Clear vision in the drive for perfect yarn

Customer needs continue to motivate USTER’s developments in quality control for winding

Uster, Switzerland, September 21, 2015 - Yarn clearing technology has come a long way in the 50 years since the first system for automatic winding was marketed by USTER. The needs of spinners - and their customers downstream - remain the key driving force as the technology progresses. But the scope of yarn clearers has steadily broadened, taking in more fault-detecting options and better data utilization. The latest USTER® QUANTUM 3 clearers represent the summit of current potential, with a range of innovative features helping mills to produce the right yarn quality with optimum productive efficiency and profitability.

Even with all today’s sophisticated technology; spinners still can’t produce the ‘perfect’ yarn. Some faults are inevitable, and the winding process after spinning is where these can be removed – to create a yarn that may not be actually flawless, but will give customers the consistent quality standards they need.

Quality has always been a big issue for both spinners and fabric manufacturers, but it was not until the early years of the 20th century that the first steps were taken towards automatic control of yarn quality during production. The motivation came from a group of spinning mills located along a small Swiss river, the Aabach, not far from Zurich. This area had become noted for the success of its yarn and fabric producers, with as many as 30 mills originally using the river to provide power for their machines. So profitable were these enterprises, that the Aabach was dubbed the Millionaire River by locals.

The Aabach spinners were anxious to find a solution to recurring thick places in their yarns, which were causing complaints from customers. They began discussing the problem with a company in the nearby city of Uster: the then Zellweger Uster, the forerunner of the company which became Uster Technologies in 2003. Those talks were the start of the history of the process now known as yarn clearing.

The initial result, in 1952, was a patent filing for a ‘Thread Cleaning Device’ by the Uster Company. This was a mechanical system for detecting thick places on manual winding machines, across a limited range of yarns. Launched as a Slub Catcher in 1955, this device was the first USTER® yarn clearer.

Spinners and weavers continued to press for better and more versatile solutions, seeking improved control of thick places and then removal of thin places and neps. USTER responded with new yarn clearer models with more advanced features.

New technology, new demands
The first yarn clearers were for manual winders only. The advent of the more efficient automatic winding systems presented new demands for clearer developers, and in 1965 USTER launched its first system for this process. The USTER® AUTOMATIC UAM B1 - celebrating its 50th anniversary this year – was installed on several of the leading automatic winding machine brands. It was still limited to clearing only thick places, until the next model, the UAM C1 appeared with the capability to eliminate thin places as well.

New technology, new potential
Even with these developments, by the 1970s yarns were still suffering from quality issues, with weavers continually complaining about the time and cost taken in mending defective fabrics. But this was the beginning of the Information Age, and it brought important new potential for improvements in textile quality control.

USTER realized that data about clearer cuts at the winder and machine standstill times could be a valuable aid to mill efficiency. In 1975, the company launched the USTER® ACTIVITY RECORDER for its yarn clearers. This was the first true data system for yarn clearing, the ancestor of the technology spinners now regard as essential in the modern winding room.
The next major step was the spread of microprocessor technology, which took yarn clearing beyond just detection of thick and thin places. From then on, neps and eventually foreign matter could be eradicated — leaving little cause for complaint along the Millionaire River, and the rest of the world, where USTER yarn clearers have been exported ever since.

Premium Swiss-made yarns remained successful until the new millennium, by which time emerging markets were able to match their quality at lower cost. At the time of this shift, it was the beginning of a new chapter in USTER yarn clearing: the QUANTUM era...

**The QUANTUM leap - beyond all expectations**
The final hurdle in defect removal was the detection of polypropylene — and this was overcome with the first generation of USTER® QUANTUM yarn clearer in 1999. By this time, yarn clearing was already acknowledged as essential for quality monitoring to avoid costly claims, but its benefits in enhancing production efficiency were also becoming significant. The USTER® QUANTUM 2, with its Central Control Unit (CCU) display of key data on spinning, winding and progress this trend.

R&D goals for the USTER® QUANTUM 3 focused on a clear vision: to allow spinners to create the ‘perfect’ yarn for their customers at the lowest possible cost. Advanced sensor technology and USTER’s expertise in data generation led to a series of genuine innovations in fulfilling this vision.

Smart Clearing Technology, based on built-in knowledge, guaranteed optimum results for each yarn application. The YARN BODY concept provided an instant visualization of yarn quality parameters and variations. And the Smart Limits feature allowed users to customize clearer settings at the push of a button.

These developments break new ground in terms of detection capabilities, intelligent operation and user-friendliness — making USTER® QUANTUM 3 the biggest single leap forward over the entire five decades of yarn clearing technology.

**What's next? Technology knows no boundaries...**
Developments at USTER already aim at wider issues, on the theme of ‘managing a spinning mill with quality in mind’. Yarn clearing is still about quality for the customer, but the emphasis is also on production efficiency and optimized profitability for the spinning mill — a focus which is sure to continue.

Who knows what possibilities will come in future, as sensor technology and data application are developed in the light of the next Uster Technologies vision?

“If the spinners and weavers in business along Millionaire River in the past could see the fine white shirts we wear today, it would seem like pure perfection to them. But that doesn’t mean we should be satisfied with our current ambitions in yarn clearing development. It’s sure that customer demands, new technologies and technical changes in spinning won’t let us rest on our achievements,” says Sivakumar Narayanan, Head of Product Management within Uster Technologies.

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