

**JUSTICE TO FIBER-PREPARATION TO
EXTRACT FULL POTENTIAL OF
STRENGTH PROPERTIES BY
APPLYING ADVANCED
TECHNOLOGY:-
- Dr.A.K.Chatterjee.**

Key words :-Old
Hessian, Bagasse, Straw, Local
occ, aocc, ndlkc, fractionator, LF
TDR, Automation, plc, dcs.

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

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.



RRP (Retail Ready packaging)

MARKETS:-

SRP . Self Ready packaging

Beverage i, e bag in Box.

Confectionary.

Bakery.

Diary.

Fruit & vegetables.

Meat, poultry & Fish.

Other foods.

Health Beauty & Pharma.

Households Cleaning.

Electronics.

Other consumer



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 4th 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,bf,cobb,and often facing the complaints of Crackings,Delaminations,Bad smell, reduction in BS,poor RCT leading to poor compressions etc.Shortage of qualified technical experts,inadeqaute R & D in this sector has further affected the progress.

Many mills are unable to utilize the opportunity to export to china,Indonesia,malayasia,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 transpiration & printing to display without much consideration of ultimate performances.

In mid '70, huge number of mills installed with 30 TPD concept, of which few were writing & printing and balance for kraft, 16-18 bf, with old hessian, bagasse, straw, local occ etc. GSM, Bf & Cobb were only parameters of consideration.

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

But in absence of need the 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 became unavoidable.

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 (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/ndlk/sack/virgin wood pulp –hdc-screens-side hills screens/Decker thickener,tdr,multiwire wire paper machine making 18-40 bf,korean paper, abrasive base ,vtl etc.

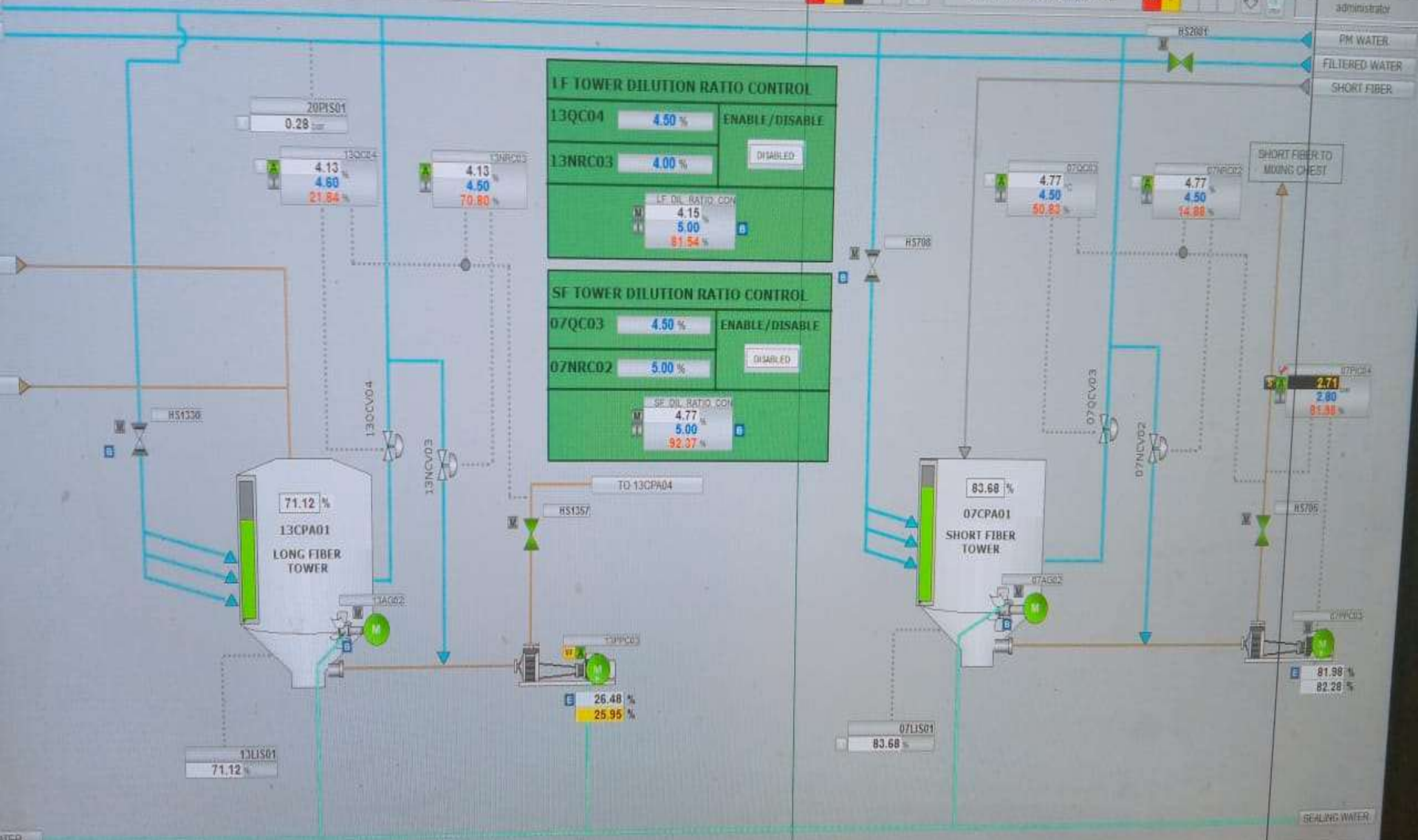
2012 onwards:-

4. Local waste, dsocc, -pulper with consistency controller-junk trap-poir-hydrapurger-trommel screens-HDC- Coarse screening 2 stage-centricleaning 5 stage-Fiber Fractionator-SF-PD-SF Tower.LF-slotted screening 2 stage-PDF-TDR-LF Tower, complete automations of flow,consistency,pressure,blending/Mixing ratio-Double wire paper machine with double dilution-pressurized head boxes etc making 18-28 BF.

FEED	PULPER	HD CLEANING	COARSE SCREENING
FUNCTIONING	LF SCREENING	THICKENING	DISPERSING
STORAGE	TOP APP FLOW	BOTTOM APP FLOW	PAPER MACHINE
DISTRIBUTION	BROKE SYSTEM	VACUUME	STEAM & CONDENSATE



- administraty
- PM WATER
- FILTERED WATER
- SHORT FIBER



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 ndlkc / aocc / dsocc / sack / kcb etc. A typical example of pulp cost for manufacturing 22 & 28 bf in 150 & 180 gsm :-

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

NDLKC	230	22168	Yield 95%
OCC	190	20200	90 %
DSOCC	215	22200	90 %
KCB	200	19895	95 %
MIX.WASTE	100	13765	85 %
COL.WASTE	100	13765	85 %
LOCAL OCC	--	16000	90 %

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 NDLKC,O CC. B/L 80 DSOCC,2 0 COL WASTE.	20529	IWP 80 % DSOCC 20%	17240	3289

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

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

THANK YOU.