

**ASHLAND**

**04 . 06**

OUTUBRO 2010  
OCTOBER 2010

TRANSAMERICA EXPO CENTER  
SÃO PAULO . BRASIL

## Softness of Your Paper Making the Difference in the Market

**Doeung Choi, Todd Sarraf and Noemy Aintablian**  
**Ashland Hercules Water Technologies**



1º Simpósio e Exposição Latino-Americano  
de Tissue

*1<sup>st</sup> Latin American Symposium and Exhibition  
on Tissue*



**ASHLAND**



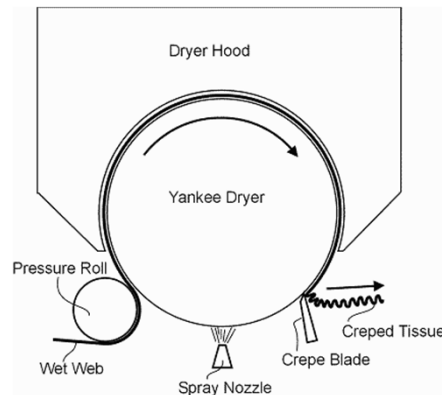
**Raw materials**



**Tissue manufacturing**



**Converting**



***Where can we make the maximum impact?***

- Pulper
- Refining
- Stock approach
- Forming and pressing
- Yankee cylinder – Creping, Drying
- Post crepe and converting

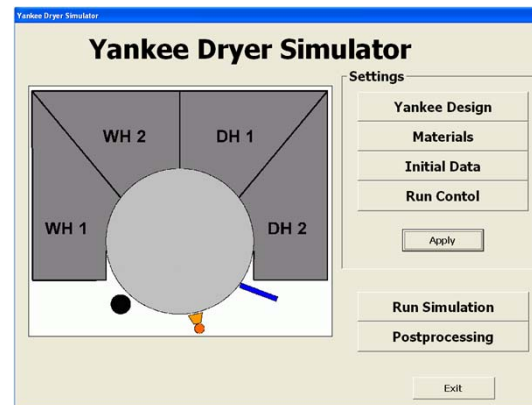
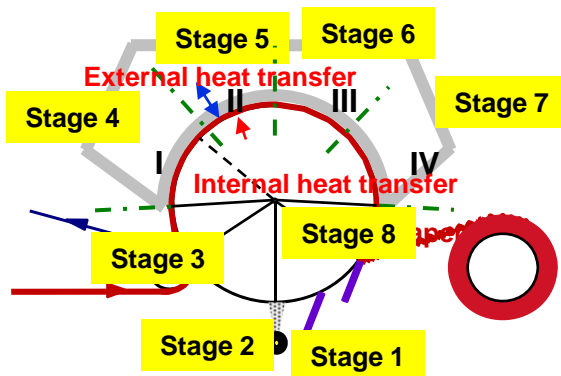
**Strength in Unity: A Holistic Approach to Softness in Tissue**

Gabriele Gessini and Ian Padley, Tissue World 2004

***Comprehensive approach in creping and converting***

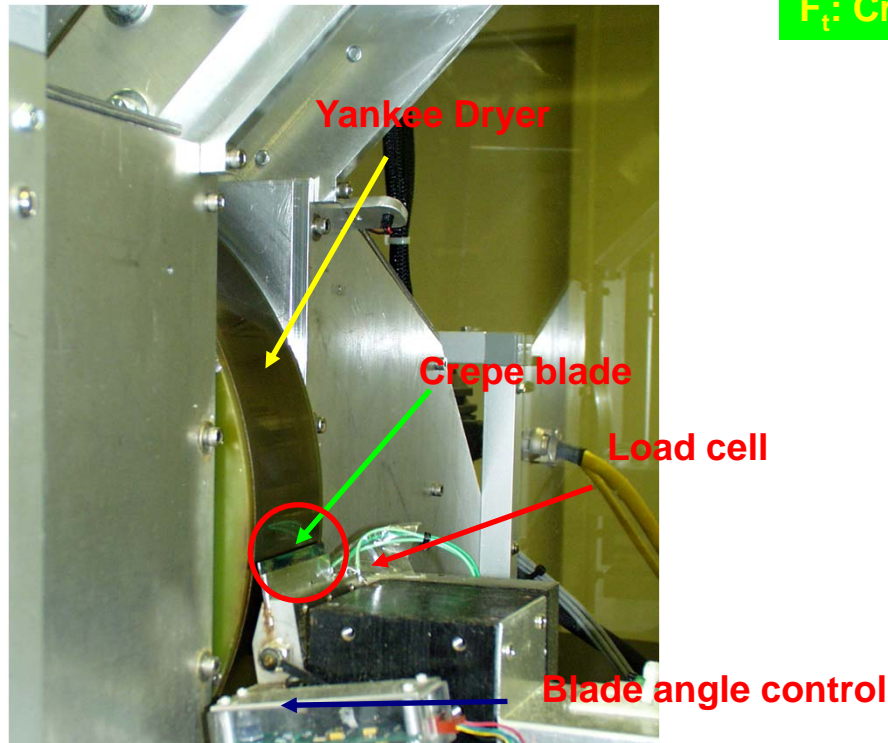
- Coating product development
- Lab evaluation
  - Adhesion/Release Test (ART)
  - Crepe simulator
  - Coating performance database
- Drying model

**ASHLAND**

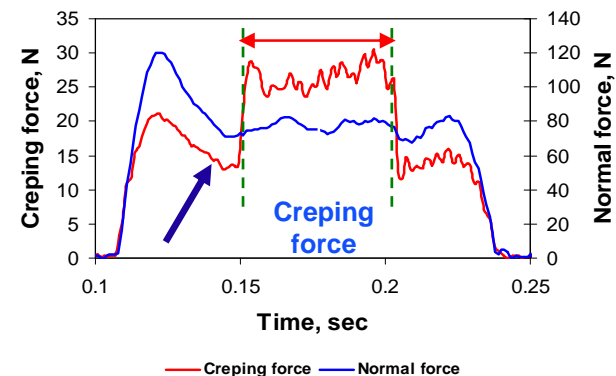
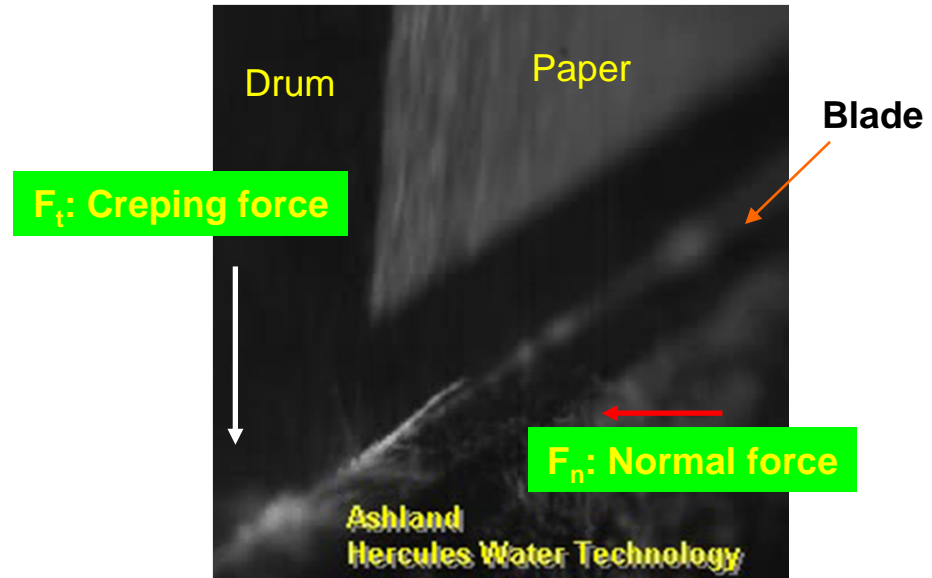


# Crepe Simulator

- Top speed: 1500m/min
- Sheet dimensions 6.4 cm x 68 cm
- Tissue to towel BW range
- Control of initial & final sheet moisture
- Control of coating weight & cure time

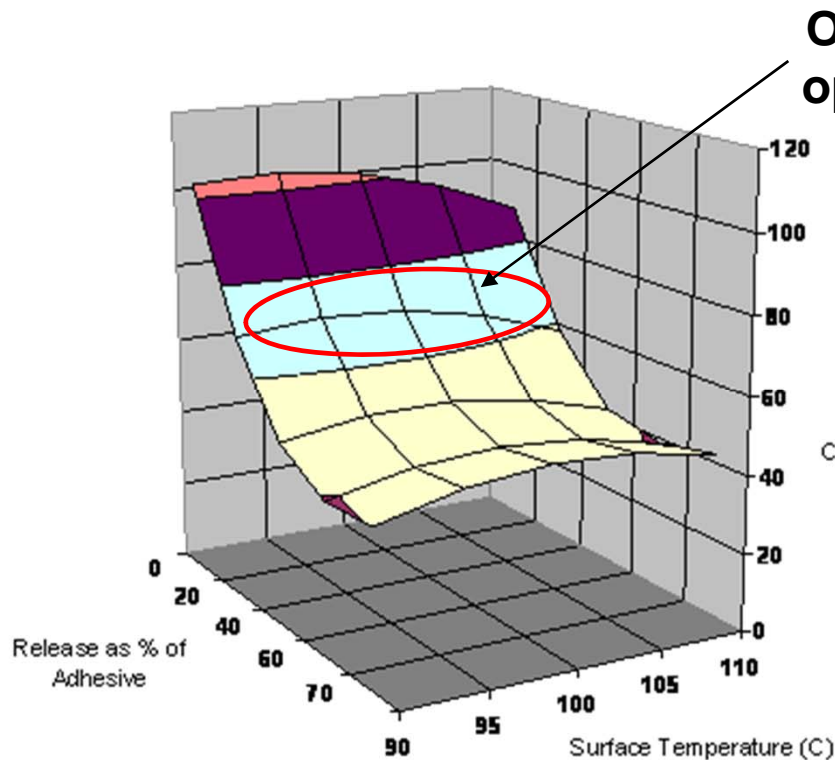


**ASHLAND**

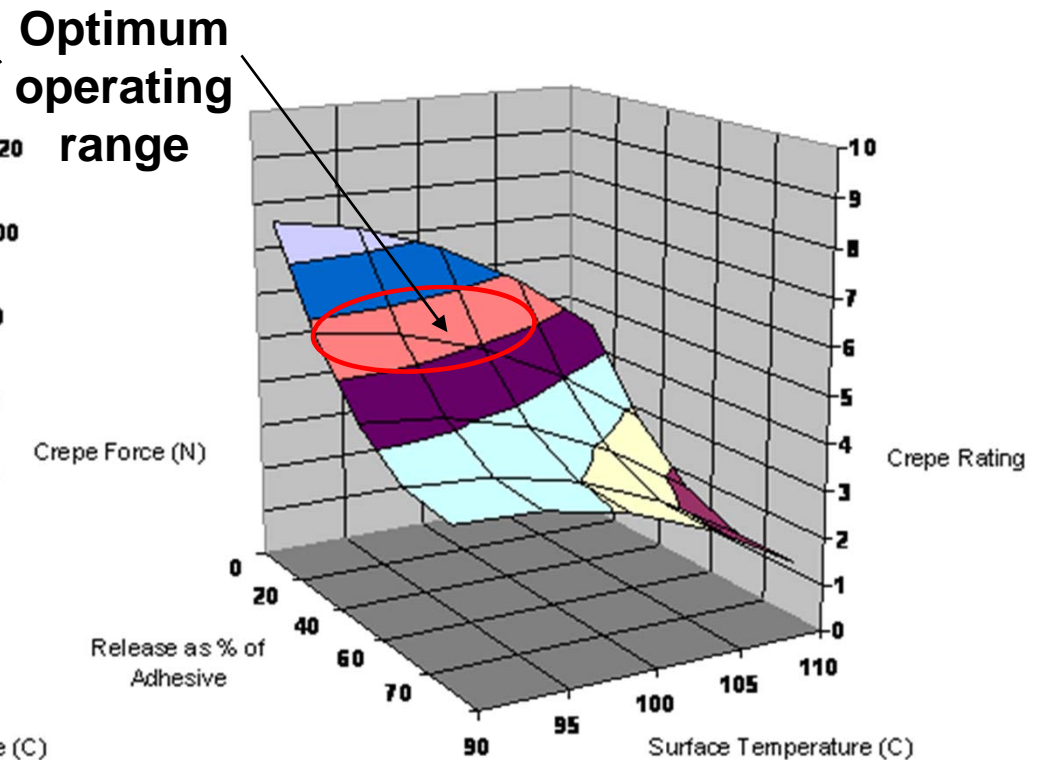


Constant modifier  
content – 30%

**ASHLAND**



Crepe Force



Crepe Rating

- New products development
  - Crepetrol™3236 (2007), Crepetrol™ 9717 (2008), Crepetrol™ 3557 (2009)
- New technology and application
  - Expand operating window through improved adhesion, better rheology.
  - Improve productivity and consistency in sheet quality – operation speed, reduced sheet break, longer blade life.
  - Improve softness through uniform coating and consistent adhesion.
- Effective troubleshooting
  - Reduce chatter

# Case History #1

## Chatter in Dryer 1



### Dryer #1

Machine : Large Crescent Former

100% Virgin Fiber

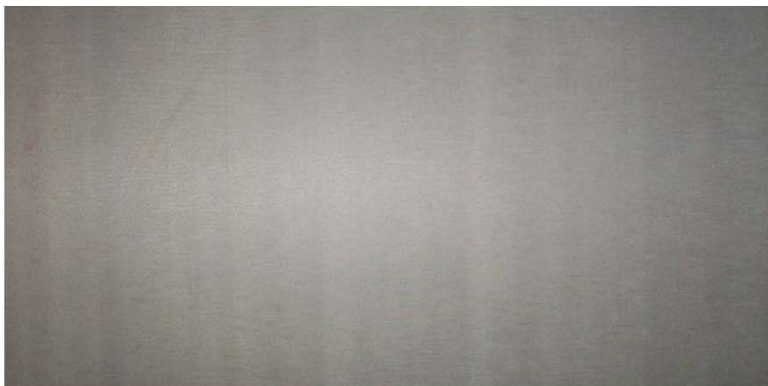
Went to low moisture creping 3.8-3.5%

Using oil release instead of modifier

**ASHLAND**



After sanding: Still there but it was able  
to be covered with AHWT coating  
package



After switch over to modifier and plasticized program

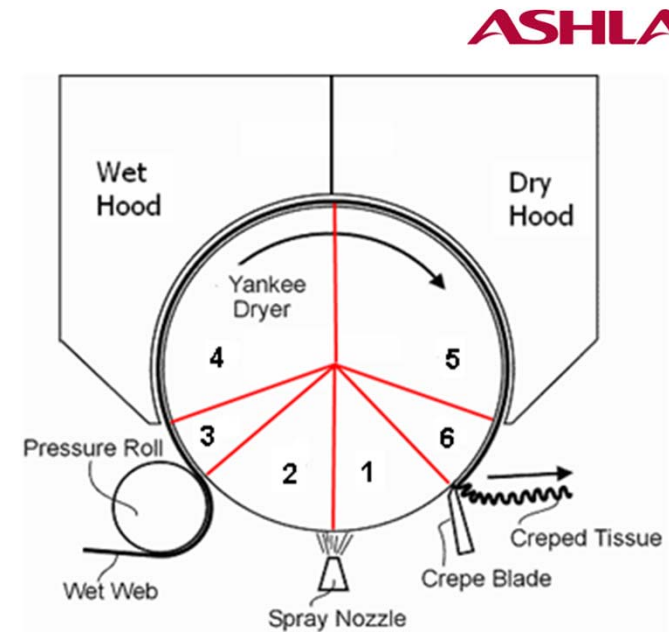
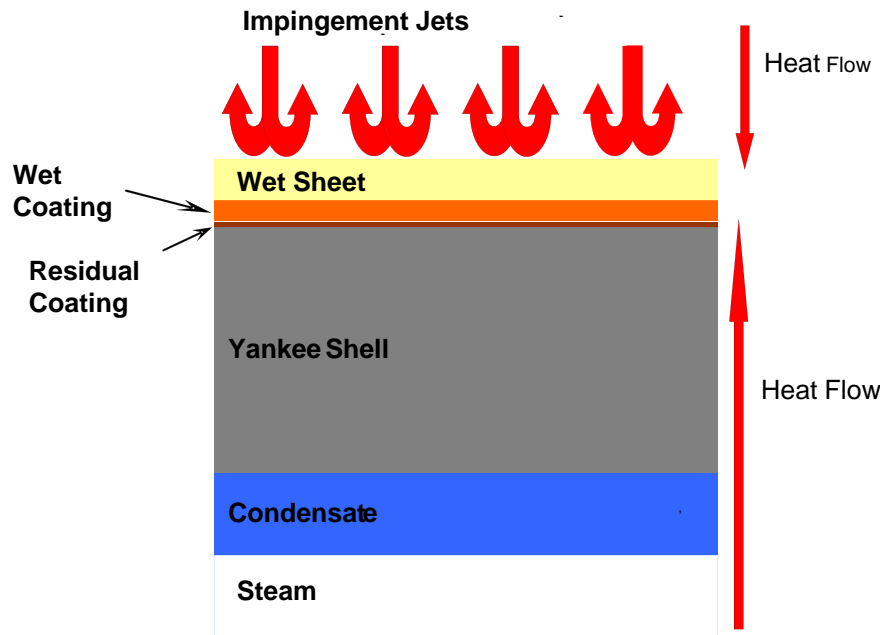


# Case History #2

## Chatter in Dryer 2

**ASHLAND**

- Background
  - Crescent Former 1830 mpm
  - Coating: three component program
    - Hard base coat, soft coating, non-oil release
  - Frequent Yankee grinds due to significant chatter
  - Unable to use cleaning blade- loss of coating carbon marks
  - Last grind lasted less than 1 week
- Crepetrol™ 9717 crepe aid introduced with non oil release
  - Dramatic improvement in blade life
  - Cleaning blade loaded for first time since start of machine
  - Improved runnability
  - Increased speed
  - Appears to have eliminated chatter (needs long term validation)



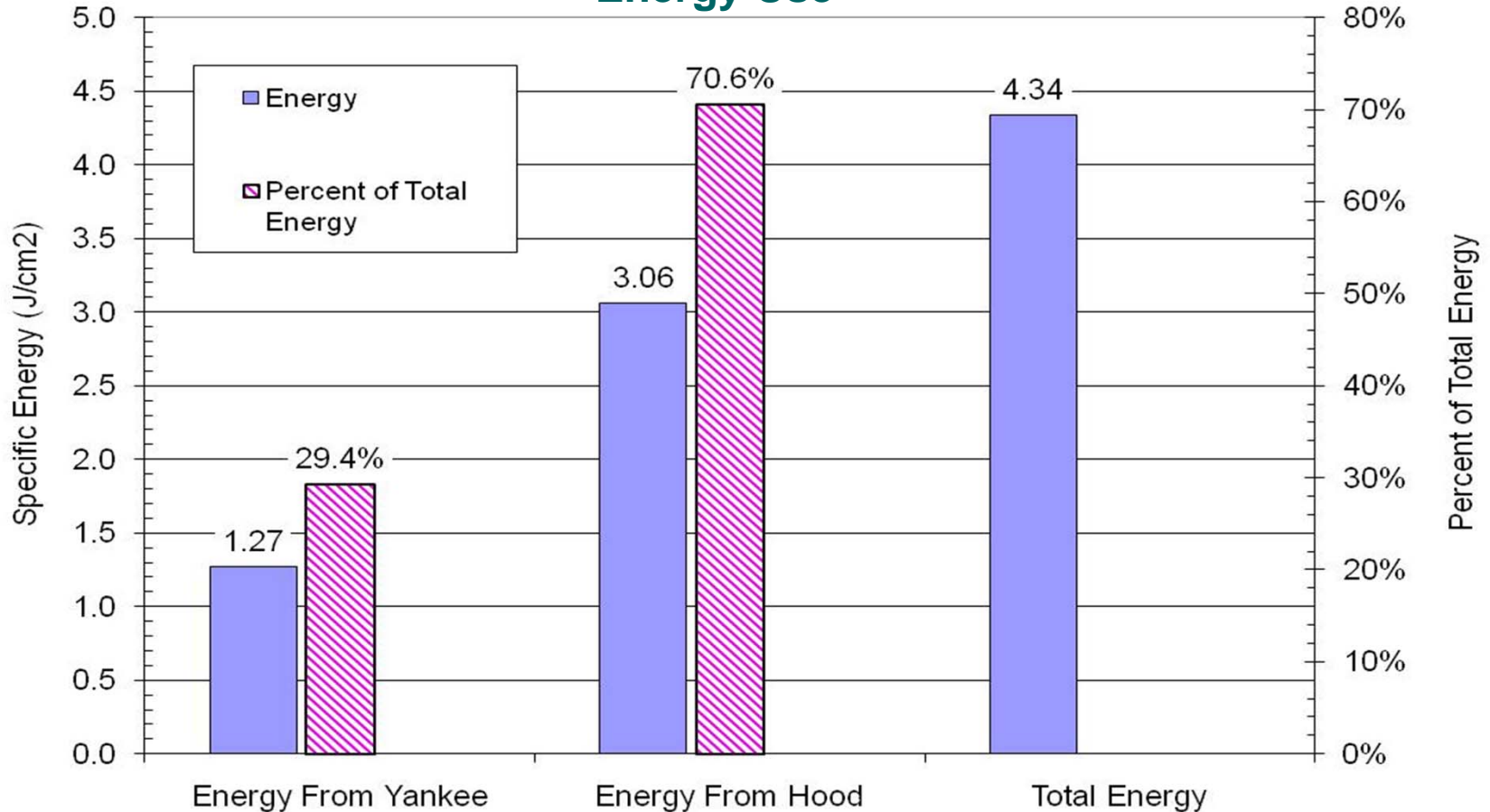
- Splits sheet into 11 layers – thermal and moisture profiles
- Tracks sheet, coating, shell through each zone for temperature and moisture

**Selecting optimum coating & optimizing machine performance**

## Comparison of Hood and Yankee Energy Use

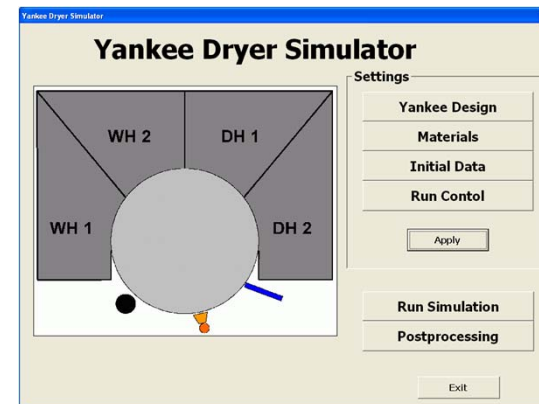
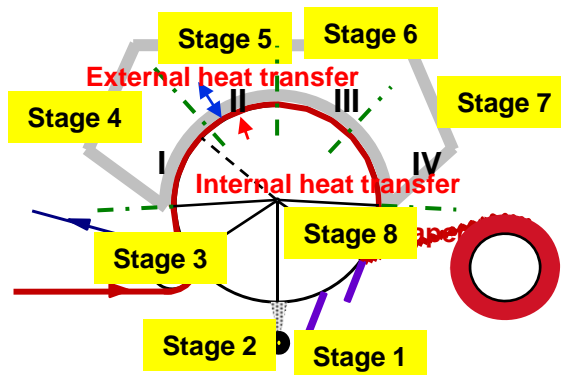


### Energy Use



**ASHLAND**

- During coating trial, the drying model showed roughly 80% hood, 20% Yankee drying.
- Machine was at the maximum speed allowed by the hoods.
- Recommendation: shift the drying effort towards a ~70-30% split
- With 70:30 split; immediately 7% gain in line speed at no additional cost.



***7% production speed gain at no additional cost***

# Converting Solutions Why Lotions?

**ASHLAND**

- Market Drivers
  - Market is demanding products of higher quality at reasonable price. Value is the key.
  - Very costly to establish higher quality from a manufacturing stand point
  - Secondary fiber quality continues to deteriorate, making it more difficult to achieve hand feel required
- Solution - Addition of lotions in a converting operation
  - Enhances hand feel on any base sheet.
  - Capital investment is significantly less than the investment required to improve the base sheet quality during manufacturing

***Lotion enhances hand feel with low capital investment.***

# How do I make the connection?

## What Equipment ?

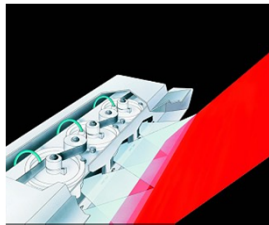


**Slot Die ?**

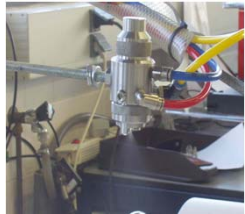


**Roll Application ?**

**Atomized Shower ?**



**Weko Spray ?**



**Wax ?**

**Surfactants ?**

**Emulsion ?**

**Silicone ?**

**Liquid ?**

**What Product is right choice?**

**Slickness ?**



**Surface smoothness?**

**What does my customer require ?**

**Silkiness ?**

**Enhanced softness ?**

**What solids ?**

**ASHLAND.**

**Drape ?**



## Matching Needs with products and application technology

Product	Type	Solids
Dimension TL1034	Emulsion	34%
Dimension TL1070	Liquid	35%
Dimension TL1080	Liquid	80%
Dimension TL1030S	Liquid	30%
Dimension TL1045	Liquid	45%
Dimension TH3023	Wax	100%
Dimension TH3045	Wax	100%
Dimension TH3060	Wax	100%
Ashland DP313	Emulsion	50%
Ashland DP317	Liquid	100%
Ashland DP320	Liquid	100%
Ashland DP519	Emulsion	40%
Dimension TL1082V	Liquid	100%

- Equipment
  - Weko
  - Atomizing shower
  - Slot Die
  - Roll Applicator
  - Standard Spray
- Quality Characteristic
  - Drape
  - Slickness
  - Surface Smoothness
  - Surface Tension
  - Skin Transfer

- Base Sheet Evaluation

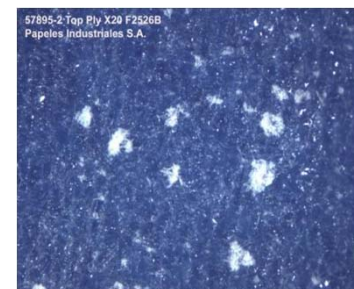
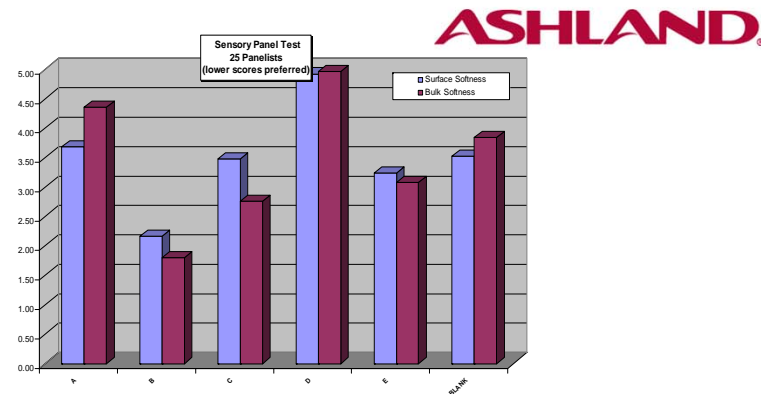
- Paper lotionizing



- Handfeel paneling

- Image Analysis

- Paper testing (strength, caliper, drape, COF)



	A	B	C	D	E	Blank
Klemm [cm]	10.5	7.8	8.4	11.8	9.7	10.9
Density [kg/m3]	349	362	352	351	343	349
Bulk [m3/T]	2.868	2.761	2.841	2.852	2.919	2.862
Breaking length [m]	565	517	533	568	518	599
Static COF	0.7	0.64	0.69	0.61	0.57	0.65
Kinetic COF	0.67	0.61	0.67	0.6	0.51	0.63

- Equipment

- We can work with suppliers to ensure product compatibility and additional testing (Weko, Nordson and spraying systems)

- We can get quotes on different application alternatives



**ASHLAND**

## Case History #1

- NE U.S. Converter desired to develop a private label lotion facial grade for a local store
- Ashland provided several different materials to be applied through a standard spraying system nozzle
- Evaluation resulted in the ongoing use of Ashland DP317 - a 100% active material
  - Provided superior surface smoothness at a reasonable add on rate of 2 %.
  - The local private label product was a success

## Case History #2

- Independent converter approached Ashland to help develop a store brand lotionized facial tissue.
- Screening indicated that two lotions performed well on their base sheet. (100% recycle)
- A trial was conducted with the two identified products
  - Dimension™ TL1045 lotion and Ashland DP313 were applied using a flexo-roll applicator
  - Both performed to expectations and the store brand launch is moving forward

**ASHLAND**

- The market place continues to demand high quality products at a reasonable price. “Value” is key.
- Holistic approach in tissue
- Comprehensive approach in creping
  - Lab creping evaluation
  - Comprehensive drying model
- Lotions: Cost effective way to add significant value
  - Wide range portfolio of products is important.
  - Clear understanding of application methods is essential.
  - Comprehensive evaluation/service capabilities for better product selection and optimization of the programs.