

Justice to Fiber-Preparation to Extract Full Potential of Strength Properties by Applying Advanced Technology



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ABSTRACT

Historically the quality of packaging paper has been neglected, used old hessian, bagasse, straw, local occ etc making Kraft paper of poor strength. Over a period of time for environmental issues & due to market demand by overseas companies to make & supply packaging paper of international qualities became compulsion. And all agro based paper mills switched over to recycle based & started using aocc, dsocc, ndlkc, kcb, sacks, mix waste etc. But the fiber preparation to extract maximum value have still been ignored and old pulping technology with equipments continued, resulting substantial quantity of costly imported long fiber being consumed. Whereas fiber, if treated scientifically with controlled consistency, pulp flow, sensors, Fractionator, LF refiner, properly designed equipments, piping, pumps, automations, with PLC, DCS etc, much higher strength properties can be achieved from Local OCC.

KeyWords: Old Hessian, Bagasse, Straw, Local occ, aocc, ndlkc, fractionator, LF TDR, Automation, plc, des.

Introduction

With the background of market scenario:-

Packaging growing @ 20-25 % consuming 6.8 mill t of plastic & 7.6 Mill t of Kraft paper & boards mainly in the following sectors :- Food, Hygienic, aseptic, Biodegradable, safe, attractive, labeling, bar-coding, scanning etc.

With the growth of consumerism & desires for making the products safe & presentable, the areas can be divided:-

*RRP (Retail ready packaging), All printed to display. Easy to identify, to open, to merchandise, to shop, to dispose.

*SRP (Shelf ready packaging)



MARKETS

- Beverage i, e bag in Box.
- Confectionary.
- Bakery.
- Dairy.
- Fruit & vegetables.



- Meat, poultry & Fish.
- Other foods.
- Health Beauty & Pharma.
- Households Cleaning.
- Electronics.
- Other consumer goods.

Only 2 % Food packed in India against worlds 70 %.

*Per capita packaging consumption, Kg :

India	Taiwan	China
4.3	6	20

*Per capita Packaging expenditures:

20 markets of world	- 348 USD
Worlds average	- 100 USD.
India	- 30 USD.

INDIAN PACKAGING

• Indian packaging is going to be the 4 Th largest Markets. The volume from 24.6 Billion \$ in 2011 grown up to 43.7 Billion \$ in 2016 & 1.3 Trillion in 2018-19. The industry is expected to grow at CAGR @ 12.3 %.

Meaning many more items to be packed with huge investment opportunity.

The other side of story is most of the units are struggling to survive & margins are shrinking compelling the delay of need based balancing projects of up gradations/modifications or expansions. Finding difficult to deliver consistent quality of GSM, Bursting

strength, Cobb and often facing the complaints of Cracking, Delaminations, Bad smell, Reduction in BS, poor RCT leading poor compressions etc.

Many mills are unable to utilize the opportunity to export to china, Indonesia, Malaysia, Gulf countries for such shortcomings. Such opportunities may not be short term as the good news is in the air that china may prohibit importing of OCC, since contaminated.

DISCUSSIONS

The packaging paper, normally known as Kraft paper for corrugated carton making is being used since a long. The concept of packing the items were generally for transportation & printing to display without much considerations of ultimate performances.

In mid 70, huge number of mills installed with a 30 TPD concept, of which few were for writing & printing & balance for Kraft, 16-20 BF, with Old Hessian, Bagasse, Straw, Local occ etc. GSM, BF & Cobb were only considerations.

Over a period of times due to market dynamics & stringent environmental issues agro pulping with spherical rotary digesters were closed compelling the mills to switch over to recycled raw material only.

But in absence of the need based fiber preparation technology & equipments, the optimum strength properties could not be achieved-resulting the use of costly imported waste paper to make higher Bf paper.

The Categories of Kraft paper manufacturing may be classified into 4 types over a period of time, as follows:-

1. Local waste, old hessian-breaker beater with single wire compound machine (with MG in between) making 20 Bf.
2. Local waste & imported occ with simple pulp mills, single wire paper machine making 16-20 Bf.

1995 onwards

3. Local waste + dsocc/ndlkc/Sack Kraft/Virgin wood pulp, pulper-hdc-screens-cc, side hills screens/Decker thickener, tdr, multiwire paper machine making 18-40 BF.

2012 onwards

4. Local occ, dsocc-Pulper with consistency controller-junk trap-poir-hydrapurger-trommel screens-HDC-Coarse screening-2 stage-Centricleaning-5 stage-Fiber Fractionator-SF PDF-SF Tower.LF- slotted screening-2 stage-PDF-TDR-LF Tower, complete automation of Flow,Consistency,Blending/mixing-Double wire paper machine with double dilution-pressurized head boxes etc.making 18-28 BF.



OBSERVATIONS

When compared the process technology with equipments against BF of paper for TYPE 3 & 4, it is observed that substantial amount of long fiber not being properly utilized-leading the increase usage of costly imported NDLC/AOCC etc. A typical example of pulp cost for manufacturing 22 & 28 Bf in 150 & 180 GSM :-

BASIS:-Price of imported raw materials, USD/T.

Material	Price (USD/T)	Yield (%)
NDLKC	230	22168
OCC	190	20200
DSOCC	215	22200
KCB	200	19895
MIX.WASTE	100	13765
COL.WASTE	100	13765
LOCAL OCC	--	16000

FURNISH USED IN BOTH CASES & THE PULP COST:- TYPE 3 & 4 MAKING 22 7 28 IN 150 7 180 GSM:-

GSM	BF	FRNSH,3	COST	FRNSH 4	COST	DIFF
150	22	T/L.50 KCB,50 OCC. B/L,50 IWP,50 MIX.	17982	100 % IWP	16000	1982
180	28	T/L 50 KCB,50 NDLC, OCC. B/L 80 DSOCC, 20 COL WASTE.	20529	IWP 80% DSOCC 20%	17240	3289

•100000 TPA CAPACITY UNITS MAKING ABOVE IN EQUAL PROPORTION, AVERAGE SAVING @ 2635 RS/T, TOTAL SAVING 26.35 Cr.

CONCLUSION: - With the emerging demand of high & consistent quality packaging paper to make performing carton by multinationals, corporate, seaworthy packaging, machinery packaging, RRP, SRP, horticultural products, food grade packaging etc, it is recommended that the units with conventional pulping process should plan & upgrade/modify the process technology with relevant equipments & automation to compete in the market & make substantial contribution towards the profitability.

Reference: High rct Kraft paper for corrugated carton-A case study, by Dr.A.K.Chatterjee. IPPTA Vol. 28 No.4 October-December 2016.