

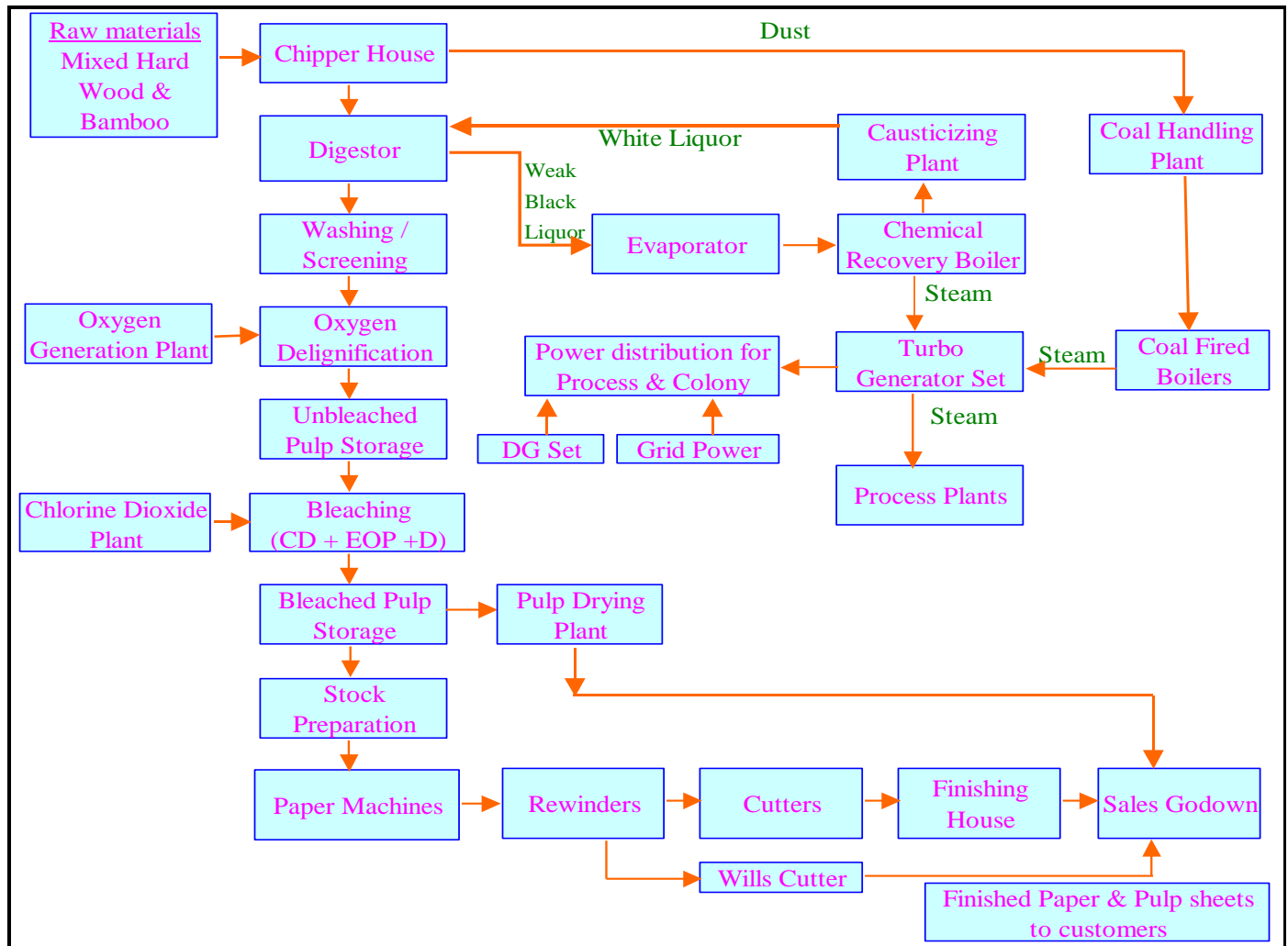
## **UNIT PROFILE:-**

JK Paper Mills (earlier Straw Products Ltd.), a unit of JK Paper Ltd. a flagship company of JK Organization, an integrated Pulp & Paper Mill with installed capacity of 18000 TPA, was set up in the year 1962 at Jaykaypur, Dist. Rayagada, Orissa. The mill manufactures machine finished, machine glazed and surface sized quality writing and printing paper and paper board, with a turn over of about Rs.666.57 cores / annum.



The mill has expanded in phases and at present it has 5 paper machines with production capacity of 125000 TPA finished paper, 108700 TPA BD (bone dry) bleached pulp and Coated Paper & Board 42897 TPA with modern pulp mill having Rapid Displacement Heating system, Oxygen Delignification system and CD-EOP-D Bleaching sequence, 2 nos. of 300 TPD BL solids firing capacity Recovery Boilers each, 5 nos. Coal Fired Boilers, 3 nos. Turbines with installed capacity of about 20 MW, 4 MW DG Set, Water Clarification & Treatment and Effluent Treatment Plant.

A schematic block diagram showing process flow (Fig-1)



The system and practices, introduced by the mills, have led it to its being the first Indian Paper Mills to receive ISO 14001, Environment Management Certification in the year 1998, Top 2 Paper Mills for getting Three leaves award from CSE, New Delhi in 2004. It is also the first Indian Paper Mill to receive ISO-9001, Quality Management System (QMS) certification for design, development and manufacture of Paper, Board and related products from M/s DET NORSEK VERITAS QA LTD. under accreditation from National Accreditation of Certification bodies, London. It also received the Greenest Paper Mills award from Centre for Science & Environment (CSE), New Delhi.

### VISION

To be a Dynamic Benchmark and Leader in the Indian Paper Industry

### MISSION

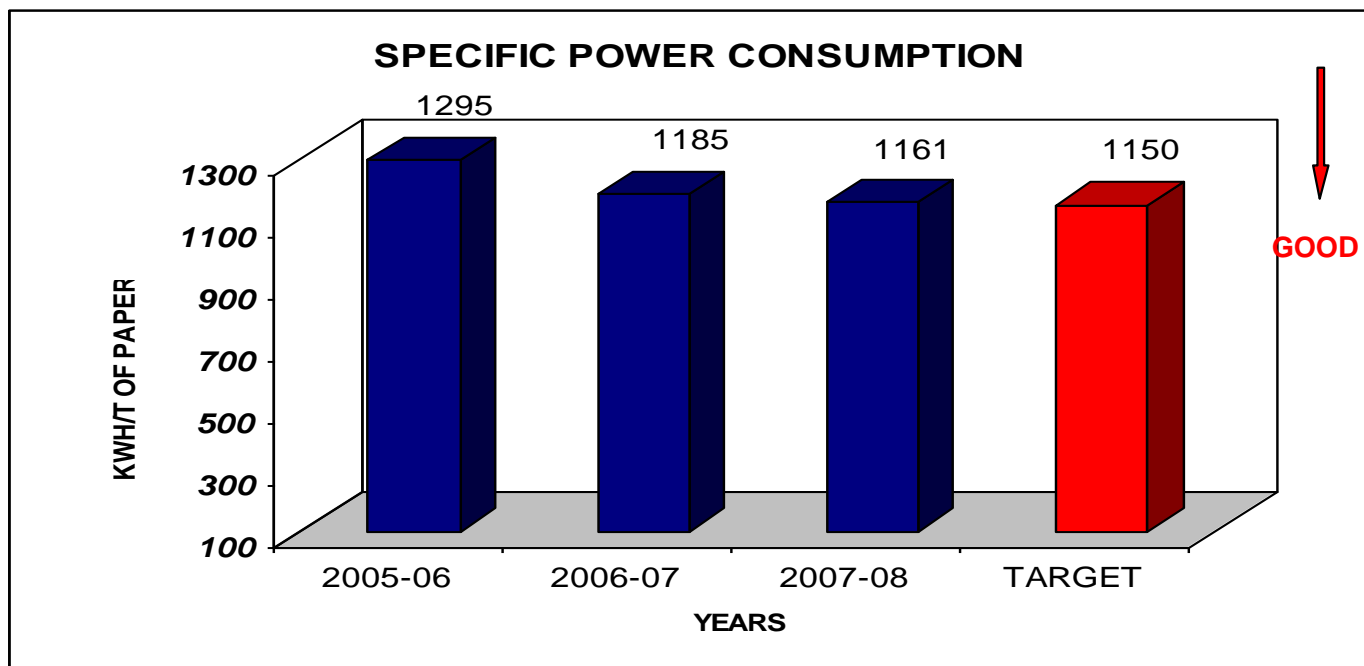
To achieve growth and leadership through the JK brand equity, customer obsession, technological innovation and cost leadership, **with a clear focus on environment**, while continuously enhancing shareholder value.

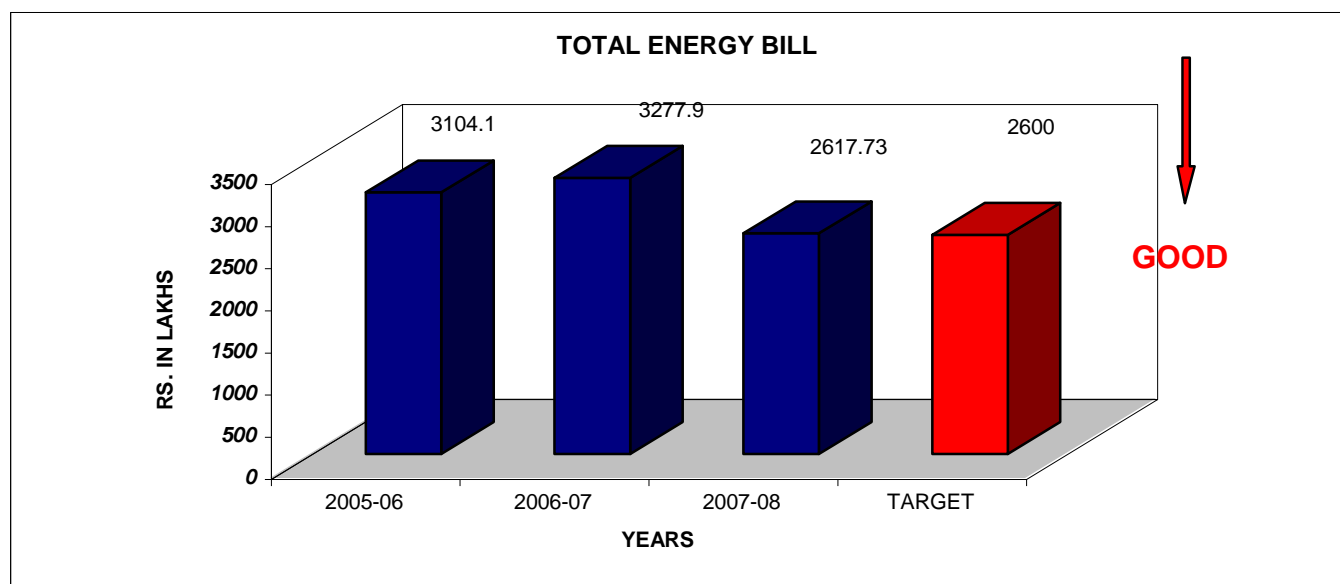
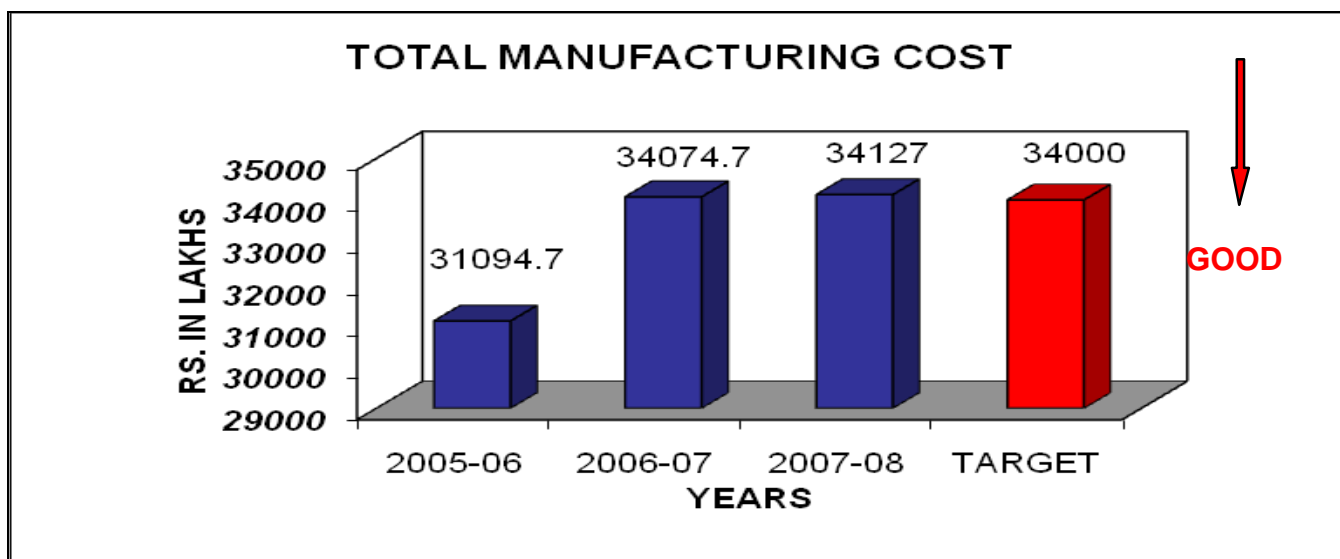
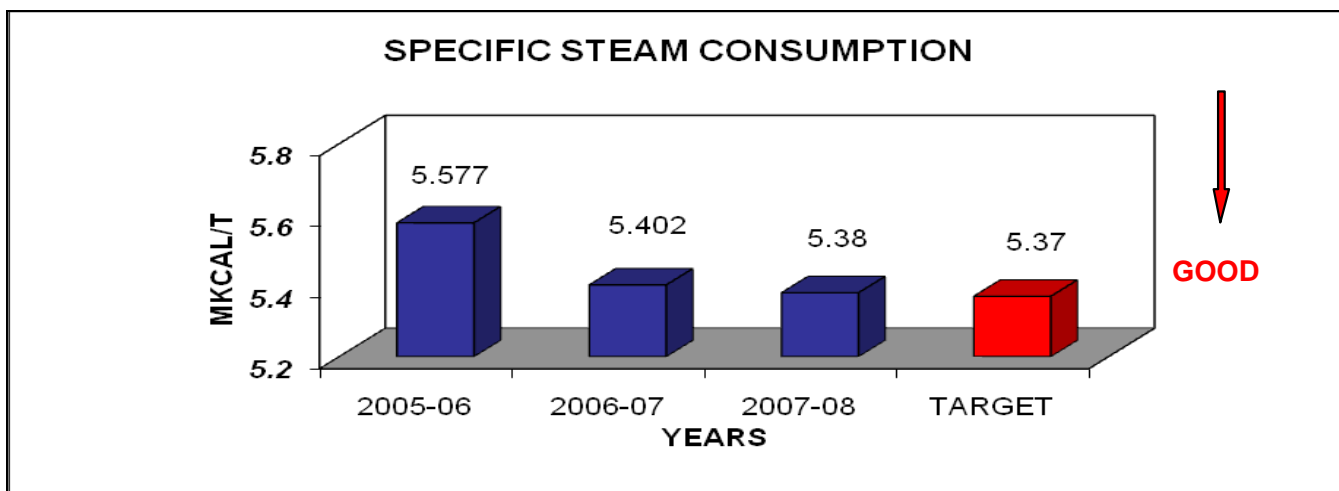
## ENERGY CONSUMPTION:-

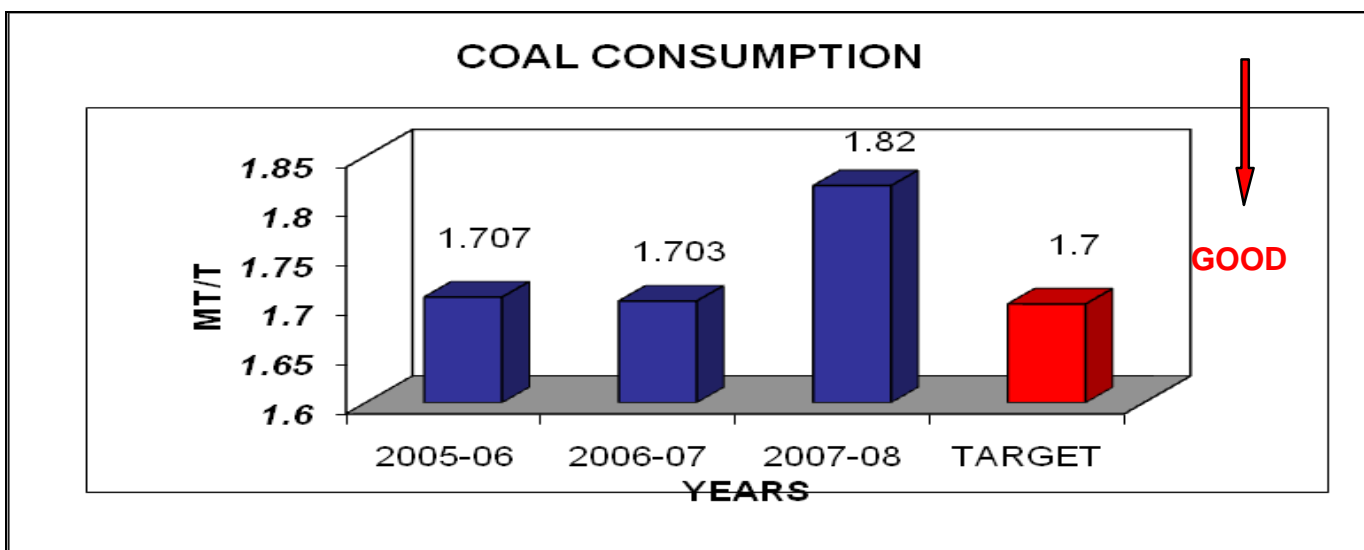
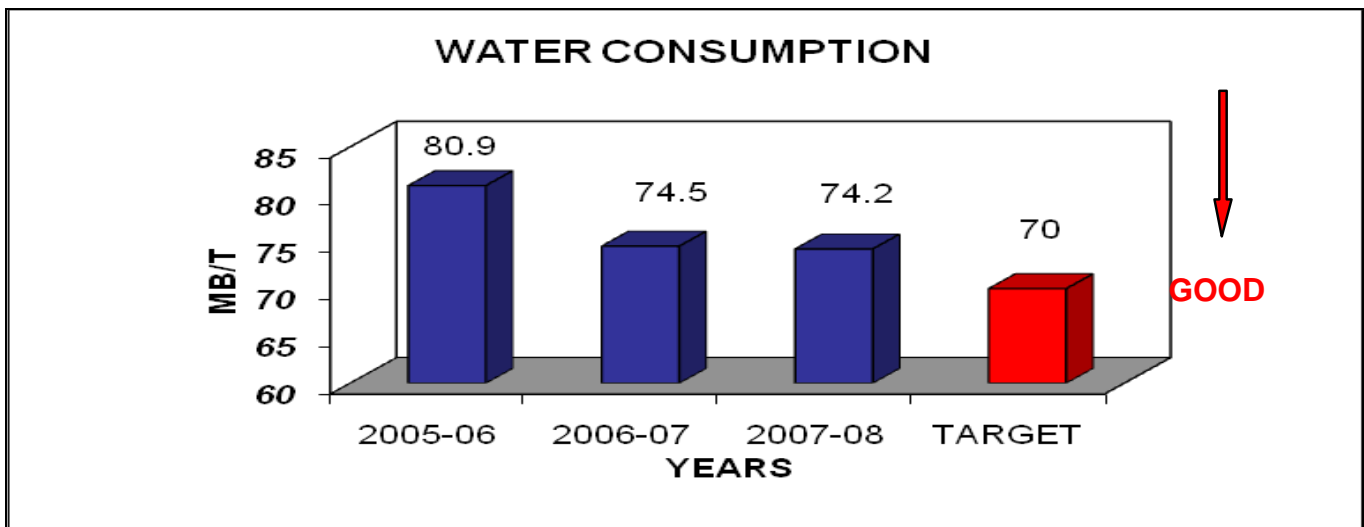
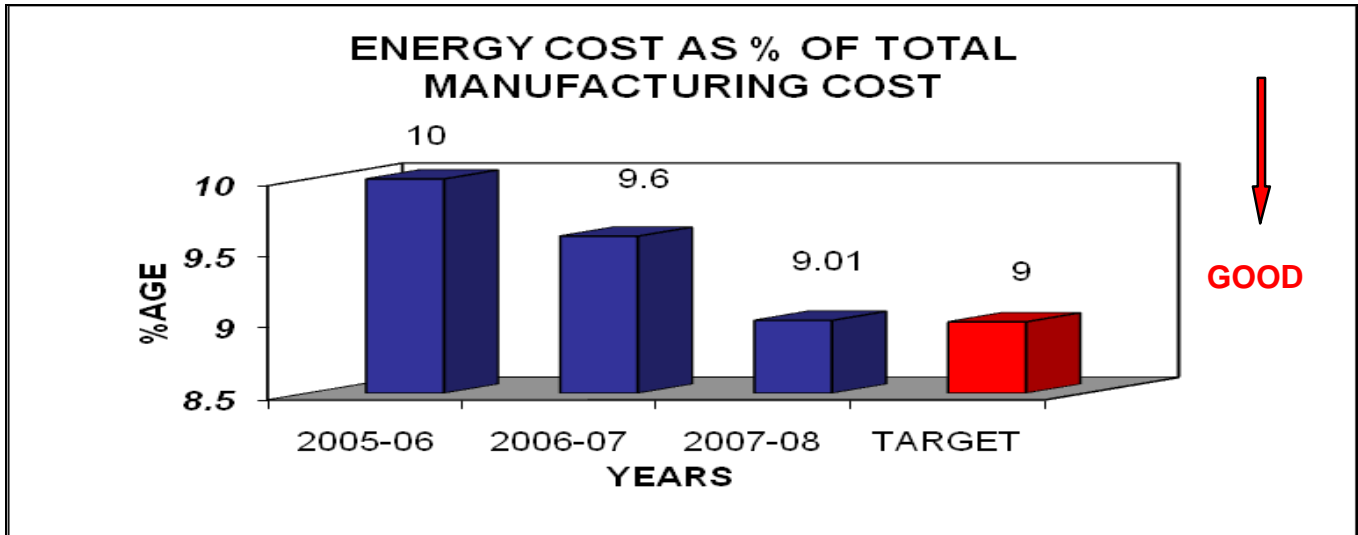
Expansion / Modernization / Renovation is a way of life at JK Paper Mills. To be self sufficient in power demand w.r.t. expansion, the company has been putting up additional power generation plants without overburdening the grid demand and have been modernizing / discarding the old boilers and discarded old Pulp Mills (2 nos. of 80 TPD BD Bleached Pulp Production Capacity).

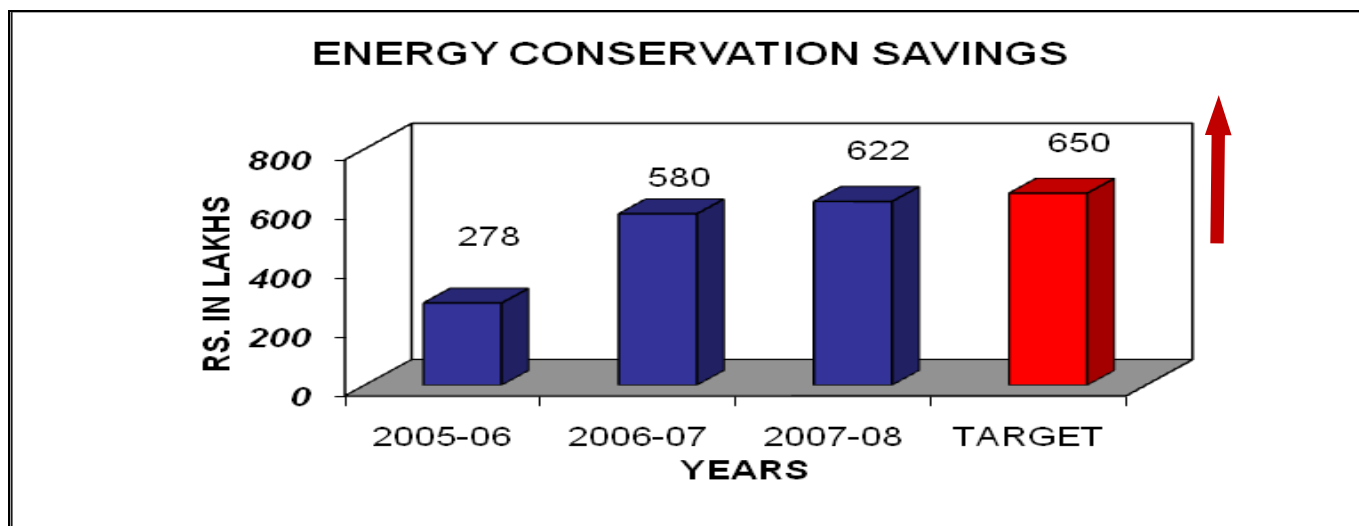
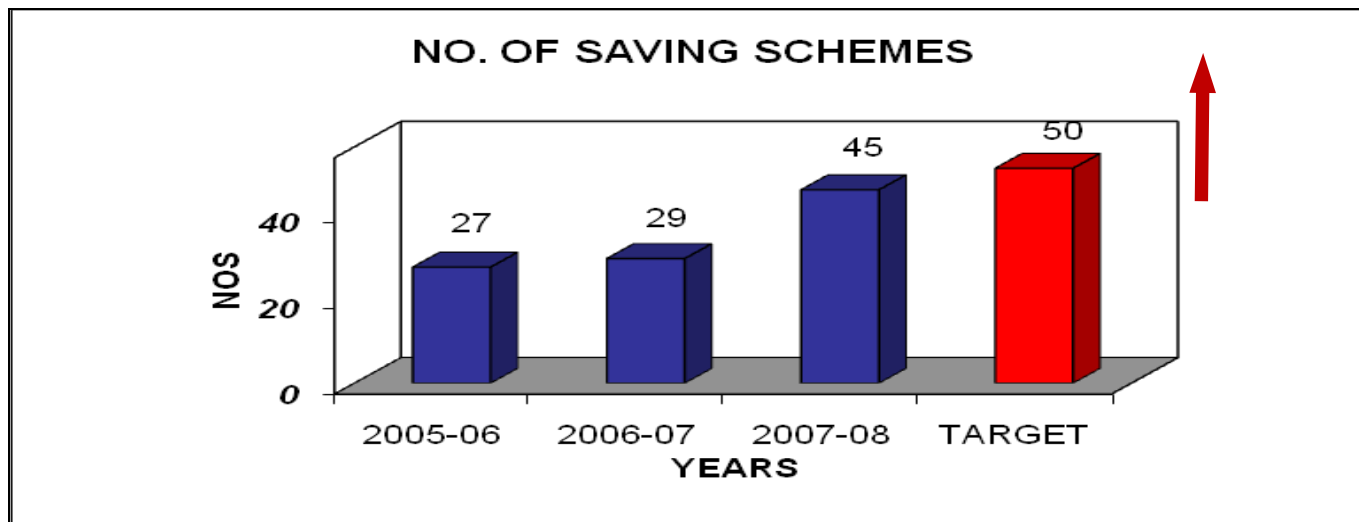
For the last three years specific energy consumption shown below, which indicates the continual reduction in energy consumption due to our sustained efforts to conserve energy with the implementation of various energy conservation projects & ideas for increasing the efficiency of the equipments/ plant.

DESCRIPTION	UNIT	2005-06	2006-07	2007-08
<b>Electrical Energy</b>	Kwh/T	1295	1185	1161
Thermal Energy	M Kcal / T	5.577	5.402	5.40
Total Manufacturing Cost	Rs. lakhs	31094.67	34074.66	34127.0
Total Energy Bill	Rs. lakhs	3104.11	3277.89	2617.73
Energy Cost as %age of Manufacturing Cost	%	9.98	9.62	9.01









### **ENERGY CONSERVATION COMMITMENT, POLICY & SET-UP:-**

The company has established Energy Management System which is continuously working on energy conservation. The company has been forming various committees from time to time namely, Energy Conservation Cell, Cost Compression Cell, Continuous Improvement Cell etc. with new energetic committee head and team members to achieve maximum benefit in conserving resources and reduce cost of production to meet market challenges.

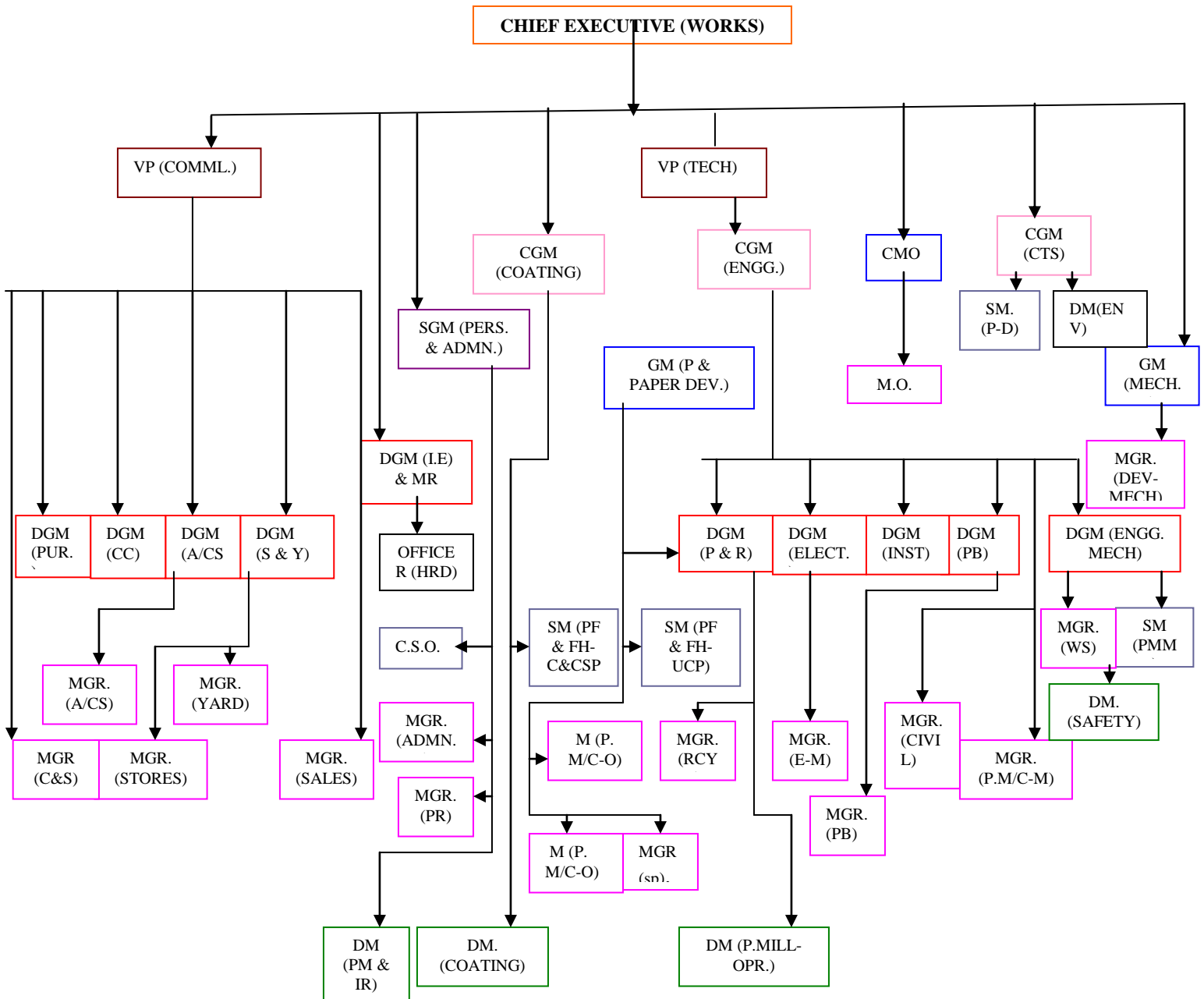
The function of the cell is to minimize losses and wastages, use technique to substitute high cost energy by low cost energy, optimize consumption, and maximize utilization of plant and machinery capacity etc. by following tools:

1. To Study specific energy consumption trend in terms of Power, Steam, Water in various sections of the mill and monitor.
2. To follow up with various departments to arrest steam leakages, condensate leakages, water leakages and provide adequate insulation as required to minimum heat losses thereby save energy.
3. To prepare energy conservation projects / proposal and ensure their financial approval and timely implementation.
4. To assist quality circle, evaluate ideas generated by suggestion schemes and to implement useful energy conservation schemes.
5. To implement suggestions given by internal auditors (ISO & TPM) from time to time.
6. To engage external agency i.e. auditors / consultants to assess the health of the organization w.r.t. energy consumption and optimize investment for additional power generation station.
7. To arrange essay / poster / slogan competition (with attractive prizes) to enhance consciousness among employees (about scarcity of energy, its depleting production and increasing cost from time to time), inculcate habit of conserving and effective use of energy, emphasizing on environmental impact to have a continuous improvement in reduction in cost of production.
8. To impart training to improve the skill of personal to evaluate the opportunity by material balance, heat balance, energy balance etc.
9. To celebrate the 14<sup>th</sup> Dec. as the Energy Conservation Day involving employees, their family members (including school children), employees of nearby small scale industries to motivate them to achieve the goal of conservation of energy for future generation.

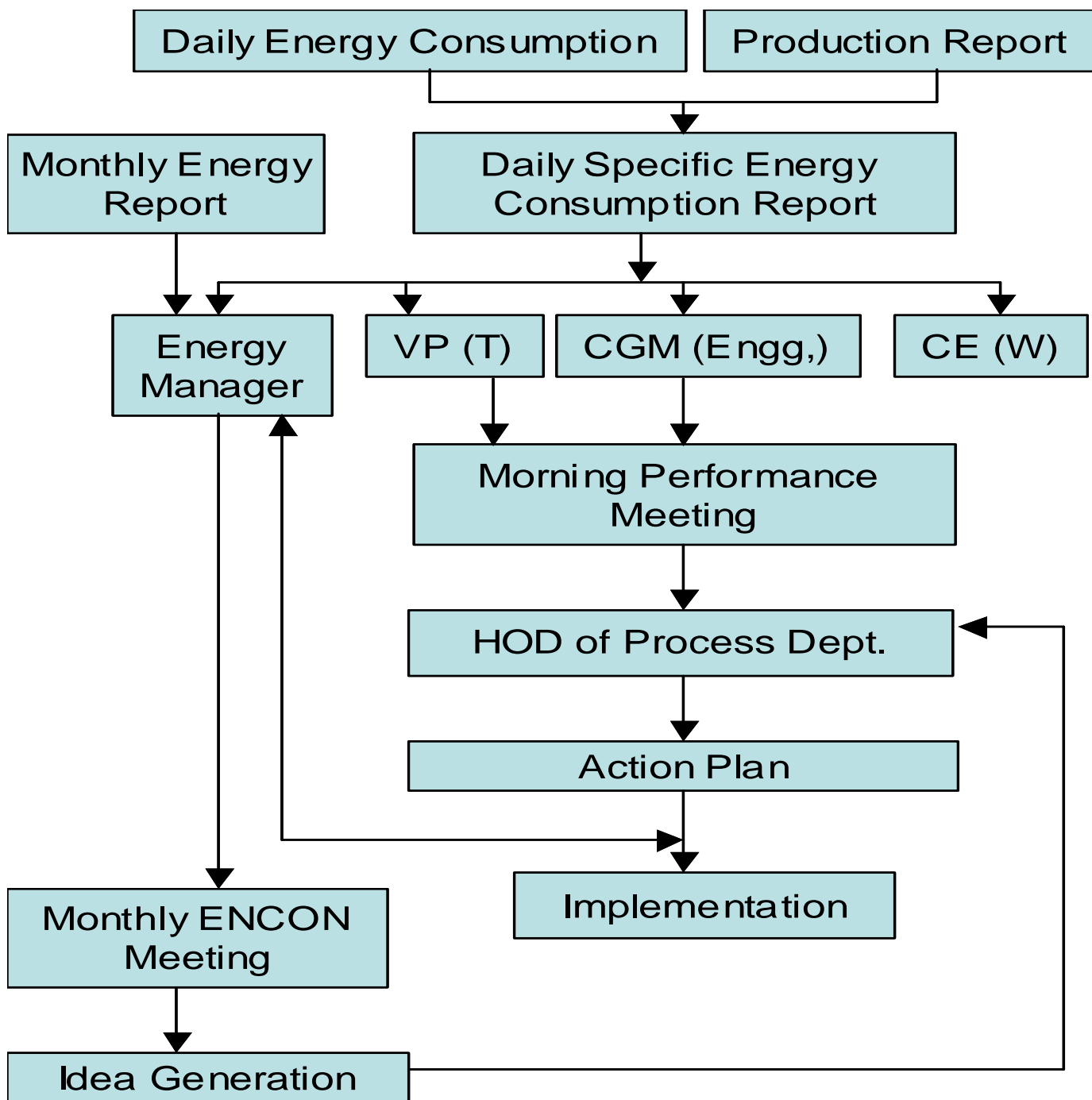
## ENERGY CONSERVATION TEAM STRUCTURES

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The total energy conservation committee receives support from top management, including Managing Director of the Company, which can be observed from the energy conservation policy of the organization, which is reproduced below:-



**OUR ENERGY CONSERVATION MONITORING APPROACH:-**



Some of the monitoring formats are attached: **Annexure-1 & 2.**

## JK PAPER LTD.

Unit: J.K.Paper Mills, Jaykaypur, Distt. Rayagada, Orissa-765017



### Energy Conservation Policy

We are committed to reduce the energy consumption and cost by :

- Optimization of plant and equipment efficiency
- Elimination and prevention of all type of losses in the use of water, power, steam, coal, compressed air
- Maximizing condensate recovery and use, process heat recovery, waste minimization
- Increasing the co-generation of steam and power
- Improved utilization of natural resources leading to environmental benefits
- Energy conservation through total employee involvement.

We believe that  
“Energy Saved is Profit Earned”

*Harsh Pati Singhania*  
(HARSH PATI SINGHANIA)  
MANAGING DIRECTOR

January 25, 2002



**Works:** J.K.Paper Mills, Ph: 91-6856-22050/70, 43550, Fax: 91-6856-22238, 43682  
Cable: Jekepaper, E-mail: jkpaper@jkpmjkm.com

**Regd. Office:** P.O. Central Pulp Mills, Fort Songadh, Distt. Surat (Guj.)-394660, Ph: 91-2624-21228/21278-80,  
Fax: 91-2624-21138, Cable: Cenpulp, E-mail: cpmjk@satyam.net.in

**Admn. Office:** Nehru House, 4, Bahadur Shah Zafar Marg, New Delhi-110002, Ph: 91-11-3311112-5  
Fax: 91-11-3712680, Cable: Jekepaper, Website: www.jkpaper.com

## **ENERGY CONSERVATION ACHEIVEMENTS:-**

During the year 2004-07 a total of 79 numbers energy saving projects are done at Jaykaypur Unit which have resulted in a saving of Rs.580.11 Lakhs per annum by investment of Rs. 345.72 Lakhs. It has resulted in percentage reduction of 11.10% in Electrical energy & 5.82% in Thermal energy during last three years shown below.

YEARS	PRODUCT	KWH/TON	% REDUCTION OVER 2005-08	MKCAL/TON	% REDUCTION OVER 2005-08
2005-2006	Papers	1295	2.850	5.577	0.747
2006-2007	Papers	1185	8.500	5.402	3.138
2007-2008	Papers	1161	10.34	5.400	3.173

Few of major energy saving projects discussed here.

### **1. Installed wind turbines in Oxygen plant.**

Using wind turbines instead of Exhaust fans in Oxygen plant

**Investment:** 0.75 Lakh

**Savings per Annum:** 1.533 Lakh



### **2. Using energy efficient vacuum pump.**

Old vacuum pump was replaced by Energy efficient vacuum Pump no.5 in PM 1

**Investment:** 6.50 Lakh

**Saving Per Annum:** 10.30 Lakh



### 3. Installed flash recovery system in LF boilers.

Flash steam recovery system  
Installed for LF boilers to reduce steam loss

**Investment:** 12.0 Lakh

**Saving per Annum:** 61.0 Lakh



### 4. Improvement of own generation by improving Power factor from 0.93 to 0.96.

Own generation improved by  
Improving the power  
Factor from 0.93 to 0.96

**Investment:** 60.23 Lakh

**Saving Per Annum:** 15.00 Lakh



### 5. VVF drive is installed in the ID fan of the LFB 5.

VVF drive is installed in  
The ID fan of LFB 5

**Investment:** 21.4 Lakh

**Saving Per Annum:** 16.63 Lakh



## 6. Installation of Energy Efficient light fittings-T5

Energy efficient T-5 light fittings are installed by replacing conventional light fittings.

**Investment:** 2.3Lakhs

**Savings per Annum:** 0.91Lakhs



## 7. Running 12 MW TG set at 48.7Hz instead of 50Hz.

Old Hydraulic governor of 12MW TG was replaced by new version Digital Electronic Governor to run the Generator at a frequency 48.7 Hz instead of 50Hz.

**Investment:** 0.00Lakhs

**Savings per Annum:** 50.85Lakhs



## 8. Replacement of old air conditioners with energy efficient air conditioners in plant & colony.

Energy efficient Air conditioners are installed In place of conventional Air conditioners inside Plant & Colony.

**Investment:** 2.5 Lakh

**Savings per Annum:** 1.84 Lakh



**OTHER MAJOR INITIATIVES TAKEN FOR ENERGY CONSERVATION DURING THE YEAR 2007-****08:-**

<b>Sl no.</b>	<b>Project description</b>	<b>Total savings in (Rs. Lakhs)</b>	<b>Investment incurred on the project (Rs. Lakhs)</b>
1	Replacement of conventional vacuum pump no.3 with Energy efficient vacuum pump at PM 5	10.30	6.50
2	Improvement of own Generation by improving power factor from 0.93 to 0.96 in 12 MW TG	60.23	15.00
3	Replacement of SV lamps with efficient t-5 light fitting	0.91	2.300
4	Vacuum pump of PM-01 was replaced by Energy efficient Siemens Germany make vacuum pump, resulted in reduction of power consumption from 110 KW to 60 KW.	16.80	10.00
5	Installation of VVF drive for P.A Fan Motor No-02 of CFB -V resulted in reduction of power consumption from 75 Kw to 52 KW.	7.73	5.25
6	Replacement of conventional vacuum pump no 4 with Energy efficient vacuum pump at PM 1	5.21	4.35
7	Installation of V/F drive for ID Fan No.1 Of LF boiler -V	16.63	21.4
8	Replacement of Damper control system by VVVF drive for FD fan motor of CF Boiler 01 resulted in saving of 30 KW	10.22	3.09
9	Running of 5.4 MW TG at 48.7 HZ frequency continuously with Electronic governor, resulted in reduced power consumption.	50.85	0.00
10	Replacement of florescent lamp with CFL in Q type Qtrs	0.98	1.50
11	Replacement of SV lamps with efficient t-5 light fitting	0.91	2.300
12	Replacement of old AC with energy efficient AC	1.84	2.500
13	Loss of energy due to running conservative pump (Stand by fresh water pump at LF 5)	0.93	0.080
14	Shutting down inefficient vacuum pump in PM-3 with operation of other pumps in efficient way.	63.58	0.00

<b>SI no.</b>	<b>Project description</b>	<b>Total savings in (Rs. Lakhs)</b>	<b>Investment incurred on the project (Rs. Lakhs)</b>
15	Installations of VVVF drive for Fan pump of Paper machine -03 to improve the reliability of fan pump and reduce electrical losses in variac.	5.20	4.89
16	Preventing idle running of equipments	35.04	0.25
17	Using wind turbines in oxygen plant	1.533	0.750
18	Optimize colony transformer voltage	8.47	0.000
19	Trimming of impeller at CLO2 cooling tower condenser	1.01	0.200
20	Removal of one stage in feed pump in CFB 4	2.03	0.500
21	Opening interconnection between old and new plants to avoid running of new compressors	23.1	0.000
22	Avoid running of refined chest in PM 4 and transferring pulp directly to PD chest	3.73	0.000
24	Operating the blower at higher IGV opening and keeping one blower as standby instead of running both	3.68	0.000
25	Optimizing use of ESP insulated haters in recovery boilers	0.55	0.000
26	Removal of condensate supply pump which was supplying contaminated condensate of B/L and W/L to hot water tank (Now going through gravity)	0.27	0.000
27	Removal of condensate supply pump which was supplying contaminated condensate of B/L and W/L to condensate heater (Now going through gravity)	0.65	0.000
28	Removal of condensate supply pump which was supplying contaminated condensate to Power house (Now going through gravity)	1.62	0.00
29	Use of LP steam instead of MP steam in feed water heater for CFB-V.	16.00	0.00

<b>SI no.</b>	<b>Project description</b>	<b>Total savings in (Rs. Lakhs)</b>	<b>Investment incurred on the project (Rs. Lakhs)</b>
30	Installation of de superheating station for LP steam in LFB -5 for reduction of LP steam consumption	1.90	1.80
31	Cascading of air heater steam to reduce heat loss in LF Boilers and use the Flash steam in de aerator.	61.00	12.00
32	Arresting of steam leakage at 2.5 MW TG ejector line, new 10/2.8 at PRDS line flange, MP steam header drain line and LFB-IV main stream line near CF Boiler	0.59	0.25
33	Providing insulation to un- insulated pipelines and valves (including 25 points like valves/pipes/ flanges/ tanks/headers etc in various location).	1.55	0.25
34	Modifying the position of bed thermocouple in CFB-1 & 2.	8.36	3.00
35	CFB -5 -Optimizing flue gas & Radiation losses by insulating the damaged area / man doors / flanges and arresting the air heater tube leakages.	9.87	5.00
36	Improving back water collection at water reclamation plant and reusing in pulp mill.	9.78	5.43
37	Diverting the condenser sealing water of 12 MW turbines to condensate tank of DM Plant.	0.52	0.05
38	Reduction of wastage of condensate at Pulp Drying plant	1.00	0.018
39	Providing insulation to non insulated valves and pipelines	0.30	1.550
40	Arresting steam leakages by on line sealing	0.21	0.050
41	Provided modified steam shattering nozzles in LFB 5 and LFB 5 to reduce steam consumption	0.50	0.020

<b>Sl no.</b>	<b>Project description</b>	<b>Total savings in (Rs. Lakhs)</b>	<b>Investment incurred on the project (Rs. Lakhs)</b>
42	Improvement in vacuum in Evaporator resulted reduction of steam consumption in LFB.	50.14	0.00
43	Flash steam recovery system for pulp mill	76.68	16.80
44	Improvement in vacuum in Evaporator resulted reduction of steam consumption in CFB.	50.14	0.00
45	Reduction of Fresh water consumption in cooling tower basin in Evaporator.	0.4	0.40
	<b>Sub Total</b>	<b>622.94</b>	<b>127.47</b>

**ENERGY CONSERVATION PLANS & TARGETS:-**

<b>Sl no.</b>	<b>Project description</b>	<b>Total savings in (Rs. Lakhs)</b>	<b>Investment incurred on the project (Rs. Lakhs)</b>
1	Improve the efficiency of CFB 1,2 and 5	23.00	15.00
2	Arrest air ingress CFB 1 and 2	10.58	17.00
3	Optimize operation of CFB 1 and 2 forced drought fans	2.40	6.00
4	Optimize the oxygen and carbon monoxide levels in LFB 4 and 5	21.00	10.00
5	Arrest the air ingress in LFB 4 and 5	18.96	40.00
6	Install intermediate control for plant and instrument air in compressed air system	6.00	10.00
7	Install VFD for fresh water pump in DM plant and avoid valve throttling	0.48	3.50
8	Install VFD for De-Gausser tank pump and avoid re circulating	0.51	1.50
9	Install VFD for CWP in chlorine plant	1.32	1.00
10	Install VFD for identified pumps	21.00	42.000
11	Install correct size pump for identified applications	6.27	10.660
12	Install VFD for intermediate chest pumps in PM 1	2.58	4.500
13	Optimize operation of centric leaner feed pumps in PM 1	9.00	9.000
14	Install VFD for PM 3 machine chest pump	1.80	3.00
15	Install KW/Ton controllers for stock refiners	16.80	8.00
16	Install KW/Ton controllers for machine refiners	13.20	15.00
17	Install auto star-delta starter for identified lightly loaded motors	1.35	4.50
	<b>Total</b>	<b>156.25</b>	<b>200.66</b>

## ENVIRONMENTAL, OCCUPATIONAL HEALTH & SAFETY (EHS) POLICY: -

The unit is committed to preserve its Environmental, Occupational Health & safety of its employees. This Policy shows employees commitment and involvement of top management for safeguarding the Environmental, Occupational Health & safety for future generations & conserve resources.

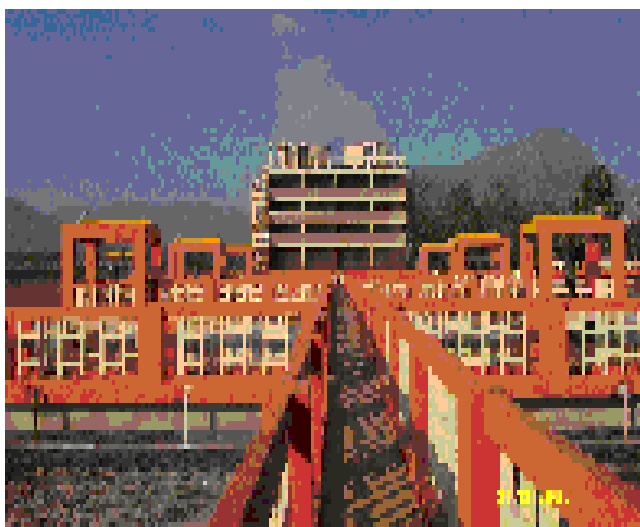
Following major improvements have been made:



## WATER TREATMENT:-

### Augmentation of Effluent Treatment Plant by installation of Activated Sludge Process with Cooling Towers:-

JKPM up graded the existing Effluent Treatment Plant by incorporating most advanced Activated Sludge System with Cooling Tower for further improvement in the quality of effluent. The most important feature of the up gradation is the *Cooling Tower* in the Effluent Treatment Plant to maintain the temperature profile of the effluent before it goes to the Aeration Basin. The Optimum temperature would enhance the growth of micro-organisms, which eat up much of the pollutants. This kind of *Aeration Basin with Cooling Tower* in ETP is the first of its kind in Indian Pulp and Paper Industry.



A VIEW OF NEW ET PLANT



PADDY CROP IRRIGATED WITH TEW AT JKPM

### Treated effluent water use for cultivation: -

@ U b X ' U d d ` ] W U h ] c b ' ] g ' U ' b U h-friendly, which includes renovation of wastewater through physio-bio-chemical reactions, re-use of wastewater and nutrients for biomass production, replenishment of natural resources and recharge of ground water. JK Paper Mills in the course of manufacturing 1, 22,000 tones of paper per annum generates 25,000E27,000 m<sup>3</sup>/day Treated Effluent Water. Demonstration plots of various crops have been raised through treated effluent water at JKPM Agro Economic Research Centre, Jaykaypur. Demonstration plots of TEW (Treated Effluent Water) irrigation are being taken up to convince farming community to take up cultivation of agricultural crops with TEW and which can bring up liftment of rural economy. The mill is planning for irrigating 1000 Acres of land by taking help of Local farmers.



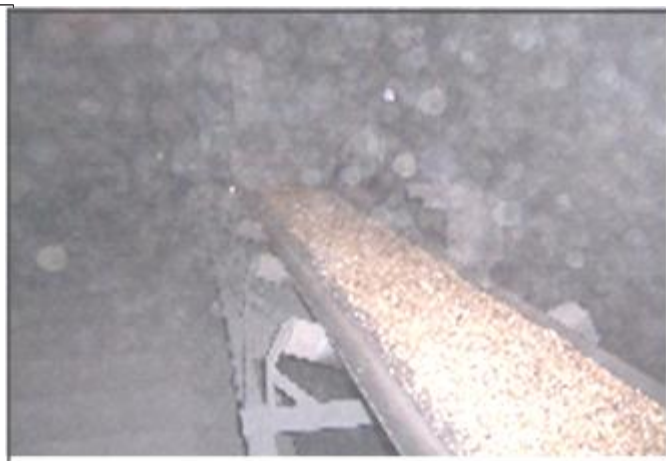
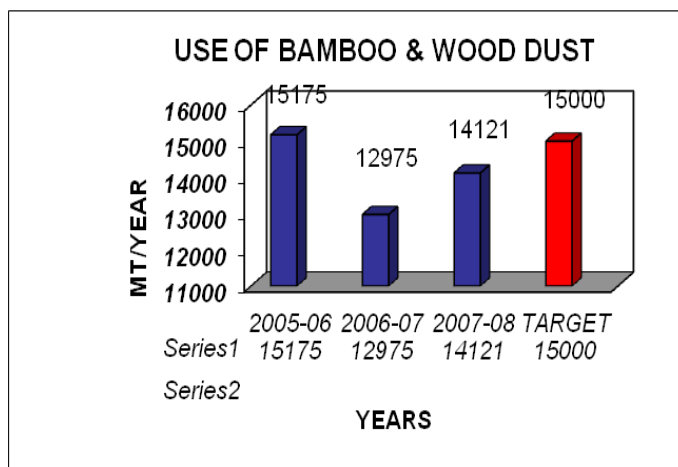
**A) AIR: -**

In view of controlling the air pollution the company has installed Electrostatic Precipitators in boilers of power plant & soda recovery plant. EPIC-II controllers have been installed in all ESPs for its better performance. The company is regularly monitoring the all polluting parameters of stacks & also the ambient air quality surrounding the plant.

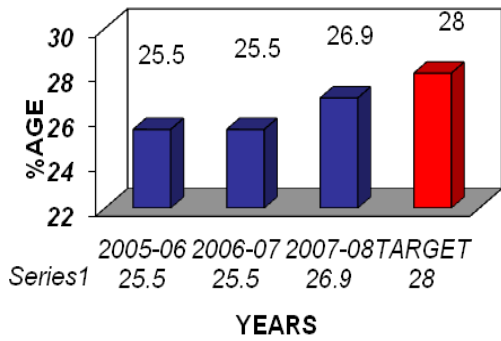
**B) SOLID WASTE:-**

Most of the solid wastes generated in the plant are utilized inside & outside the plant. For the time lime sludge generated is disposed as a solid waste in low lying land area. The Company is installing a Lime kiln Plant for utilization of the lime sludge generated.

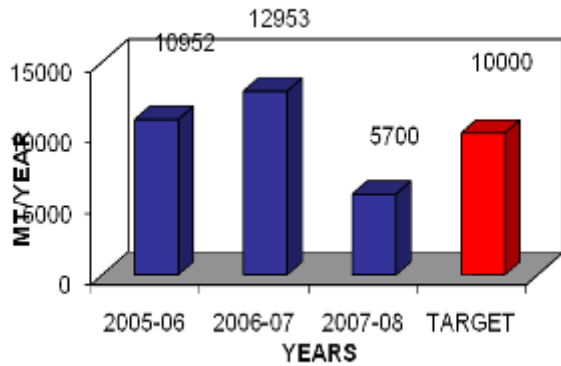
How the company is utilizing the solid waste generated given below:-



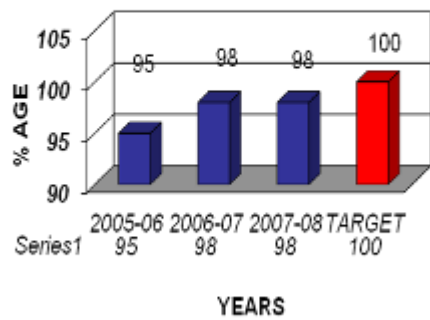
### FLY ASH UTILIZATION %



### USE OF CHARCOAL FINES



### USE OF ETP SLUDGE FOR CARDBOARD MANUFACTURING %





### Energy saving and nature friendly Electric bike

#### **SAFETY: -**

JK Paper Mill has a very impressive track record in Safety Management. The salient features of Safety Management System in the organization are as under:-

**1. Safety & Health Policy: Guides the activities to promote Safety & Health in the organization.**

**2. Safety system in the organization comprises** ↓

- Ø Work Permit System, Vessel Entry & Fragile Roof Permit system
- Ø Accident Investigation and remedial measures
- Ø Safety code for Contractors
- Ø Concise Safety Guide for all employees
- Ø Recording, investigation of near miss accidents.
- Ø On-site Emergency Preparedness Plan with roles and responsibilities of key personnel, command and communication structure, infrastructure for handling emergency etc.
- Ø Availability and use of personnel protective equipment
- Ø Elimination of unsafe conditions & acts.

### **3. Training to equip the employees with required knowledge & skill is carried out through \**

- Ø Both external & internal faculties.
- Ø On the job training
- Ø Safety talks at work spots
- Ø Safety Instruction and one point lessons
- Ø Participation in seminars & conferences
- Ø Training in home safety

### **4. Safety Promotional Activities to raise employee awareness is one of thrust areas for safety. This comprise of**

- Ø Observation of Safety Day (on 4<sup>th</sup> March every year) and other such important occasion such as Fire Day, Chemical Disaster Prevention Day etc.
- Ø Safety competitions
- Ø Awards and recognition to departments, individuals for excellent performance in safety.

### **5. Communication \ Safety related communication is another major initiative to promote safety awareness. Some of the medium of communications are \**

- Ø Centralized display of accident statistics
- Ø Display of safety posters, slogans
- Ø Display of Caution board, Instruction boards, Safety measures boards, Safety & Health Policy.
- Ø Periodic Safety bulletins & leaflets
- Ø Safety films through CATV network

### **6. Medical Surveillance**

Various activities on Occupational & general health awareness that are carried out are -

- Ø Occupational Health Check up by experts.
- Ø Periodic Medical Check up for all employees
- Ø Pre-employment Medical Check up.
- Ø Health Camps
- Ø Awareness programs on Occupational diseases.

## 7. Monitoring & Evaluation

Monitoring of Safety performances and targets is done rigorously by the different committees and agencies

- Ø Daily site inspection by safety officers
- Ø Inspection by safety stewards
- Ø Central Safety Co-ordination Committee
- Ø Department Safety Committee
- Ø Contractors Safety Committee
- Ø Safety Audit by external and internal auditors
- Ø Assessment through statistical records
- Ø Annual inspection by Zonal Inspector of Factories & Boilers
- Ø Mock drill
- Ø Accident investigation and analysis system

**ENERGY CONSERVATION THROUGH EMPLOYEES INVOLVEMENT:-**



**ENERGY CONSERVATION MONTHLY MEETING: MCS**



**ENERGY CONSERVATION THROUGH OUTSOURCING: FRENCH CONSULTANT**

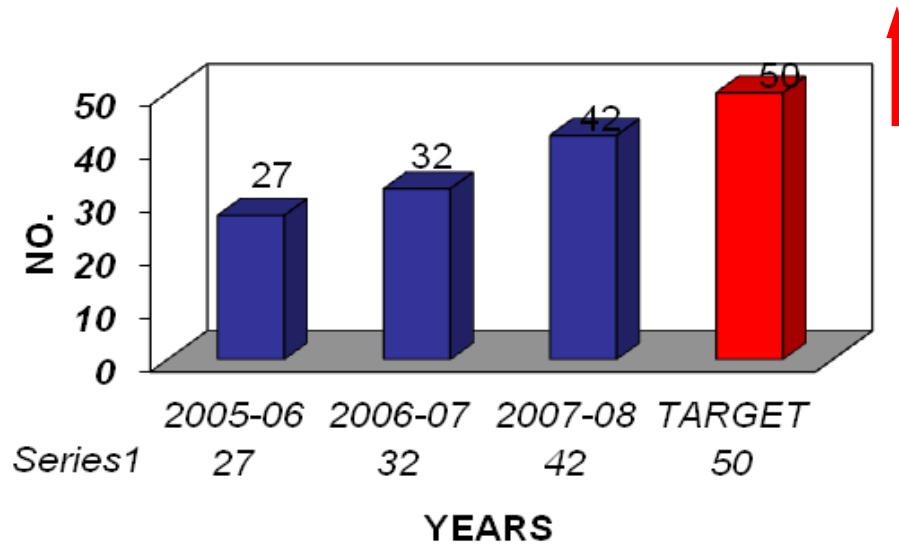


**QUIZ COMPETITION ON ENERGY CONSERVATION: WORKMEN**

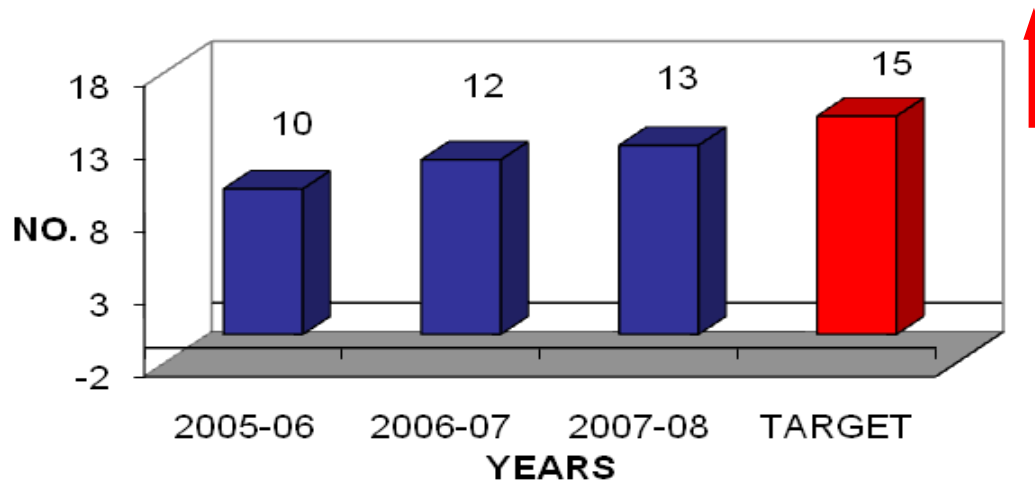


**QUIZ COMPETITION ON ENERGY CONSERVATION: HOUSE WIVES**

### SUGGESTION SCHEMES ON ENCON



### QUALITY CIRCLE PRESENTATION ON ENCON



Format of Suggestion Form: Annexure-3