

## **BRIEF WRITE UP OF NAGAON PAPER MILL**

### **(i) Unit profile:**

Nagaon Paper Mill, a unit of Hindustan Paper Corporation Limited (a Govt. of India Enterprise) started commercial production in October, 1985 to produce 1,00,000 MT per annum of writing & printing paper. NPM is the first paper mill in the world to produce Kraft Pulp in Kamyr Continuous Digester using 100% bamboo as raw material. Challenging all odds like locational disadvantage, infrastructural and communication bottleneck, continuous ethnic problems etc., NPM never looked back. The mill attained 100% of its installed capacity in 2000-01 and since then the mill has been showing continuous rise in production attaining 105.160% of its installed capacity in 2006-07 last year. NPM has been certified with ISO 9001:2000, EMS 14001:2004, OHSAS 18001:1999 by Det Norske Veritas (DNV) of Netherland.

Over and above meeting 17% of Indian market share of Cream wove variety and a good share of education sector requirement, NPM has been exporting paper to countries like Nigeria, Bangladesh, Myanmar, Logos & USA etc. The major activities involved in manufacture of paper in NPM are shown in the Flow diagram enclosed.

### **(ii) Energy consumption:**

Steady decrease in specific electrical and thermal energy (process steam) consumption has been achieved through the implementation of various energy conservation schemes.

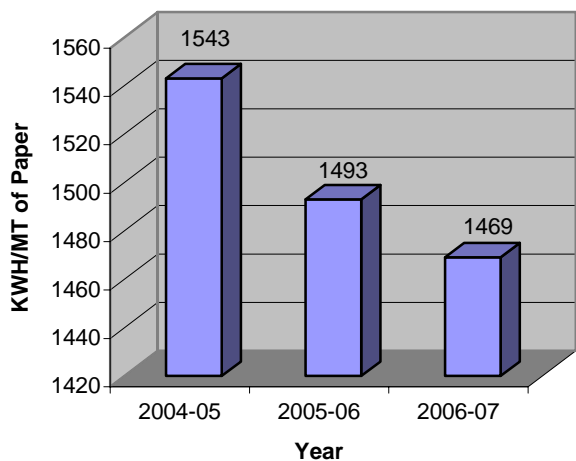
a. Energy consumption in terms of percentage of manufacturing cost;

Description	Unit	2004-05	2005-06	2006-07
Annual production of paper	MT	106300	106437	105160
Total Electricity consumption	Lakhs kwh	1640.21	1658.82	1544.78
Total Thermal energy consumption.	M Kcal	370317	278447	336562
Total Manufacturing Cost	Rs. per MT of Paper	21799.00	24829.00	27030.00
Total Energy Cost	Rs. per MT of Paper	2599.20	2571.58	2870.00
Energy cost as % of Total Manufacturing Cost	%	11.92	10.36	10.62

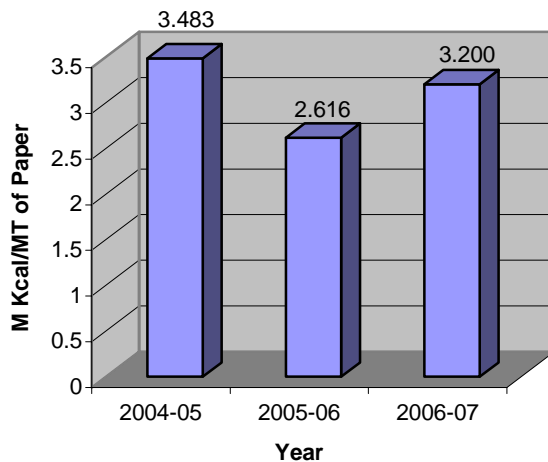
b. Specific energy consumption:

Year	Electrical energy		Thermal energy	
	Consumption (kwh/MT of Paper)	% Reduction over 2004-05	Consumption (M Kcal/MT of paper)	% Reduction over 2004-05
2004-05	1543	--	3.483	--
2005-06	1493	3.24	2.616	24.89
2006-07	1469	4.80	3.200	8.12

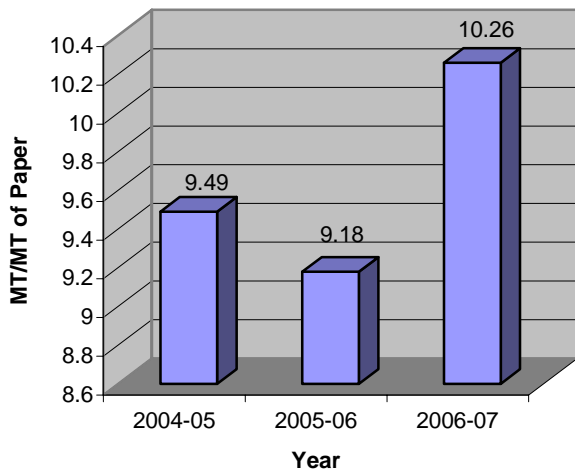
**Electrical Energy Consumption**



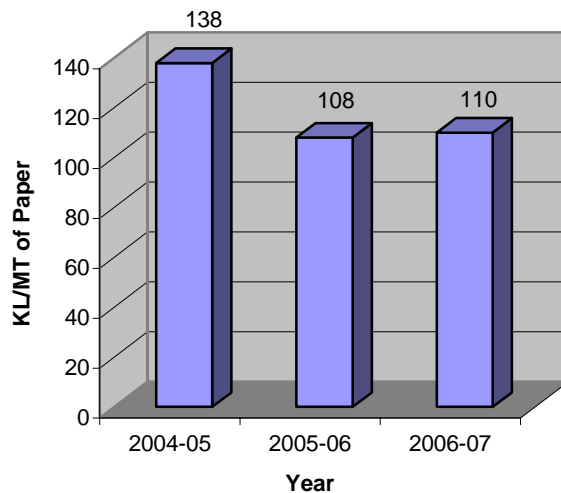
**Thermal Energy Consumption**



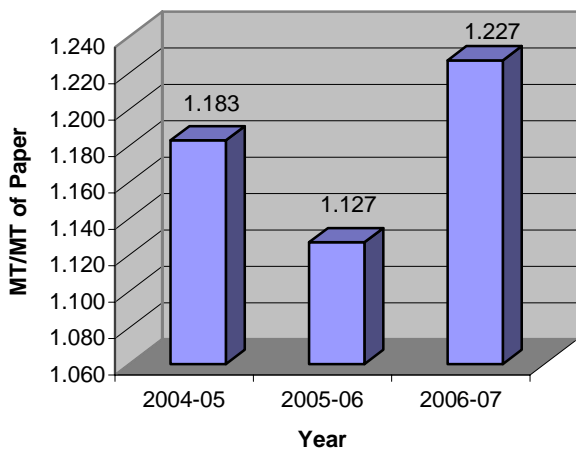
**Specific Steam Consumption**



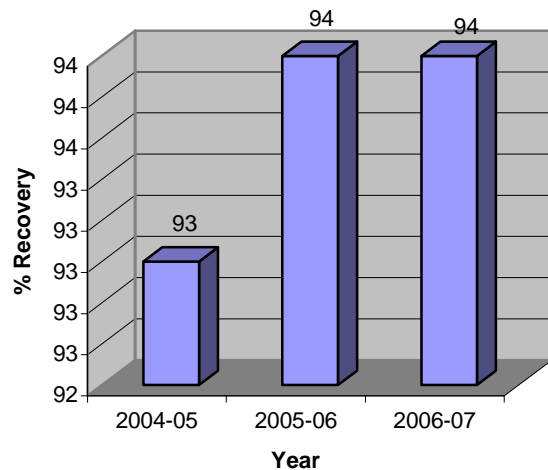
**Specific Water Consumption**



**Specific Coal Consumption**



**Process Condensate Recovery**



**(iii) Energy conservation commitment, Policy and Organizational set up.**

The scope of saving energy includes optimization of boiler efficiency, reducing steam/air distribution losses, better heat transfer in various heat exchangers, reduction of water consumption, optimization of condensate recovery, power loss in distribution, efficient running of equipment etc.

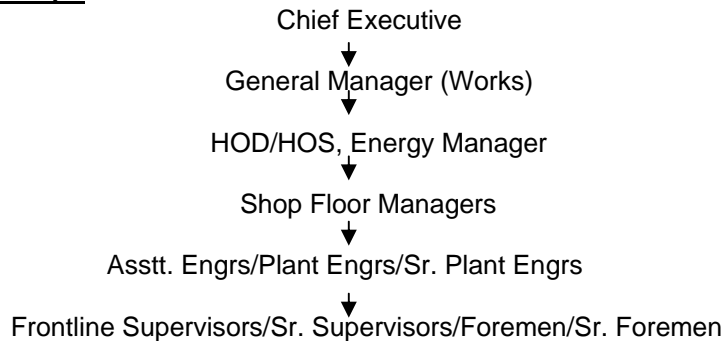
To identify the scope for energy conservation and implementation of energy conservation measures there is an Energy Conservation Cell headed by an Energy Manager who monitors the trend of consumption on daily basis and each year set target for the next year in consultation with respective HOD and concurrence of the Chief Executive. The Chief Executive also reviews the daily energy consumption figures against the set norms in the production meeting and concerned HODs and Managers are asked to explain in case of any deviations and necessary corrective measures.

**Energy Management Policy:**

Hindustan Paper Corporation Limited is committed to conservation of energy through –

- Use of energy – efficient and environment friendly technologies
- Optimal utilization of natural resources and undertaking a war on wastages
- Continual review of the specific energy consumption norms for bench marking with the best in the industry
- Carrying out regular energy audits internally and through external experts
- Promoting awareness amongst the employees and other stakeholders

**Organizational set up:**



**(iv) Energy Conservation Achievement:  
Energy Conservation Projects completed during  
the year 2006-07 are listed below.**

**1. Bypassing of E2 stage in Bleached section, Pulp Mill**

In Pulp Mill, E2 stage has been bypassed without affecting quality.

**Investment made:** Rs. 0.50 Lakhs

**Saving:** Power saved 5000 kwh per day

**Monetary saving:** Rs. 29.53 lakhs per annum

**2. Fitting of lower size motor 132 KW in 431-71 bleached stock pump**

431-71 bleached stock pump having 250 KW motor was oversize. It was replaced with 132 KW motor.

**Investment made:** Rs. 0.40 lakhs

**Saving:** Power saved 1190 kwh per day

**Monetary saving:** Rs. 6.28 lakhs per annum

**3. Using of Utmal machine main condensate tank vent steam for false sealing ventilation**

Utmal machine main condensate vent was going to atmosphere. It was utilized in false sealing ventilation for LP steam saving

**Investment made:** Rs. 0.20 lakhs

**Saving:** LP steam saved 17 MT per day

**Monetary saving:** Rs. 15.08 lakhs per annum



#### 4. Installation of De-superheating valve for supplying of MP & LP steam

Earlier MP was supplied through PRDS –1. One De-superheating valve was installed instead of pump to reduce pressure & temp both.

**Investment made:** Rs. 7.00 lakhs

**Saving:** Power saved 1000 kwh per day

**Monetary saving:** Rs. 5.03 lakhs per annum



#### 5. Installation of auto on / off switch for cooling tower fans 4 nos, Utility

In Utility cooling tower auto on / off switch was installed with one CT fan VFD mode to save power consumption.

**Investment made:** Rs. 6.00 lakhs

**Saving:** Power saved 349 kwh per day

**Monetary saving:** Rs. 1.85 lakhs per annum



Some other energy conservation schemes completed during 2006-07:

- Re-using of Paper Machine Air Conditioning water (Utmal Thyristor) in Utility Cooling tower
- Both Machines (Utmal & Jessop) gear cooling & oil chamber cooling water diverted to warm water tank.
- In Utmal Machine – warm water tank pump discharge line connected to mill water header.
- Installation of auto combustion control in all 3 Coal Fired Boilers (partially)
- Sheet Knock off shower of jessop machine fitted with a 100 NB control valve to get sufficient back water.

#### (v) Energy conservation Plans and Targets:

Energy Conservation Measures (Planned)	Anticipated savings	Approx. investment	Project Commencement & Completion year
	Rs. in Lakhs	Rs.in Lakhs	
1. Installation of one Fluidised Bed Boiler of capacity 50 TPH	156.75	1500.00	Commencement: March'2003 Completion: March'2008
2. Replacement of Existing Cast Iron blades with FRP blades in the exhaust fans	4.81	18.00	Commencement: Apr'2007 Completion: March'2008
3. Installation of 2 nos Energy saving CT fans	1.35	3.00	Commencement: Apr'2007 Completion: March'2008
4. Fitting of Mechanical seals in Evaporator Surface Condensate Water Pump 2 nos	3.54	10.00	Commencement: Aug'2007 Completion: Aug'2008
5. Recycling of pump sealing / cooling water of Evaporator and Recovery Boiler	0.25	6.00	Commencement: Apr'2007 Completion: Aug'2008

#### (vi) Environment and Safety:

Parallel to quality of product, NPM is equally conscious for protection of environment in and around the mill premises as well as safety of its employees and equipments. As a result of its sincere efforts towards these areas, NPM has been certified with ISO 14001 : 2004 for its Environment Management System by BVQI of United Kingdom in 2002 and OHSAS 18001 : 1999 by DNV in December 2003. Nagaon Paper Mill is the first Paper mill in India to get this certificate.

The Environmental Policy and Occupational Health & Safety Policy of NPM are under.

**i. Environmental Policy:**

NPM, a unit of HPCL is committed to

- ☞ Adopt an environment friendly approach in all activities related to its products and services.
- ☞ Ensure compliance of all relevant legislative enactments, statutory regulations and orders.
- ☞ Evolve eco-awareness among its members, affiliates and the community at large.
- ☞ Minimize the use of non-biodegradable substances.
- ☞ Upgrade process controls and operating practices to contain and counter pollution at source.
- ☞ Reduce the consumption of natural resources through conscious efforts to reuse and recycle wherever possible.
- ☞ Promote compensatory afforestation through community initiatives to reciprocate the gift of virgin fiber.
- ☞ Disseminate information through frequent exchange and interaction with internal and external constituents on the progress in implementation of Environmental Management Plan (EMP)

**Environmental schemes under implementation :**

**A. Major schemes under CREP:**

- ☞ Lime mud re-burning plant
- ☞ Conversion to membrane cell in Chloro Alkali plant

**B. Other schemes:**

- ☞ Installation of FBC Boiler

**ii. Occupational Health & Safety Policy:**

- Promote and maintain the Occupational and Health & Safety (OH&S) standards to protect its Human Resources (including interested parties), properties and environment from foreseeable work hazards associated with its integrated Pulp & Paper manufacturing process including captive units.
- Comply with all relevant statutory provisions and other requirements in respect of OH&S.
- Continually improve the OH&S standards through all reasonable efforts of risk reduction activities.

**A. Occupational Health & Safety Management:** NPM is having full-fledged Safety and Health department manned by professionally qualified Safety Officers. Professionally trained CISF personnel control its Fire Wing equipped with three Fire-Tenders, Hydrant System and other accessories. The mill is having its own Occupational Health Center as well as a 30 bedded hospital equipped with Operation Theatre, being manned by a team of doctors, nurses, pharmacists etc.

**B. Hazard Identification & Risk Assessment / Safety Audit:** The mill had carried out the Risk Assessment for all activities (both *Routine & Non-routine*) prior to its certification from OHSAS 18001 in 2003. Safety audit was carried out by Regional Labour Institute, Kolkata (Ministry of Labour, Govt of India) and more than ninety percent recommendations made by them have been implemented.

**C. Best Safety Practices Of The Mill:**

- i) Reporting, analyzing and undertaking corrective measures of *Nearmiss Accidents* occurring in the mill.
- ii) *Monthly* Shop Floor Safety Committee meetings and *quarterly* Central Safety Committee meeting are held.
- iii) Interdepartmentally Safety Competitions in respect of *Best Housekeeping & Highest Accident Free Mandays work* are held.
- iv) Appreciatory Safety Award for good performance on safety.

**NPM has bagged “Greentech Safety Award-Gold” 2004-05 instituted by GREENTECH FOUNDATION, New Delhi , “Greentech Environment Award – Silver” for 2006-07 for its outstanding achievements in Safety and Environment Management respectively.**