

TAMIL NADU NEWSPRINT AND PAPERS LIMITED
KAGITHAPURAM – TAMIL NADU

i) Company Profile

Tamil Nadu Newsprint and Papers Limited, known as TNPL is the largest bagasse, an agricultural residue, based paper unit in India presently having an installed capacity of 1,80,000 tpa of Newsprint and Printing & Writing Paper in various combinations. It is a Government of Tamil Nadu Enterprise commissioned in 1985 and is the pioneer in commercially successful production of Newsprint from bagasse in the entire world. Recognizing the pioneering effort, World Bank had extended a loan of US \$ 100 million through IDBI in 1981 and based on its performance, World Bank for the first time directly financed the Company to the tune of US \$ 75 Million for its expansion project in 1993 for enhancing capacity from 90,000 tpa to present level.

Notwithstanding the highly fluctuating market conditions of paper in India, TNPL has been achieving consistently high capacity utilisation of over 100% and an unique record of "ZERO STOCK" at the end of each financial year since 1989-90, except for 1997-98. TNPL is an ISO 9001 and ISO 14000 certified company with its commitment to satisfy customers with products developed using eco-friendly raw material and at competitive prices. Environmental solution with an approach of sustainable development has always drawn top priority at TNPL.

ii) Energy Consumption

Cost of Energy in TNPL reduced substantially over manufacturing cost for the last 3 years, which is a good achievement specially for a Newsprint and Printing & Writing Paper Manufacturing mill with 70% Bagasse as raw material. The details of Energy cost for the last 3 years are given below:

		<u>2004-2005</u>	<u>2005-2006</u>	<u>2006-2007</u>
Finished Production	(Tons)	1,96,241	2,30,079	2,31,161
Sales Turn over	(Rs. In Lakhs)	64,106.02	77,567.10	85,483.73
Manufacturing Cost	(Rs.in Lakhs)	44,448.05	49,517.42	53,669.14
Power Cost	(Rs.in Lakhs)	5,991.87	6,996.63	7,349.26
Fuel Cost	(Rs. in Lakhs)	4,519.66	5,326.02	5,966.45
Energy Cost	(Rs.in Lakhs)	10,511.53	12,322.65	13,315.74
Energy Cost over Manufacturing Cost	(%)	23.65 %	24.89 %	24.81 %
Power/ton of Paper	(Kwh)	1,525	1476	1460

- ⇒ Specific Power consumption is for Newsprint and Printing and Writing Paper combine. The Power consumption is high for Newsprint.
- ⇒ The raw material is bagasse 70%, wood 30%. The Power consumption is high for Bagasse Paper.

iii) Energy Conservation Commitment, Policy and Setup

The Company has fixed target of reducing Specific Energy Consumption by 5% each year for 4 years to reach International Norms at the end of 4 years.

The Company has constituted Energy Conservation Cell consisting of DGM(Utility), Chief Manager (Utility), Manager (Offsite), Manager (Pulp) & Sr.Plant Engineer (Paper Machine). The cell will work under Director (Operations) I/c, the Chief of the Mill. The Cell meets once in two months to review the operating parameters of energy, which are prepared and monitored on daily basis.

The Energy Cell conducts periodically walk through inspection in the mill and record the energy wastage/saving proposals and work out implementation. 5 Members of TNPL have undergone training and Certified as Energy Auditors (2 Members by FICCI and 3 Members by Fuel Users Association).

(iv) Energy Conservation Achievements

Paper Industry is a highly energy intensive with the energy bills in the range of Rs.50-100 Crores per annum for large size mills. The savings in Energy generation and consumption costs are the major factors for an industry to sustain market fluctuation and profitability.

1) Voltage Optimisation in Identified Transformers

Investment (Rs. Lakhs)	:	Nil
Implemented in Month	:	May-06
Savings (Rs.Lakhs)		
Per Annum	:	3.82
For 2006-2007	:	3.50

In ETP Area LT supply voltage was higher due to partial loading of transformer and varied loads. The supply voltage was reduced by optimizing the loads and savings of about 1.45 lakh Kwh per annum was achieved.

2) Voltage Optimisation by installation of Capacitors at Consumption Point

Investment (Rs. Lakhs)	:	Nil
Implemented in Month	:	May-06
Savings (Rs.Lakhs)		
Per Annum	:	0.22
For 2006-2007	:	0.20

In ETP, Bio-Methanation Plant is located far away from transformer and Bosster capacitors were erected near transformer. The capacitors were relocated near consumption point and optimized voltage and saving of about 8000 Kwh per annum was achieved.

3) Speed Optimisation of Machine Chest Pump

Investment (Rs. Lakhs)	:	Nil
Implemented in Month	:	May-06
Savings (Rs.Lakhs)		
Per Annum	:	2.73
For 2006-2007	:	2.50

In Paper Machine-2, stock regulation tank over flow was high for safe operation. The stock regulation tank level indicator was hooked upto VFD of machine chest pump and

regulated minimum over flow of stock regulation tank saving about 1 Lakh Kwh per annum.

4) DM Plant Degassed Water Pump Impeller reduced

Investment (Rs. Lakhs)	:	0.10
Implemented in Month	:	June-06
Savings (Rs.Lakhs)		
Per Annum	:	0.55
For 2006-2007	:	0.41

In old DM Plant Degassed Water Pump of 18.5 KW capacity was developing pressure of 5 Kgs/cm² which was high. The Impeller diameter of the pump was reduced by 5mm and reduced the pressure to 4 kgs/cm² which was sufficient for normal operation. About 20,000 Kwh saved per annum.

5) Conventional Fluorecent Lamps replaced with energy efficient lamps at selected locations.

Investment (Rs. Lakhs)	:	1 Lakh
Implemented in Month	:	Throughout the year
Savings (Rs.Lakhs)		
Per Annum	:	7.64
For 2006-2007	:	7.64

Conventional Flourcent Lamps were replaced with Energy Efficient lamps at the cost of Rs.1 Lakh. Replacement was carried out throughout the year and process is continuoing this year also. About 2.8 Lakh Kwh savings was achieved.

6) V- Belts replaced with clogged V-belts in Paper Machine Agitators

Investment (Rs. Lakhs)	:	0.60
Implemented in Month	:	June-06
Savings (Rs.Lakhs)		
Per Annum	:	0.44
For 2006-2007	:	0.33

In Paper Machine, V-Belts drive of broke tower agitator and blend chest agitator were replaced with clogged V-Belts and about 16,000 Kwh saving was achieved per annum.

7) Air Preheater damaged tubes replaced to arrest air infiltration

Investment (Rs. Lakhs)	:	4.00
Implemented in Month	:	Sep-06
Savings (Rs.Lakhs)		
Per Annum	:	8.19
For 2006-2007	:	4.10

Coal fired boiler No.5 Air Preheater tubes damaged and ID fan was taking high load due to air infiltration. The damaged air preheater tubes were replaced during annual shut down and ID fan power consumption was reduced by 3 Lakh Kwh per annum.

8) Thermal Insulation improved in Pulp Mill

Investment (Rs. Lakhs)	:	5.00
Implemented in Month	:	Jun-06
Savings (Rs.Lakhs)		
Per Annum	:	4.00
For 2006-2007	:	3.33

The damaged insulation in the following areas in Hard Wood Pulp was replaced and 130 Tons coal equivalent steam per annum was saved.

- a) 4 Nos. digester bottom conical portion.
- b) LC pump discharge line
- c) Steam inlet to preheater
- d) Steam inlet at top of digester

9) Installation of VFD for broke supply pump and broke tower pump in Paper Machine

Investment (Rs. Lakhs)	:	6.7
Implemented in Month	:	Dec-06
Savings (Rs.Lakhs)		
Per Annum	:	3.55
For 2006-2007	:	1.18

45 KW VFD for broke supply pump and 75 KW VFD for broke tower pump were installed at the cost of Rs.6.7 Lakhs and about 1.3 Lakh Kwh savings per annum was achieved.

10) Introduction of Buck Transformer in lighting circuit

Investment (Rs. Lakhs)	:	1.6
Implemented in Month	:	Oct-06
Savings (Rs.Lakhs)		
Per Annum	:	7.37
For 2006-2007	:	3.68

Voltage Buck Transformers were installed in Sodium Vapour Lamps tower light circuits at the cost of Rs.1.6 Lakhs to reduce line voltage from 230V to 207V and reduced power consumption.

11) Installation of 6 x 125 Kw Wind Electric Generators

Investment (Rs. Lakhs)	:	3600
Implemented in Month	:	Apr-06
Savings (Rs.Lakhs)		
Per Annum	:	661.2
For 2006-2007	:	661.2

TNPL has been adopting a policy of augmenting the windfarm capacity steadily for generation of green power from wind.

During the year, the windfarm capacity was increased from 28 MW to 35.5 MW by adding 6 Wind Electric Generator of 1.25 MW each.

The to generated green energy of 228 Lakh Kwh of per per annum

12) Waste Effluent Sludge fired in boilers as fuel

Investment (Rs. Lakhs)	:	15.00
Implemented in Month	:	April-06
Savings (Rs.Lakhs)		
Per Annum	:	84.00
For 2006-2007	:	84.00

Arrangements were made to dry waste effluent sludge generated in effluent treatment plant by screw press and solar heating and fired in coal fired boilers.

During the year, 20,626 MT of waste effluent sludge fired in the boilers and saved equivalent to 3,000 MT of coal.

(v) Energy Conservation Plans and Target

The target of reducing energy consumption by 5% every year for 4 years is fixed by the company. The Energy Cell and Certified Energy Auditors of the company are regularly inspecting mill sections to find and arrest energy waste. We are propagating awareness among all employees for Energy Conservation.

(vi) Environment and Safety

Environment

TNPL is ISO 14000 Certified Company. This clearly demonstrates the commitment of TNPL management on genuine sustainable development. Thanks on a whole series of measures such as changes in process, improved effluent treatment systems, better management of solid wastes through recycling, continuous monitoring. TNPL can confidently assert that it is among the best environmentally compliant mills in India.

Currently, TNPL's effluents completely adhere on the norms set by the TNPCB. TNPL's efforts are geared to go further. Pilot studies have established that the MLSS generated from the activated sludge process together with some pith can be compressed. The resultant compost has been well received by farmers. The bagasse wash stream can be processed through an upflow anaerobic reactor to reduce the BOD/COD and to generate biogas. This is planned to be implemented shortly. The biogas can replace furnace oil in the lime kiln.

On air quality, TNPL has installed ESPs for all 5 nos. Coal fired boilers and 2 nos. Soda Recovery Black Liquor fired Boilers. The SPM of stacks are maintained at 80 mg/M³ much below the norms of 150 mg/M³ specified by Tamil Nadu Pollution Control Board.

The Loyola Institute of Business Administration (LIBA) Chennai has adjudged TNPL as the "Best Corporate Citizen 1999" and bestowed the prestigious Mother Teresa Award by recognizing TNPL's outstanding social commitment, professional management, exploring eco-friendly technology, ethically conscious and compassionate concern for the welfare of the weak and underprivileged.

As a testimony of TNPL's commitment to the protection of the environment, Worldwide Fund for Nature India has accorded permission to TNPL to use their "Panda" logo in TNPL's branded products.

Safety

TNPL has a clearly defined Safety Policy. The Safety Policy specifies in detail the responsibility for Implementation of Safety measures. Prevention of personal injury, accident reporting system and statutory reporting system.

TNPL's Safety Committee is represented by Management members and Workmen members nominated by Unions. Periodic Committee meeting are conducted and suggestions of the members are implemented. TNPL Safety Committee Members had visited other paper mills like HNL/Kottayam & MPM/Badhravathi to observe the Safety Measures adopted in these mills and to improve our Mills Safety Standards.

Periodic mock Drills on major hazardous chemicals like Chlorine Gas leakage and major incidents like fire were conducted. Accidents and incidents within the factory have been documented and preventive corrective measures are implemented.

Periodic training programme are conducted for Workmen, Officers and Staff. Special training programme on Safe handling of Chlorine and Fire are organized.

Periodic testing of all pressure vessels like Air Receivers, Digesters, Pressure Filters are carried out in collaboration with Dy. Chief Inspector of Factories (Testing and Safety). Periodic resting of lifting tackles/machines are carried out by competent persons from TNPL Authorised by Chief Inspector of Factories, Tamil Nadu.

Loss Prevention Association of India Ltd, Chennai conducted millwide safety audit. Their findings and recommendations are implemented to prevent personal injury and property damage.

TNPL has been provided with mobile and fixed fire hydrant system/facilities. Two mobile fire tenders are available. The entire Mill is provided with fire hydrant points with pressure water mains.

All safety reporting systems, testing procedures, inspection procedures are brought under ISO 9001 documentation. Periodic audits are conducted.