



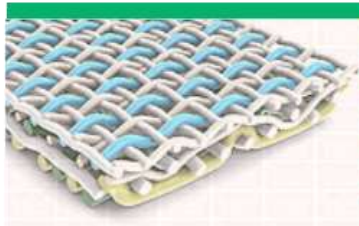
**wires & fabriks**

*... we bring life to paper*

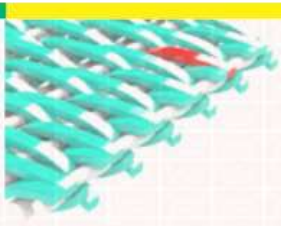
# Emerging Design of Forming Fabric to meet future challenges

02.06.2020

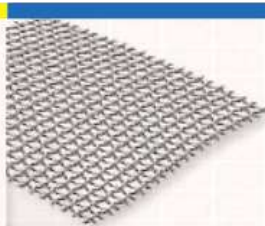
*Fourth Generation forming fabric for Packaging paper and Writing Printing.....*



Forming Fabrics  
Conveyer Belts  
Press Belts-ETP



Dryer Screens  
Spiral Screens



Stainless Steel Mesh  
Phosphor Bronze Mesh  
Pulp Fabrics



Chemicals



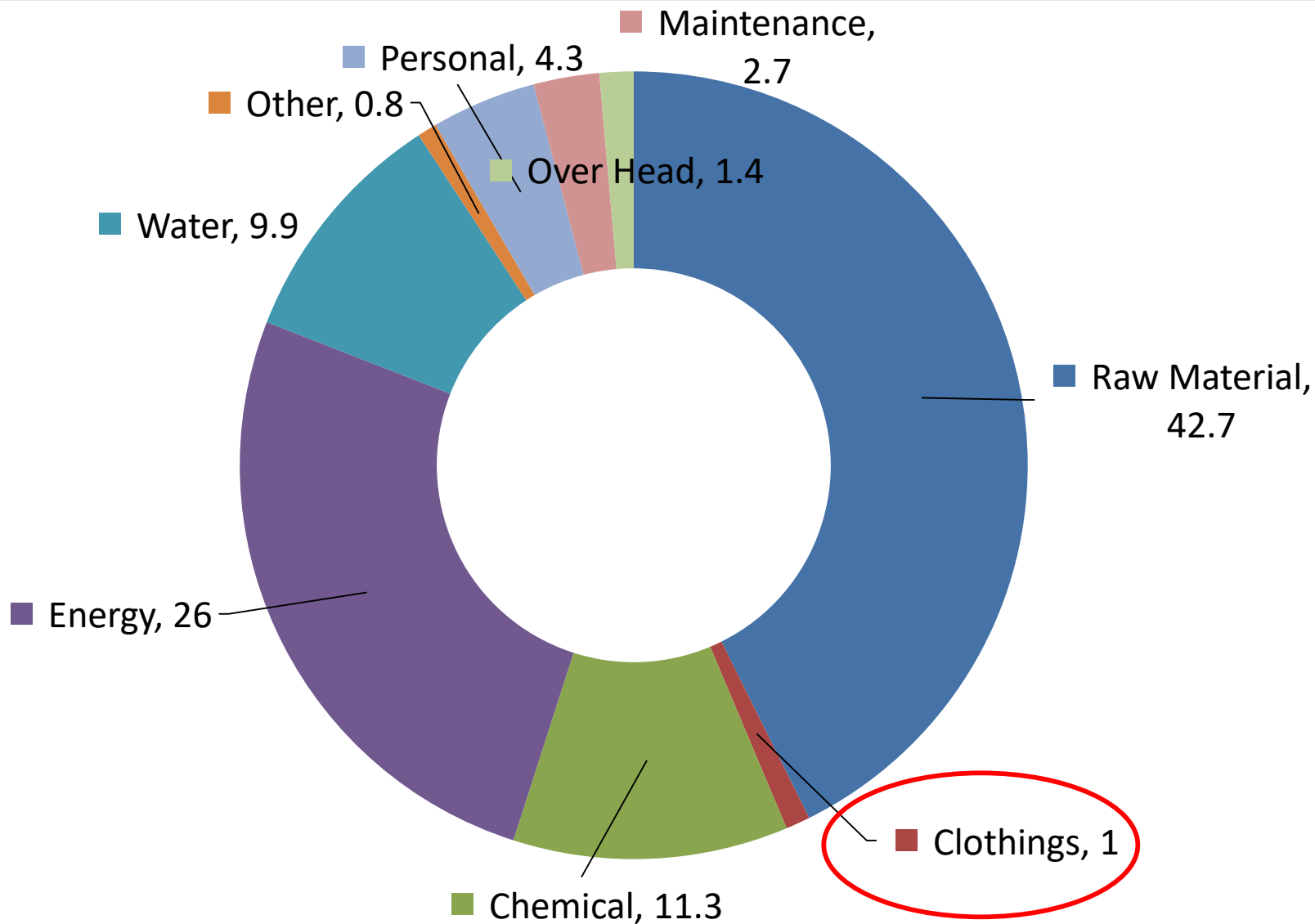
Accessories

## COVID 19 impacts expected in Paper Industry.....

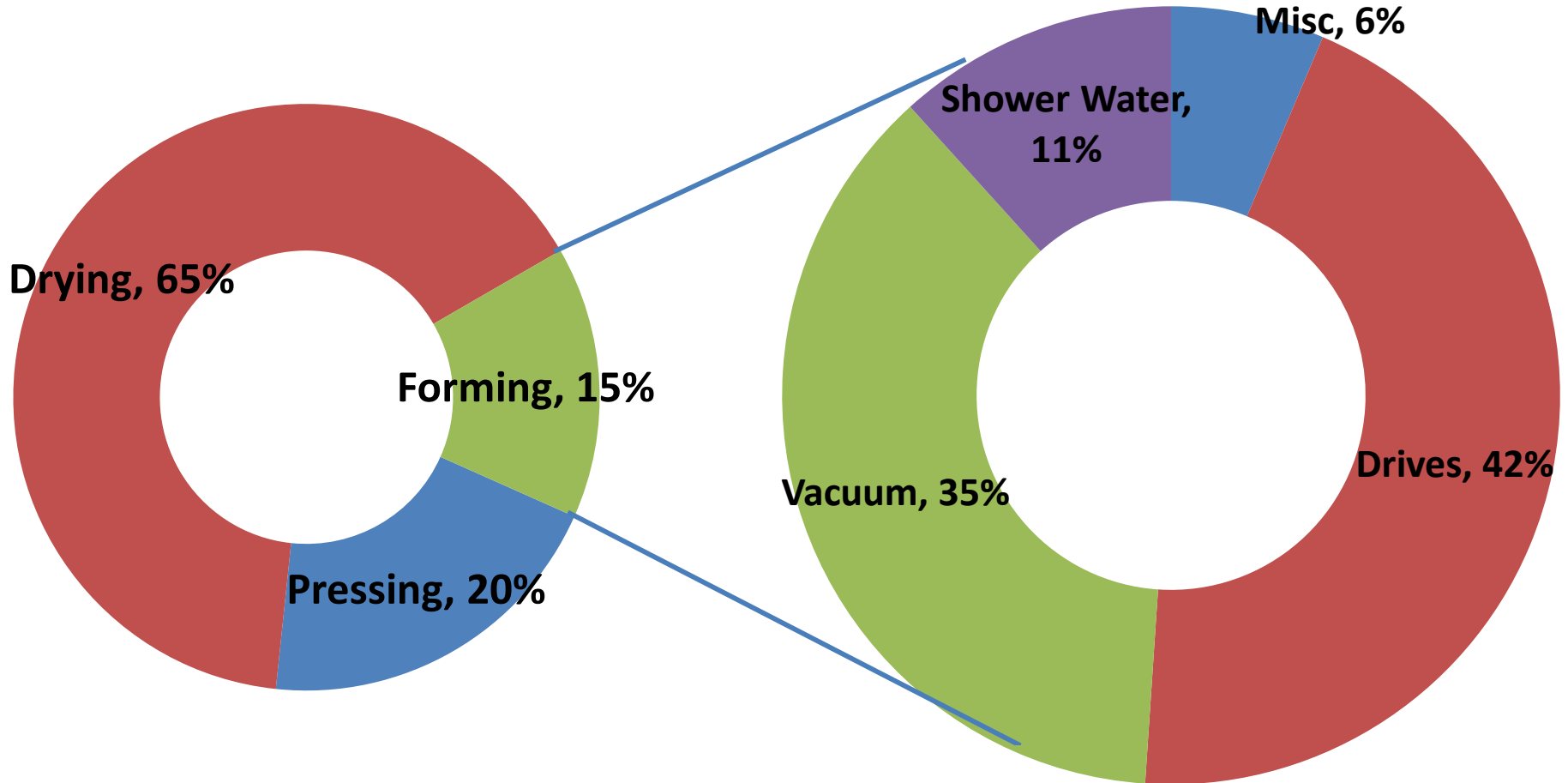
- ❖ Industry to work more on **Cost reduction** measures to regain to normal operation
- ❖ **Fiber saving** as raw material is difficult to get.
- ❖ **Quality improvement** CAPEX will be there to compete the World market.
- ❖ New CAPEX will be focused on Cost reduction & Environment related.

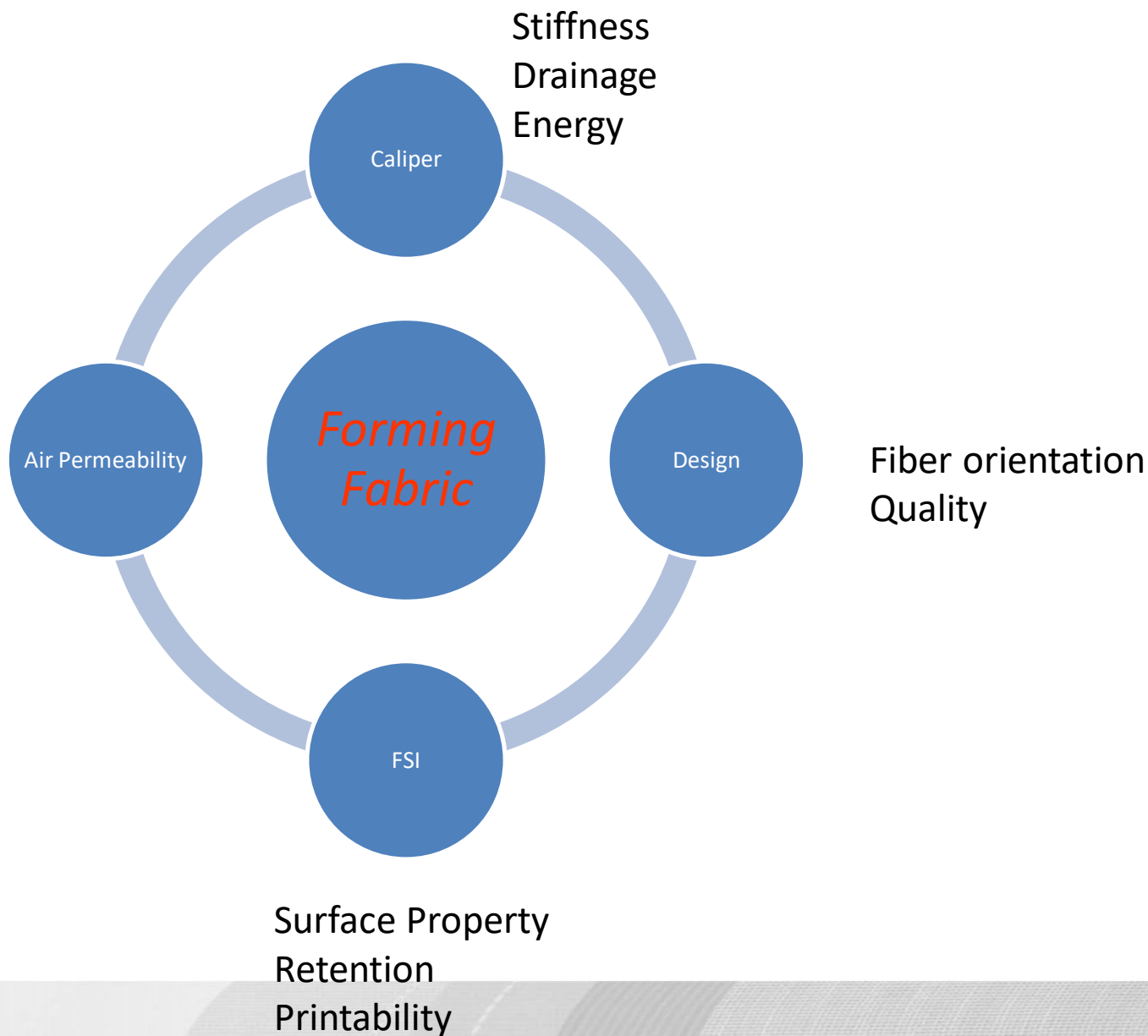


# Cost distribution in Paper Manufacturing(%)

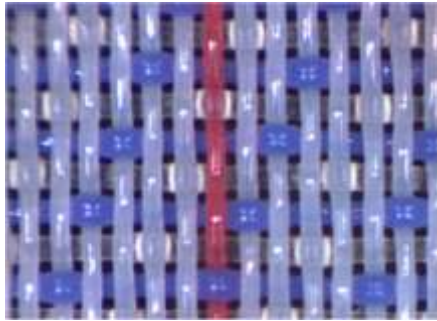


# Cost of Water removal in Paper Machine(%)





# Technology development in Forming fabric



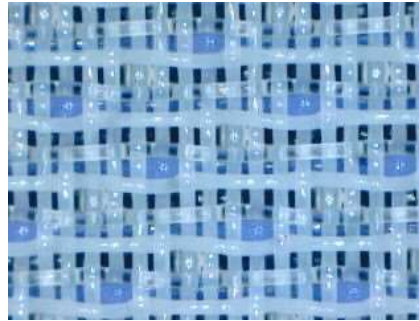
Single layer

## Advantages:

- ✓ Most versatile Design
- ✓ Easy to drain
- ✓ Easy to keep clean

## Limitations:

- Dimensional Stability
- Poor formation
- Low retention
- High Elongation
- Bleeding



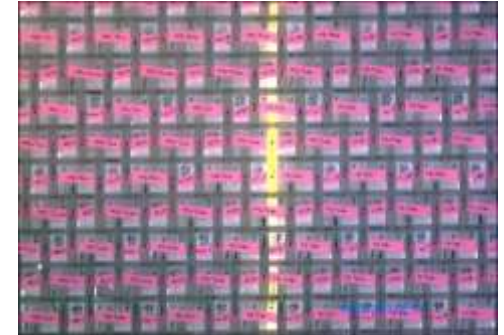
1.5 layer

## Advantages:

- Higher life potential
- Improved retention
- No Bleeding

## Limitations:

Wire marking  
Poor profile



Multi Layer

## Advantages:

- Higher life potential
- Improved retention
- Better formation

## Limitations:

Drainage limitation  
Higher vacuum requirement

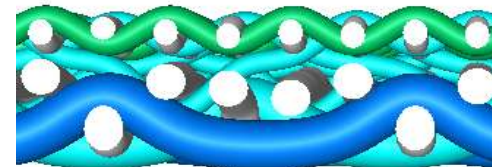
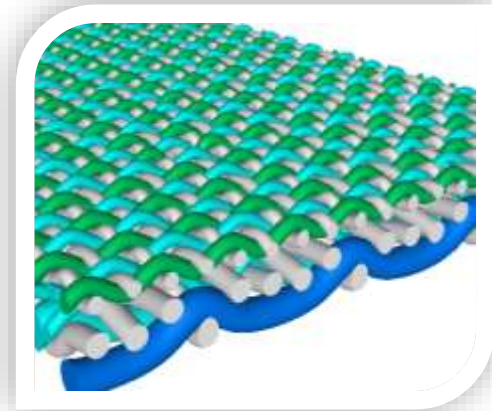


# Shute support Triple Layer (STL)



To cater –

- ✓ Formation - Good dewatering due to more small holes
- ✓ Higher Mechanical Retention – High fiber supports  
Helps in Less effluent load and  
Best fiber usage
- ✓ Cleaner run – Plain weave top surface ,  
Less prone to chocking and  
easy sheet release

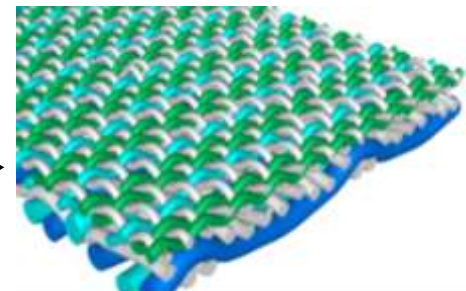


For Paper Maker

- Improved fiber saving by increased retention
- Good paper surface properties due to homogeneous surface
- Improved machine runability, good sheet release
- Low energy usage due to improved dewatering with many holes
- Improved dimensional stability gives better CD profile control
- Thinner fabric for effective usage of vacuum for easy drainage & less prone for wear.

# Development in Packaging Board





## Box Performance

- Printability
- Stacking
- Glueability
- Uniformity

## Board Properties

- IGT value
- Surface smoothness
- Stiffness
- Porosity
- CD Profile
- Ply Bond strength
- Formation

## Fabric Properties

- Fiber orientation
- Retention
- Top Surface
- Drainage characteristics
- Fabric Stability

# What's Next for Packaging Board?



There is a need of development

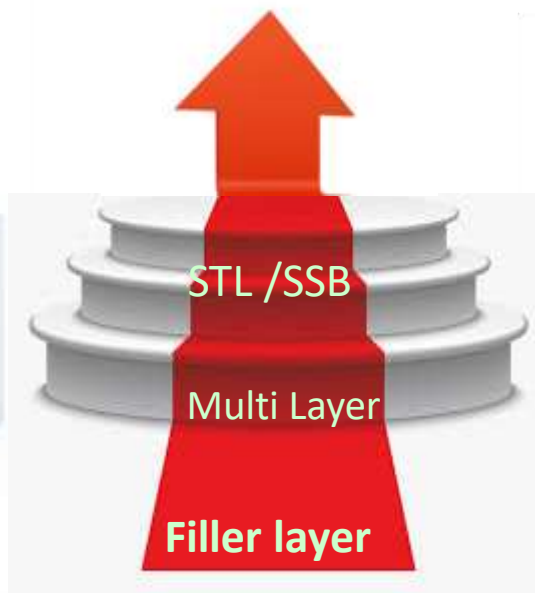
Lets go invent tomorrow instead of worrying about what happen yesterday



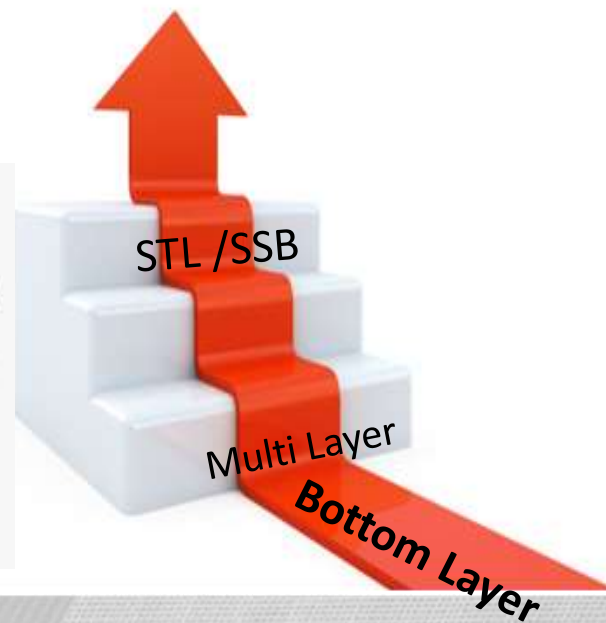
**AQUAPRINT**



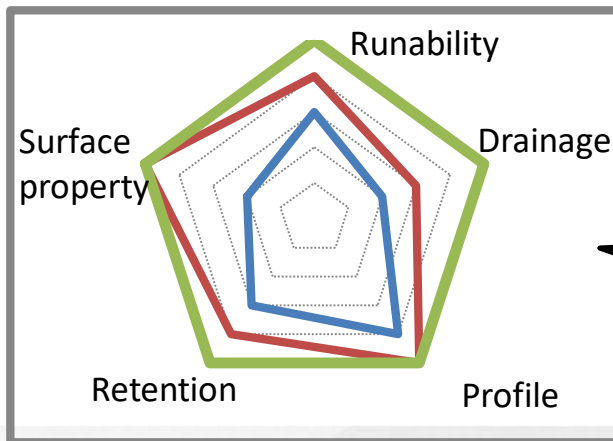
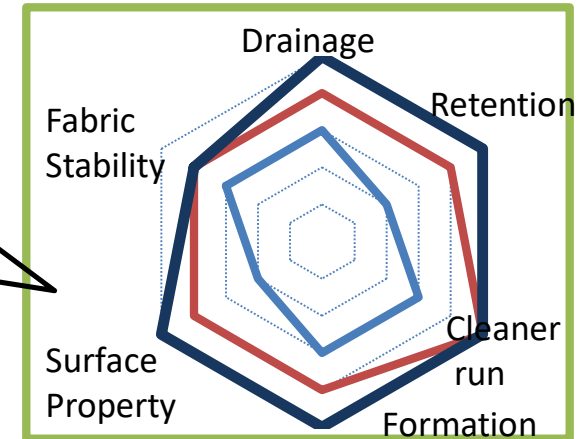
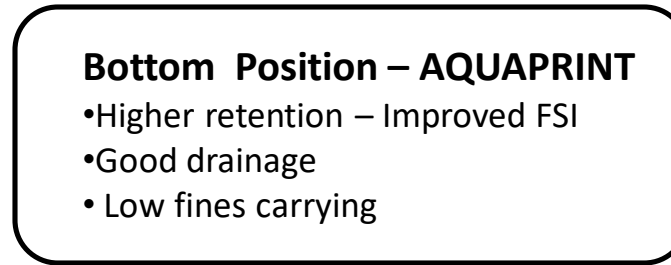
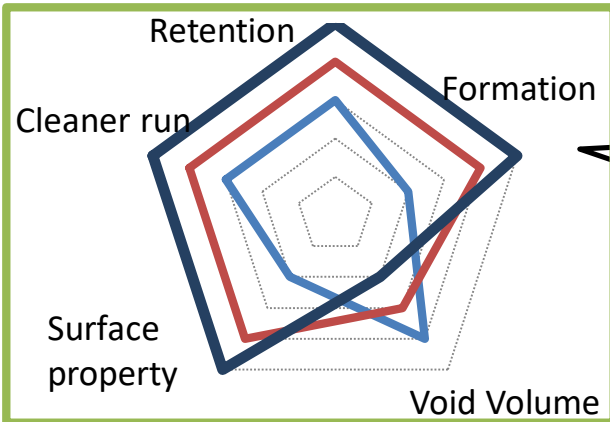
**ULTRABOND**



**AQUAPRINT**



# Fabric needs in Board segment

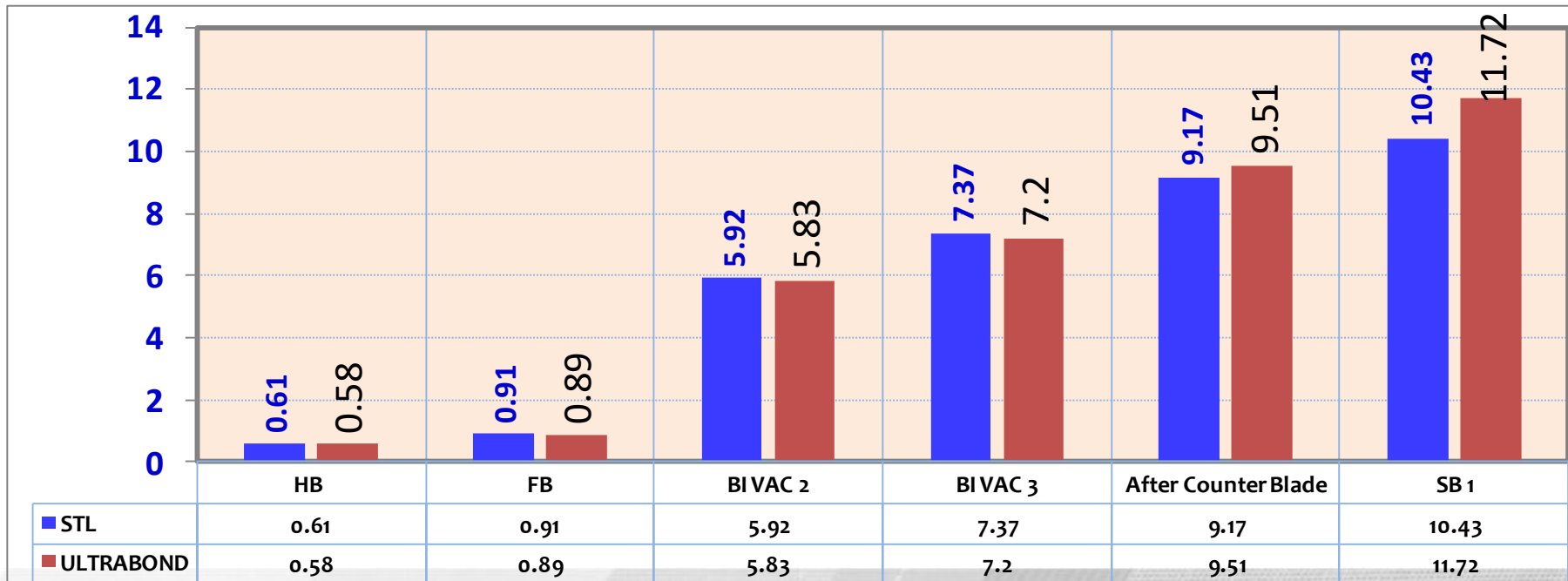




Customer : XYZ  
Machine Type : Multifourdriner  
Position : Filler position  
Paper Grade : Coated Board  
Speed : 500MPM  
Furnish : 70% BCTMP+30 % Broke



**Objectives** : improve Drainage and sheet dryness

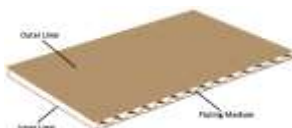


Improved sheet dryness with more drainage capacity in  
**ULTRABOND**

● STL  
● ULTRABOND

# Development in Packaging Segment





## Box Performance

- Box Compression Test (BCT)
- Rough Handling protocol

## Corrugator board properties

- Edge Curl test (ECT)
- Flat crush test (FCT)
- Bending Stiffness
- Friction
- Printability
- Burst Strength
- Warp

## Paper Properties

- Tensile strength
- Tensile Stiffness
- Ring Crush Test (RCT)
- Corrugated medium Test(CMT)
- Dimensional Stability

## Fabric Properties

- Drainage Characteristics
- Higher retention
- Cleaner Run
- Good machine runnability
- Surface Property

# What's Next for Packaging?



There is a need of  
development

Lets go invent tomorrow instead of worrying about what happen yesterday

**ULTRA**EDGE

&

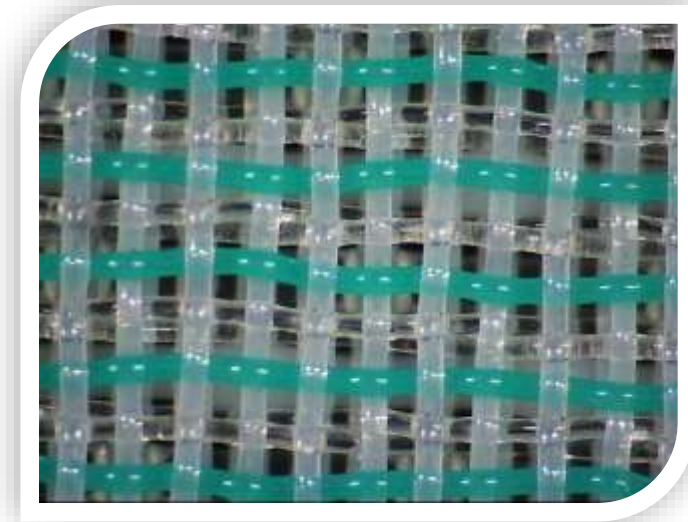
**ULTRA**PACK



## ULTRAEDGE/ ULTRAPACK

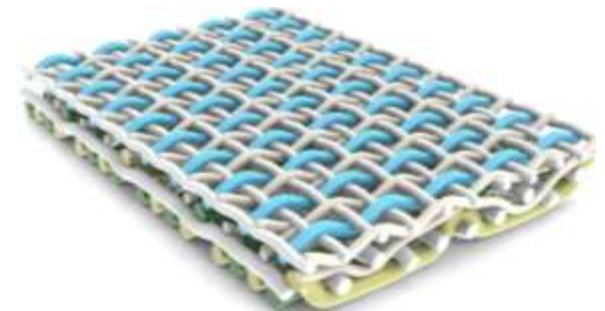
To cater –

- ✓ Drainage – Straight through (similar to Single layer )
- ✓ Higher Mechanical Retention – Best in all design
  - Helps in Less effluent load and
  - Best fiber usage
- ✓ Cleaner run – Finer top surface , no hill and valleys,
  - Less prone to chocking and
  - easy sheet release



For Paper Maker

- Freedom in paper making
- Uniform Paper properties
- Improved machine runability
- Low energy usage
- Paper makers can reduce cost of Operation and Quality improvement in the final paper with the help of improvement in technology through 3 E's – Efficiency, Environment and Energy



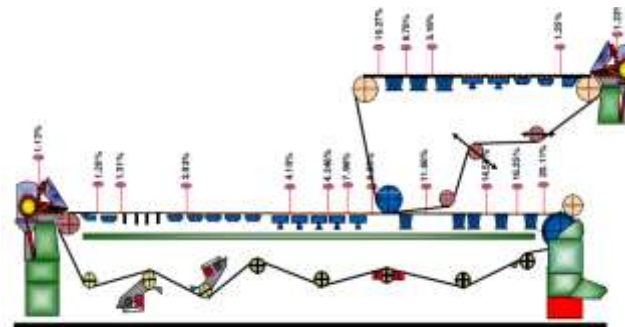


**ULTRAEDGE** – Same drainage character as like Single layer with Top plain weave and improved fiber retention and clear back water

**ULTRAPACK** – Controlled drainage for improved formation, Top plain weave and improved fiber retention and clear back water, more stiffer fabric for better CD profile

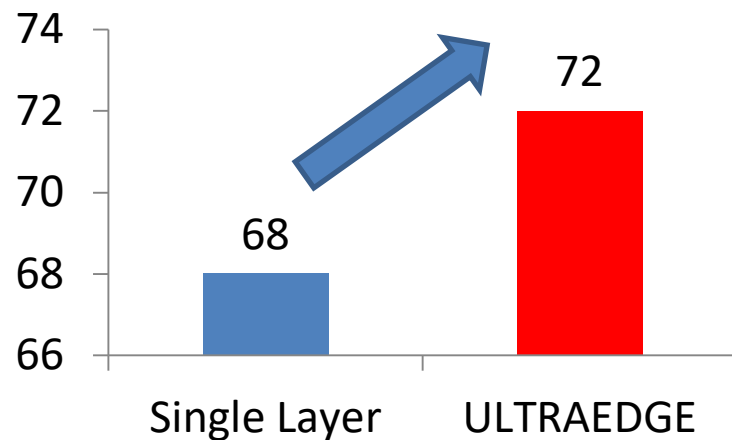


Machine Type : XXXXX  
M/c Type : Multi-fourdrinier  
Paper Grade : 100 - 250 GSM –Kraft Liner  
Speed : 200 - 300 mpm  
Furnish : 100% Waste paper  
Position : Top  
**Objectives** : To enhance FPR & reduce solid lost

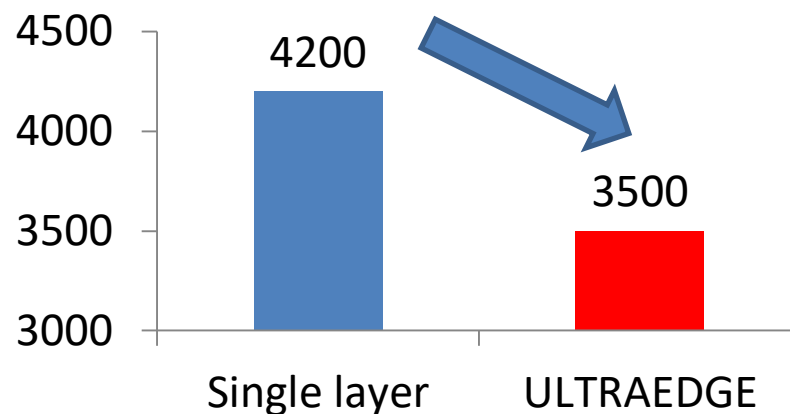


### Results :

First Pass Retention, %



B/w Clarity, ppm



**Improved First Pass retention and reduced solid lost**



## Results :



**Paper made with Single Layer**



**Paper made with ULTRAEDGE**

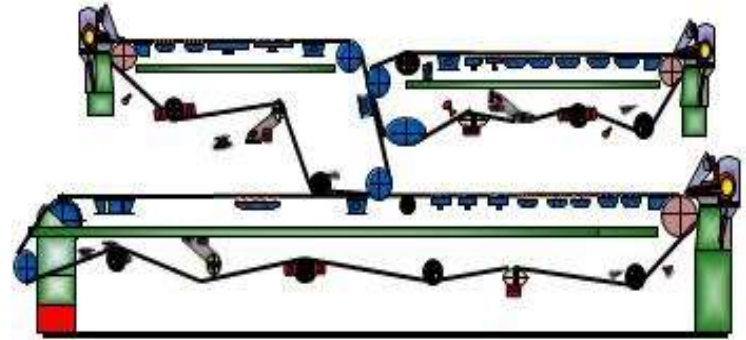
**ULTRAEDGE resulted in,**

- ❖ 4 – 5% improvement in First Pass Retention
- ❖ Reduced solid lost by 15%, hence reduce load to ETP
- ❖ Improved paper finish – No marking on printing surface.

**❖ Cost saving - 84 L/Year**

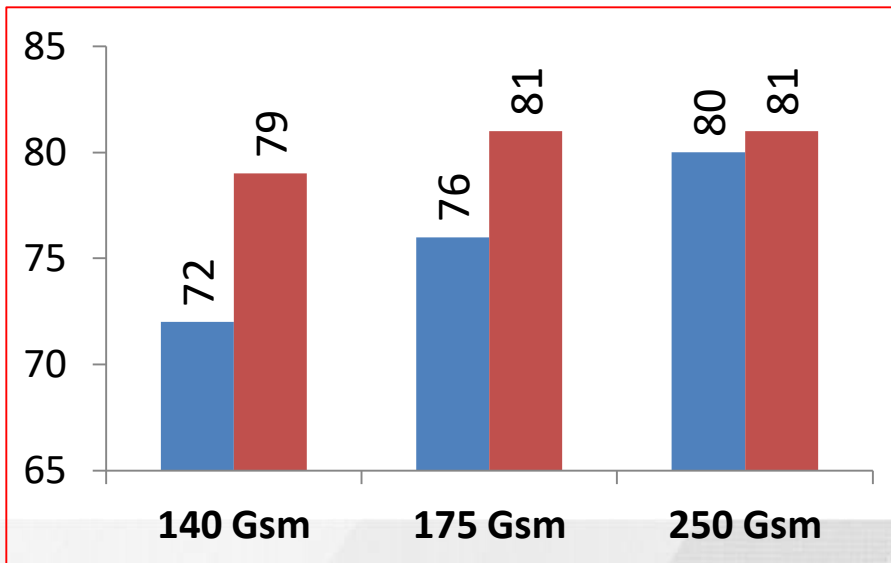


Customer : XYZ  
Machine Type : Multifourdriner  
Position : Top position  
Paper Grade : Kraft  
Speed : 350MPM  
Furnish : 100% WVP

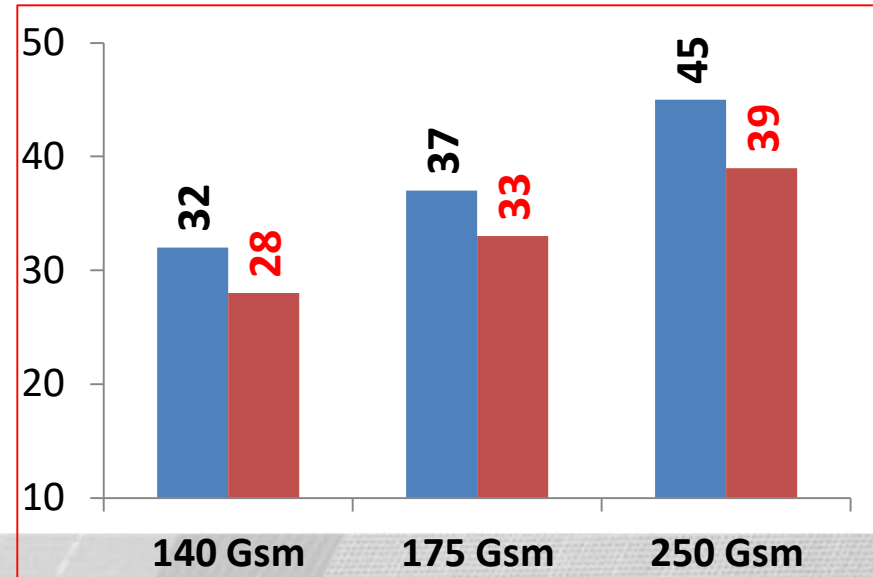


**Objectives** : improve paper formation, retention & reduction in Drive load in each gsm of Kraft paper by changing design of fabric.

**Retention %**



**Drive Load Comparison in Amps**



● 1.5 layer

● ULTRAPACK



Properties	ULTRAEDGE	ULTRAPACK
Retention	+	++
Formation	+	++
Back water ppm	-	--
Printability	++	++
Drainage	Good	Good
CD Profile	+	++
Sheet surface	+	+
Effluent Load	-	--

**ULTRAEDGE delivered more than 100 fabrics and ULTRAPACK delivered more than 500 fabrics across the Globe**

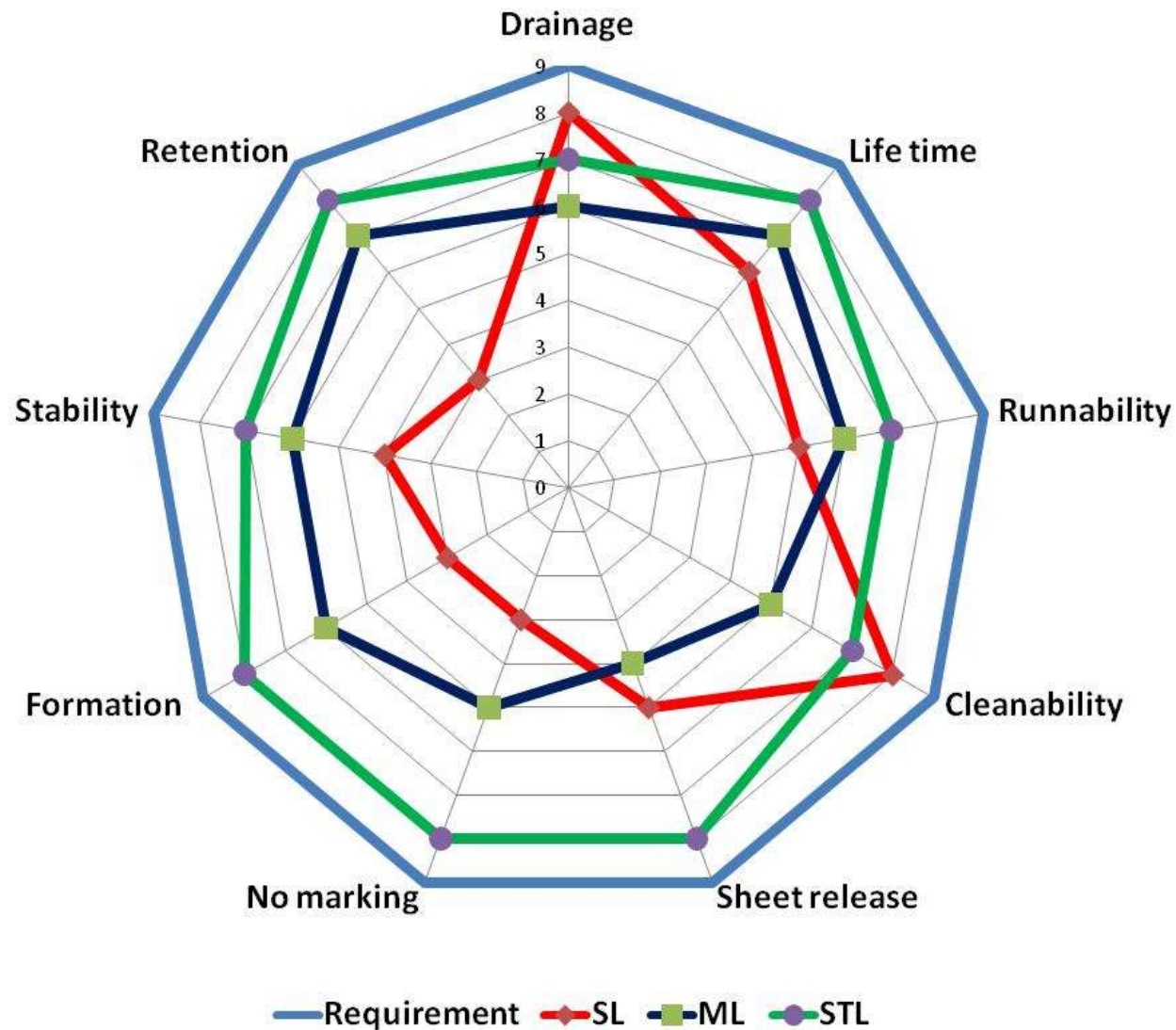
# Development in White Segment

↓	Raw material	By improving retention
↓	Chemical	By improving Mechanical retention
↓	Energy Cost	Better drainability in fabric
↓	ETP Load	Reduction in Backwater PPM
↑	Up keeping with Printing technology	Improved surface property



**So, What needs.....**

**Freedom to Paper makers, as per his Quality requirement –  
by better drainage fabric**



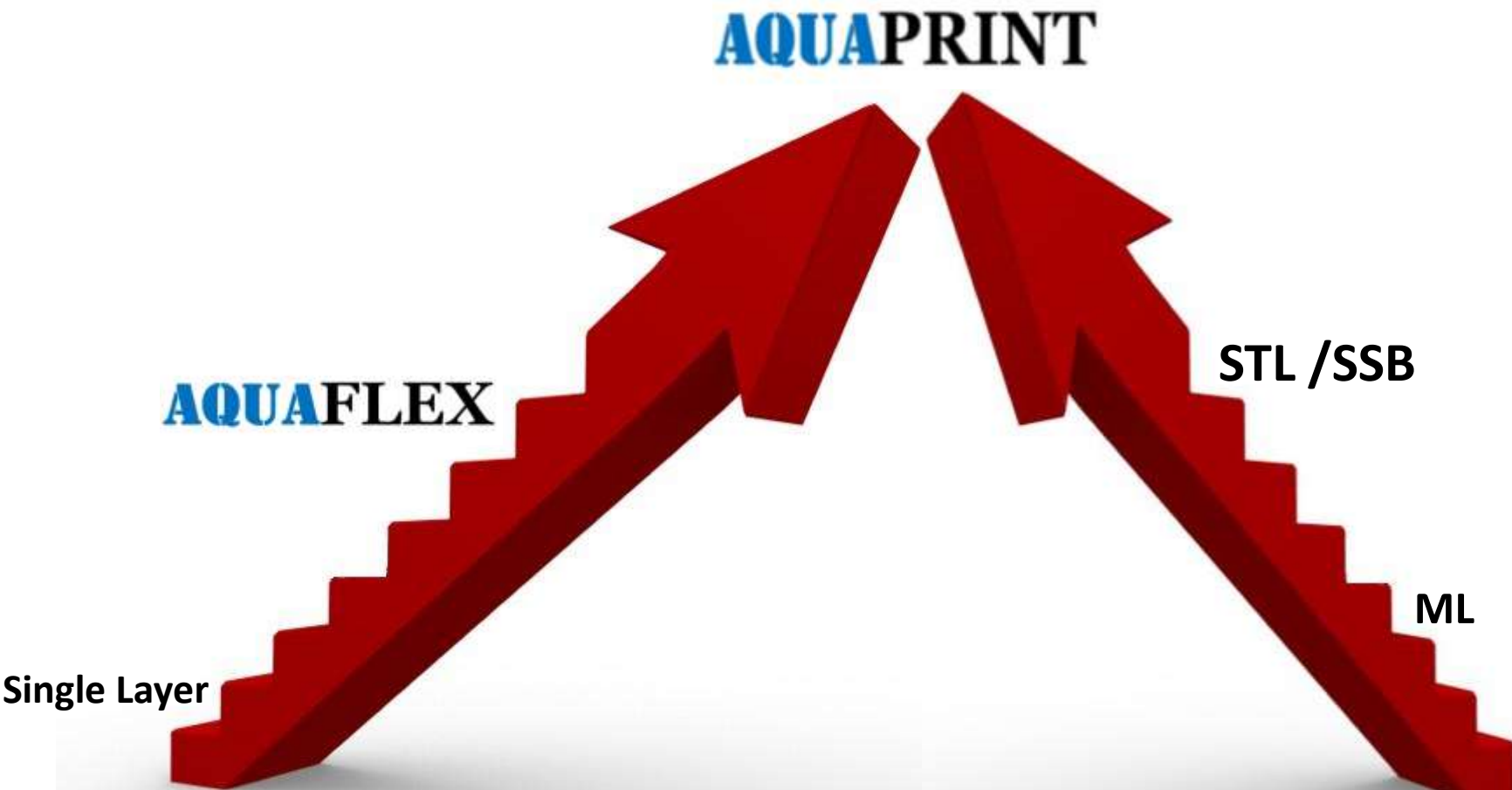


# What's Next for White Segment



There is a need of development

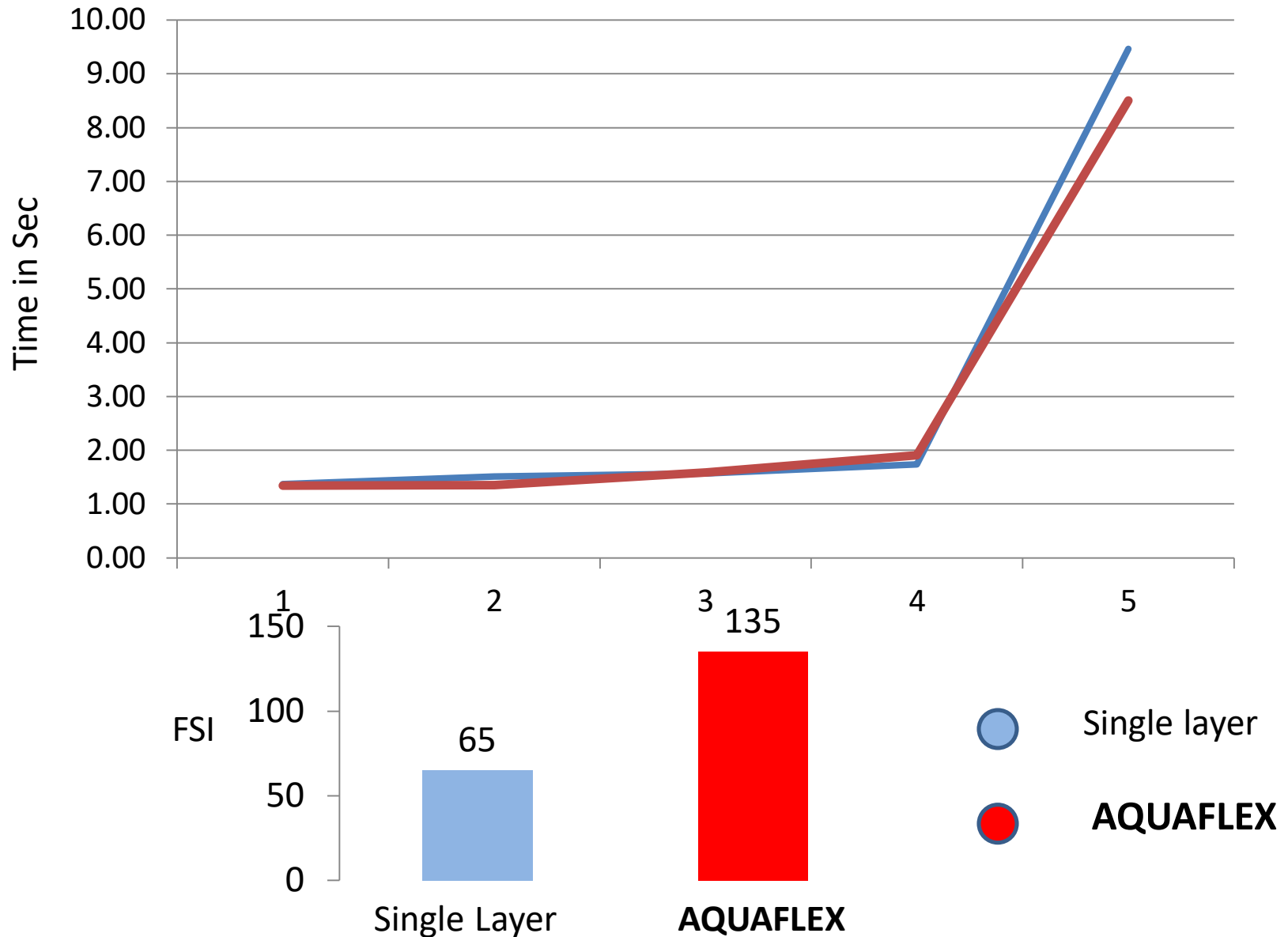
Lets go invent tomorrow instead of worrying about what happen yesterday



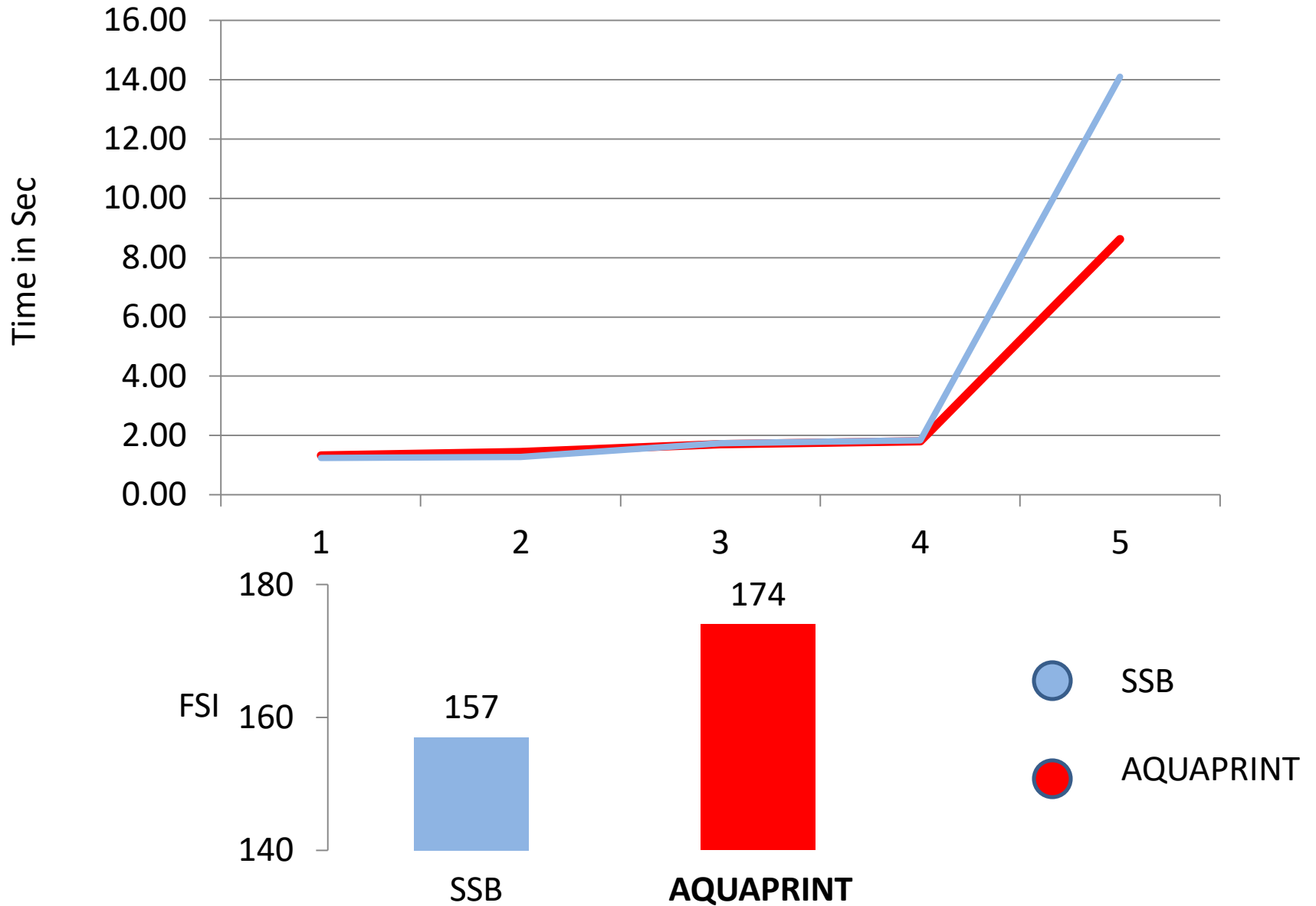
**AQUAPRINT** - Innovation in weaving pattern to achieve high retention without change in drainage behavior.

**AQUAFLEX** – Innovation in weaving pattern to achieve high retention with high drainage behavior because of low caliper.

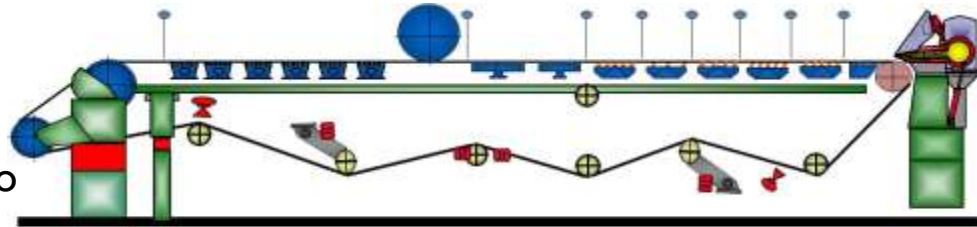
# Drainage Curve Comparison



# Drainage Curve Comparison

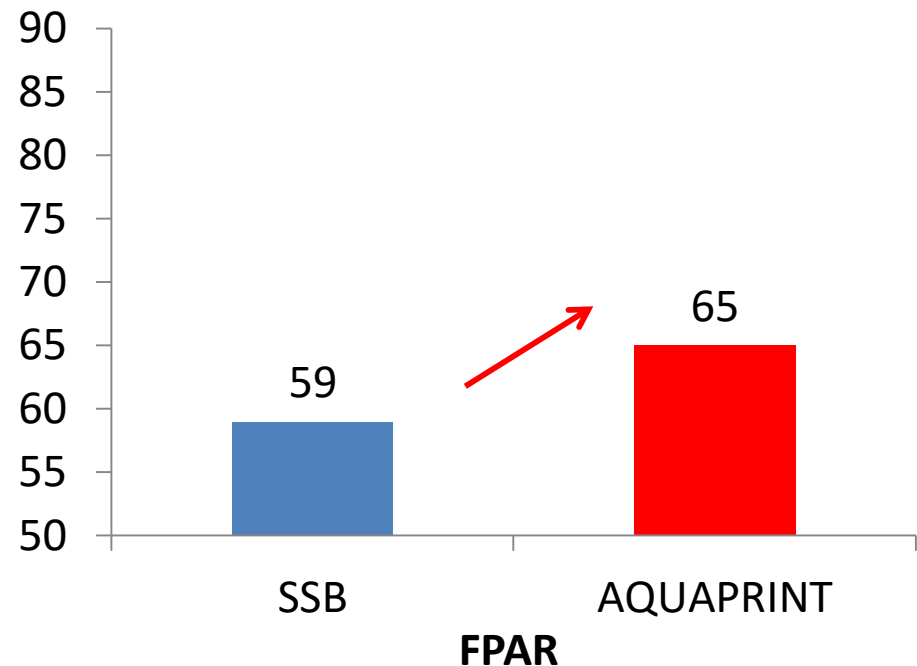
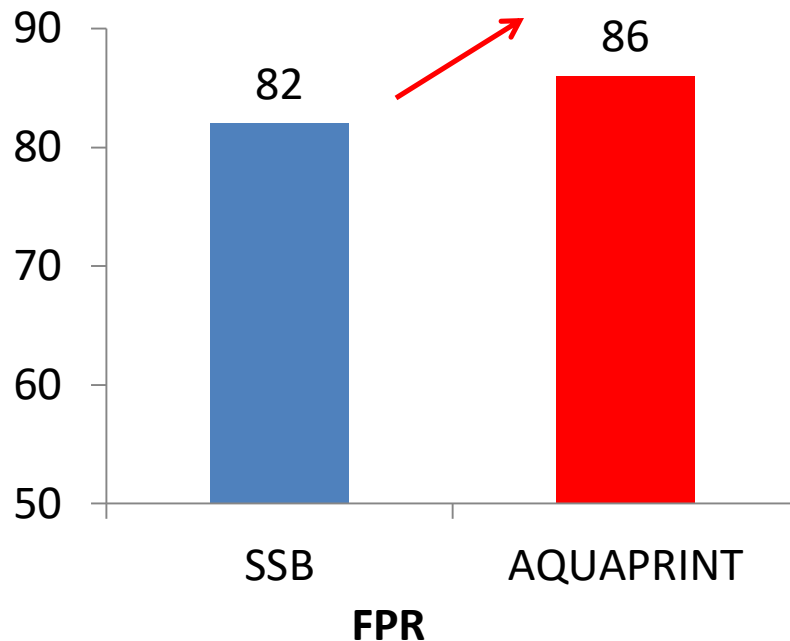


Machine Type : Fourdrinier  
 Paper Grade : 70 - 120 GSM –VWP  
 Speed : 270 - 390 mpm  
 Furnish : 80 % Hardwood, 20 % Bamboo



Objectives : To enhance FPR & FPAR

Results :



Improved Overall First Pass & Ash retention by AQUAPRINT

Less fiber cost & chemical cost and improved Paper surface property.



	Standard SSB	AQUAPRINT
Paper Formation		+
Printability		+
ETP LOAD		--
Retention, %	82	86
FPAR %	59	65
Back water PPM	1050	861
Overall Retention, %	96.5	97.13
Pulp required kg /Ton of paper	1036.26	1029.86
Pulp Cost Rs /Day	2,983,680	2,963,520

Net Saving by use of AQUAPRINT – 18432 Rs/Day

**Approx – 48 L/Annum** in term of pulp saving

\*\* In calculation considered 32 Rs/kg pulp cost and twice system cleaning in month



**Objective** : Machine performance improvement by fabric design

## Machine Detail

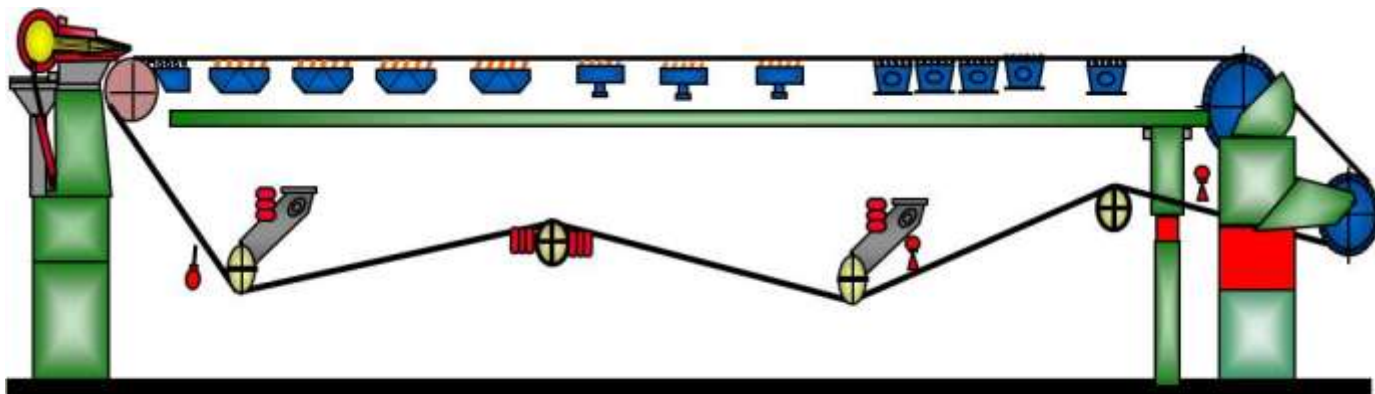
Machine Type : Fourdrinear

Paper Grade : Writing & Printing

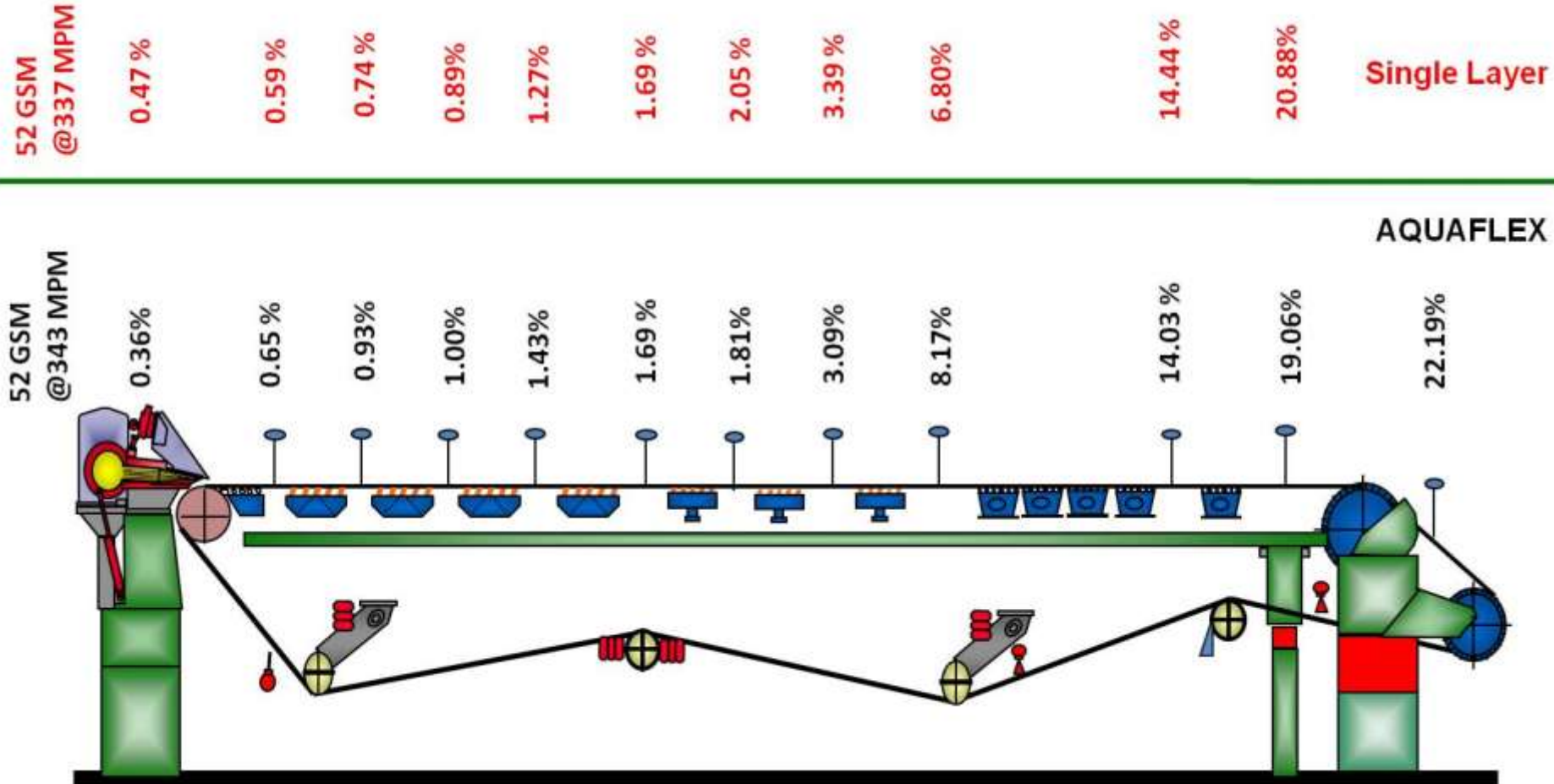
GSM : 50-100

Speed : 350 mpm

Furnish : 70% Wood + 10% Agro + 20% Broke



# Machine overview by Drainage Study

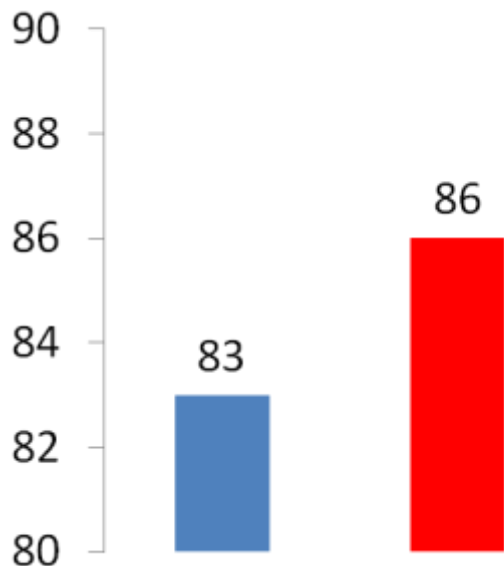


Off couch Dryness and machine runability is satisfactory in all paper grade manufacturing

# Machine Parameter Comparison

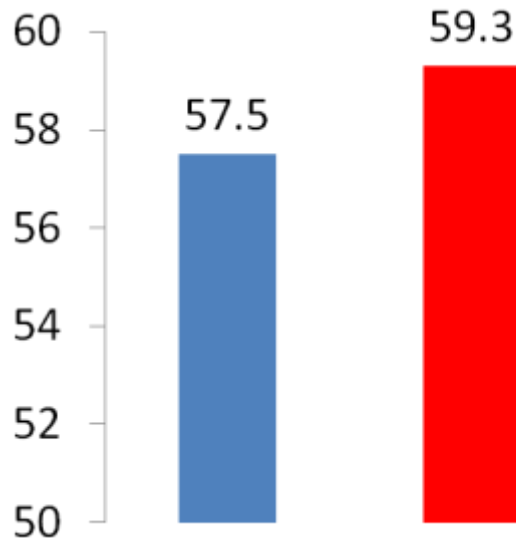


### FPR %



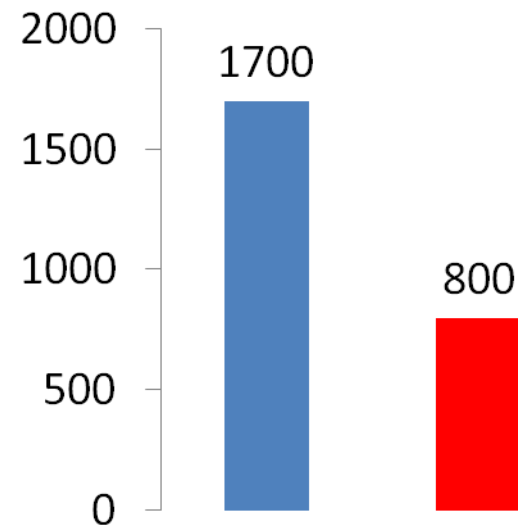
FPR %  +3

### FPAR %




FPAR %  +2

### Back Water PPM



B/W ppm  - 52%

**Improved First Pass retention, First Pass Ash Retention and reduced solid lost**

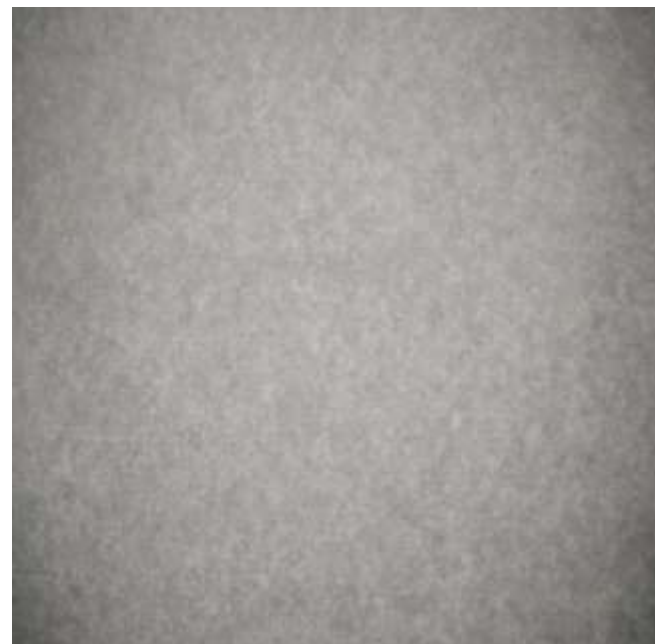
 Single Layer

 AQUAFLEX

\*\* One month average data comparison & all data collected from lab



Single Layer



AQUAFLEX

**Improved paper finish in Modified Fabric - No wire marking on printing surface.**





Properties	Single Layer	AQUAFLEX
Retention, %		++
FPAR, %		++
Formation		++
Back water cy	-	--
Printability		++
Drainage	Good	Good
CD Profile		++
Sheet surface		++
Effluent Load	-	--
Pulp Saving Lakh/Year		<b>72 L/Annum</b>

**AQUAFLEX Delivered more than 100 fabrics across the Globe**



Properties	SSB/STL	AQUAPRINT
Retention	+	++
Formation	+	++
Back water ppm	-	--
Printability	++	++
Drainage	Good	Good
CD Profile	+	++
Sheet surface	+	+
Effluent Load	-	--

**AQUAPRINT Delivered more than 70 fabrics across the Globe**





**One Solution to cater for multiple  
needs**



- ❖ Quantum jump from Single layer to STL in-terms of technology of Forming fabric
  - ❖ Improved drainage with trouble-free operation through Forming fabric, leads to increase Productivity.
  - ❖ Customized Product selection option for Paper makers to enhance the Quality & reduce the Cost of Operation.
  - ❖ Breakthrough in Forming Fabric of Board Machine
- ULTRABOND**
- ❖ Covid 19 special **Multiuse Forming Fabric** for Kraft, White & Newsprint

 **RECAP**

**“Vocal about Local.  
Local is not merely a need, But a responsibility”**

***.....Hon. Prime Minister Sh. Narendra Modi Ji***



*Stay Safe and Stay Healthy*

**Thanks for being with us**



**Alok Maheshwari**  
DGM (Technical Services)



**Barathi G**  
DGM (New Product Development)



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