



PRESENTATION

Session: **Textile Processing**

Title: **Raw material management pays off**

Speaker: **Oswald Baldischwieler**, Uster Technologies AG, Uster, Switzerland

Presentations are available in the conference archive: <https://baumwollboerse.de/en/competencies/international-cotton-conference/speeches/>

Conference Organization

Faserinstitut Bremen e.V., Bremen, Germany. E-Mail: conference@faserinstitut.de

Bremer Baumwollbörse, Bremen, Germany. E-Mail: info@baumwollboerse.de



Bremen Cotton Conference 2022

From fiber to yarn

Raw material management pays off

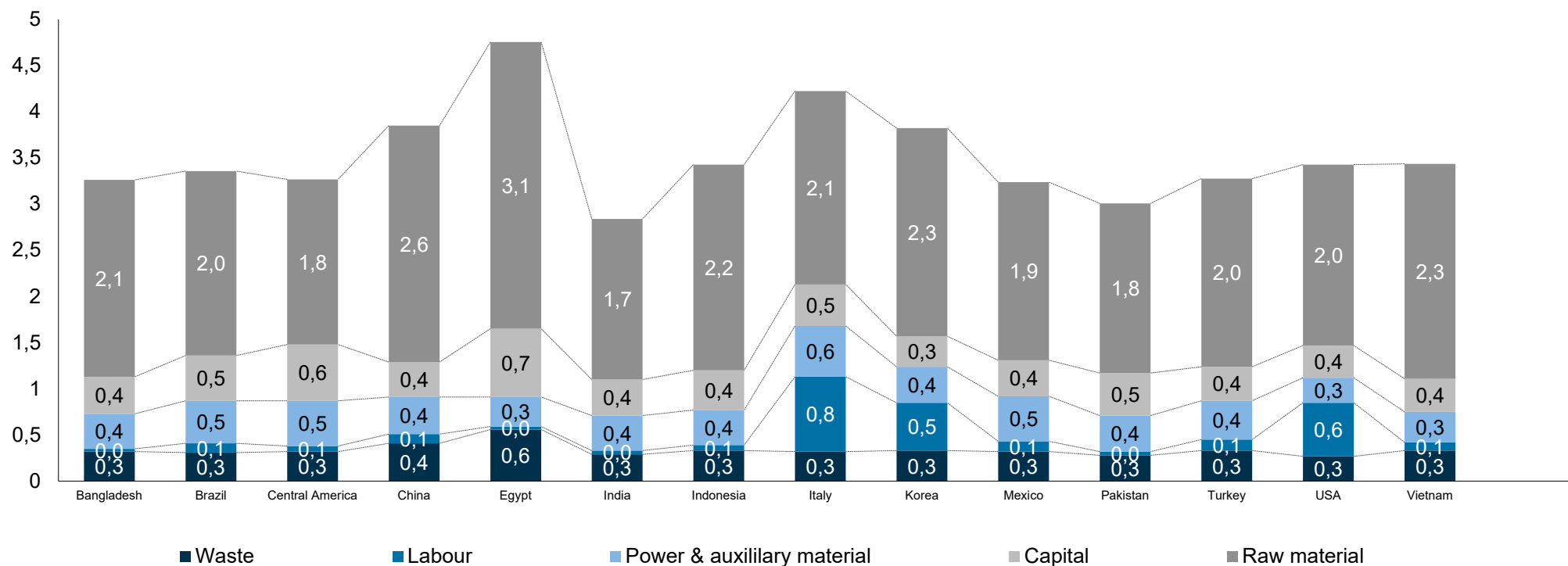
ITMF Cost comparison 2021

Total cost – Ring spinning, Ne 30 with Cotton 1 1/8 “

Production costs in US dollars per kg of yarn

In different countries

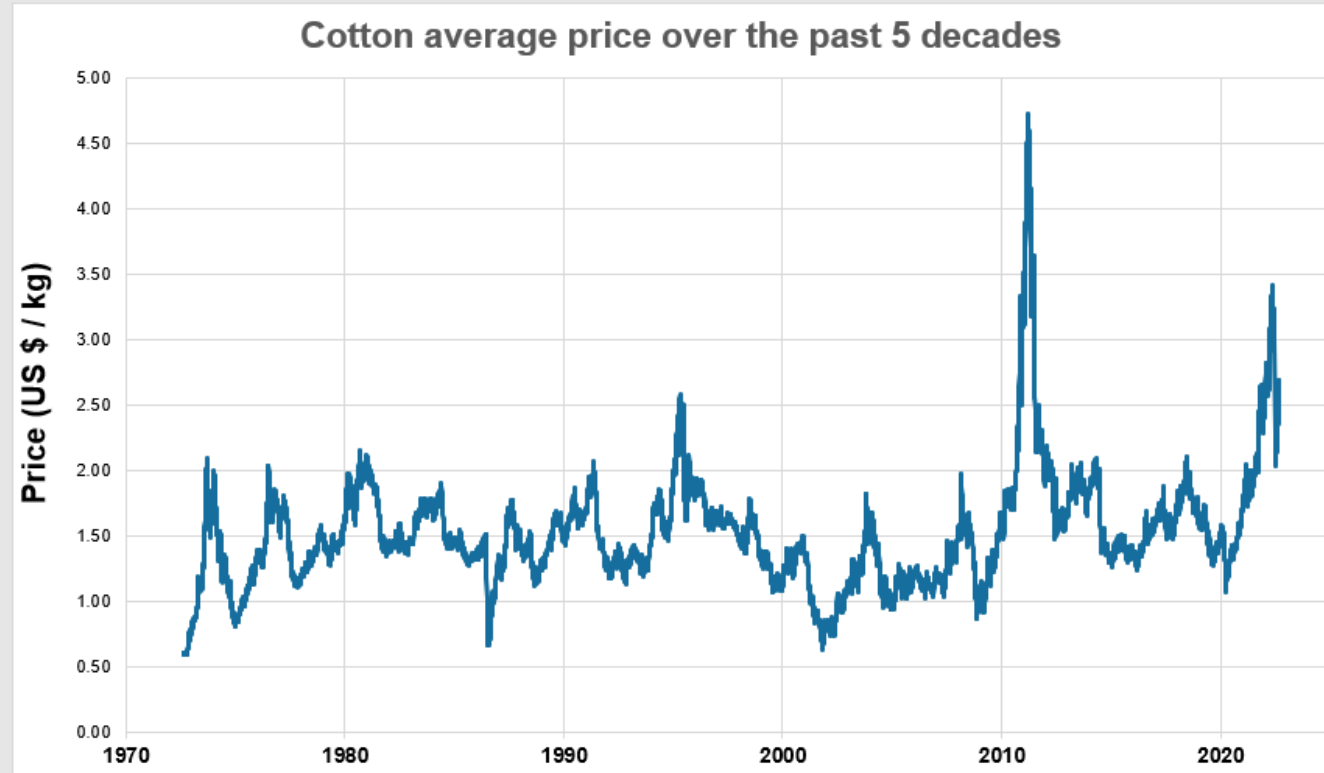
US\$/kg



Source: ITMF International Price-Cost Comparison 2021

Raw material is the key in spinning

Historic cotton prices



Raw material

Ne 30, 100% CO combed yarn, application: knitting

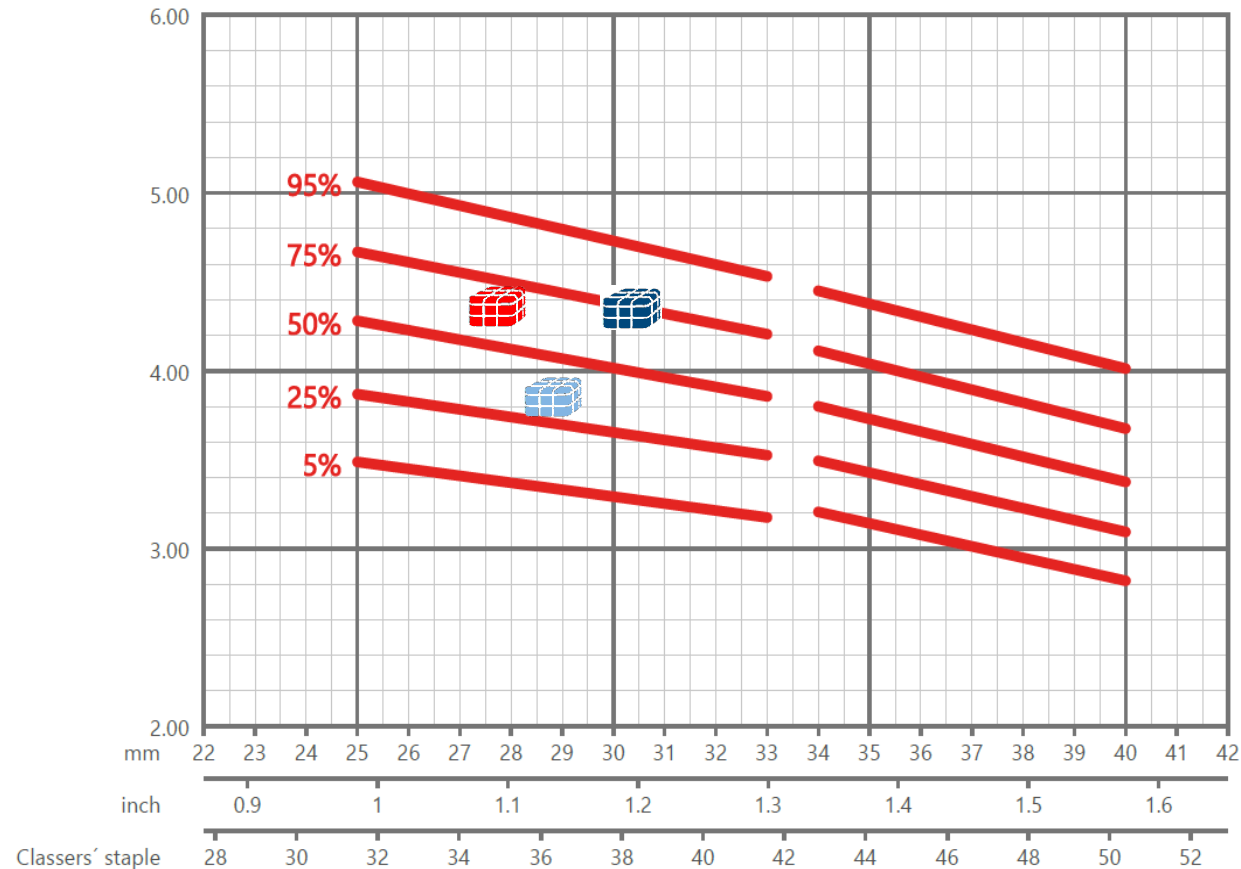
			
• Type	A	B	C
• L [mm]	27.5	29.0	30.0
• SFI	7.5	7.6	6.1
• STR	29.6	29.5	31.0
• Mic	4.4	3.9	4.6
• Rd	71.5	74.0	73.2
• +b	9.0	9.3	9.2
• Trash [%]	5.1	5.5	2.5
• Price	3.26 \$/kg	3.34 \$/kg	3.50 \$/kg

Raw material is the key factor in cotton spinning

Uster Statistics 2018: Micronaire over fiber length



Cotton, 100%, Any process, Bale, Loose
USTER® HVI Mic - Micronaire [mic]



Mic

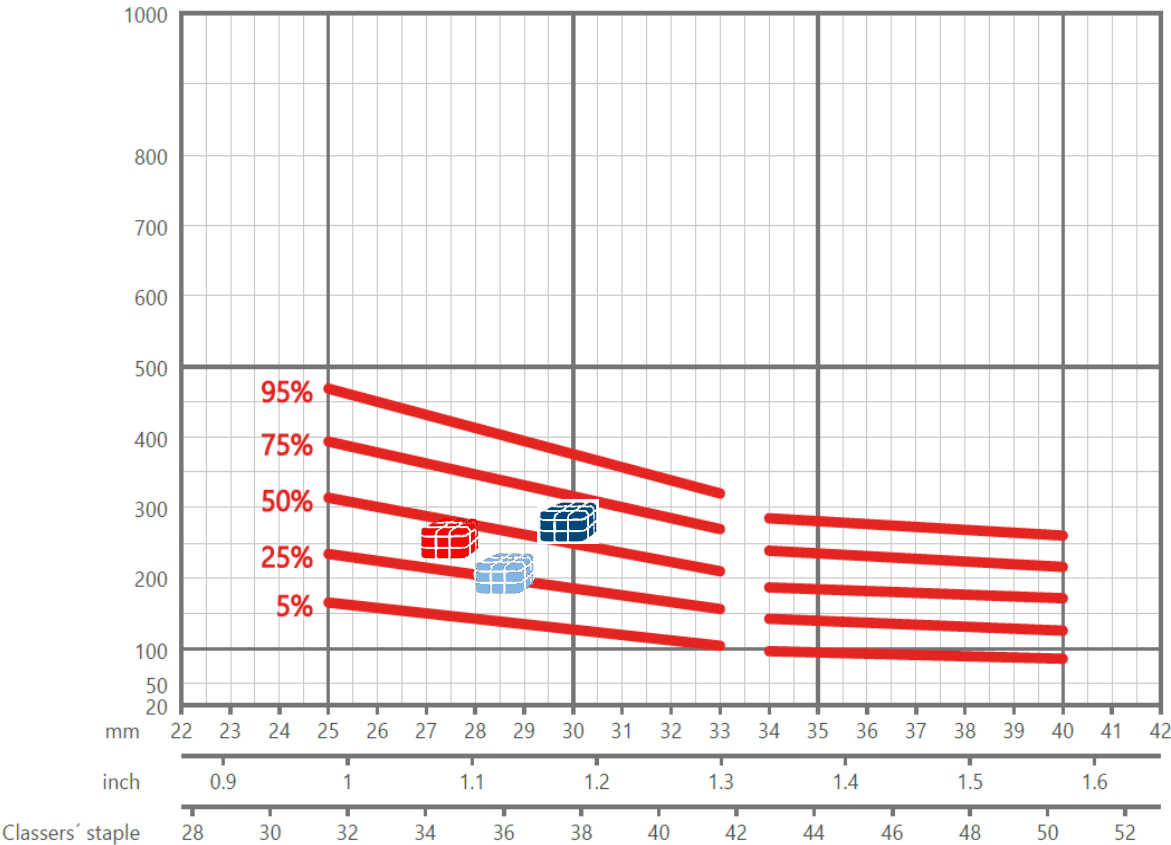


Raw material is the key factor in cotton spinning

Uster Statistics 2018: Neps per gram over fiber length



Cotton, 100%, Any process, Bale, Loose
USTER® AFIS tot N Cnt - Total nep count [/g]



tot N Cnt



Relationships between fiber and yarn quality

for ring spinning

		Yarn evenness	Imperfections Thin, Thick, Neps Classimat faults	Breaking tenacity	Breaking elongation	Yarn Hairiness	Correlations
• Fiber length							 Significant
• Micronaire							
• Nep content Trash/Dust content							 Good
• Breaking strength							 Little or none
• Elongation							
• Color / Reflectance							

Raw material is the key factor in cotton spinning

Yarn is the key factor in knitting and weaving

Input



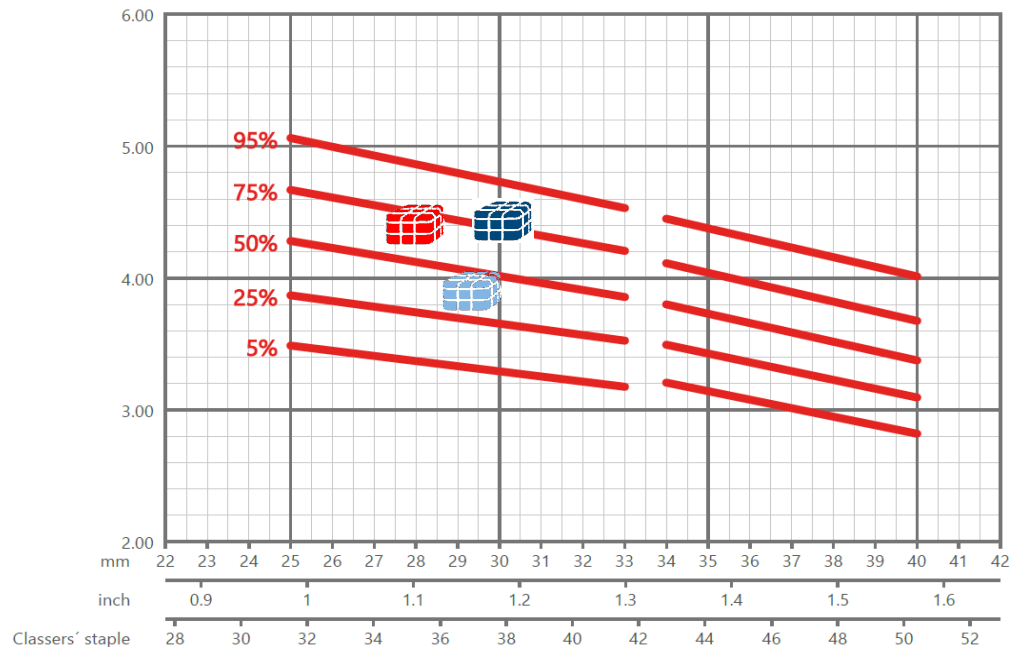
Raw material source

Output



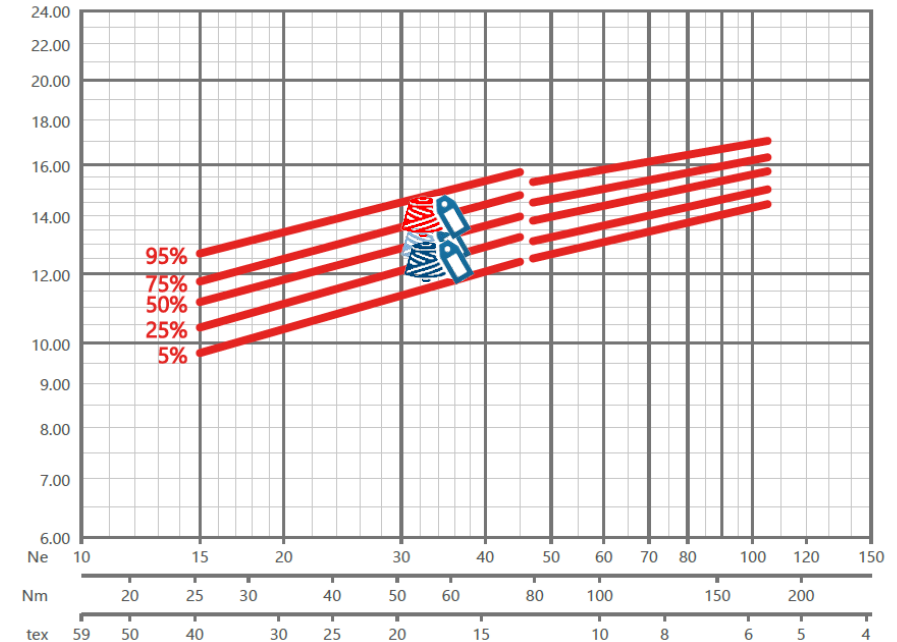
Weaving-Knitting mill

Cotton, 100%, Any process, Bale, Loose
USTER® HVI Mic - Micronaire [mic]



Mic

Cotton, 100%, Combed, Ring yarn, Package, Knitting
USTER® TESTER CVm - Coefficient of variation of mass [%]



CVm

Raw material is the key factor in cotton spinning

Yarn is the key factor in knitting and weaving

Input



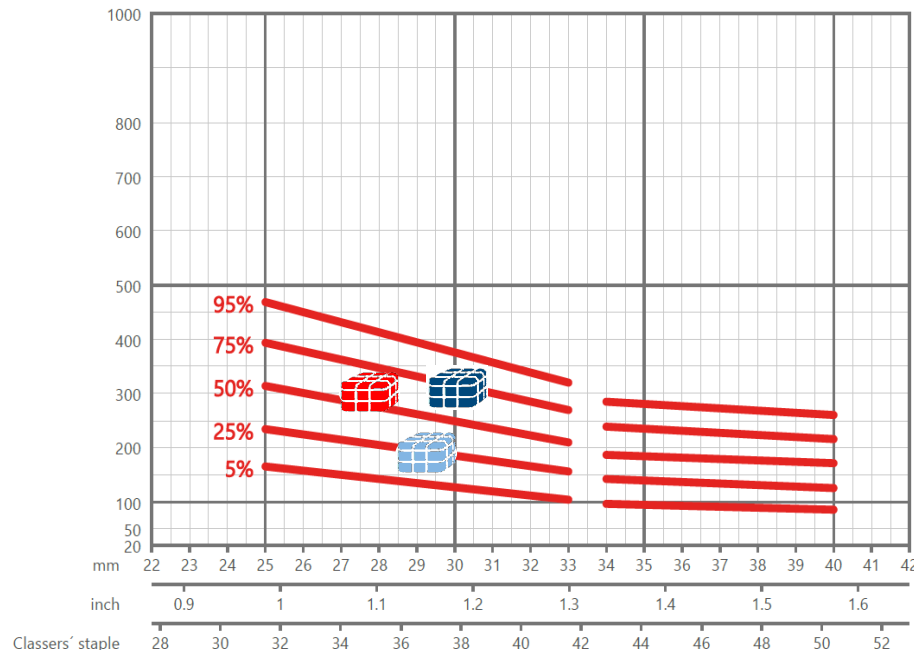
Raw material source

Output



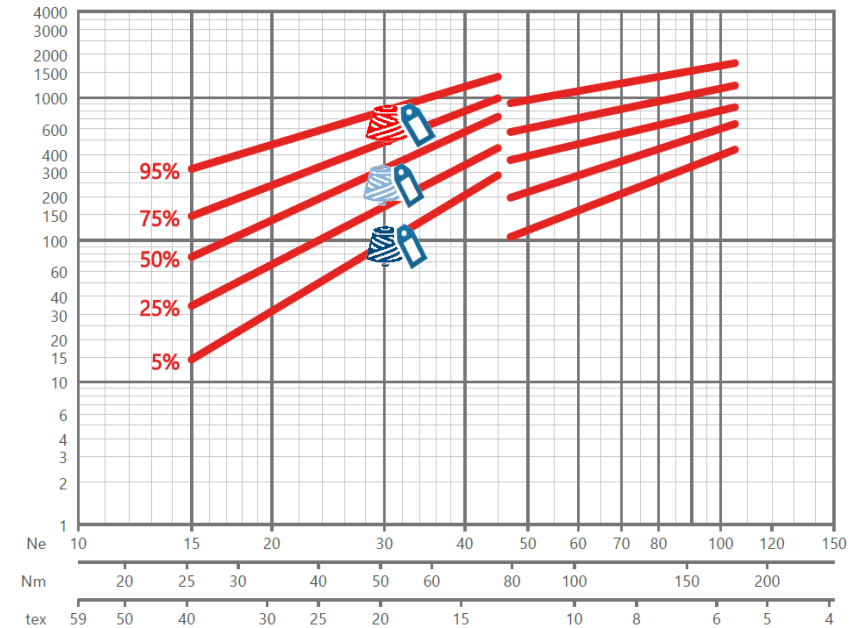
Weaving-Knitting mill

Cotton, 100%, Any process, Bale, Loose
USTER® AFIS tot N Cnt - Total nep count [/g]



tot N Cnt

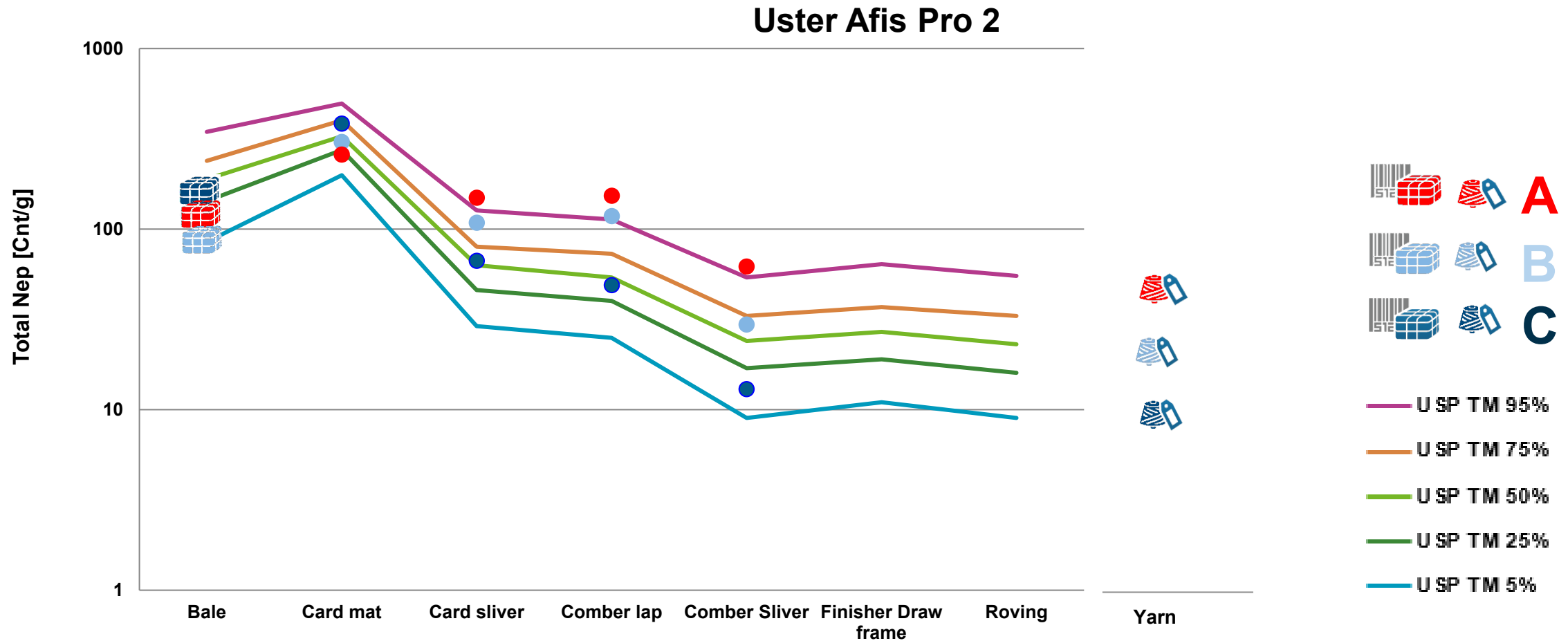
Cotton, 100%, Combed, Ring yarn, Package, Knitting
USTER® TESTER Neps +140% - Neps +140% [/km]



Neps +140%

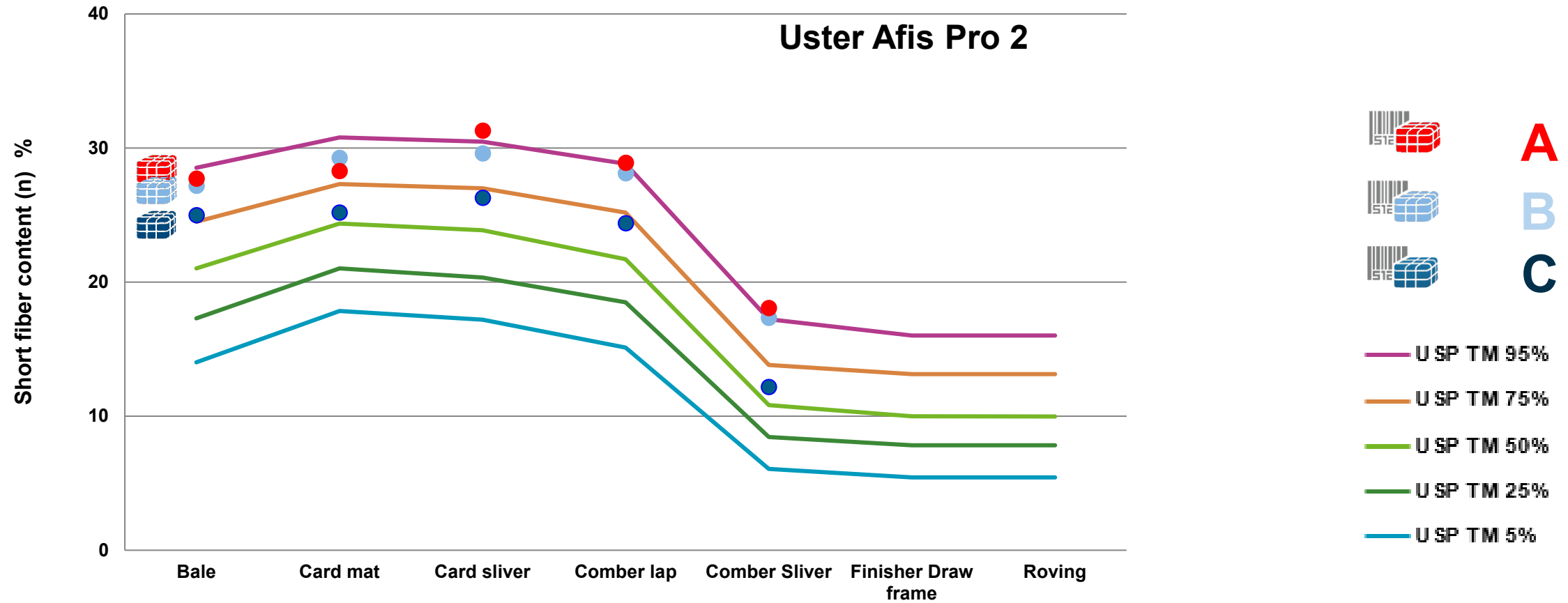
What happened in the spinning mill ?

Fiber Processing charts of Uster Statistics 2018



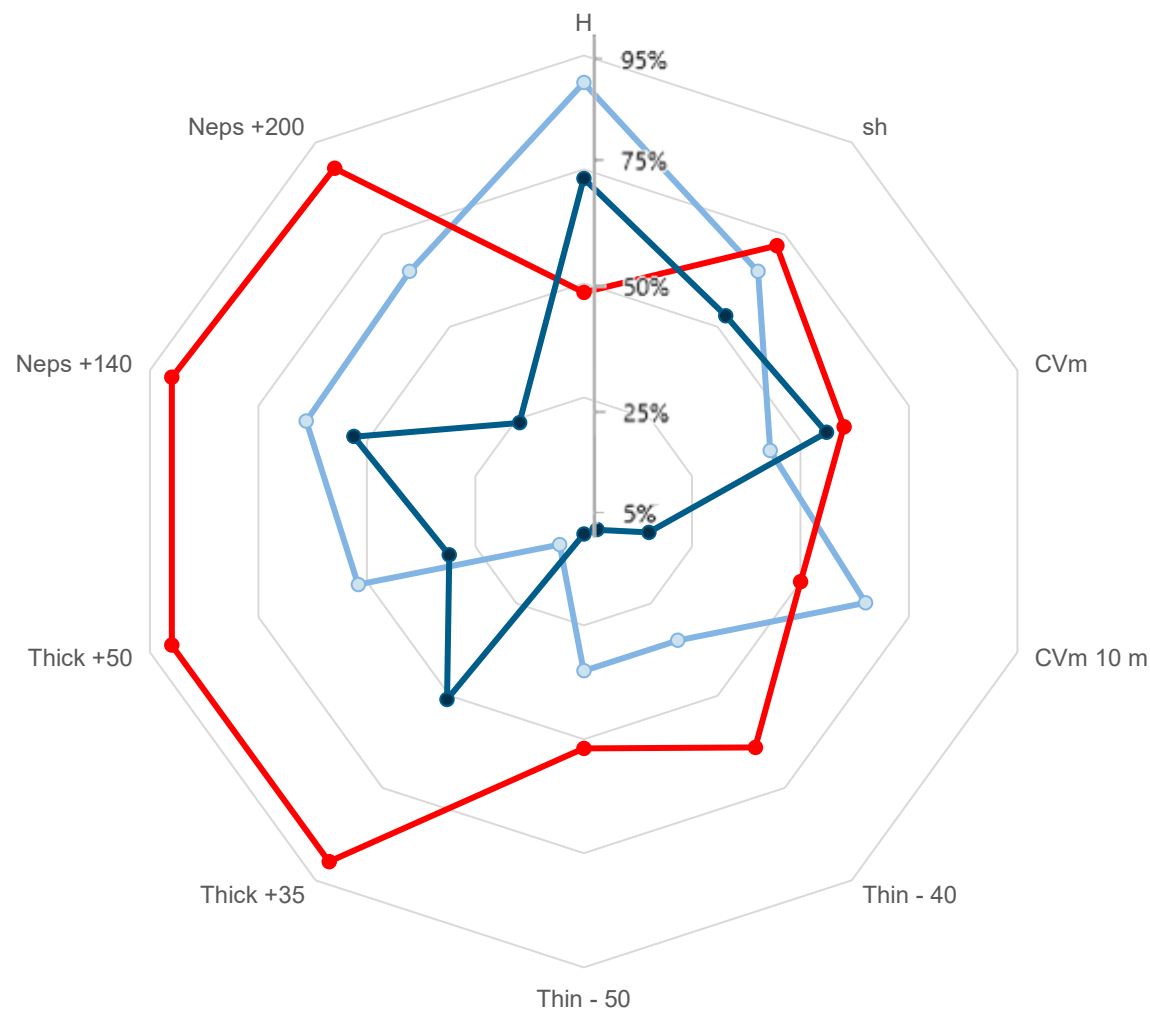
What happened in the spinning mill ?

Fiber Processing charts of Uster Statistics 2018



Comparison of several parameters using the Uster statistics

Yarn: Ne 30, 100% CO, combed, Uster Tester 6

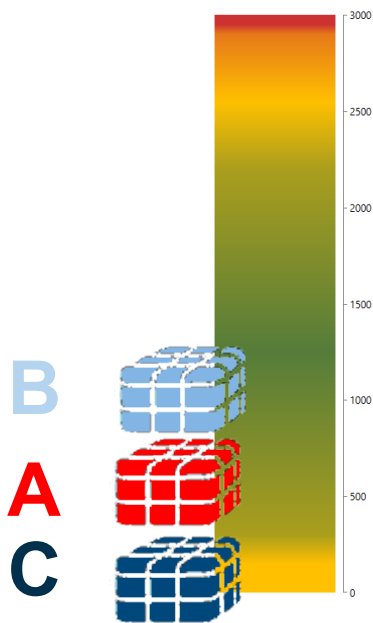


Foreign matter control matters in all process stages



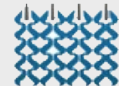
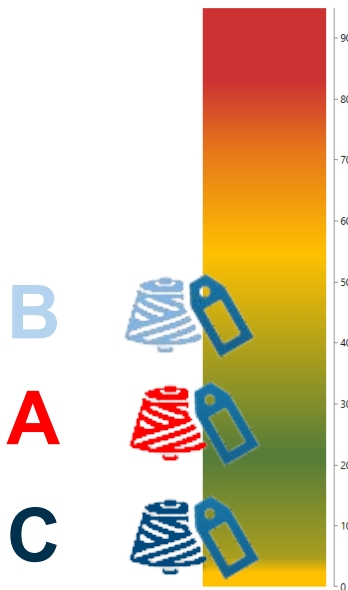
Uster Jossi Vision Shield

Spectroscope ejections / 100 kg



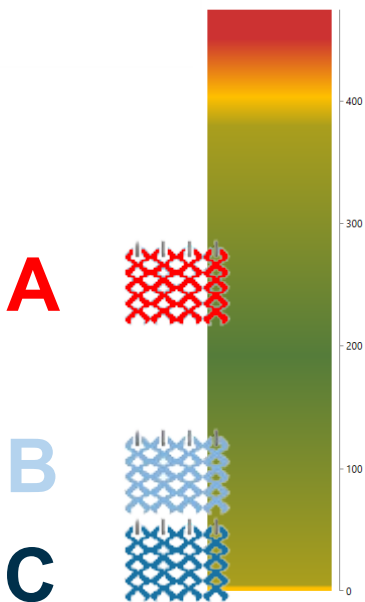
Uster Quantum 4.0

FD / kg



Uster Quantum 4.0

FD remaining / kg



Cost calculation (as of July 2022)

Raw material for a Ne 30, 100% CO combed yarn, end use: knitting

A



C



• Fiber length	1 1/8 "	1 3/16 "
• Fiber cost	3.26 \$/kg	3.50 \$/kg
• Blowroom waste [%]	11.2	5.3
• Comber noil [%]	15%	15%

Ne 30, 100% CO combed, knitting
50.0000 spindles, alpha e= 3.6 knitting, 40 ring diameter

Cost calculation (as of July 2022)

Raw material for a Ne 30, 100% CO combed yarn, end use: knitting

A



10,000



C



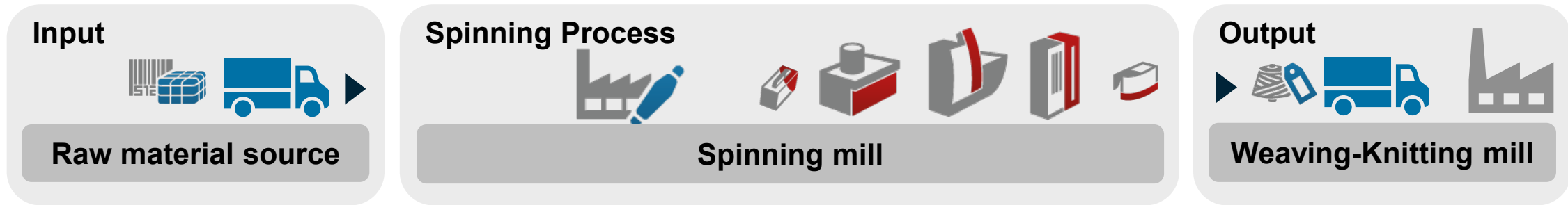
12,570



Yarn produced
per year, tons

Raw material is the key for the yarn quality

Yarn is the key for the end product quality



Summary

- Customers need to balance between cost, efficiency and quality
- With the help of testing equipment from bale to yarn the mill can optimize its material utilization
- Even with higher cotton prices, a mill can profit thanks to optimal raw material utilization, but also earn a premium for the yarn thanks to the higher quality level

Raw material is the key for the yarn quality

Yarn is the key for the end product quality



Outlook and trends in the industry

- Waste materials: Mills utilizing comber noil in integrated OE rotor operations (pre-consumer)
- Recycled fibers: Recycling of finished & dyed yarns, fabrics and garments (post-consumer)
- Traceability – where was material grown, processed and even recycled into individual materials
- More vertical mills – collaboration with growers/ginners or including next process steps such as knitting, weaving, dyeing or even into garment manufacturing

USTER®

Think quality