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

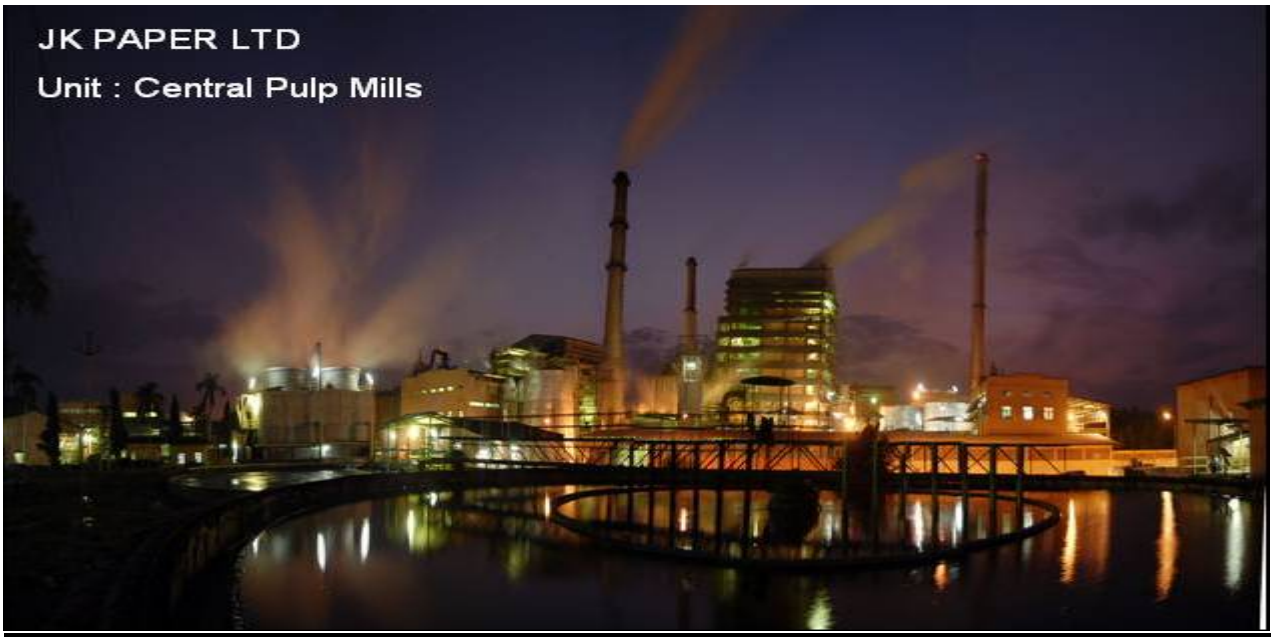
Point No. 22

Unit Profile

JK Paper Ltd is one of the large Pulp and 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 54000 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,OHSAS-18001 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 15, 25 & 50 tph at 42 Kg/cm2, 405^0 C and 3 TG sets of capacities 2 Nos.X 3 MW, and 1 No. X12 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, 405^0 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 (2006-07) energy bill of CPM is around Rs. 34.08 Crores which is 20.40 % 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 5 years and the reduction in energy bill as percentage of total manufacturing cost for three years and there is an increase in bill due to installation of ODL, ClO2 Plant in 2005.

Year	Prodn	Total Energy Bill			Total	Specific figures		% of Energy
	Year MT	(Coal+ F.Oil) Thermal Bill Rs. Crore	Electricity Bill Rs.Crore	Total Energy Bill Rs. Crore	Mfg Cost Rs. Crore	Energy Bill / MT Rs./MT	Mfg cost MT Rs./MT	bill wr to mfg cost
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
2004-05	51590	10.94	16.18	27.12	133.47	5256	25855	16.44
2005-2006	52292	11.40	15.51	26.94	142.90	5152	27329	19.7%
2006-2007	53781	12.94	21.14	34.08	158.93	6336	29552	20.4%

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 supported by a core team 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 by Steering Committee.

Energy Conservation Team Structure

ENERGY CELL STEERING COMMITTEE

Sr. No.	Name	Designation
1	Shri N K Agarwal	Vice President (Works)
2	Shri S Goswami	Chief General Manager (Manufacturing)
3	Shri N K Khanna	Chief General Manager (Engineering)
4	Shri S K Kaul	General Manager (Utility)

ENERGY CELL MEMBERS

Sr. No.	Name	Designation	
1	**Shri S Marwaha**	**DGM (Electrical)**	**Energy Manager**
2	Shri V N Chauhan	DGM (P&D)	Member
3	Shri A K Somani	Sr Manager (P&D)	Member
4	Shri Anil Sah	Sr Manager (PM/c-Maint)	Member
5	Shri C Muthaiyan	Sr Manager (Instrument)	Member
6	Shri M P Singh	Manager (Pulp Mill)	Member
7	Shri Jaydeep Shah	Manager (Electrical)	Member
8	Shri D N Jha	Dy Manager (Recovery)	Member
9	Shri Raju Agarwal	Dy Manager (Env)	Member
10	Shri YS Rathore	Asst Mgr (Power Block)	

Major Energy Conservation Activities

We are installing a new power plant of 12 MW capacity by incorporating a 70 TPH, CFBC boiler at 88 Kg/Cm2 and 510 Deg C steam temperature which is expected to be commissioned by November 2007. This high pressure steam would pass through new 12 MW double extraction cum condensing steam turbo generator set (STG) and extraction steam at 10 Kg/Cm2 and 4 KG/Cm2 would be sent for process heat and cogeneration power with minimum steam to condenser will be available.

The new CFBC boiler will operate at efficiency of 86 % as compared to existing AFBC boiler at 82%. The gain of 4 % in efficiency will effect reduction in coal consumption. Additional advantage of CFBC is that the generation of NOX combustion gases is eliminated thereby improving the emission quality. New turbine will be operated at most economical extraction and condensing flows thus giving overall CHP efficiency and cheaper power.

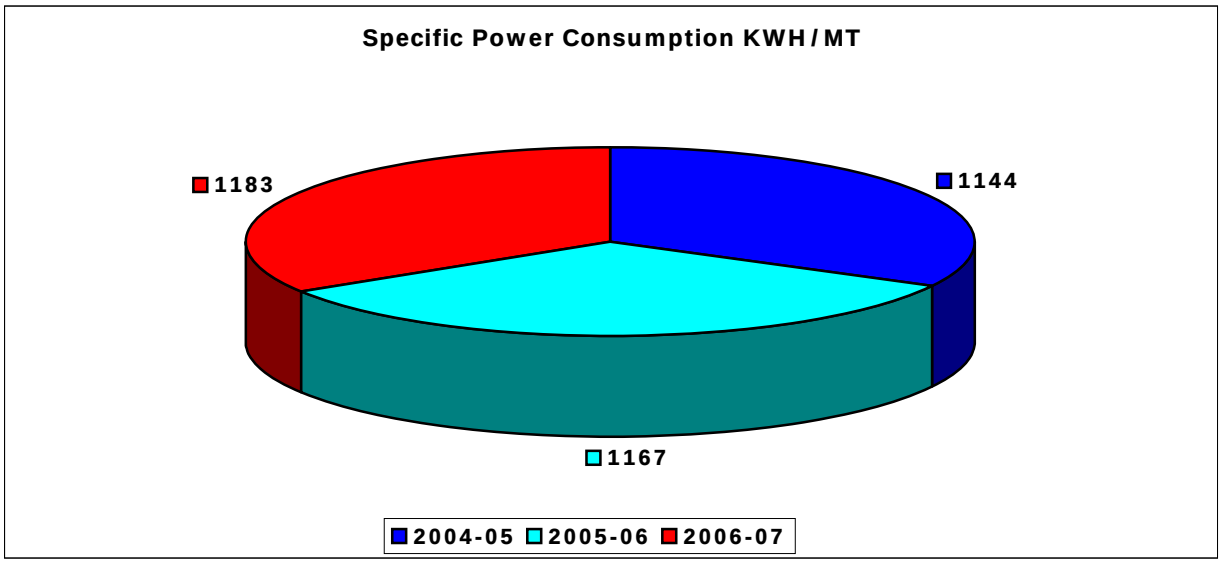
This new power plant has been installed to cater additional / new thermal and power energy demand of recently installed Paper Board Project of 60,000 TPA capacity.

Recent Energy Conservation Activities

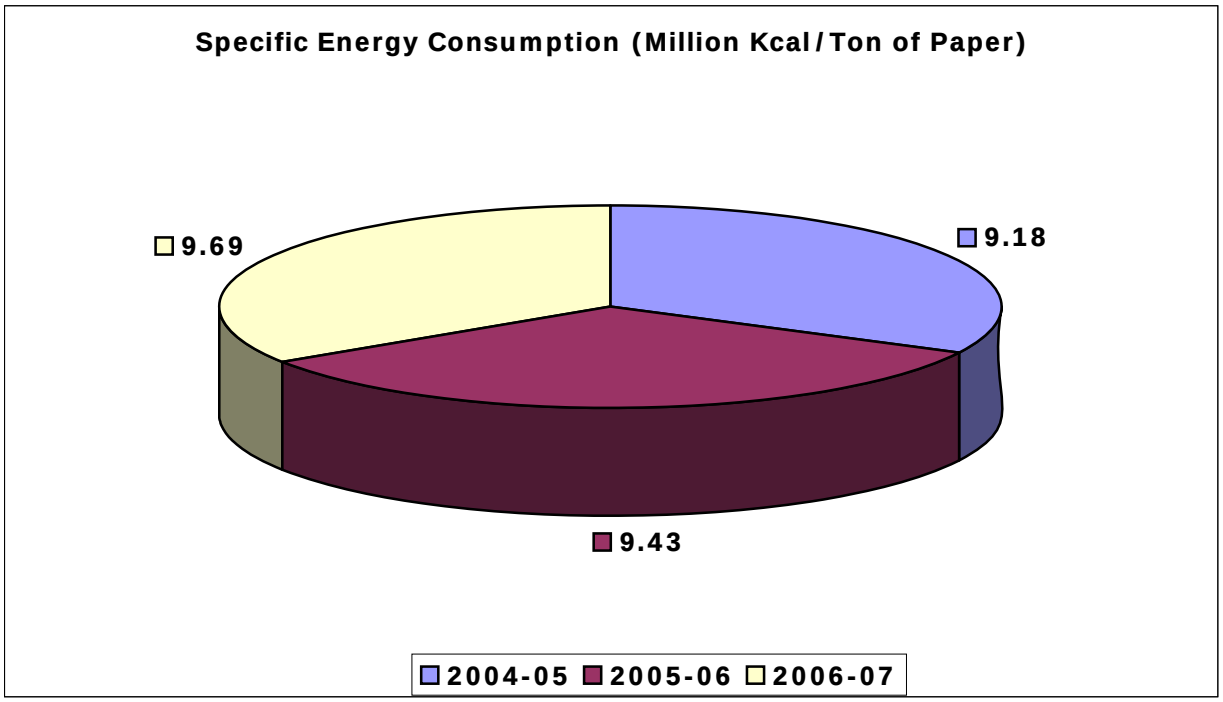
Various Energy Conservation schemes- in house and suggested by external agencies were taken up on continuous basis, resulting in steady decline in the energy consumption in various sections.

However to improve environment / High AOx effluent and improved yield per ton of raw material, there has been increase in overall specific power consumption and steam consumption due to installation of Oxygen De-lignification plant, Modernization of screen plant and Chlorine Dioxide Plant in Pulp mill in Nov-2005. The overall increase in power as well as steam consumption is as shown below :

Year	2004-05	2005-06	2006-2007
Specific Power Consumption (kWH/MT) (Figures exclude consumption in Colony, Coal Boiler and TG set operation)	1144.00	1167.00	1183



Year	2004-05	2005-06	2006-07
Specific Energy Consumption (Million kCal/T of paper) (Figures exclude consumption in coal boiler deareator and power component of TG set cogeneration)	9.18	9.43	9.69



Energy Conservation/ Technology improvement

- Partial replacement of medium pressure steam at 10 Kg/cm2 with LP steam at 4 Kg/cm2 in Digester House.

Major projects implemented for Energy Conservation during 2006-07

Sr. No.	Project Description	Total Savings (Rs. Lacs)	Total Investment (Rs. Lacs)
1	ClO2 plant for pulp bleaching	440.00	1300.00
2	Power saving due to Finishing House working in 2 shifts from 3 shifts	0.63	0.00
3	Steam reduction in Causticizing Plant by minor changes in process parameters	11.800	0.00
4	Installation of driver ratio control system for Cutter No. 3 overlapping	3.700	5.200
5	Power saving due to replacement of 3 blade agitator of mixing tank by 4 blade agitator.	3.940	0.00
6	Increase in deckle utilization due to Line-O-Matic Cutter-II.	11.550	0.00
7	Changing fills of Cooling Tower for steam and power saving.	23.040	7.00
8	Shifting of colony water supply pump and connecting to Board plant pump suction header for power saving.	1.990	0.00
9	Providing 'ON/OFF' switch arrangement for lights in control room.	0.640	0.20
10	Stopping 1 No. vacuum pump out of 2 Nos. running by providing 2 Nos. water separation.	1.990	0.00

Energy Conservation Future Plans & Targets

Sr. No.	Description	Anticipated Savings In		Approx Investment (Rs. Lacs)	Project Commencement & Completion year
		Energy Value (Lacs KWH)	Rs. Lacs		
1	Installation of high pressure coal boiler and TG set.	-	660	5000.00	Completion in November 2007
2	Installation of New Paper Board Machine to manufacture different varieties of Board.	Per Ton of power consumption will be 900 KWH as compared to our Pulp & Paper Machine consumption of 1183 KWH/T of paper.		25000.00	Completion in October 2007
3	Replacement of __ HP pump for wire cleaning of paper machine.	0.70	2.00	1.22	December 2007
4	Replacement of 40 HP trim blower by 30 HP motor.	0.21	0.64	1.26	December 2007
5	Replacement of edge cutter pump by lower capacity pump	0.61	1.80	1.80	December 2007
6	Checking of Eff. of existing motors and replacing with high efficiency motors.	3.50	10.00	15.00	June 2008
7	Study and replacement of old and inefficient pumps in the plant.	6.00	20.00	35.00	June 2008

Various water conservation schemes for recirculating the process waste water to conserve fresh water and critical study of process pumps efficiency to achieve 5 to 7 % reduction annually and introducing environmental friendly processes in phased manner.

Installing Chlorine di-oxide plant of capacity 1.5 Ton to increase pulp brightness from 86-87% ISO to 90 % ISO. This will result in increase in power by 30KWH per ton of paper.

Environment and Safety

- A new lime mud filter of higher capacity was installed in causticizing plant to further control/reduce loss of chemicals going with Calcium sludge .
- In order to reduce water consumption, uncontaminated water from paper machine section, chemical recovery section and power plant is collected separately and is used as fresh water.
- Paper machine effluent is segregated and treated separately in 20 m diameter clarifier. Clarified effluent, to the extent of 95%, is reused in pulp mill and chipper house.
- In order to keep the environment clean, CPM has planted 50000 trees in and around factory and colony premises in the year April 2006 to March 2007.
- Mill has been awarded TPM Excellence Award-2006- 1st category by JIPM, Japan.
- Mill has been awarded "IPMA Award for Energy Conservation-2005-06".
- Domestic sewage is treated properly in 7 Nos. of septic tanks and then taken to main effluent treatment plant alongwith mill effluent.
- Online pH meter has been installed at the inlet of effluent treatment plant for better control of pH.
- Old inefficient feed pumps and motors in paper machine clarifier has been replaced by new efficient pumps and motors for reducing energy consumption.
- In order to reduce pollution load in effluent unbleached pulp is deknotted in the recently installed modern 3 stage pressure screening system. Screened pulp is then processed in Oxygen Delignification Plant.
- Oxygen Delignification plant has been installed in the Pulp Mill which has resulted in the reduction of elemental Chlorine consumption and AOX content in the treated effluent as per CREP guideline.
- Chlorine Dioxide plant has been installed in the pulp mill which has resulted in the reduction of elemental chlorine and hypochlorite to minimize AOX content in the treated effluent as per CREP guidelines.
- All boilers are equipped with ESPs (Electrostatic Precipitators)

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. Unit –CPM was awarded National Safety Award- 2004. 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 **TPM** (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**
  - 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. One more washer was added to improve washing of pulp, increase recovery of chemical and reduction of COD and BOD in effluent.

- **Air :** 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. Coal ash dust from Boilers is utilized for moulded brick making for Civil constructions.

CPM received following awards –

1. **Winner of J.I.P.M. TPM Excellence 1st Category Award for the year2006.**
2. **Winner of CII National Award for excellence in Energy Management-2005**
3. **Indian Paper Manufacturers Association adjudged unit : CPM as outstanding " Paper Mill of Year award 2003-04".**
4. **National Safety Award 2004.**
5. **Energy Conservation award for the year 1999 from Indian Paper Manufacturers Association**
6. **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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