SPINNING INTELLIGIN PROCESSED COTTON

Jack Mace
Zellweger Uster
Knoxville, TN

Abstract

The Uster[®] IntelliGin System allows real-time measurements of fiber color, trash, and moisture during ginning. It features control of dryer temperature for optimum fiber moisture, and control of seed cotton and lint bypass valves. Reported here are studies of the effect of IntelliGin processing on textile processing efficiency and product quality. It was concluded from spinning trials that IntelliGin-processed cotton had improved fiber properties, which translated into higher quality of finished sliver and improved single-end yarn strength.

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USTER® IntelliGin

The System

- **Real time measurements of fiber color, trash & moisture**

- **Control of dryer temperature for optimum fiber moisture**

- **Control of seed cotton and lint bypass valves**

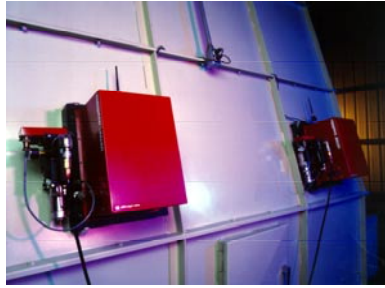## Gin Process Control System

USTER® IntelliGin

Monitoring Stations placed throughout the gin which record levels of moisture, color and trash as often as every 6 – 9 seconds

USTER® IntelliGin: Readings

- **Moisture: Seed cotton / lint**

- **Trash: Seed cotton / lint**

- **Color: Seed cotton / lint**

Sampling Station - *Module Feeder*

Sampling Station - *open*

Screen Shot - *from main console*

Automatic Dryer / Moisture Control

New patented moisture sensors - high level of
accuracy based on:

- **Maintain optimum moisture at gin stand**
  - 5% - 6%
- **Significantly reduce dryer temperatures**
- **Reduce fiber damage**

Trash Reading

System recommends bypass or engagement of cleaning stages
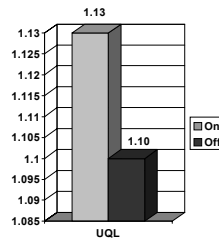
- **Minimize mechanical fiber damage**
    - Stick Machine
    - Lint Cleaner
- **Immediate feedback of USDA leaf grade**

Color Reading

- **Built-in HVI colorimeter**
- **Rd and +b readings**
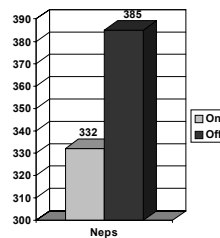- **Immediate feedback of HVI color grade**
- **New patented flash technology**

Fiber Quality UQL Length 2001 Trials

- **IntelliGin On / Off Trial**
- **4 modules on**
- **4 modules off**
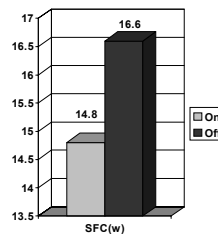- **Southeast location**

Fiber Quality Neps 2001 Trials

- **IntelliGin On**
    - 1 lint cleaner
    - Reduced dryer temp
    - 50% stick machine
- **IntelliGin Off**
    - 2 lint cleaners
    - Increased dryer temp
    - 100% stick machine

Fiber Quality Short Fiber Content 2001 Trial

- **Increased moisture**
- **Reduced pre-cleaning**
- **1 lint cleaner**

ITT Spinning Trial

- **2 bales processed with IntelliGin**
  - 2 incline cleaners
  - 1 lint cleaner
  - Reduced dryer temperature
- **2 bales processed without IntelliGin**
  - 1 impact cleaner
  - 1 stick machine
  - 2 lint cleaners
  - Normal dryer temperature
- **Trials conducted at Russell Corp T&E Center**
  - Results published by D. McAlister, III

Spinning Trial

Objectives

- **Determine impact of:**
  - Reduced fiber neps
  - Reduced short fiber content
  - Increased length and strength
  - Increased trash content

HVI Fiber Properties

IntelliGin On / Off Trial

	Without IntelliGin	With IntelliGin
Micronaire	4.4	4.4
Length	1.15	1.18
Uniformity	83.2	84.6
Strength	31.1	32.9

HVI Fiber Properties

Color and Leaf Grade

	Without IntelliGin	With IntelliGin
Color Grade	31	41
Leaf Grade	3	4

AFIS Fiber Properties

IntelliGin On / Off Trial

	Without IntelliGin	With IntelliGin
Neps	248	176
UQL (w)	1.19	1.22
SFC (w)	7.4	6.3
VFM%	.90	1.8

Waste Analysis

Percent Waste Removed

	Without IntelliGin	With IntelliGin
Opening Line	2.19	2.45
Carding	3.99	3.06
Ring Spinning (Pneumafil %)	.54	.34
Comber Noils %	13.2	11.1

Yarn Quality Data

	With IntelliGin			Without IntelliGin		
	Ring	OE	MJS	Ring	OE	MJS
Single-End Strength (g)	461	320	365	428	309	309
Min. single-end strength (g)	410	297	309	400	291	255
Classimat A1	103	16	231	76	7	86

Spinning Trial Conclusion

- **IntelliGin samples contained trash particles with an increased size that proved easier to remove during opening and carding**

- **Improved fiber properties at the bale translated to higher quality finished sliver**

- **Improved single-end yarn strength from IntelliGin cotton on all spinning systems**