

# Energy Conservation Efforts of Rama Newsprint and Paper Ltd. to Become Role Model in Waste Paper Based Paper Industry

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Increasing trend in energy cost & demand altogether forced the industry in general to conserve energy and pulp and paper industry is no exception. Government of India is doing significant effort towards encouraging Energy Conservation by Energy Conservation Act 2001. One of the main provisions of this act is to establish and prescribe energy consumption norms for BEE designated consumers. For eco-friendly environment, energy conservation is a need of the country and the globe in total. Energy conservation also makes easy for the industry to survive in competitive business environment by improved production with cost reduction. Energy conservation in an industrial facility requires a thorough understanding of original design basis, current problem definition, goal settings, local assessment, base case model development & an ability to conduct unlimited "What if" analysis to determine cost effective efficiency improvement measures. Most successful projects are justified using energy savings & non-energy benefits. We at RNPL are involving in production of newsprint from waste papers. We give equal importance to 'Energy Management' together with 'Quality Management' and 'Environment Management'. Here we mentioned some efforts towards efficient use of energy and waste minimization in Paper Machine, Deinking and Utility area.

## INTRODUCTION

### UNIT PROFILE

**RAMA NEWSPRINT AND PAPERS** was established in 1996 and is one of the India's largest manufacturer of Newsprint and Writing & Printing paper qualities, having an installed capacity of 1,32,000 MT per annum based on Recycled Fiber. Now RNPL is

going for double expansion. The plant is situated at village Barbothan, 25 Km from Surat city.

### ENERGY MANAGEMENT POLICY

We at RNPL are involved in high quality Newsprint and Writing & Printing paper using waste paper as raw material thereby conserving natural depleting resource.

We are committed to demonstrate excellence in energy management performance on a continual basis.

**To achieve this, we are committed to:**

1. Improved capacity utilization.
2. Up gradation of process, instrumentation & utility/equipments for energy conservation.
3. Continuously review specific energy

	Aug '05	Sept '05	Oct '05	Nov '05	Dec '05	Jan '06	Feb '06	Mar '06	April '06	May '06	Target
Specific Steam Consumption (MT/MT)	6.47	7.16	6.88	6.45	6.11	6.66	5.81	5.68	6.08	5.64	5.75
Specific Power Consumption (KWh/MT)	1040	1190	1162	1127	1063	1123	1015	1002	1058	998.7	991
Specific Water Consumption (m <sup>3</sup> /MT)	40	47	50	46	39	45	34	34.4	38	35.5	30
Total Specific Energy Consumption (MKCal/MT)	26.00	25.32	23.24	24.50	27.26	24.96	29.85	29.13	27.84	28.13	-

Rama Newsprint & Papers Ltd.,  
Vill. Barbodhan, Taluka : olpad  
Dist. Surat-395 005 (Gujarat)

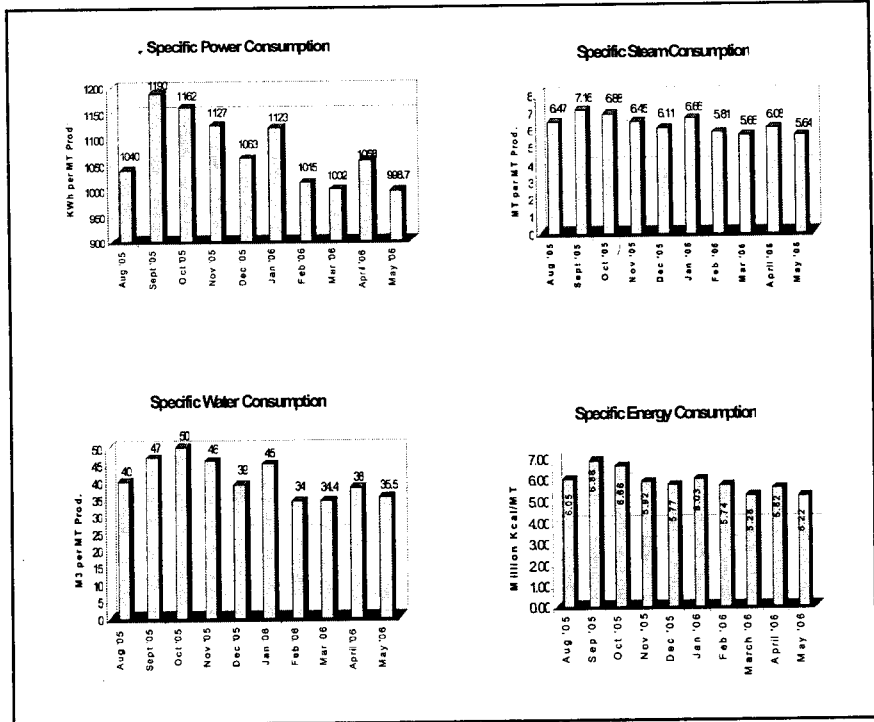
consumption norms and benchmark with the best in the industry.

4. Energy efficient power generation equipment for replacement of old ones and achieve 100% self power generation.
5. Optimize consumption of natural resources, in particular fuel, water, air & electricity and wherever feasible, reduce, re-use and recycle.
6. Carry out Internal and External audits to identify areas of improvement.
7. To ensure that the new projects are energy efficient.
8. Create awareness among all employees for efficient use of energy resources.

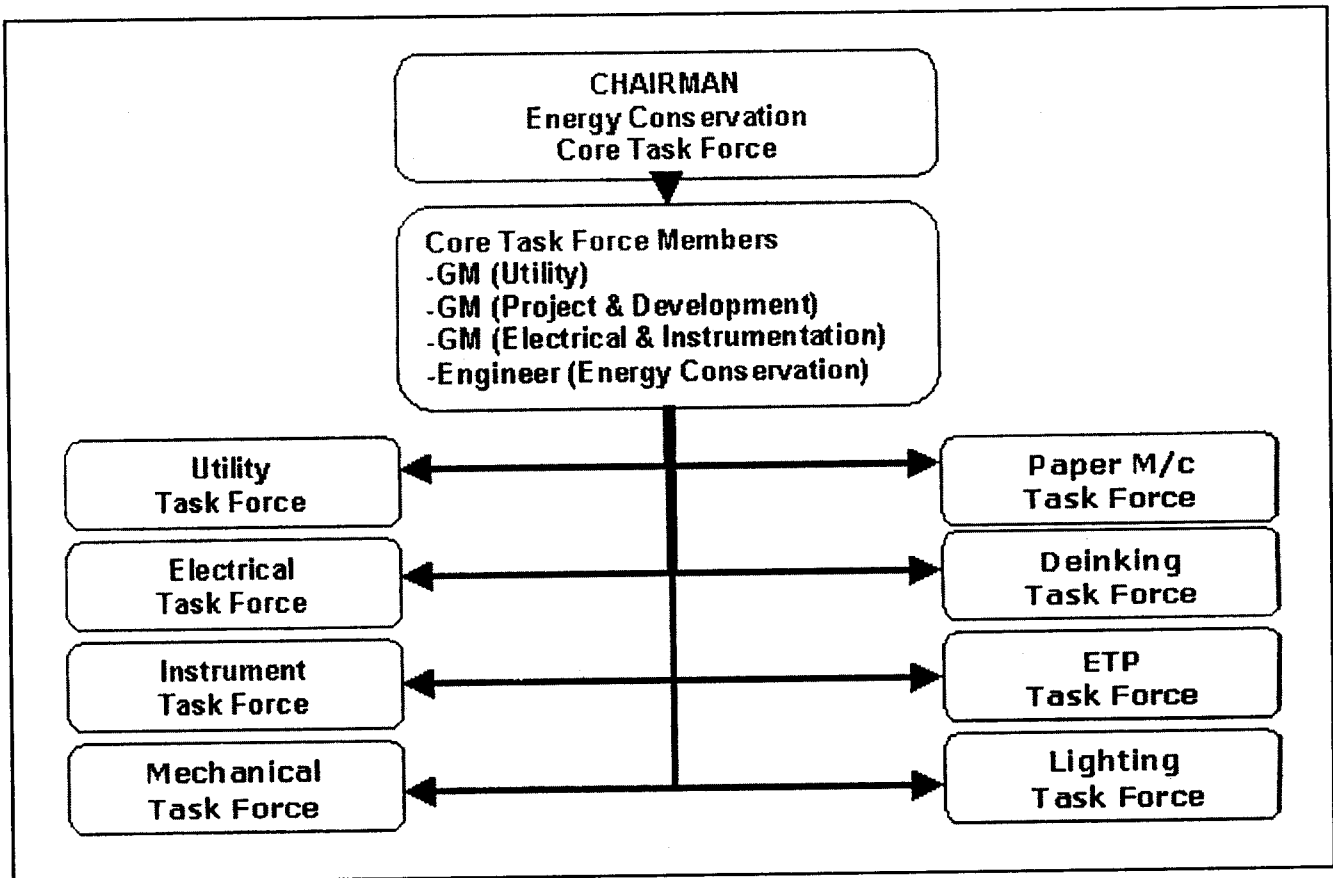
**ENERGY CONSUMPTION**

As RNPL is manufacturing only Newsprint since Aug '05, for real comparison we will consider the energy consumption figures from Aug '05.

**GRAPHICAL PRESENTATION**



**ORGANISATION CHART OF ENERGY CONSERVATION CELL**



The Energy Conservation Cell is headed by Chairman- Energy Conservation Core Task Force, who is Vice President Technical of RNPL & assisted by GM-Utility, GM-Project & Development, GM-Electrical &

Instrumentation & Engineer-Energy Conservation. We have department wise eight Task Forces & supports energy conservation activities.

### ENERGY CONSERVATION ACHIEVEMENTS

Sr. No	Job Description	Justification	Saving per Yr	Saving in Rs/Yr
<b>PAPER MACHINE AREA</b>				
1	Interlocking PV steam with PM#1	-LP Steam consumption per hr = 2.2 MT -Avg downtime per Day = 1.023 hr -Saving per yr = 742.7 MT -Equivalent HP steam = 615 MT -Considering saving of 500 MT	500 MT	2,29,500/-
2	Reducing running hrs of Refiner in PM#1	-By continuous monitoring it was found that with stopping of refiner not considerable change in pulp quality, so one refiner made permanent OFF, the other is running as per requirement.	13,86,000 KWh	27,72,000/-
3	By passing Broke chest pump & agitator	-Running load of Broke chest pump+ Agitator in PM#1 = 24 KWh - Running load of Broke chest pump+ Agitator in PM#2 = 78 KWh	8,07,840 KWh	16,15,680/-
4	Installation of Krofta in both Paper Machine	-Stopped one pump actual load: 35.7 KW -Net power saving: 195 KWh per day -Water saving: 50 m <sup>3</sup> /hr	64,350 KWh 3,96,000 m <sup>3</sup>	30,19,500/-
5	Save Water in Krofta by level adjustment	-Drain quantity of water saved, thus more water could be recycled	3,96,000 m <sup>3</sup>	28,90,800/-

### DEINKING PLANT

6	Stopped the Deflaker	-It was found by monitoring that virtually no difference in pulp quality without Deflaker. Actual load was: 90 KW	7,12,800 KWh	14,25,600/-
7	By passed Thickener Feed chest pump & agitator in FDP	-Actual load of pump & agitator: 34.4 KW	2,72,448 KWh	5,44,896/-
8	Replacing air compressor of 30 KW with 11 KW for Krofta clarifiers	-The 30 KW compressor (water cooled) found overcapacity -Replaced with ELGI 11 KW (Air cooled) compressor	1,66,320 KWh 23,760 m <sup>3</sup>	5,06,088/-
9	Using recycled water in Floatation cell sealing & cooling gland packing	-Total 20 points of primary and secondary floatation cell provided with recycled water -Each point was consuming 5 LPM water flow	47,520 m <sup>3</sup>	3,46,896/-
10	Stopped Dump chest agitator	-By continuous monitoring it could possible to stopped the agitator	1,32,000 KWh	2,64,000/-

## UTILITY

11	Installation of new 23 MW Extraction Condensing Turbine & targeting min. use of GEB power	-Self power generation increased -GEB consumption minimized -Reduced coal consumption -DM water saved	-	Rs. 1255 lacs
12	Using recycled water for ash handling system	-Fresh water quantity of 50 m <sup>3</sup> /hr saved	3,96,000 m <sup>3</sup>	28,90,800/-
13	Reducing compressed air consumption in Utility	-By tuning auto time & loading time of ash handling cycle with boiler loading, it could be possible to save the compressed air.	9,90,000 m <sup>3</sup>	1,48,500/-
14	By diverting bearing cooling water of Boiler Feed Pump & jacket cooling water of ash handling system to cooling tower	-Previously this water was going in to drain. -Now per day about 200 m <sup>3</sup> water could be saved	66,000 m <sup>3</sup>	4,81,800/-
15	Running 4th CT fan only in summer	-By monitoring of cooling tower outlet temperature, it was decided to run the 4 <sup>th</sup> CT fan as per requirement -Actual load: 15.3 KW	1,21,000 KWh	2,42,000/-
16	Started new BFP of same capacity which consumes less power	-The new Boiler Feed Pump saved about 34 KW	2,64,000 KWh	5,28,000/-
17	Trimming of two no of Clear Water Pumps in WTP	-To avoid throttling, two pumps out of four, trimmed -The power reduction found 20 KW	1,58,400 KWh	3,16,800/-
18	Isolation of ideal transformers to save no load loss	-It saved about 124 KW per day	40,900 KWh	81,800/-
19	Replacement of cement roof sheets by semi-transparent sheet in go down	-The light those were remaining ON during day time, Now they OFF	21,900 KWh	43,800/-
20	Reducing operating frequency from 50.3 Hz to 49.5 Hz	-We reduced the frequency 1.6% and we able to save power approx. 2%.	23,76,000 KWh	47,52,000/-

## ENERGY CONSERVATION PLANNING

Sr. No	Job Description	Justification	Saving per Yr	Pay Back Period
1	Modification in Stock preparation system & by passing 3 chests.	-The net projected saving is 840 KWh per day	Rs. 5,54,400/-	17 months

2	Interlocking of PV steam with PM#2	-LP Steam consumption per hr = 2.6 MT -Avg downtime per Day = 1.6 hr -Saving per yr = 1372 MT -Equivalent HP steam = 1136 MT -Considering saving of 900 MT	Rs.4,13,100/-	3 months
3	Water from vacuum condenser to be diverted to Warm Water Tank	-Presently this water is going to drain. -This will save minimum 230 m <sup>3</sup> water per day	Rs. 5,58,000/-	1 month
4	Access water from Warm Water Tank to be transferred to Water Treatment Plant	-The water which is overflowing during shut, will be transferred to Water Treatment Plant -Minimum projected saving of water is 200 m <sup>3</sup> per day	Rs. 4,81,800/-	24 months
5	Air chiller to be inserted in compressed air line going for Calendar cooling.	-Cold air will maintain the paper quality with reduced compressed air consumption	Rs. 5,48,000/-	22 months
6	Maga Booster to be put in ash handling system	-This will reduce the compressed air consumption in ash handling system	Rs. 2,15,000/-	8 months
7	Condensate Recovery System	-Implemented -Under observation	Rs. 1,89,000/-	14 month
8	Energy Audit performance contract	-We are going for voluntary Energy Audit profit sharing contract	-	-

#### SUMMARY

As all process and maintenance departments are included in Energy Conservation Team, every employee has awareness for efficient use of energy and alertness to minimize the wastage. Energy Conservation Team taking each suggestion very seriously towards saving in energy. Thus RNPL become able to run Energy Conservation activities successfully. The total achievable amount of Energy conservation activities said above comes more than Rs. 1400 lacs.

#### ACKNOWLEDGEMENT

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