

# "ITC BHADRACHALAM" A Promising Future For The Waste Paper Recycling

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## ABSTRACT

*ITC Bhadrachalam is one of the largest consumers of waste paper. New board machine of 1,20,000 MT/annum commenced its commercial production from 1<sup>st</sup> April 1998. To cope up new machine production, Waste Paper treatment plant of 300 BDMT/day was successfully commissioned with the latest Technology of DCS. This paper depicts the salient features of the waste paper recycling process and promising future prospectus for recycling technology.*

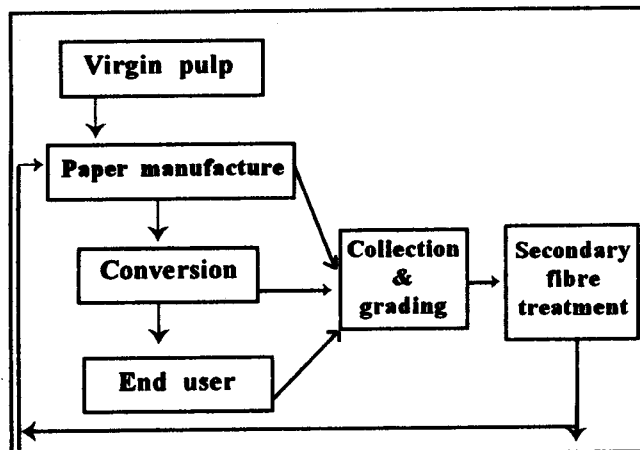
## INTRODUCTION

Waste paper is a world commodity, a vital raw material for manufacture of Paper and Board products. Waste paper recycling is not a new activity but it is an established and thriving business. In the past waste paper was used only for economic reasons, but now environmental aspect is also becoming an important issue.

## WHAT IS WASTE PAPER ?

Waste paper can be preconsumer waste or from post consumer waste. Waste paper cycle is shown in figure 1.

Figure-1



As shown in figure Paper manufacture and conversion are the pre-consumer stages and End user is post consumer stage for the source of waste paper.

## WASTE PAPER RECYCLING AT ITC BHADRACHALAM

Waste paper recycling and fibre processing is very much dependent on the end use of the product in which waste paper fibre will be used. At ITC Bhadrachalam Paper Boards, recycling of Waste Paper pulp started in the year 1980 for the manufacture duplex board on PM-1. Two streets, Street 'A' and Street 'B' were installed with flexibility to supply waste paper pulp/ sorted white ledger for paper machines. In the year 1995 Street 'A' was upgraded with screening, cleaning and hot dispersion.

Considering the demand for quality coated boards on the rise, a new machine PM-4 was installed and commissioned with an annual capacity of 1,20,000 Tonnes/annum. To cope up new machine production, Waste Paper treatment plant of 300 BDMT/day was installed and successfully commissioned with the latest Technology of DCS.

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## WASTE PAPER PROCESSING

Since the availability of waste paper from indigenous sources is limited, major quantity of waste paper is being imported from Europe/States. Different categories of waste paper and its end use are tabulated as follows:-

S. No.	Imported Waste paper	End use
1.	i) Imported Mix/Super Mix	Grey
	ii) O.N.P./O.I.N.P./news and pamps	Board
	iii) Box Board cuttings (B.B.C.)	
2.	i) New double liner kraft cuttings (NDLKC)	Delux kraft
	ii) Old corrugated container (O.C.C.)	
3.	i) New computer print outs (N.C.P.O.)	White
	ii) Hard white shavings	back
	iii) Pure white cuttings	Board
S. No.	Indigenous Waste paper	End use
1.	i) Duplex	Folding
	ii) O.N.P. (Ind.)	Box
	iii) Office record	Board
2.	i) White cuttings	White
	ii) Pure white cuttings	Back

### SECONDARY FIBRE TREATMENT PLANT AT ITC BHADRACHALAM

Secondary fibre treatment plant of ITC Bhadrachalam consists of three streets. Plant capacities and processing equipments are tabulated in Table 1.

A unique problem faced in recycling waste paper is that of physical contaminants. The removal of these contaminants is essential to produce a reusable fibre. Quality of final product like visual appearance, runnability and strength is improved by contaminant

removal. Contaminants interfere with the bonding between the fibres reducing the strength of resultant paper/board. The presence of minor concentration of contaminant can cause a high nuisance value. Small flakes of metal foil can trigger off metal detectors and cause rejects in packaging lines.

Hence ITC Bhadrachalam adopted Technology for recycling waste paper to produce more and more clean pulp. Line diagram for Street 'C' is shown in figure 2. Total system and design engineering was done by M/S Jaakko Poyre, a world class consultant. All processing equipment are imported and supplied by renowned suppliers.

Pulper & screening	M/S Lamort, France
Centricleaning and	M/S Celleco, Sweden
Thickening	
Hot dispersion	M/S Cellwood, Sweden
DCS system	ABB Bangalore

### SALIENT FEATURES OF THE PLANT

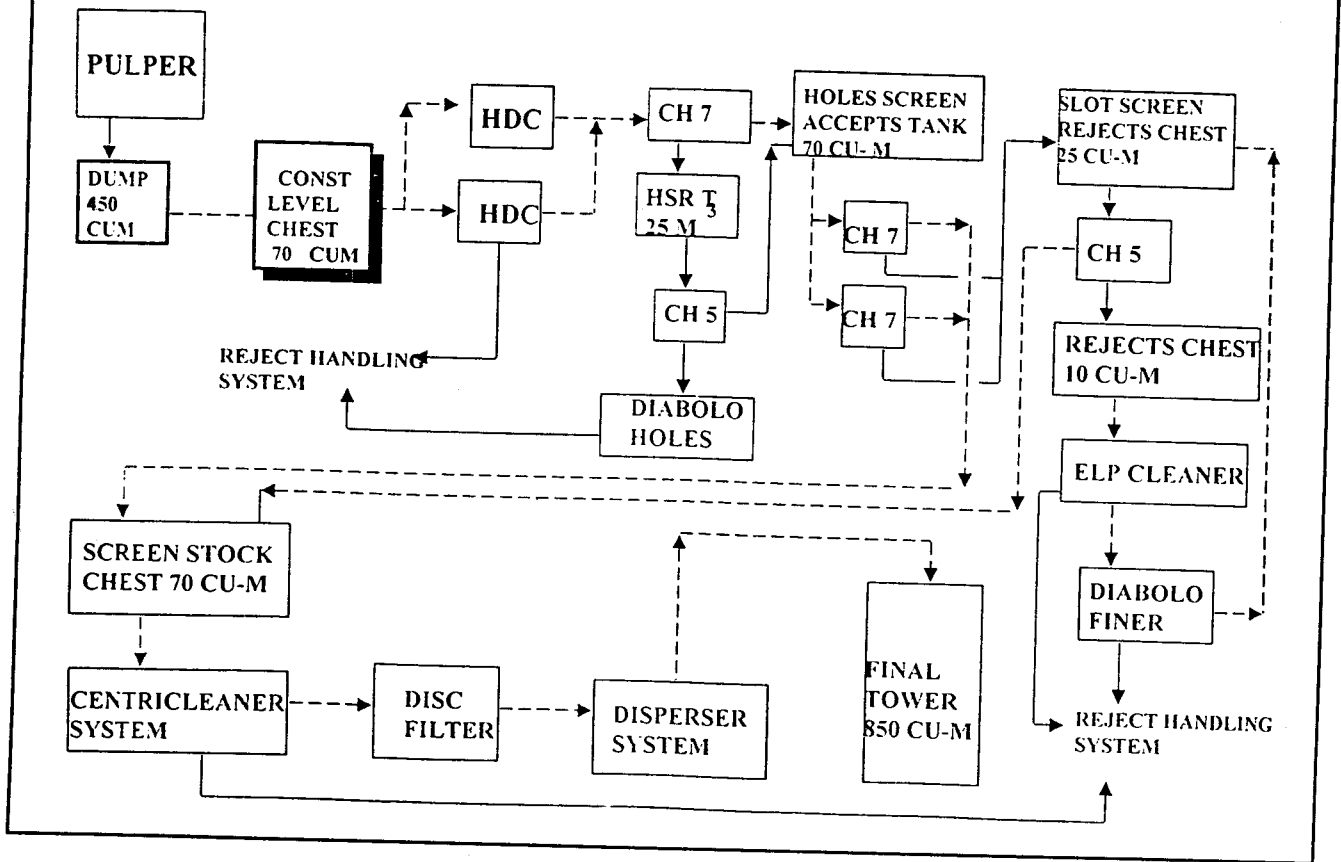
High density Batch pulper	Operating in Auto Cycle
	Operating Cy. 15%
Three stage Coarse screening 2.2 mm Hole perforation	Operating at 3-3.5% Cy.
Three stage fine screening	Operating at 2.5-3% Cy.
0.35 mm slot	
Four stages centricleaning System with fibremiser	Operating at low pressure drop 150 Kpa.
CDI Disc Filter	Stock inlet Cy 0.8-0.9%
	Stock outlet Cy 12-14%
Hot dispersion	Dispersion Temp. 120°C
	Disc gap 0.2 mm
DCS system	Better process control
	Reduced manpower

Table-1

S. No.	Secondary Fibre Street	Capacity BDMT/day	Processing Equipments
1.	Street 'A'	120	Pulping, Screening, Centricleaning
2.	Street 'B'	120	Thickening & Hot dispersion
3.	Street 'C'	300	Pulping/turbo screening Thickening Pulping, screening, Centricleaning Thickening & Hot dispersion

Figure 2.

## SFT STREET - C FLOW CHART



### PROCESS PERFORMANCE

% yield ( BDMT Pulp produced/ADMT material used)	82%
% Out throws	5%
Power Consumption kw/BDMT pulp produced	170
Steam for hot dispersion kg/BDMT	400
Fresh Water consumption m <sup>3</sup> /BDMT	2.0

### FACTS REQUIRED AND RESEARCH NEEDS

There is a clear need for probing the facts and its solutions to the following :

- Improved recycling by identifying procedures to improve yields.
- By designing and improving processes to convert

waste paper into saleable and profitable product that can compete with products from virgin pulp.

- Design of system to integrate production and effluent to reduce discharges to minimum.

### FUTURE OF RECYCLING

ITC Bhadrachalam, being in the manufacture of

Packaging board, will continue to be the main user of waste paper. However growth is expected in all grades with substantial increase in recycled fibre usage in newsprint, mixed waste, office records, duplex.

ITC Bhadrachalam would be adopting route of contaminant removal by modification in screening system to get cleaner pulp.

The growing importance of deinking grades will

be one of the key trends in the future of waste paper consumption. As an industrial process, deinking followed by bleaching is growing in importance for the manufacture of writing/printing paper from waste paper. Worldwide, about 11 million tonnes of fibre is currently deinked in about 400 mills. Though the technology is need based and cost intensive, it may prove as one of the best solution in view of ecofriendly process.