PRACTICAL CASE

Reduced yarn faults and maximum cost savings with USTER® *RSO 3D*

Reducing yarn faults, yarn alarms and clearer cuts – as well as saving costs...
Can Uster RSO 3D achieve all this?

A medium-sized spinning mill in central India has installed Uster - Muratec RSO 3D in an expansion project. The installation includes 30 compact spinning machines with Uster Sentinel, in combination with Muratec QPRO EX/FPRO EX with Spin Inspector and Uster Quantum clearers. On these machines, the customer produces 100% combed cotton, in counts Ne 26 and Ne 32.

USTER solution
The customer was able to reduce yarn faults by 10% and yarn alarms by 12% in both counts with Uster RSO 3D. Quality blocks were reduced by a further 7% and clearer cuts by 8% - requiring lower compressed air usage in the winding stage. This resulted in cost savings of about 35,000 USD per year for the customer, as well as improving fabric appearance.

The new installation was put into operation and, on a trial basis, the RSO 3D option was deactivated on some machines for a period of one month, to demonstrate the advantages over the standard installation. These advantages are described in the following paragraphs.

Advantages on the spinning machine:
The working area for machine operators could be significantly increased. This was possible because Uster Sentinel notifies the operators from a distance about individual yarn breaks. The system uses signal lamps at the head of the machine, at the relevant section, and at the affected spinning position. So, the operator is logically guided to the next yarn break, instead of having to search laboriously for yarn breaks along all machine sides.

When an operator locates a yarn break, the type of break is indicated at the spinning position. Here it can be distinguished by different signals identifying the problem as either Slip; Off Quality, Rogue or RSO 3D Alarm. In this case, operators were instructed to deal exclusively with yarn breaks, but not with the RSO 3D alarms. These are the responsibility of more highly-trained technicians from the customer, because the RSO 3D alarms indicate a faulty setting at the spinning position, and repairing them is both necessary and time-consuming. The RSO 3D alarms are not only displayed to the technicians by the Sentinel LEDs, but also on the Quantum control unit (CCU), as well as on the RSO 3D Quality Map (Figs. 1 & 2).

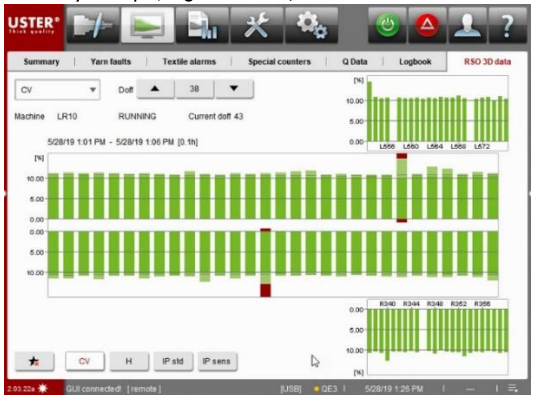

Fig. 1: RSO 3D Quality Map showing the RSO 3D alarm.

Fig. 2: LED of Uster Sentinel showing RSO 3D alarm.

This means the customer can deploy trained personnel in a very targeted and efficient manner. In addition, this mill was able to increase the spinning capacity and the working areas of the operators through path optimization.

The positive benefits continued at the winding machines. The customer was able to reduce yarn faults by 10% and yarn alarms by 12% in both counts with RSO 3D. Quality blocks were reduced by a further 7% and finally clearer cuts by 8%.

It was found that approximately 40% of the cuts had been related to hairiness issues, as well as in hairiness blocks. This is a common problem in compact spinning, as clogged compacting elements no longer compact properly, leading to an increase in hairiness. Finding these clogs is very time consuming and unsafe (Fig. 3). With the Uster RSO 3D, these precise spinning points were signaled to the technicians, so the fault could be quickly eliminated.

Fig. 3: Clogged compacting elements in compacting section.

Overall, this customer was able to save 5% in yarn splices and produce about 5 kg more good yarn per machine. These are impressive values, but what do they mean? Some small calculations can convert these facts into numbers, as follows:-
With the savings of yarn joints on the winding machine, the customer needed less compressed air and thus less electricity for the machine compressor unit. These savings together amount to approximately 954 kw per machine per month. Calculated at about 6 INR per kw/h, this comes to 5,724 INR per machine per month. With 30 machines, this amounts to almost **2 million INR**.
Additionally, the 5 kg reduction in waste equates to 5 kg more good yarn which can be sold. With 30 machines, this totals 1800 kg more yarn per year.
Based on a price of 280 INR/kg, this achieves an increase in sales worth another **500,000 INR.**
Combining both these calculations produces a gain of 2.5 million INR per year, equivalent to about **35,000 USD/year**.
Further advantages can also be expected in downstream processes. Thanks to the reduced number of cuts, the yarn has fewer potential weak points. This makes it possible to adapt subsequent process speeds, while the customer will also benefit from an improved fabric appearance arising from the reduction in quality alarms and cuts.

Conclusion and Summary

- Uster RSO 3D increased spinning capacity, as well as helping the customer to utilize trained personnel in a very targeted and efficient manner by increasing the operators' working areas.
- The customer was able to reduce yarn faults by 10% and yarn alarms by 12% with Uster RSO 3D. Quality blocks were reduced by 7% and finally clearer cuts by 8%.
- Due to the savings in yarn joints, compressed air, and lower waste generation, the customer was able to save around 500,000 INR or about 35,000 USD. Apart from these savings, Uster RSO 3D has also helped the customer to achieve improved fabric appearance through the reduced quality alarms and cuts.

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