PRACTICAL CASE

USTER® *QUANTUM 3* Advanced Classification provides clear picture of yarn defects

Groups of long thick places were occurring from time to time in a woven fabric. This case seemed unusual as the fabric was made of yarns from the same lot.

Unacceptable fabric defects resulting from long thick places were observed from time to time in woven material.

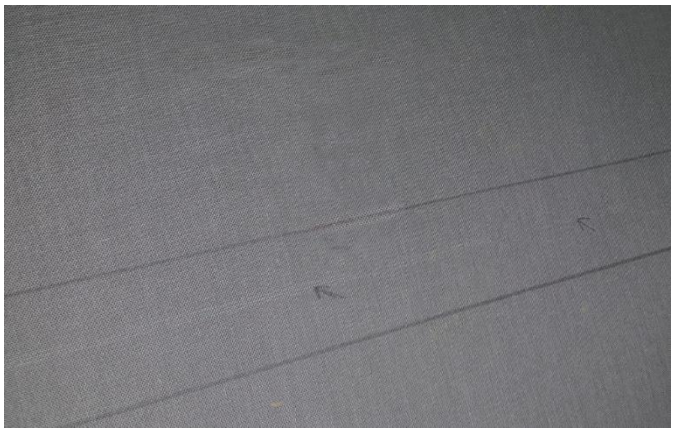

Fig. 1: Fabric defects because of long thick places in the yarn.

All ring spinning machines were operated with the same settings. All roving machines also had equal settings, regardless of the different machine types.

Yarn quality characteristics – especially imperfections – were tested by the USTER® *TESTER 6* as a routine. Even the results focusing on high sensitivity didn't show any significant differences between the roving machine types (Fig. 2).

The hairiness difference shown in the table was due to an over-extended life time cycle of the traveler, which finally had no impact on long thick places.

USTER solution

The yarn was cleared with the USTER® *QUANTUM 3*. The standard classification (values in red type) did not show any significant difference (0.8 thick places per 100 km). Only the analysis using the Advanced Classification (values in blue type) included in the USTER® *QUANTUM 3* highlighted relevant differences between the yarns.

The Advanced Classification facility of USTER® *QUANTUM 3* includes information on new advanced defect classes correlating to USTER® *CLASSIMAT 5*. This feature also allows users to customize classes and inspect specific defects. To be considered: The USTER® *QUANTUM 3* analyzes seldom-occurring events like long thick places, while the Tester focuses on frequently-occurring events.

Values measured by the USTER® *TESTER 6*	Yarn from roving machine 1	Yarn from roving machine 2
CVm (%)	10.56	10.66
CV10m (%)	2.02	1.67
-30 % thin places (/km)	289	290
-40 % thin places (/km)	5	9
-50 % thin places (/km)	0	0
+35 % thick places (/km)	100	91
+50 % thick places (/km)	2	5
+140 % neps (/km)	66	82
+200 % neps (/km)	15	18
H (-)	5.29	5.65
S1+2*u* (/100 m)	17,700	20,974
S3*u* (/100 m)	9,000	9,587
Shape (-)	0.85	0.85
Density (g/m^3)	0.63	0.62

Fig. 2: Various yarn characteristics measured with USTER® *TESTER 6*.

By comparing the advanced classes FP21, H01 and H02 as shown in Figs. 3 and 4, the differences in thick places per 100 km, as well as in thin places per 100 km, become clearly visible.

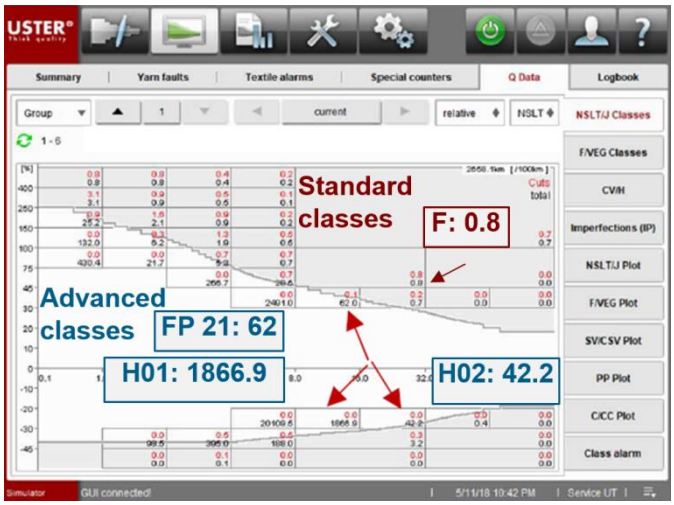

Fig. 3: Scatter plot of Advanced Classification results of yarn from roving machine 1

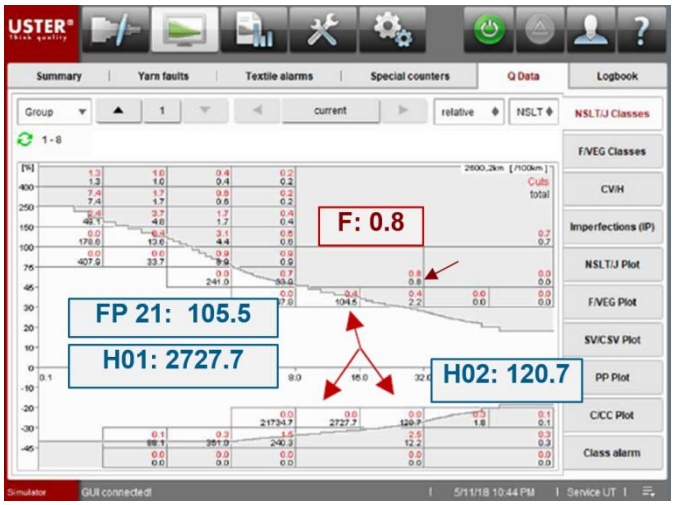

Fig. 4: Scatter plot of Advanced Classification results of yarn from roving machine 2

The Advanced Classification results showed an increase of +69 % for thick places at 9 to 32 cm length (FP21 class). The thin places even increased +186 % at 8 to 16 cm length (H01 class) and +46 % at 16 to 32 cm length (H02 class).

Conclusion

The setting of the roving machine always needs to be considered and adjusted individually for each roving machine type. To find the causes of seldom yarn defects – and also to optimize settings on the spinning and roving machines – it is recommended to extend the assessment procedure by checking the results of the Advanced Classification of USTER® *QUANTUM* 3, since its standard classification is sometimes inadequate to identify and analyze fabric problems.

Uster Technologies AG
Sonnenbergstrasse 10
8610 Uster
Switzerland
T. +41 43 366 36 36
F. +41 43 366 36 37
sales@uster.com
www.uster.com

USTER®
Think quality