Paper Machine- II machine refiner.
- Implementation of various schemes related to water conservation and saving water pumping cost.
- 100% reutilization of Paper Machine effluent in Pulp Mill thereby reducing the consumption of fresh water.
- Lowering the frequency of TG power thereby reducing energy consumption substantially.

Energy Conservation Future Plans & Targets

- To replace one high head and capacity 40 HP pump at Paper Machine - II machine chest with a 10 HP. Pump of lower head and capacity.
- To utilize flash vapours from the condensate of Pulp Mill for heating combustion air at Soda Recovery Boiler.
- Various water conservation schemes for recirculating the process waste water to conserve fresh water.
- Replacement of PM-II flat box seal pit inefficient pumps of 20 HP with 10 HP energy efficient pump.
- Power savings by reduction of head of PM-I machine chest pump by trimming the pump impeller.

Environment and Safety

Environment and safety has always been priority area in mills operation. The Environment Management System has been introduced in the mills and the company has been awarded ISO 14001 certificate during 2001-02.

CPM believes in sustainable development and thus it has adopted two pronged strategy to abate pollution.

- Pollution control at source by adopting cleaner technology and
- End of pipe treatment
- CPM has introduced (Total Productivity Maintenance) a Japanese work culture which covers environmental and safety aspects also.

Use of peroxide bleaching to reduce pollution load in effluent and use of Atmospheric Fluidised Bed Combustion Boiler to reduce NOx emission are few examples of pollution control measures at source. Following major jobs have been carried out during the last 3 years:

• **Effluent**

- In August 2001, an on line pH meter was installed at inlet of effluent treatment plant to eliminate excess consumption of lime and proper operational control of ETP.
- Earlier pulp was washed in 3 stages counter current washing system. Since February 2001, one more washer was added to improve washing of pulp, increase recovery of chemical and reduction of COD and BOD in effluent.


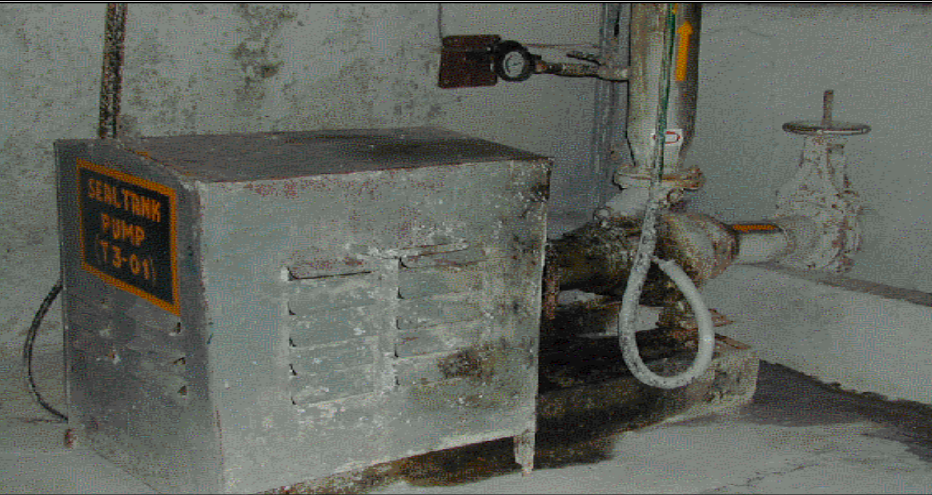
- **Air** : During March 2001 one ESP was provided for Stoker fired boiler No. 1 and thus all the boilers are equipped with ESP and the old stack of 50 mtr height of spreader stoker boiler was replaced with new RCC stack of 70 mtr height for reducing pollution.
- **Solid Wastes** : All possible care is taken to dispose off the solid wastes judiciously. Lime sludge is filled in abandoned stone quarry and ETP fibrous sludge is utilized for making packaging board and bamboo dust is burnt in boilers for generating steam thereby replacing the equivalent quantity of coal.

CPM received following awards –

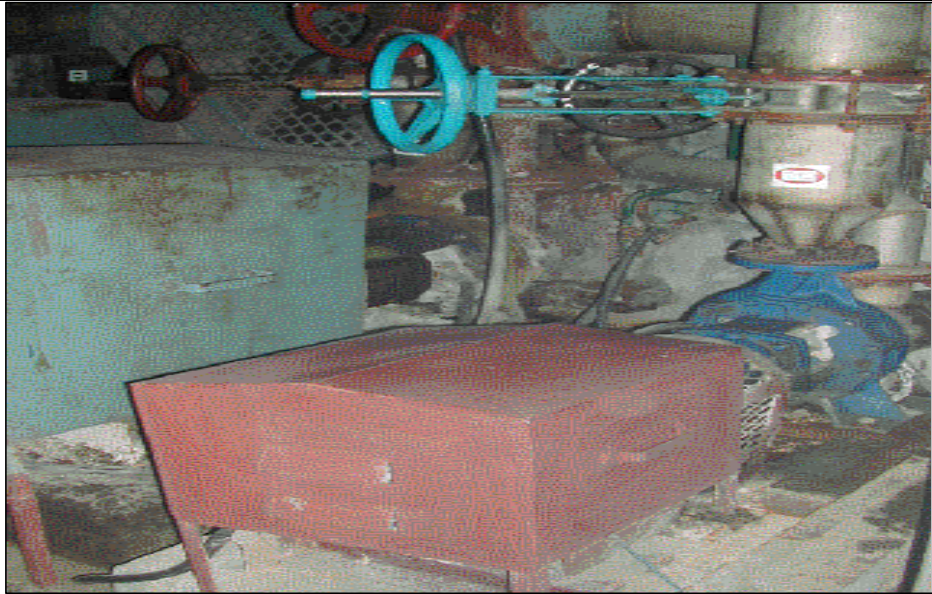
- i) **Energy Conservation award for the year 1999 from Indian Paper Manufacturers Association**

- ii) Golden Jubilee Memorial Trust award for **Outstanding pollution control programme for 1999-2000** from Southern Gujarat Chamber of Commerce and Industry

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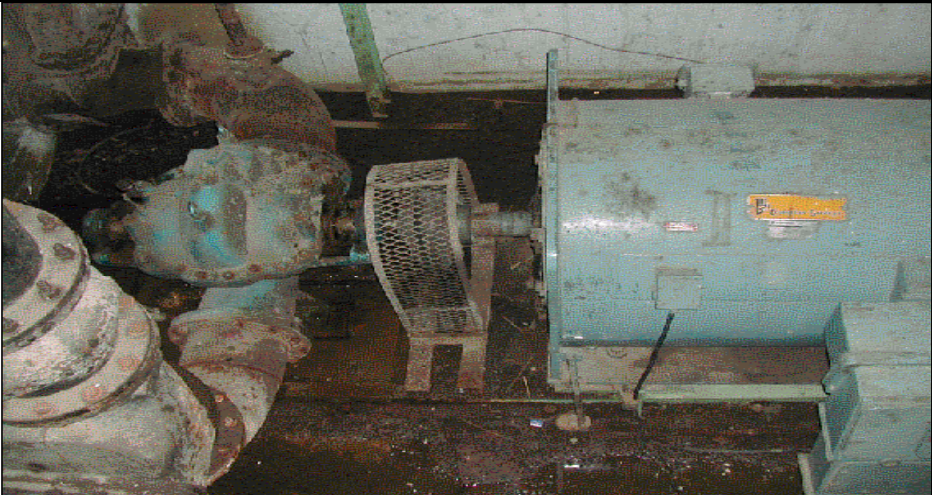
Year of Commissioning of the projects	Project Description	Achievement of energy savings per year basis					Total Savings in (Rs. lakhs)	Investment incurred on the project (Rs. lakhs)
		Electricity (Lakhs kWh)	Fuels*					
			Coal tonnes	F. Oil (KL)	Gas (Lakhs m ³)	Total (fuel in MkCal)		
2003-04	Paper Machine							
1	Reduction in head of one of the PM-I machine chest pumps for power saving.	0.21	--	--	--	--	0.580	0.100
	WATER SAVING SCHEME							
2	Replacement of PM-II flat box seal pit pump and delivery line for power saving.	0.56	--	--	--	--	1.500	0.600
								


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		Electricity (Lakhs kWh)	Fuels*					
			Coal tonnes	F. Oil (KL)	Gas (Lakhs m ³)	Total (fuel in MkCal)		
3	Installation of new pump of lower head for PM-II machine chest circulation for power saving.	0.81	--	--	--	--	2.200	1.500



4	Utilities Installation of new mill water pump Phase-I new rotating element fitted in spare Mather & Plat body.	5.91	--	--	--	--	15.960	2.480
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		Electricity (Lakhs kWh)	Fuels*					
			Coal tonnes	F. Oil (KL)	Gas (Lakhs m ³)	Total (fuel in MkCal)		
5	Installation of level transmitter in colony water O.H. tank and interlock with supply pump for water and power saving.	0.60	--	--	--	--	1.620	0.830
								
6	Replacement of canal water pump of higher efficiency & lower head	1.03	--	--	--	--	2.780	1.680
								

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 (Lakhs kWh)	Fuels*					
			Coal tonnes	F. Oil (KL)	Gas (Lakhs m ³)	Total (fuel in MkCal)		
7	Heat Recovery from flash tank in Recovery Boiler	--	179.75	--	--	771.8	3.78	0.15
								
	Sub Total	9.12	179.75	0	0	771.8	28.420	7.340
	Grand Total	26.538	5066.27	0	0	20451.77	175.496	76.19

* Delete or add fuels as the case may be

Note : (i) With the commissioning of a particular project/measure, annual energy savings indicated in one year should not be shown again in the second or third year, as recurring energy saving.

(ii) Savings in fuel under the column "Total (fuel) in MkCal" should be presented in Million kCal by multiplying the Coal/F. Oil/ Gas quantity with the appropriate calorific value of the fuel and appropriate multiplying factor.