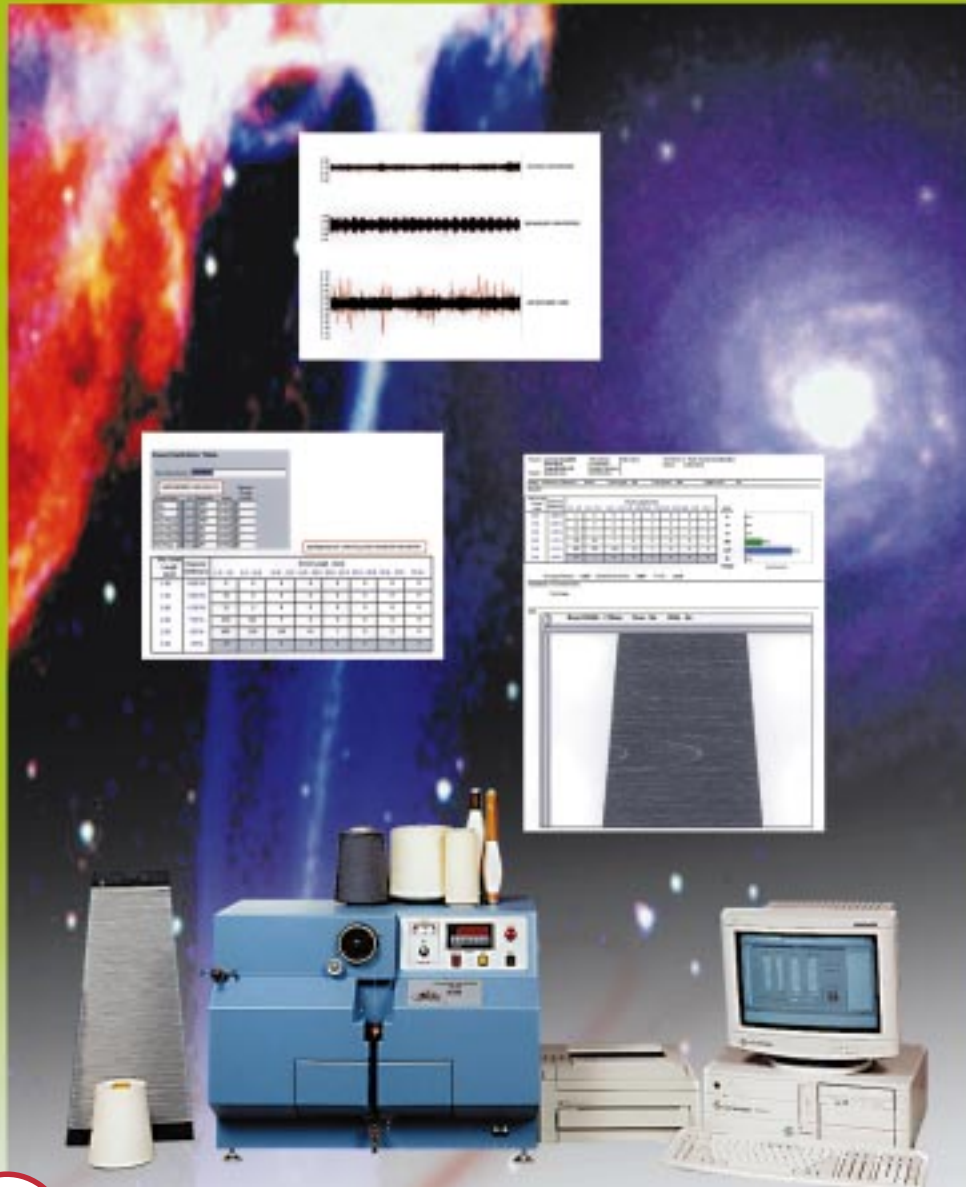


# YAS

Yarn Analysis System



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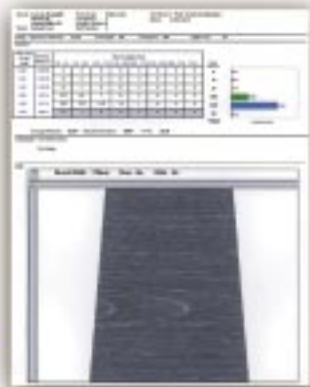
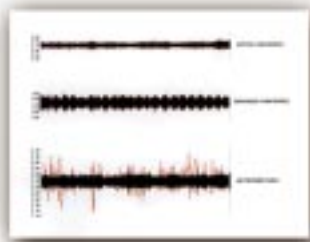
# YAS

## Electronic Inspection Board Yarn Analysis System

The **Yarn Analysis System (YAS)** test method, developed in cooperation with the United States Department of Agriculture (USDA) and Cotton, Inc., uses the latest optical digital technology to grade spun yarns. New imaging technology with a precision electronic inspection board offers the most complete and advanced production tool for grading spun yarns. This innovative system is operating successfully in mills and research centers worldwide.

# Get the Advantage You Need!

**New Technology  
Brings The Most  
Complete and  
Advanced Production  
Tool for Grading  
Spun Yarns**



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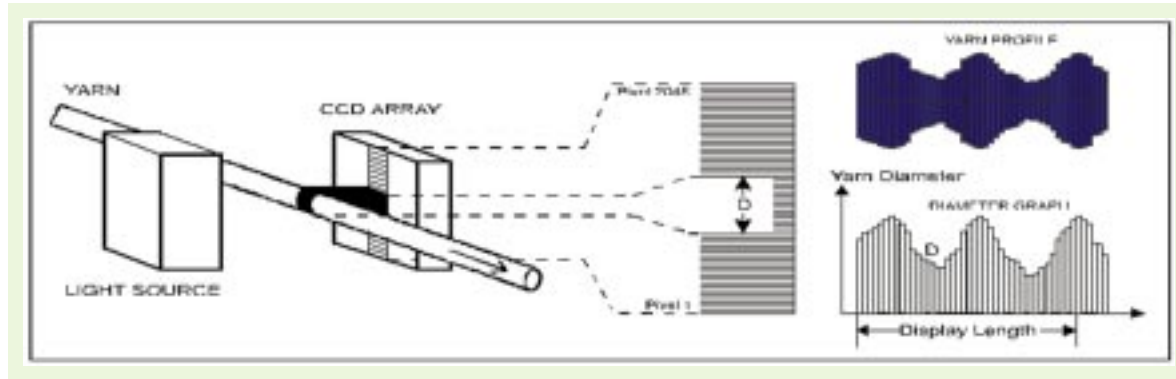
## BENEFITS

The **YAS** performs a total yarn evaluation, including a complete statistical fault analysis and supporting graphic imagery of the entire tested yarn length (core and hairs), along with a taper board image and fabric simulations.

### Statistical Fault Analysis

The measurement of variability within a yarn is evaluated as well as the effects of combining other yarns to build a fabric. A complete yarn analysis is made by using digital optical technology with a sensitivity of 0.5 mm (length) per scan and a revolution of 3.2 microns (diameter). Since the system uses a digital optical sensor, humidity, color, ambient light, and fibers containing electrostatic components do not affect the results unlike capacitors or some analog sensors.

Optical  
Measuring  
Principle



### Graphic Imagery

The graphic image function visualizes yarn defects including faults, hairs (*the yarn's image for the entire yarn length tested is shown and stored for viewing in sections*), and their distribution on the taper inspection board. By using the fabric simulation module, accurate fabric evaluation is accomplished, including the combination of different YAS tested yarns and color effect.

The YAS provides spinning producers the capability and assurance to achieve total yarn fault analysis, including effects on final fabric appearance. Additionally, the system eliminates data sorting from several tests. Automatic yarn grading for standard counts is performed according to ASTM standards, along with customized grading for special yarns.

## FEATURES

- Compares yarn profiles, yarn boards, fabric graphic images, or yarns tested on the same screen or printout
- Standardizes grading process
- Eliminates human judgment and replaces blackboards
- Highlights chosen faults in color on board
- Visualizes different yarn events, such as neps, slubs, etc.
- Allows simulation of various sizes of weaving and knitting
- Operates on CCD principle
- Operates in Microsoft Windows® environment
- Requires one operator
- Shares test data or graphics via LAN, email, fax, or printout.



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## SOFTWARE DESIGN

Using the latest high-speed computer technology and Windows®, all test results may be stored and recalled or transferred through an internal network (LAN) or externally. Data reports and/or graphics are easily transferred to other databases or reports. For example, taper boards, fabrics, and yarn (section) images of any tested yarn can be directly compared on the same report for a new or previously tested

yarn. Claim disputes with weavers or knitters can be resolved using these techniques. Other features include simple menu structure, yarn color



Share Data,  
Boards and  
Fabric

selections, complete printouts, taper boards, and accurate test file management.

Event Definition Table

New Menu Name:

**USER DEFINED YARN FAULTS**

Event Type	+/- Threshold	Units	Minimum Event Length
Warp	400	% RD	1
Warp	200	% RD	1
Thick Place	700	% RD	3
Thick Place	90	% RD	3
Thick Place	25	% RD	3
Thin Place	40	% RD	3

**DISTRIBUTION OF YARN FAULTS BY DIAMETER AND LENGTH**

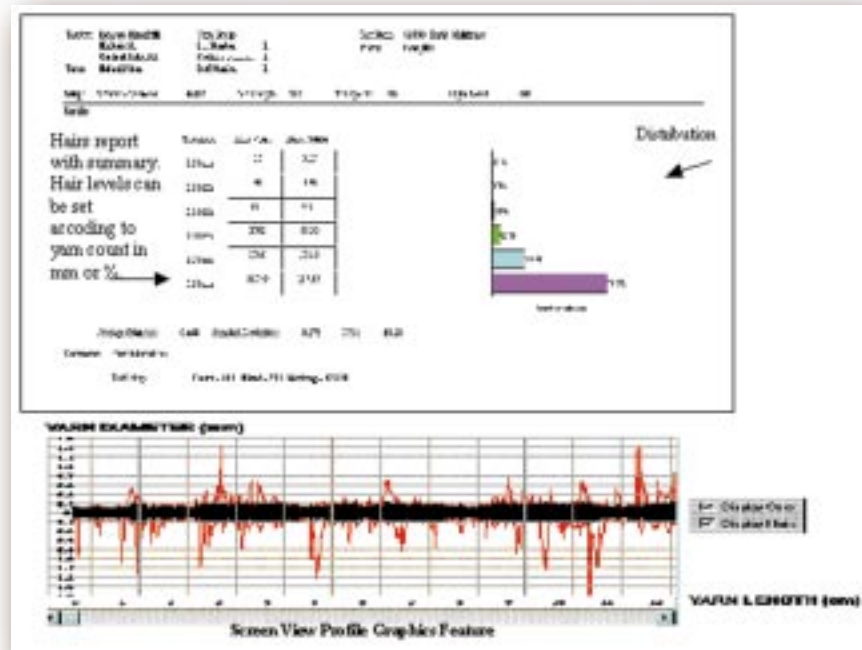
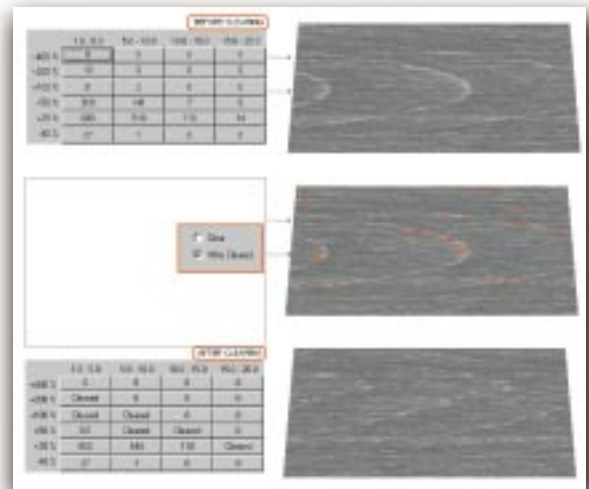
Min. Event Length (mm)	Diameter Difference	Event Length (mm)							
		10 - 50	50 - 100	100 - 150	150 - 200	200 - 250	250 - 300	300 - 350	350+
1.00	+400 %	0	0	0	0	0	0	0	0
1.00	+200 %	10	0	0	0	0	0	0	0
3.00	+100 %	31	2	0	0	0	0	0	0
3.00	+50 %	300	141	7	0	0	0	0	0
3.00	+25 %	680	510	310	14	1	0	0	0
3.00	-40 %	27	1	0	0	0	0	0	0

## FAULT EVALUATION

The YAS furnishes a traditional fault classification matrix (length and diameter). Standard matrixes may be applied to a test along with customized matrixes. This capability allows the opportunity to focus on specific types of faults for analysis, such as neps, thickness variations, etc. The matrix evaluation may be changed and analyzed as preferred - even after the yarn is tested!

## YARN BOARDS AND GRADING

Together with the fault evaluation matrix, the tested yarn is electronically wound onto a rectangular or taper board and stored for future evaluation or comparison with other tested yarns. Specific faults in the matrix are shown in different colors or removed from the board to simulate the effect of various yarn clearer settings on fabric appearance. Through the assistance of USDA research, automatic yarn grading according to ASTM standards is included for several counts. Further research has proven that this system is an accurate, automated replacement for subjective human inspection grading. It offers excellent correlation with improved repeatability and accuracy. Grading can be established between supplier and fabric producer. Yarns tested using the YAS are compared with accepted standards to guarantee consistent fabric appearance.



## HAIRINESS MODULE

On the same test run, a hairiness test may be performed which counts the number of hairs per meter at various levels. The hair levels to be measured may be selected to accommodate different counts or tests. A unique graphic profile visualizes the tested yarn onscreen. The operator may scroll the entire length (up to 1,000 meters) viewing the hair distribution and core yarn. The core (black color) and hairs (red color) may be displayed together or separately.

## PRODUCTION TESTING

The YAS evaluates inner package diameter variation as well as variability of the average diameter of yarns in a population to avoid improper mixing of yarns into a fabric. This precision is not present in traditional testers that reference changes in the yarn only to the first few meters tested. The average yarn diameter is an important statistic for integrating yarns in fabric as well as in determining the appearance grade.

**PRODUCTION REPORT RESULTS EACH PACKAGE**

**Results**

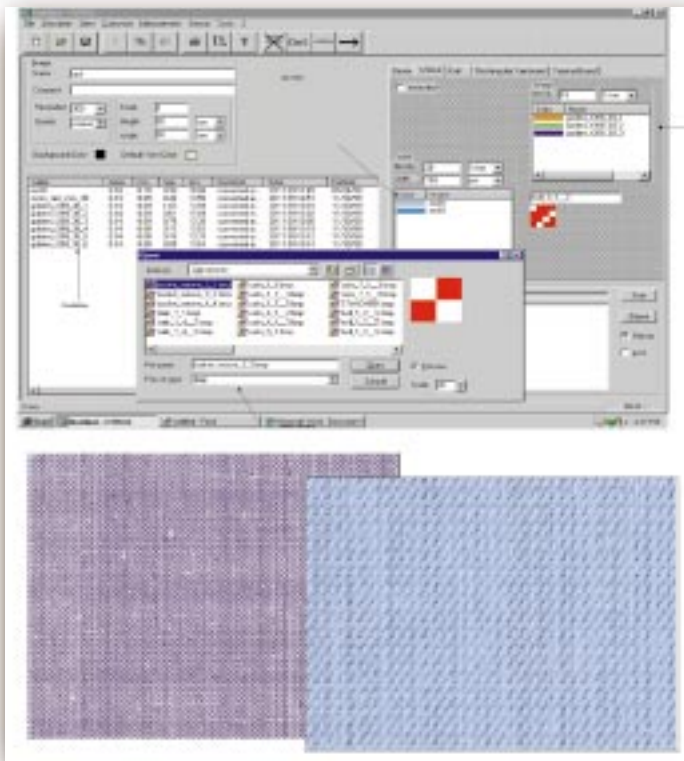
Test	Grade	AD	CV%	WS	AL	CV%	TEV	SPEED	SPC	REJ
STANDARD		0.1808	14.41	3036	0					
SLYER ALLOWED		15	0	0						
1	B+	0.187	17.80	1490	1.87	143.81	23.77	100	18	
2	C+	0.213	22.24	24670	2.73	130.60	937.6096			
3	B	0.202	24.22	8470	1.87	80.70	1181.25			
4	D	0.248	10.87	220020	11.18	174.80	#####			AD
5	C+	0.211	23.34	28910	2.64	130.24	52122.30			
6	C+	0.208	21.61	31130	2.89	124.24	47114.38			
7	C+	0.211	24.20	35040	2.84	101.80	#####			AD
8	D	0.238	10.80	21480	6.82	189.87	#####			
9	B+	0.180	15.79	300	1.77	22.20	16.05			
10	B+	0.182	16.70	300	1.24	28.52	44.57	100	18	

Average Diameter      Pack Summary

**Summary**

	Grade	AD	CV%	WS	CV%	AL	CV%	TEV	CV%
0000	0.182	11.54	17208	88.74	2.11	31.31	32347.18	110.44	
ALL	0.204	14.70	87324	141.84	1.49	38.45	#####	190.94	
PERCENT	20		AD 1000 CV%	18.78					

	WS	TEST	MAX	TEST	MIN
GRADE	B+	1	D	4	
TEV	18.28	0	#####	0	#####
WS	230	0	220020	0	218700
K	1.11	0	11.15	0	10.60
CV%	22.26	0	174.80	0	152.47
AD	0.182	10	0.28	0	0.88
CV%	16.07	0	24.20	7	13.42



## FABRIC SIMULATION MODULE

Fabric simulation is ideal for integrating various yarns tested into construction of a fabric or for analyzing a single yarn, and complements the YAS module. The "CYROS" simulation module is a powerful addition to a spinner's laboratory for integrating various yarn colors, creating swatches for clients, or for creating new fabrics.

Test files produced by the YAS module can be transferred into the fabric simulator. The benefits of the YAS digital optical measurement system provide high resolution. A fabric library permits the selection of the fabric type, size, and fabric specifications including color, density, etc. From yarn testing to fabric manufacturing, a complete evaluation is performed saving production costs, raw material costs, and valuable time while improving quality and performance.

## TECHNICAL INFORMATION

**Speed:**

Up to 360 meters/minute

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**Shipping Dimensions:**

61 in.(L) x 46 in.(W) x 28 in. (H)  
(155 x 117 x 71 mm)

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**Shipping Weight:**

450 lbs. (205 kg)

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**Voltage:**

110/220 VAC 60/50 Hz

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**Power Consumption:**

1000 watts

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**Maximum Air Consumption:**

9 SCFM @ 80 psi  
(15 CMH @ 55 bar)

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**Automatic Air Shut-off**

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## COMPUTER SPECIFICATIONS

**Processor:**

Pentium PIII

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**Memory:**

256 RAM

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**Storage:**

30 GB; CD, 2 ISA slots

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**Display:**

17-inch monitor

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*Specifications subject to change without notice*



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