

RIETER PRESENTS SPINNING SEMINAR

We were pleased to have representatives of the Rieter Machine Works of Winterthur, Switzerland, give a seminar on spinning at the International Center on May 20. The program was divided into three parts, each covering detailed aspects of the processing that converts textile fibers into yarns.

An overview of the program follows:

Part 1: World Class Spinning Mill Strategy:

1. Customers and markets for cotton and blended yarn
2. The importance of a reliable fiber supply
3. Added value by the spinning process
4. Investments and renewal strategies for the mill
5. Modern spinning systems and mill organization
6. Examples for competitive advantage.

Part 2: Short Staple Spinning Systems in 1987/1991/1995

1. Opening and blow room concepts for closed loop control
2. High performance carding as a basis for modern sliver preparation
3. Fiber material upgrading by high throughput comber module
4. Draw frames: controlled draft replaces excessive doubling
5. High speed ring spinning along with automation opens new markets for high quality yarn

6. Evolution to a next generation of rotor-spinning machines
7. Outlook towards Local Area Networks and process control

Part 3: Computer Integrated Spinning: Automation in Progress

1. Mechanization, Automation, Process Control
2. From the mechanical piecer to the service robot
3. The basis for automation: truly reliable machinery
4. Design principles for user-friendly robotics
5. Steps towards the operatorless night shift
6. The key role of software development.

The program was presented by Dr. Urs Meyer who was assisted by Ueli Schmid and Hans Suter. Dr. Meyer is from Winterthur and Schmid and Suter are from the Rieter office in Spartanburg, South Carolina.

The seminar was attended by representatives of the PCCA denim plant in Littlefield, Texas; Plains Cotton Cooperative Association, Lubbock; Lorenzo Textiles, Lorenzo, Texas; and members of the staff of the International Center. We appreciate the time and effort contributed by the Rieter executives in presenting this.

EFFECTS OF NON-LINT REMOVAL ON SPINNING PERFORMANCE AND THE QUALITY OF COTTON YARNS: Part 3

In the past two issues of *Textile Topics* we have given portions of a study conducted at the International Center on evaluating cottons that had been ginned with zero, one and two lint cleaners (Lots A, B and C, respectively). Each lot was divided so that half was carded on a Rieter C4 card and half on a Crosrol Mark-4 Tandem card. The March issue presented a flowchart showing the machinery used throughout the program and noting that both rotor- and ring-spun yarns were produced. In April we gave rotor-

spinning and yarn testing results.

In this issue of *Topics* we are presenting ring spinning results with Table VI giving data from single-carded sliver and Table VII from tandem-carded stock. Additionally, both carded and combed yarns were produced at ring spinning. (No combed yarns were made at rotor spinning.) Since fiber data and all spinning frame settings were the same for both single- and tandem-carded yarns, we show these data in Table VI only.

The strength (CSP) of the combed yarn was more

TABLE VI
RING SPINNING TRIAL RESULTS (Single-carded Sliver)

than the carded yarn in every case except Lot A of the tandem-carded fiber. The difference there is very small, but it is normally expected that combed yarn will be stronger. The strength expressed as single-strand tenacity does not leave any question about the superior strength of the combed yarn.

Although there were variations in the strengths of the yarns made from the different cards, both produced yarns of good strength and there does not seem to be any clear trend of one over the other.

The carded yarns produced from the cotton processed on the Rieter C4 card showed a decline in single-strand tenacity as more lint cleaners were used (Table VI). This measurement dropped from 18.61 g/tex to 17.98 at the same time the non-uniformity CV% increased from 21.38 to 22.15

The same type of yarn showed an opposite trend in tenacity when using the tandem card. Table VII shows an increase in tenacity from 17.74 g/tex to 18.72, and a slight decline in the non-uniformity when two lint cleaners were

Lot Number	A		B		C	
FIBER DATA (Individual Instr.)						
Tensile: Strength (g/tex)	32.3		34.0		33.1	
Elongation (%)	5.17		5.17		5.67	
Length: 2.5% Span Length (in)	1.238		1.242		1.267	
Uniformity Ratio (%)	48.2		46.8		47.4	
Short Fiber Content (%)	0.4		1.5		1.0	
Micronaire	3.67		3.60		3.60	
Pressley Strength (Mpsi)	107.2		108.1		105.1	
Non-Lint Content (%)	8.37		3.26		2.00	
ROVING 1.8 hank	Carded	Combed	Carded	Combed	Carded	Combed
Machine						
Saco Lowell SF-3H						
Nominal Yam No. (N _e)	50/1					
Ring Diameter (in)	2.0					
Spindle Speed (rpm)	11,000					
Traveller	10/0					
Draft (Break)	1.77					
Draft (Total)	28.1					
Twist Multiplier (α _e)	3.80					
Yam Speed (yd/min)	11.4					
Ambient Conditions	77°F/55% RH					
Test Duration (Spindle Hours)	---	3390	---	3245	---	3390
YARN PROPERTIES						
Skein Test:						
Yam Number (N _e)	49.17	49.13	48.79	48.28	50.23	48.62
CV% of Count	1.5	3.0	1.8	4.5	2.9	1.6
Count-Strength-Product	2896	2927	2915	2941	2867	2953
CV% of CSP	3.4	3.9	3.3	3.6	4.0	3.4
Single Yam Tensile Test:						
Tenacity (g/tex)	18.61	19.90	18.32	19.71	17.98	20.15
Mean Strength (g)	224	239	222	241	211	245
CV% of Strength	10.0	11.7	10.8	9.3	10.2	9.9
Elongation (%)	5.15	5.48	5.19	5.59	5.04	5.50
CV% of Elongation	7.2	9.8	7.9	7.4	7.6	12.0
Spec. Work Rupture (g/tex)	0.436	0.511	0.445	0.511	0.464	0.5
CV% of Work of Rupture	15.4	18.0	18.2	14.9	17.3	15.9
Initial Modulus (g/tex)	317	331	319	376	341	404
Uster Evenness Test:						
Non-Uniformity (CV%)	21.38	18.49	21.86	18.42	22.15	18.47
Thin Places/1,000 yds	354	168	398	151	428	168
Thick Places/1,000 yds	1239	512	1308	533	1388	524
Neps/1000 yds	894	452	898	457	946	461
Hairs/100 yds	869	562	766	503	680	520
ASTM Yam Grade	D	D+	D	D+	D	D+
PERFORMANCE						
Number of Breaks	---	18	---	37	---	18
Break Rate/1,000 spinning hrs	---	5.30	---	11.40	---	5.30

CORRECTION

In the first installment (March 1991 *Topics*) of the current serialized report, the HVI "Leaf" data in Table I (Fiber Properties) is incorrect due to a typesetting error. At right, we are printing a correction of the HVI section only of Table I. We apologize for this oversight and for any confusion it may have caused any of our readers.

TABLE I
FIBER PROPERTIES

Lot Number	A	B	C
No. of Lint Cleaners	0	1	2
<u>High Volume Instrument data</u>			
Strength (g/tex)	33	32	32
Elongation (%)	6.8	7.0	6.8
Length (in)	1.21	1.21	1.19
Length Uniformity (%)	87	84	84
Micronaire	3.8	3.5	3.6
Leaf	7	4	3
Reflectance, R _d (%)	73	77	77
Yellowness, +b	8.0	8.2	8.6

*Mean of two determinations

TABLE VII
RING SPINNING TRIAL RESULTS (Tandem-carded Sliver)

Lot Number	A		B		C	
	Carded	Combed	Carded	Combed	Carded	Combed
ROVING 1.8 hank						
Test Duration (Spindle Hours)	---	2943	---	2667	---	2959
YARN PROPERTIES						
Skein Test:						
Yarn Number (N _e)	48.31	48.75	50.16	49.2	48.22	48.70
CV% of Count	1.1	2.3	2.0	2.0	1.4	1.8
Count-Strength-Product	2892	2886	2827	2916	2919	2947
CV% of CSP	3.6	5.0	4.4	4.3	1.4	2.7
Single Yarn Tensile Test:						
Tenacity (g/tex)	17.74	19.60	18.02	19.79	18.72	19.72
Mean Strength (g)	217	238	212	238	229	239
CV% of Strength	12.1	9.3	11.0	9.8	9.7	11.3
Elongation (%)	5.17	5.54	5.18	5.52	5.20	5.34
CV% of Elongation	7.9	9.2	7.5	7.6	7.0	11.4
Spec. Work Rupture (g/tex)	0.459	0.511	0.452	0.509	0.437	0.499
CV% of Work of Rupture	18.7	15.5	17.0	14.8	16.2	19.2
Initial Modulus (g/tex)	350	380	326	395	329	420
Uster Evenness Test:						
Non-Uniformity (CV%)	22.01	18.44	22.41	18.05	21.86	17.92
Thin Places/1,000 yds	487	159	510	166	431	184
Thick Places/1,000 yds	1240	528	1345	362	1258	395
Neps/1000 yds	580	323	613	199	669	204
Hairs/100 yds	752	531	794	599	767	553
ASTM Yarn Grade	D+	C	D	C+	D+	C+
PERFORMANCE						
Number of Breaks	---	43	---	29	---	15
Break Rate/1,000 spinning hrs	---	14.27	---	10.87	---	5.07

used. In every case, the combed yarns had greater single-strand strength than the carded yarns, which is expected, and lower non-uniformity CV%.

As for spinning performance, yarn break rates were recorded only for the combed yarns. Table VI (Rieter C4 card) gives the same break rate for zero and two lint cleaners with a higher rate for one cleaner. Table VII, however, shows a steady decline in end breakage as more cleaning is used. Here again, this measurement corresponded with a decline in non-uniformity.

We will present the final part of this report in next month's *Topics*. We wish to express our appreciation to the Texas Food and Fibers Commission, that sponsored this research, for granting permission to print portions of the report submitted to them. Also, we want to mention that the full report was prepared by John B. Price, Assistant Director of the International Center.

TEXTUBE CORPORATION DONATES CONES

The Textube Corporation of Greer, South Carolina, recently donated a generous supply of cones to the International Center. These will be used at rotor spinning and winding in our educational and research programs.

Assistance of this kind is very helpful, and we want to express our appreciation to Mr. Hans Freytag, president of Textube Corporation, for his generosity.

VISITORS

Visitors during May, in addition to the Rieter representatives, included Carl Cox, Texas Food and Fibers Commission, Dallas, TX; David L. Huff, Texas Department of Commerce, Austin, TX; Ardis Gaither, Texas State Technical Institute, Sweetwater, TX; Herb Wright, Wright Fibers, Decatur, TX; Rodney Pilsbury, Crosrol Inc., Greenville, SC; Lee Morris, B. F. Goodrich, Pueblo, CO; Roger Bolick, Allied Fibers, Hopewell, VA; John T. Childers and Seburn Crocker, Henkel Corporation, Charlotte, NC; Dunman Perry, Jr., C. Douglas Houston and James D. Henery, Perry Equipment Corporation, Mineral Wells, TX; Don Dale, Wilcox, AZ; Rex Dunn, Dunn Seed & Delinting, Seminole, TX; and Jim Hunt, Laguna Textiles, San Antonio, TX.

Also visiting were Takao Konishi, Inter-Tec Co., Ltd., Osaka, Japan, Yoshinobu Hirano, Nagoya Spinning Co., Ltd., Nagoya, Japan; Jorge Spinola, Tejidos Laguneros S. A. de C. V., Gomez Palacio, Durango, Mexico; Colin Clayson, Johnson & Johnson Co., East London, South Africa; Ladislav Drzic, Arhtex, Zagreb, Yugoslavia; and Loic Pelfresne, Societe d' Importation et de Commission, LeHavre, France and his wife.

Forty members of the American Bank of Commerce Women's Club, Wolfforth, TX; and fifty Good Sam Trailer Club members from Portales, NM also visited during the month.