



ITC LIMITED- PAPERBOARDS AND SPECIALTY PAPERS DIVISION- BHADRACHALAM UNIT
(AN ISO9000-2000 AND ISO14000 COMPANY)



Unit Profile:

Promoted by ITC limited, Bhadrachalam Paper Division was incorporated on 17th July 1975, manufacturing high quality paper and paperboards for printing and packaging. During the year 2003-2004 the company produced 2,36,911 tons of paper and paperboards against the installed capacity of 1,82,500 tons with a Capacity utilization of 129.8%. In the Indian market ITC-PSPD commands a market share of 18% by volume. Since inception ITC PSPD has won 67 awards in various areas out of these, 36 are in Energy and Environment front. Exports are to the tune of 15 % of total production. Premium products manufactured on one of state of art board machine are import substitution for major FMCG packing industry.

The company installed state-of-the-art Elemental Chlorine Free pulp mill in the year 2002 having a production of 330 tons bleach pulp with an investment of Rs. 200 crores which has resulted huge reduction in energy, chemicals, water, etc., etc. In the year 2004-2005 ITC-PSPD unit Bhadrachalam has installed Turbo-Generator set of 18.5 MW and paper machine-5 (PM-5) having capacity of 100000 TPA. The equipments selected are state of Art..

ITC-PSPD, unit Bhadrachalam has exclusively setup an energy cell in 1986 and appointed a dedicated Energy Manager on a full time job with one engineer in each discipline to Audit Energy on all ENCON activities.

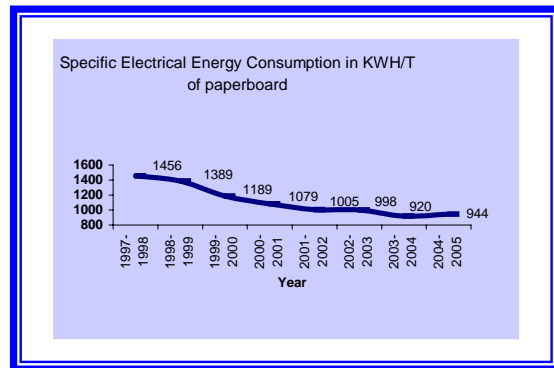
The unit has its own plantation makes available high-yielding disease resistant clonal planting stock developed through biotechnology, with the use of these clonal plantations farmers have brought 16000 hectares under these plantations. The clones are procured by forest department of Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra and West Bengal in all 8000 hectares have been planted.

ITC-PSPD Bhadrachalam Unit has planted high yield eucalyptus 300587 in just 20 minutes in Khammam district thereby entering Guinness book of world records

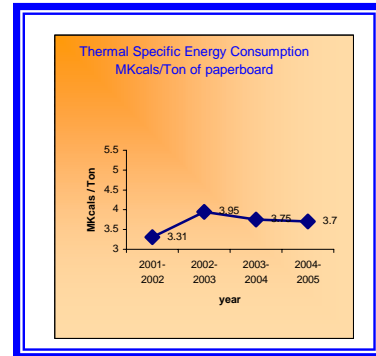
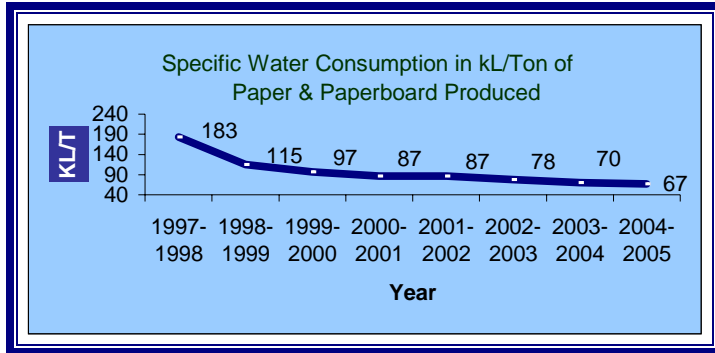
The Unit has put enormous efforts to reduce energy, chemicals, water consumption by updating the technology and constantly strives to bring the consumption of all inputs at par with international practices.

Energy Consumption:

DESCRIPTION	UNIT	2002-03	2003-04	2004-05
Annual Production	tonnes	238264	236911	256061
Total Electrical Energyconsumption	Lakhs kWh	2378	2180	2417
Specific Energy Consumption- Electrical	kWH/T	998	920	944
Total Thermal Energy consumption	Million Kcal	941143	888416	947426
Specific Energy Consumption- Thermal	Million kKcal/t	3.95	3.75	3.7
Total Manufacturing Cost	Lakhs Rs.	55178	58700	64007
Total Energy Cost	Lakhs Rs.	5103	6234	7092
Energy cost as %age of Total Manufacturing cost	%	7.38	10.83	11.08



ITC-PSPD, unit Bhadrachalam like any other pulp and paper company is highly energy intensive. The senior management who are policy makers have given a very high priority for Energy Conservation activities. The policy makers who were instrumental in adopting latest technology which has driven the energy, chemical and water reduction on decline tendency year after year.



From the above graphs it is clear that above achievements are only possible with good practices and involvement of Senior Management who are policy makers.

Energy conservation Commitment, Policy and Set up.

Commitment :-

At ITC-PSPD, Bhadrachalam unit, the company's main objective is to operate a modern, cost-effective, energy efficient and environment friendly production plant. The management commitment towards Energy Conservation is as under :

- a) Use Energy but very efficiently.
- b) Target better than design
- c) Bench mark with International best
- d) Energy auditing and monitoring for all sections to micro level and eliminate waste.
- e) Replace the inefficient systems with efficient ones at the first available opportunity.
- f) Use of SCADA systems for Energy monitoring.
- g) Keep track of latest technological developments in pulp & paper and upgrade the plants as soon as the schemes becomes viable.
- h) Engaging experts / external consultancy for study of various equipment efficiency and ways and means to improve the operating efficiency of the various equipments.
- i) Organise visit to various pulp & paper mills to study and understand the operation and gather data for study and actions to be initiated in particular to the equipments which are operating at lower efficiencies.
- j) Minimum procurement of purchased power.
- k) In-house co-generation should be maximum possible.

At ITC Bhadrachalam, the vision of Energy Conservation of the founders was turned into a mission by the successors. The concept was converted into culture. Commitment of the Top Management trickled down to all levels. Electrical Department acting the role of a facilitator, the Process adopted energy conservation as a regular function. Consequently, within two years of commencing commercial production, the company was awarded First Prizes by the National Productivity Council and the Indian

Paper Makers' Association for its meritorious performance in the areas of energy conservation, capacity utilization and productivity consistently during 1981-85.

Regular monitoring of the energy usage pattern is day-to-day activity in the company and is done by top most levels. Energy Consumption is monitored at macro and as well as micro level.

The culture of the company is to constantly modernize the mill with the equipment of latest technology, which are environmentally friendly, and energy efficient. Since inception of the company it has been practice to work always on system efficiency and this guiding factor has been followed in day-to-day activities and as well as in the project stage. The commitment to greening the environment is visible in the mill and the town of Bhadrachalam through the gardens and plantations being maintained by ITC Bhadrachalam.

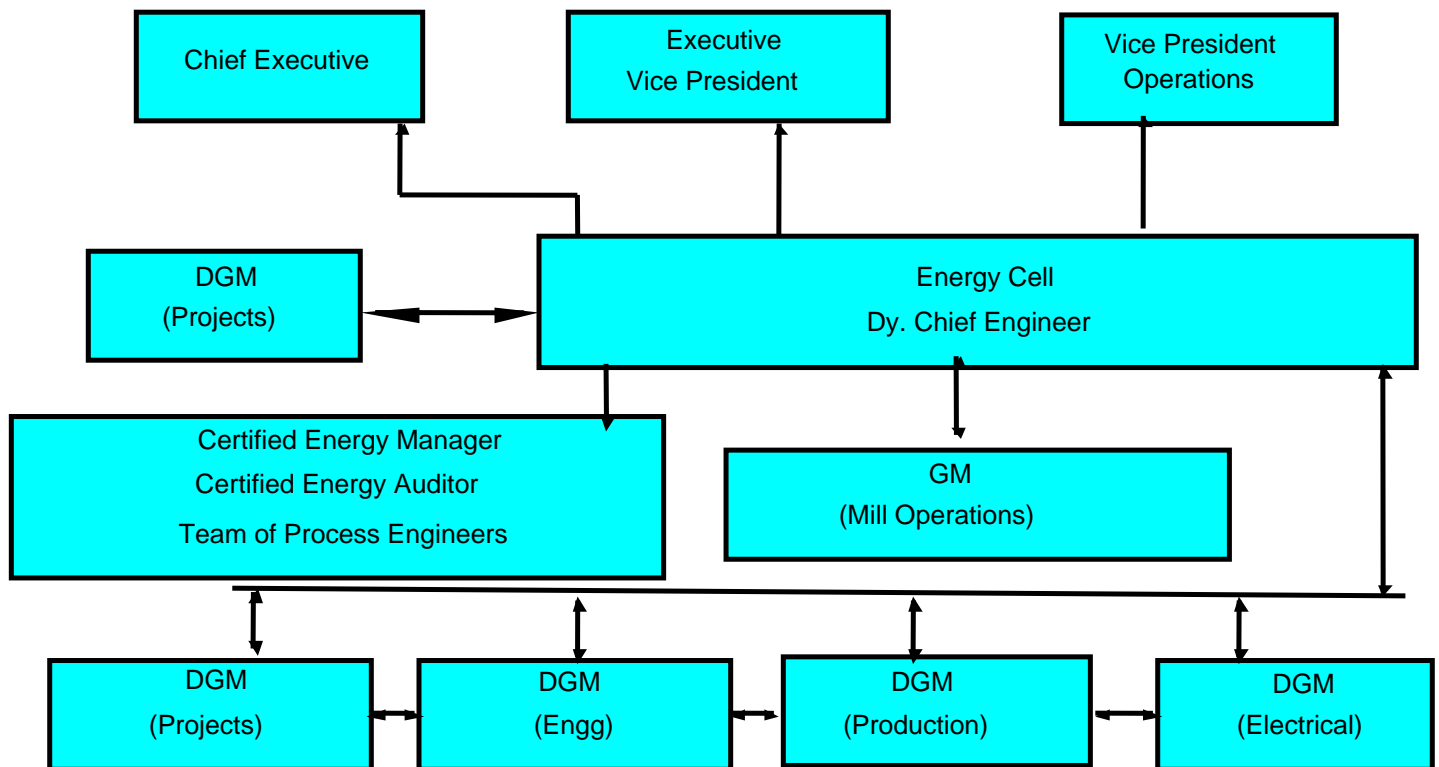
In the year 2002-2003, ITC-PSPD Bhadrachalam Unit has installed India's most Modern plant with Elemental Chlorine Free Pulp-Mill 300TPD (and old Pulp-Mill 200TPD has been stopped). Soda Recovery Boiler having 650TPD black liquor solids firing and Lime re-burning Plant augments the Pulp Mill. The payback is of 3 year 10 Months with an investment of 200 crores. All the additions in equipments have very marginally increased the Specific Energy in view of Energy efficient equipment selected.

In 1980 ITC-PSPD felt the implementation of EnCon and identified a separate section and certified energy managers to head all EnCon activities to give maximum thrust. Chief Executive and Executive Vice-president personally involve and see the achievements

Energy Conservation Policy:

ITC-PSPD is having a Energy Conservation Policy. The Copy is enclosed.

Energy Conservation Set Up:



Energy Conservation Achievements:

During the period 2003-2004, ITC-PSPD Bhadrachalam unit has implemented 80 ENCON projects from in-house expertise and as well as from external consultants. The effort has resulted in savings of Rs 988 lakhs was achieved with an investment of Rs 2851 Lakhs. Three Major Projects described here and all other Details of the projects has been detailed in the Annexure-

Three major Projects implemented during the year 2004-2005 are given below

1. Replacement of 2 x 27TPH at 42ata 405C stoker fired boiler and 1 x 20TPH 11ata by 1 x 90TPH at 62ata 480C AFBC boiler to increase boiler efficiency and reduce heat rate of co-generation system.

Impact of implementation:

Efficiency (Direct) of old boilers	: 55%
Efficiency (Direct) of new boilers	: 78%
Increase in efficiency of steam generation:	23%
Coal consumption for 35TPH of steam (Old):	7TPH
Coal consumption for new boilers	: 6.25TPH
Saving in coal consumption	: 0.75TPH
Annual operating hours	: 7500h
Coal savings	: 5625 ton
Annual savings @ Rs.1600/ton	: Rs.90 Lac



2. Replacement of extraction cum back pressure type 1 x 5MW with 42ata 405C steam by 1 x 18.5MW with 62ata 480C steam of same type to improve energy efficiency of co-generation system.

Impact of implementation:

Output rate of 5MW turbine	: 88kwh/ton
Output rate of new turbine	: 110kwh/ton
Increase in output rate of turbine	: 22kwh/ton
Avg. steam flow through 5MW unit	: 45TPH
Additional power generation per hour	: 990kwh
Equivalent steam savings	: 11.25TPH
Equivalent coal saving@5.6 steam coal ratio	: 2.00TPH
Annual operating hours	: 8000h
Additional annual generation	: 16000 ton
Annual savings @ Rs.1600/ton	: Rs.256Lac



Old 5 MW turbine

Old 5 MW TG

New 18.5 MW TG



3. Installation of improved system with new plate type heat exchange to recover heat from blow heat released from digester blows.

◆ **Impact of implementation:**

Reduction in steam consumption	: 80 ton/day
Steam coal ratio	: 5.6
Reduction in coal consumption	: 14.2 ton/day
Annual operating days	: 330days
Annual coal savings	: 4686 ton
Annual savings @ Rs.1600/ton	: Rs.74.97 Lac



Energy Conservation Plans and Targets for the year 2004-2005

For the period 2004-2005, ITC-PSPD Bhadrachalam unit has Targeted for 56 ENCON projects with in-house expertise and as well as with external consultants. The efforts will result in an annual savings of Rs 1189.67 lakhs with an investment of Rs 844.35 Lakhs (payback of 9 months). All the total Details of the projects has been enclosed