

# Nepa Limited: Turning To Greenfield Mill In Present Scenario of Globalisation.

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## ABSTRACT

*Before Globalisation Nepa Ltd enjoyed protection under the Newsprint Allocation Policy. With major change in the Allocation Policy towards liberalisation in the economy and allowing free import of Newsprint, Nepa Ltd. dragged in the arena of competition for the first time in its 40 year of operation both from imported Newsprint and recently set up modern and sophisticated Newsprint mills in the country. To meet this abrupt change in the Newsprint marketing situation, Nepa geared itself and came out with innovative ways of keeping the mill afloat.*

*In changed scenario of globalisation Nepa Ltd changed its operation from Forest based to Waste Paper based mill by altering its process. Nepa Ltd improved its quality and also able to reduce its cost of production. "NEPA 44" GSM Newsprint has been launched first time in Indian market giving benefit of extra mileage to consumers. Product has been further widen up by manufacturing Newsprint of different varieties from Super Fine to Economic grades to meet demand of different customer segments. Nepa have also successfully launched its Writing & Printing Paper and Telephone Directory grade paper in the market. With further improvement in Deinking process Nepa is fully geared up to compete with imported Newsprint and other indigenous Newsprint in market.*

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## INTRODUCTION

Nepa Limited earlier known as The National Newsprint & Paper Mills Ltd. is the first Newsprint Mill in India and also in South East Asia. It started commercial production in early 1956. Nepa's initial production was based mainly on stone Ground Wood Mechanical Pulp from Salai (*Bosvellia Serata*) and Chemical Pulp from Bamboo (*Dandrocalamus Strictus*).

Nepa Ltd. have following manufacturing facilities -

- |                                               |                                         |
|-----------------------------------------------|-----------------------------------------|
| a) Bamboo Chemical Pulping Plant - 30,000 TPA | b) Cold Soda Pulping Plant - 30,000 TPA |
|                                               | c) Secondary Fibre Plant - 10,500 TPA   |
|                                               | d) Paper Machine No.1 - 50,500 TPA      |
|                                               | e) Paper Machine No.2 - 37,500 TPA      |
|                                               | f) Captive Power Plant - 24 MW          |
|                                               | g) Caustic Chlorine Plant - 6,900 TPA   |

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**Nepa Limited,  
Nepanagar - 450 221, (M.P.) India.**

**EXPOSURE TO GLOBAL COMPETITION**

Newsprint Industries in India is getting linked to global market after liberalisation in Indian economy since early 90's. Fiscal policies of the government especially in Newsprint Industries, when it was transformed from completely protected environment to sudden exposure to International Competition led to enormous continuous losses and mill had to shut operation completely for seven months (from August, 1996 to mid of March, 1997).

**CHANGING OVER FROM FOREST BASED TO WASTE PAPER BASED MILL IN CHANGED SCENARIO**

The desparate situation gave birth to innovative ways of keeping the plant running and after detailed experimental research and trials in inhouse R&D centre, following product have been launched first time in the history of Nepa Ltd. In order to fight out competition when large quantities of superior quality Newsprint were imported at price much lower than indigenous cost of production.

(a) 44 GSM Newsprint in wider range of quality

and grade suiting to all segments of customer i.e. large/medium and small Newspapers / Publishers etc., First Time in India, which will give approximately 11% extra length to the customer in comparison to 48.8 GSM Newsprint. In 1997-98 about 62% production was of 44 GSM Newsprint.

- (b) To reduce cost, Economy/Standard grade Newsprint was manufactured by using partial deinked pulp from Waste Paper i.e. Old Newsprint and Over Issue Newspaper (ONP/OINP). Partial De-inking process is developed by modification of existing pulping unit originally designed to process only forest based raw material without much investment in equipment technology.
- (c) In view of product diversificatiion, manufacture of cream wove Writing Printing Paper was started.
- (d) Low grammage (28-42 GSM) Directory Printing Paper was manufactured.

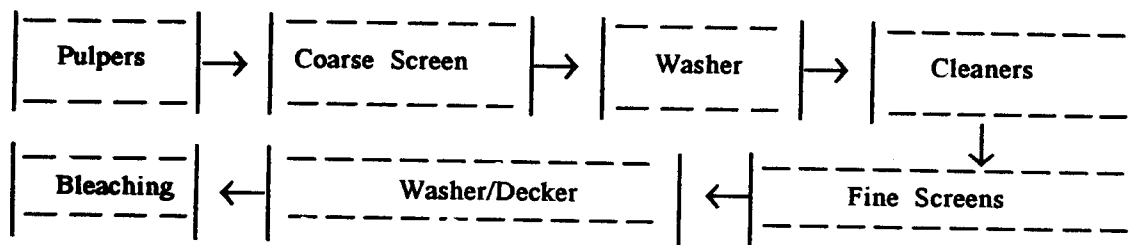
Quality parameters of existing product range of Nepa Ltd. is summarised here under.

**EXISTING PAPER QUALITIES AND THEIR PARAMETERS**

Sr. No.	Particular	Unit	Economy Grade	Standard Grade	Delux	Prime	Cream wove	Directory Printing
1.	Basis Wt.	g/sq m	44	44/48	44/48	44/48	60	42
2.	Caliper	micron	75	65-70	70-75	70-75	75	70
3.	Bulk	cc/g	1.70	1.50	1.50	1.45	1.25	1.59
4.	Porosity	ml/min	300-400	350	300	250	400-500	300-350
5.	Smoothness	"-	400-500	200-300	250-300	200-250	100-150	200-220
6.	Brightness	% ISO	41-42	43-44	51-53	57-58	80	58-60
7.	Opacity	%	97	97.5	95	92	90	94
8.	Burst Factor	-	12-13	13.5-14.5	16-18	20-21	16-18	15-17
9.	Tear Factor	-	50-52	50-55	55	60	65	54
10.	Breaking Length	MD Meter	3500	3800	4500	5100	4000	3800
		CD Meter	1800	2000	2100	2250	2000	2000
11.	Formation	NJI	26-30	25-30	20.3	14-0	12.0	13.0
12.	Cobb						20	
13.	Ash	%	4-5	4-5	5	4-5	5	8-9

## PROCESS DESCRIPTION

Present waste paper processing system adopted at Nepa is as under :-



## COST EFFECTIVENESS

Present Nepa Ltd's Product is mainly based on Waste Paper and Imported Mechanical Pulp, whereas the raw material and technology adopted by Indigenous and some global competitors are based mainly on virgin fibres.

The energy requirement for our product/process is quiet low in comparison to the product made from virgin fibres, which needs more energy for their pulping.

Purchase of Electricity from Grid (Madhya Pradesh Electricity Board) is totally stopped and required Power is generated by our own turbines, that gives considerable saving in terms of power cost.

Nepa Ltd is procuring following qualities of Waste paper in accordance with European standard & Scrap specification circular 1998 (Guide lines for paper stock PS-98 Export transaction).

S.N.	Waste paper quality	Cost/MT
<b>Imported waste Paper (US\$/MT)</b>		
1. No.8	Special News deink quality	92-125
2. No.9/	Over Issues News	102-125
3. No.37	Sorted Office paper	155-190
4. No.41	Manifold White ledger	230-255
5. No.43	Cotated book stock	155-180
<b>Indigenous Waste Paper (Rs. /MT)</b>		
6. -	Indigenous ONP	4500-5000
7. -	Paper Cuttings etc.	7900-8200

In the present scenario the variable cost of Newsprint from forest base raw material is estimated Rs. 20000/MT & Delux Newsprint from Imported

## CONSUMPTION PER UNIT PRODUCTION:

Sr. No.	Particulars	Unit	With Forest based RawMaterial	With Waste Paper Based	% Saving
1.	Electricity	kWh/T	2069.50	1532.00	25.97
2.	Steam	Tons/T	7.18	4.55	36.63
3.	Water	Cu. M/T	362.00	128.00	64.64
4.	Fuel Oil	Lit/T	21.00	NIL	100.00
5.	Total Energy	G Cal/T	11.75	8.17	30.47
6.	Furnish	T/t	0.98	0.91	7.14

Mechanical Pulp & Waste Paper (ONP/OINP/ENB) is Rs. 18000/MT.

**APPROPRIATE DEINKING TECHNOLOGY FOR NEWSPRINT MANUFACTURE**

**ENVIRONMENT PROTECTION**

Use of waste paper and secondary fibre in the furnish leads to considerable reduction in pollution load in effluent as well as in atmosphere and also conserving the forest based raw material. The details are given under:-

The ideal deinking technology and plant design should be able to achieve a clean and bright pulp with.

- Low grade waste paper
- Minimum chemicals

**EFFLUENT/EMISSION LOADS GENERATED PER UNIT PRODUCTION**

Sr. No.	Particulars	Unit	With Forest based Raw Material	With Waste Paper Based	% reduction
1.	Suspended Solids	kg/T	102.90	48.90	52.48
2.	BOD Load	kg/T	62.62	19.57	71.05
3.	COD Load	kg/T	241.49	78.26	67.59
4.	SPM (Suspended Particulate Matter)	kg/T	5.62	0.71	87.37

**QUALITY IMPROVEMENT**

Over the years Nepa Limited has improved quality of it's Newsprint to compete with imported Newsprint and other indigenous Newsprint. Stone Ground Wood pulping is discontinued from 1993. Grammage of Newsprint also reduced from 52 GSM to 44 GSM. Use of Waste Paper in the furnish also improved quality of paper with respect to strength and optical properties of Newsprint. A comparison of quality of Newsprint made earlier and presently made with Waste Paper is tabulated below:

- Minimum energy.
- Minimum fresh water consumption with a closed back water system.
- High Pulp yield
- Environmentally clean and low moisture solid waste
- Effluent water having low COD, BOD and entrained solids.

**Quality Parameter of Nepa Newsprint with and without Waste Paper**

Sr. No.	Particulars	Unit	(Before Globalisation)	(After Globalisation)
			With Forest based Raw Material	With Waste Paper Based
1.	Basis Wt.	gm/M <sup>2</sup>	52±1	44±1 Standard
2.	Caliper	Micron	90±5	70±5
3.	Bulk	cc/g	1.73	1.59
4.	Formaton	N.U.I.	25-30	20-25
5.	Porosity	ml/min.	1200-1500	330
6.	Smoothness	ml/min	300-400	200-300
7.	Brightness	%ISO	30-35	40-43
8.	Opacity	%	96	97.5
9.	Burst factor	-	12±1	14-15
10.	Tear factor	-	55±5	50-55
11.	Breaking Length	MD	3000	3800
		CD	1900	2100

The deinked fibre must meet certain quality requirements before it can be used in the manufacture of a given grade of paper. The effectiveness of the deinking operation is largely a function of the types of inks and contaminants contained in the waste paper.

Deinking technology, in its present state of development, is well equipped to remove most contaminants and inks. However, the advent to new printing techniques and the complex Ink formulations in use today have made thorough ink removal a challenging task.

The early deinking installations for newsprint manufacture laid emphasis on ink removal and the basic system consisted only of pulping, cleaning, screening and in removal by flotation or washing. Such a system would probably removal the bulk of free ink and allow upto around 20% deinked pulp in the furnish. Any attempt to use higher quantities of deinked pulp resulted in impaired paper machine efficiency due to blind forming fabrics/press felts and build up of sticky material in the system.

With the need to increase the deinked pulp in the furnish, emphasis shifted to the removal of stickies and light weight rejects by introducing reverse cleaners in the system design. Light weight reject cleaners enable removal of a major portion of the light weight plastic contaminants that would create problems in the mill operation.

The developments upto this stage help in the removal of considerable quantity of the ink and the light weight contraries. The pulp, however, still contains some ink and light weight contraries and hence the need for further upgrading.

The disperser stages help in breaking down the remaining contaminants and break down any remaining ink particles to such small sizes that they are no longer visible to the human eye. Breaking down of the residual ink to small size, specks, however, results in reduced brightness of the pulp. In order to remove these fine ink specks a washing stage or a post flotation or both were introduced, thereby elevating the pulp brightness by several points.

These post flotation/washing stages also allowed controlled pH changes to take place of change the stock condition to those of the paper machine system.

Controlled pH change at the post flotation/washing stage would however, bring in chemical

precipitation and agglomeration of the residual ink. This lead to the need to add in a thickening system, which helped in creating a barrier between the water loops and allowed the impact of the pH change to be retained in the pulp mill, where the necessary equipment can be added to remove the precipitated/agglomerated particles.

Modern deinking installations for newsprint production incorporate a judicious combination of flotation deinking, wash deinking and disperser stages alongwith state of arts coarse and fine screening and cleaning systems with forward and reverse cleaners. The exact selection of the system configuration would very much be dependent on the grade of waste paper to be processed, the type of inks to be removed, the extent of brightness desired, the level of contraries and stickies present in the waste paper etc.

A detailed study of the available technological option for deinking has been taken up and required changes/modification in the existing pulping system designed for forest raw material are being taken up in phased manner.

For making Deinked pulp successfully also required expertise in buying appropriate quality of waste paper depending upon the process adopted and end product to be manufactured.

## POTENTIAL OF THE COMPANY

The company has already taken measures from 1992 onwards towards improvement in newsprint quality, upgradation of technology and removal of bottlenecks, creation of raw material base near the plant site, stepping up captive power generation, improvement in marketing and rationalisation of manpower.

The company's potential strength can be utilised effectively by further undertaking the following major steps:

- Make the company self-sufficient in captive pulp production.
- Create raw material base near the plant site by installing integrated Sugar Mill & Bagasse pulping plant complex.
- Upgrade technology, modernise manufacturing process and equipments in phases and remove imbalances.
- Provide stable and adequate captive power/steam supply.

- Expand capacity from 88,000 tpa to 1,20,000 tpa in diversified product range and value addition keeping the international market in view.

Considering Nepa's product quality, market share and established client and the demand-supply imbalance in the newsprint industry, if the above steps are taken up immediately for implementation with necessary resource deployment, Nepa will become a successful and effective player in the industry. Its Development Plan has been accordingly formulated.

### **STRENGTHS OF NEPA LTD:**

#### **Centrally located**

Nepa's location in the East Nimar district of Madhya Pradesh gives it the automatic advantage of easier access to the north, east and western Indian markets compared to the other three major newsprint mill which are all situated in South India.

#### **Good Infrastructure**

Nepa possesses good infrastructure facilities. It has a dedicated railway station (Nepanagar) on the Central Railway. A broad gauge line connects Nepanagar with New Delhi, Bombay and Calcutta. It is also well connected by roads with Pakistan, Bangladesh & Nepal. There is an entire township owned by Nepa which comprises residential quarters for employees, a hospital, educational institutions, recreational centres, shops etc.

Mill has its own captive generation plant with an installed capacity of 24 MW, which can very well meet the 100% demand. Further, there is a potential to increase power generation by renovating old boilers and TG sets.

#### **Water & Effluent Treatment Plant**

The source of water for the mills is Tapti River.

The mill is having two water works each with a processing capacity of 10 Million Gallons/day (40 MLD) and a overhead reservoir of capacity 8.48 lakhs gallons.

A full fledged Effluent Treatment Plant for treatment of mill effluent with total capacity of 63,000 cu.m/day.

#### **Coal**

Mill is located near coal rich area and sufficient quantity of coal is available. Thus there is potential for setting up of Power Project of 100 MW, excess power can be sold to nearby industry with in 200 km radius through MPEB grid.

#### **Experienced and Skilled technical manpower/ labour**

The technical manpower and labour of Nepa have the experience of 4 decades of newsprint production behind them and thus have acquired all necessary skills.

#### **Raw Material source**

Nepa Ltd. being centrally located and a comfortable distance from Bombay Port (500 Kms) have easy access to the Waste Paper market. Surrounding area is also potential base for Sugar cane to instal sugar mill. Bagasse recovered from Sugar Mill can be used for manufacturing of Bagasse Chemical Pulp which is cheaper & environmental friendly.

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