

# Energy conservation at Rohit pulp & paper mills limited

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Rohit Pulp & Paper Mills Ltd., with the installed capacity of 22,500 MT per annum enjoys the credential of being the pioneer and pace setter on the use of rice straw for the manufacture of quality writing and printing paper. Apart from writing and printing varieties, Company manufactures duplex board, kraft and poster papers and coated papers. Also the Company has established in-house R & D Department recognised by the Department of Science and Technology. Above all the Company has blend of right technical expertise and scientifically framed energy conservation cell.

## SUCCESS STORY :

Economic health of a nation is indicative of condition of its industries and the natural resources. The sustained economic progress is achieved by the efficient and balanced utilization of these. Energy is one such resource required at every stage of life while its conventional form is in limited quantum, it is desired not to misuse. Awareness of this responsibility blended with keenness for making positive approach would definitely meet the conservation whether it is energy or material. The management of the Company with its whole hearted involvement, foresighted planning and convincing ability to impart among the concerned the meaning of first law of thermodynamics i. e the energy can neither be created nor be destroyed while it can only change its form. This change in form should be directed to useful application blended with efficiency, which meaning conservation. Successful induction of this phenomenon among the mill Managers and staff at various levels for the efficient energy management became the success story.

Faster and selective conservation results were realised through the blend of R & D and shop floor and

through predetermined goals. Such goals were reviewed and revised periodically based on benefits assessed and the need of the hour.

For any progressive decision time-to-time it has been necessary for the company to know its position in energy balance, technological implications and productivity, which have fundamental links with one another. For the success the company has always been aspiring to catch up with the best in the world of course in the frame work of its ability. One of such outstanding example is the successful adoption of fluidised bed combustion system for extracting maximum fuel value from the fluctuating quality of conventional and non-conventional energy resources.

Further, important routes of successful energy conservation effort at this company could be largely assigned to the following -

- realisation of the need of the hour
- excellent response from the management with money and matter
- creation of awareness up to grass root levels and willingness to accept changes in the system for good
- building up of team work
- creation of reliable and valuable technical data bank
- vigilance, intensified control, targets fixing and improved communication

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Rohit Pulp & Paper Mills Limited

- making available desired technical expertise
- making use of basic and current control tools such as instrumentation and aptitude for latest development.

Some of the important achievements by the Company are touched upon in the following points :

- 1) Successful adoption of fluidised bed combustion system at the boiler to improve the fuel efficiency and cater to multifuel arrangement.
- 2) Application of heat exchange principles to recover thermal energy otherwise discharged in the atmosphere and optimisation in thermal energy utilisation.
- 3) Application of standard engineering practices in the steam conveying and consuming arrangement and control of undesired dissipation with proper protection
- 4) Making use of wet-end chemistry to achieve indirect means of thermal energy saving and improved productivity.
- 5) Application of thermo-mechanical and mechanical means at different zones of paper machine to gain steam economy.
- 6) Application of latest findings in the power supply and consumption practices, such as optimised cable sizes, routes and incorporation of capacitor banks at right location.
- 7) Optimization of drive loads through rearrangement or replacement.
- 8) Adoption of energy efficient pumping technology.
- 9) Incorporation of energy and process efficient or combined refining system.
- 10) Elimination of steps having no real process values and simplification.
- 11) Adoption of progressive technology having energy efficiency as well as productivity.
- 12) Adoption of energy efficient product as well as furnish mix.
- 13) Water conservation and better house keeping.
- 14) The most important for the successful conservation effort is to apply stringence control and reporting system.

The overall achievements of the Company in the energy conservation has been summarised in Fig. 1 and 2. From the same, it may be observed that the present specific energy consumption of various end products are as under :

	KWH/MT finished production	M KCals (Fuel)/ MT finished production
Writing & printing paper (Integrated)	1002	6.1
Duplex board	591	2.8
Coated varieties (Art and chromo)	170	1.7

Specific energy savings due to energy conservation projects undertaken has been described in Table — 1 and 2.

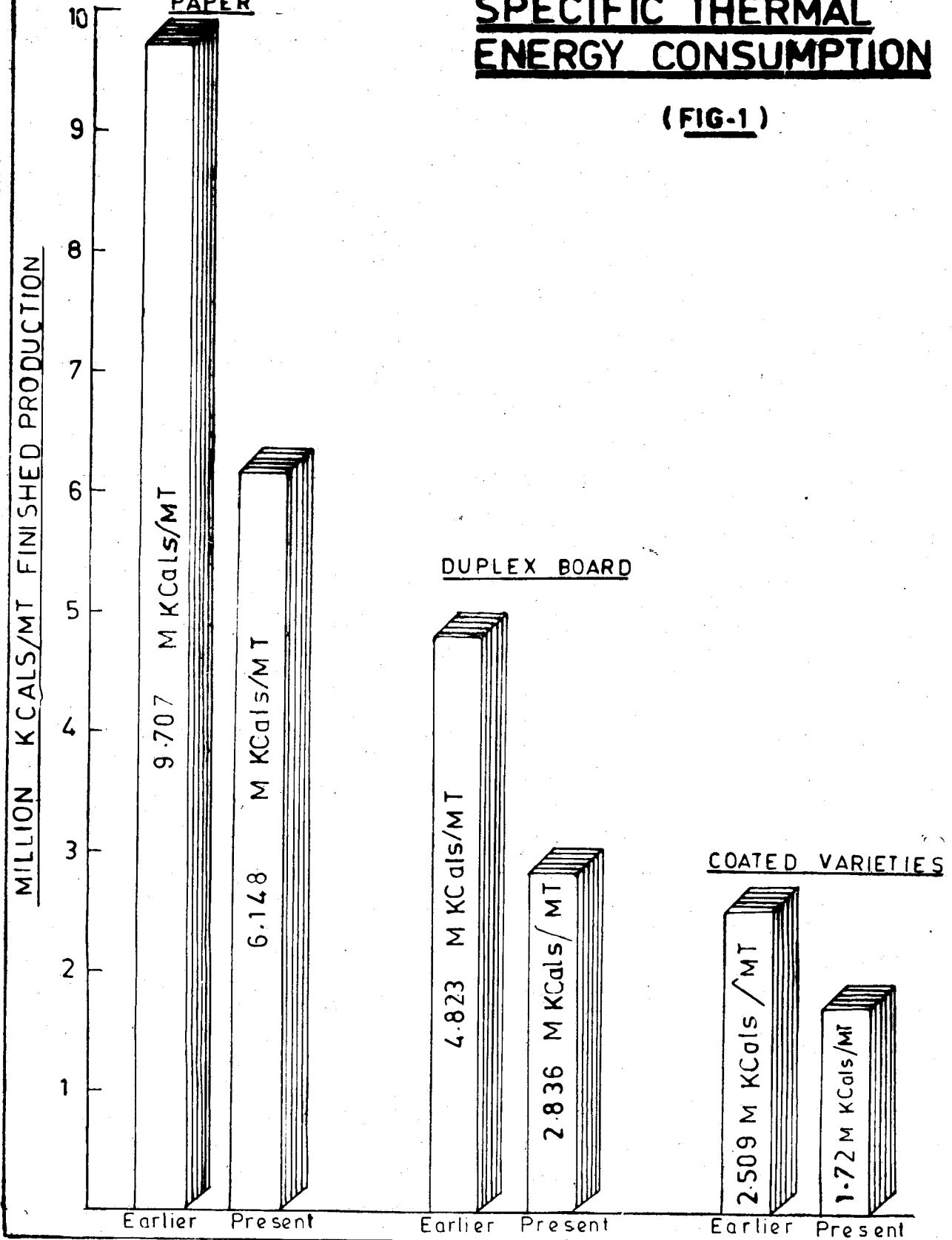
T A B L E — 1  
THERMAL ENERGY

Projects	Savings in M KCals (Fuel)/MT finished production
<b>A. Writing and printing paper (Integrated)</b>	
1) Digester flash heat recovery through heat exchanger	0.460
2) Revision of pulping process	0.305
3) Improvement in the efficiency of press zone	0.402
4) Better housekeeping, checking radiation losses and wastage	0.100
5) Improvement in the boiler combustion efficiency by the adoption of latest technology	2.500
<b>B. Duplex board</b>	
1) Increase in dry content of wet web by the application of wet end chemistry	0.330
2) Improvements in the efficiency of steam traps	0.254
3) Improvement in the boiler combustion efficiency by the adoption of latest technology	1.320
<b>C. Coated varieties</b>	
1) Improvement in the boiler combustion efficiency by the adoption of latest technology.	0.720

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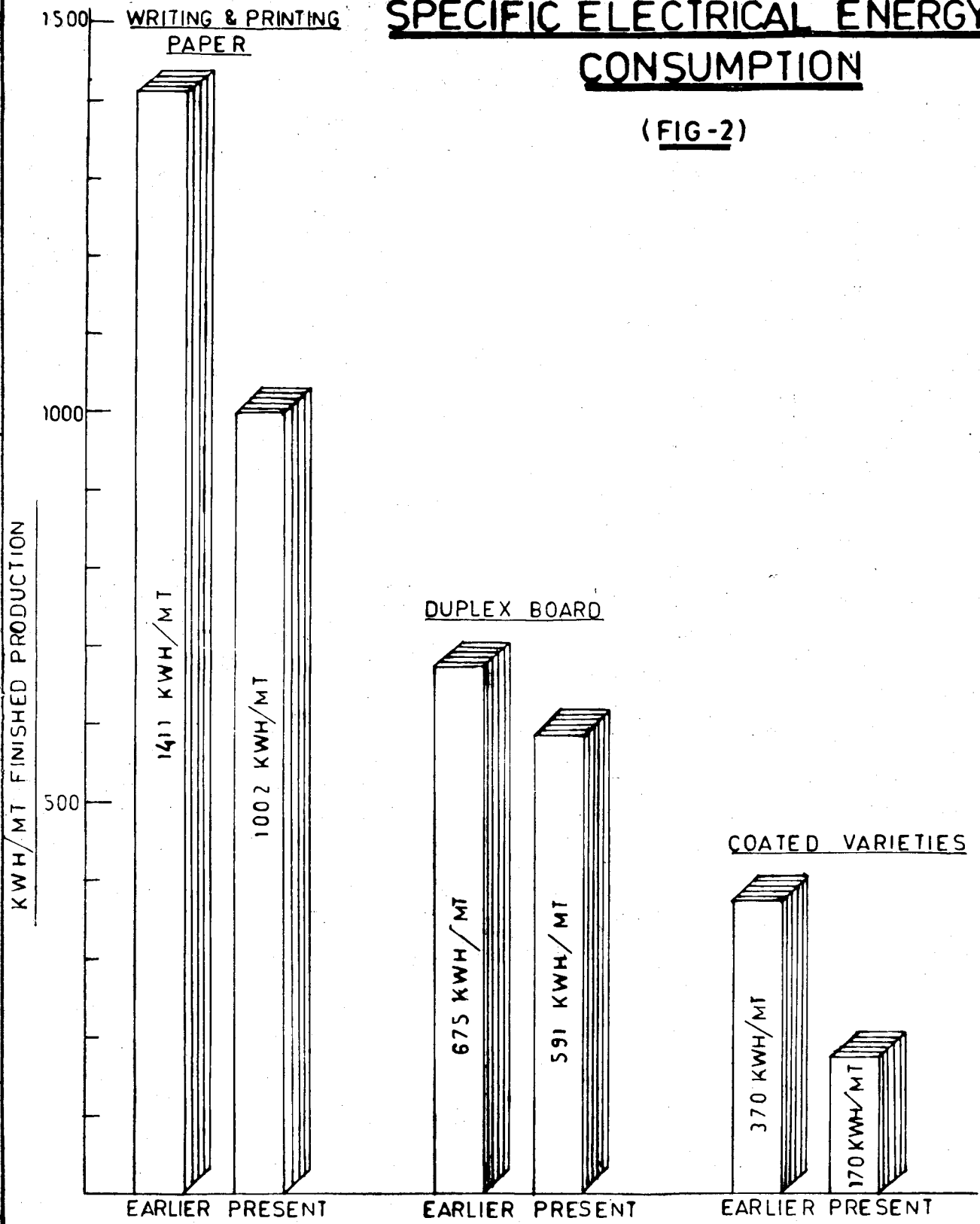
SPECIFIC THERMAL ENERGY CONSUMPTION

(FIG-1)



# SPECIFIC ELECTRICAL ENERGY CONSUMPTION

(FIG-2)



**TABLE — 2**  
**ELECTRICAL ENERGY**

Projects	Savings in KWH/ MT finished production
<b>A. Writing &amp; Printing paper (Integrated)</b>	
1) Optimisation of motor loading through rearrangement	13
2) Application of thyristor drive for paper machine	11
3) Adoption of energy efficient for pulp washers	7
4) Optimisation of pumping and adoption of high efficiency pumps	20
5) Improvement in layout with the application of fluid dynamics	35
6) Increase in the efficiency of refining by adoption of latest version of refiners	205
7) Enhanced productivity	40
8) Energy consumption monitoring and elimination of idle running of equipment	75
<b>B. Duplex board</b>	
1) Optimisation in refining, layout simplification and improved productivity	31
2) Optimisation in permutation and combination of furnish	25
3) Energy, consumption monitoring and elimination of idle running of equipment	12
<b>C. Coated varieties</b>	
1) Improved formulation system	60
2) Enhanced productivity	40
3) Energy consumption monitoring and elimination of idle running of equipment	25
<b>D. Utilities and others</b>	
1) Water conservation	5,44,000 KWH/year
2) Improvement in P.F. and reduction in distribution losses	68,460KWH/year
3) Improvement in luminary	37,700KWH/year

**CONCLUSION :**

Energy conservation efforts help the Company to check the cost of production, enhance the productivity and also helps the Nation to conserve its valuable natural energy resources, which are of scarce nature. Considering the benefits, the efficient utilization of energy should receive at least equal attention if not more.

Rohit Pulp and Paper Mills' effort for the cause of energy conservation has been recognised by awarding the First Prize by the IBPL Urja Research Foundation for two successive years.