# PRACTICAL CASE

## Assistant Q identifies a roving spacer issue as the cause of high S and L cuts

Even small changes in mill procedures can have serious implications for quality and efficiency. But without the right technology, they can be hard to spot.

A spinning mill produces 100 % cotton Ne 40 combed compact yarn. For this yarn, the mill expects a typical average value for L cuts (long thick places) of 3/100 km – but was finding cuts gradually increasing on all machines.

**USTER solution**

USTER® *QUALITY EXPERT* Assistant Q triggered an alarm for high S and L cuts in winding

Over a period of 12 days, L cuts increased gradually on all machines, reaching a level of around 13 cuts/100 km. (Fig. 1)

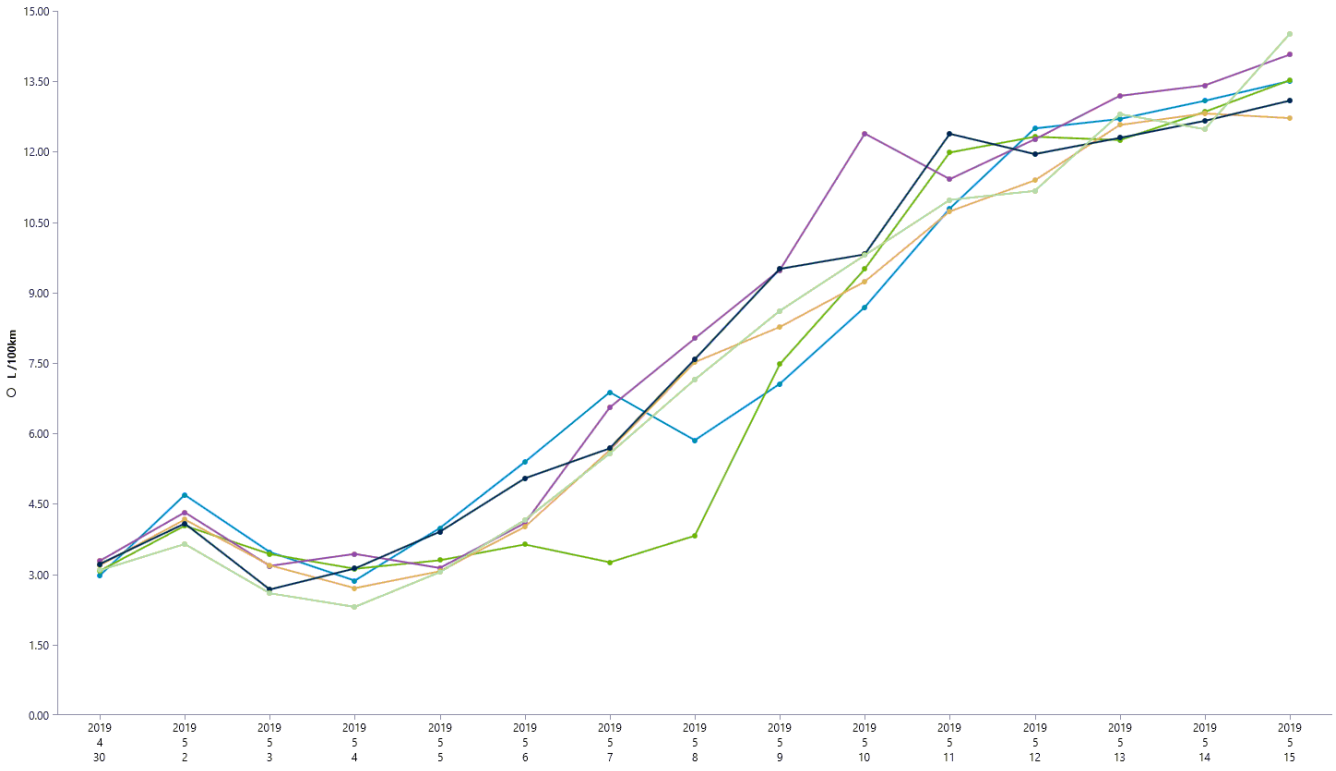


Fig. 1: L cuts gradually increased on all machines, reaching a level of 13 cuts/100 km

The trend was similar for all the machines that were processing the same count. This indicated that the problem was not related to a sudden change in settings, or to an isolated machine, but rather to a change in either the raw material or the spinning process.

A similar trend showed S (short) cuts increasing from an average of around 24 cuts/100 km to about 55 cuts/100 km over the same period (Fig. 2).

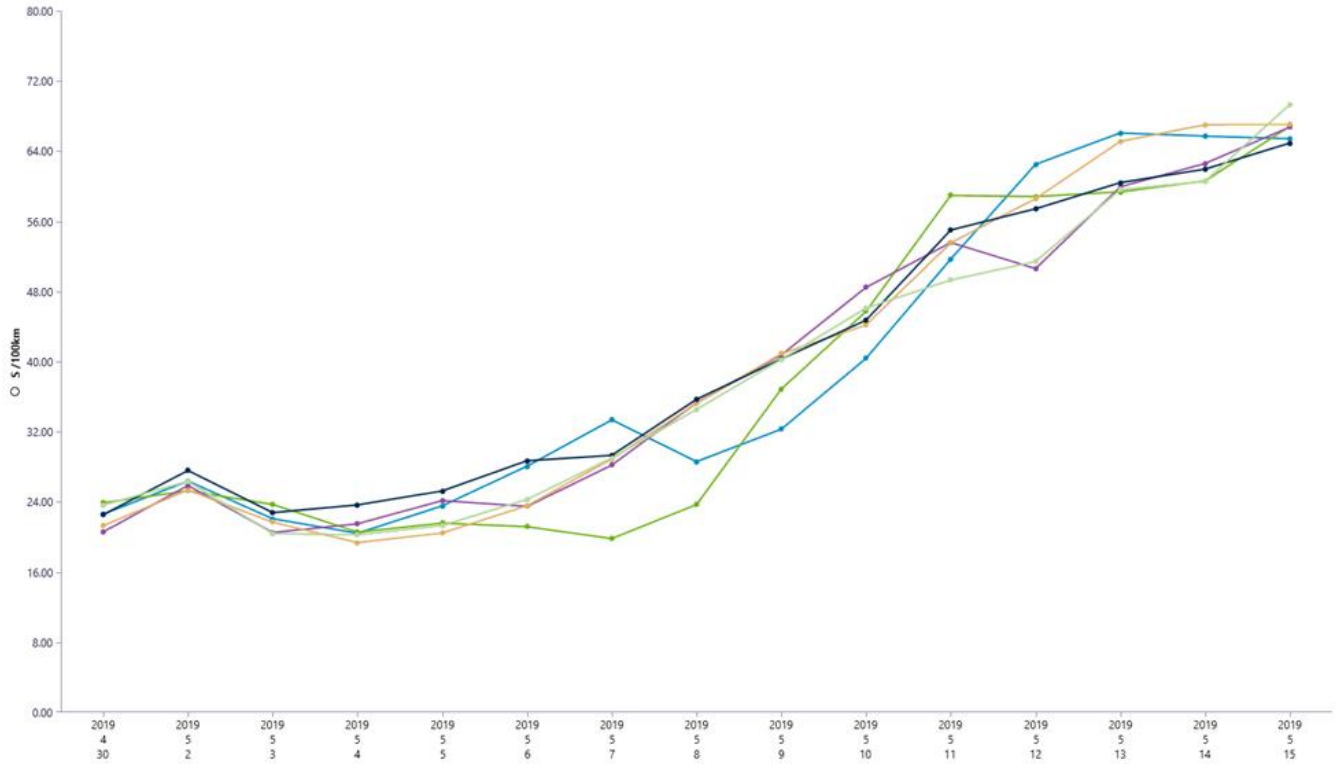


Fig. 2: S cuts increased to around 55 cuts/100 km over the same period.

The spinner started investigating any changes or problems in the spinning operation, analyzing both ring spinning and the roving processes.

The result of the analysis was the discovery that the spacer in the roving drafting zone had been adapted in the mill from 6.5 mm to 7.0 mm.

The reason for this change was that the roving machines had more stops (breaks) than normal, so efficiency was lower than anticipated. Roving breaks decreased, and production seemed to come back to normal, after changing the spacer. But things did not go smoothly in downstream processing: alarms were now being triggered in the winding process from USTER® *QUALITY EXPERT*, as both L faults and S faults increased and caused more cuts at winding.

The classification on USTER® *QUANTUM EXPERT 3* also showed a trend of a double increase for almost all parameters, when comparing data from the 6.5 mm and 7.0 mm spacers (Table 1).

| Yarn spun by roving with spacer 6.5 mm | | Yarn spun by roving with spacer 7.0 mm | |
|---|---|---|---|
| **Quality parameter** | **Yarn faults** | **Quality parameter** | **Yarn faults** |
| **USTER® QUANTUM EXPERT 3** | | **USTER® QUANTUM EXPERT 3** | |
| S /100km | 23.85 | S /100km | 56.16 |
| L /100km | 3.88 | L /100km | 11.79 |
| B0 tot /100km | 33.30 | B0 tot /100km | 53.42 |
| B1 tot /100km | 13.21 | B1 tot /100km | 27.91 |
| B2 tot /100km | 5.68 | B2 tot /100km | 13.87 |
| B3 tot /100km | 2.06 | B3 tot /100km | 4.09 |
| C0 tot /100km | 5.40 | C0 tot /100km | 13.99 |
| C1 tot /100km | 2.62 | C1 tot /100km | 7.15 |
| C2 tot /100km | 1.70 | C2 tot /100km | 4.16 |
| C3 tot /100km | 0.91 | C3 tot /100km | 2.22 |
| C4 tot /100km | 0.45 | C4 tot /100km | 0.89 |
| D0 tot /100km | 0.72 | D0 tot /100km | 1.97 |
| F tot /100km | 1.02 | F tot /100km | 3.36 |

Table. 1: USTER® *QUANTUM EXPERT 3* values showing twice the increase for almost all parameters when comparing data for the spacers 6.5 mm to 7.0 mm

Based on the alarms from USTER® *QUALITY EXPERT*, the spinner analyzed the process and found the root cause. Finally, the roving spacer was changed back from 7.0 mm to the original 6.5 mm (Fig. 3).

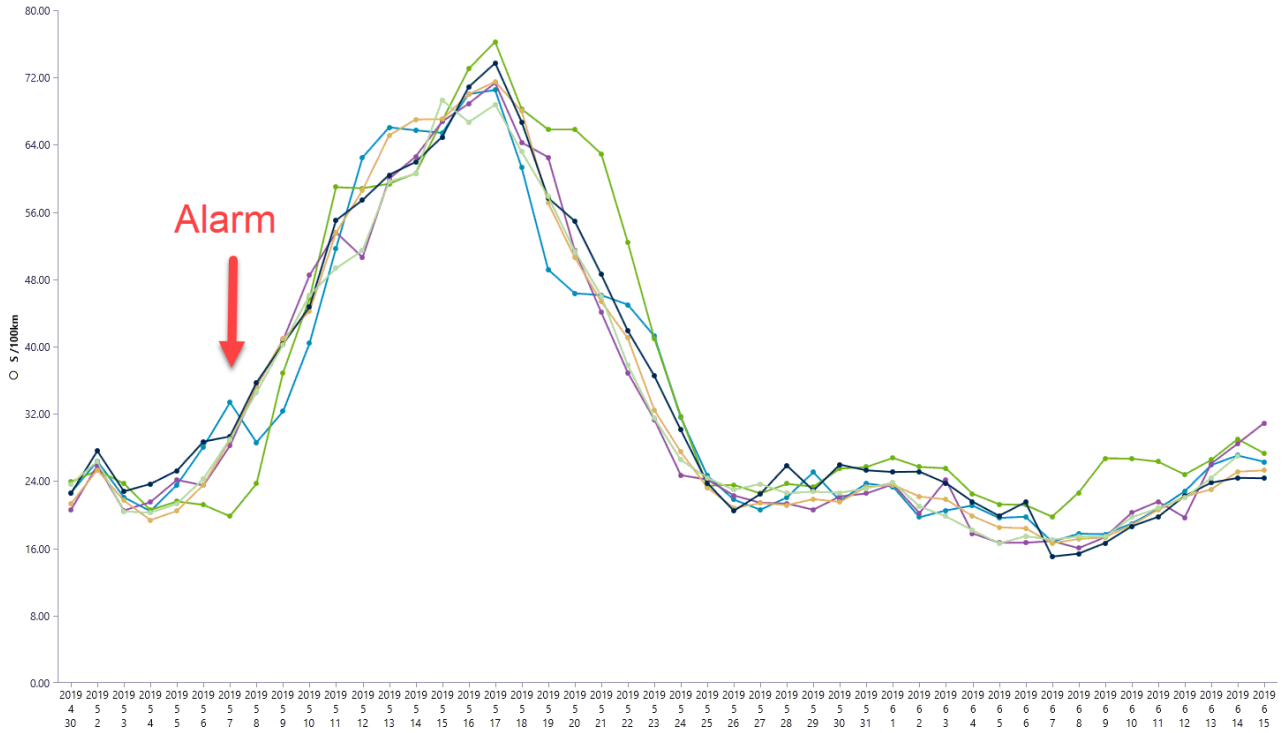


Fig. 3: Alarm from USTER® *QUALITY EXPERT* for high S cuts in winding.

In this case, only a few rovings at a time were replaced daily at each ring spinning machine, thus decreasing the quality only gradually. After the issue was resolved on the roving machine, the improvement also took some time, until all previously-produced rovings were used up.

**Conclusion and Summary**

- Assistant Q alerted about a change that had occurred smoothly over time. Such changes, especially if they take long to develop, are not easy to recognize quickly.
- Small changes in spinning mills can have considerable implications, in terms of both quality and efficiency.
- In this specific example, the spinning mill managed to deal with the efficiency loss in the roving area, but the price was paid in winding, in terms of quality (more splices, more defects in the yarn)), as well as in efficiency, which were in total more damaging.
- Assistant Q, with its application intelligence, can ensure that alerts are triggered for the right reasons and will assist the spinner to find the root causes and rectify them.

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