

USTER® AFIS PRO 2

The fiber process control system



Route to best practices in yarn manufacturing

Information is virtually useless if not exploited to maximum advantage. That is why the USTER® AFIS PRO 2 shows how to use its valuable data to implement best practices in fiber process optimization. The following examples detail how current users of AFIS® are controlling manufacturing costs and maximizing profits.

Best practices for process control:

- Optimizing card maintenance cost by monitoring card sliver nep levels to manage grinding and re-clothing schedules better
- Optimizing comber noil removal by monitoring short fiber, trash and nep removal efficiencies
- Optimizing cleaning efficiencies by monitoring trash removal efficiency in the blowroom and carding machines
- Optimizing machine settings by monitoring variability and reduction in fiber quality properties throughout processing
- Reducing yarn imperfections by monitoring short fiber, fiber fineness, and nep level variability throughout processing
- Improving spinning efficiency by monitoring short fiber, trash, neps, seed coat neps, fiber fineness level and variability throughout processing
- Reducing fabric dyeing defects by monitoring fiber maturity level and variability throughout processing to prevent fabric barré faults



USTER®
Think quality

USTER AFIS PRO 2

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Controlling costs through material monitoring

Some of the costliest mistakes in yarn manufacturing arise from poor control of the raw material – both before and during the spinning preparation stages. The financial impact of excess waste, unnecessary cuts, reworking, and paying claims can drive the yarn-manufacturing cost way beyond the original cost of the raw material.

This is where the USTER® AFIS PRO 2 shines. Fiber quality is the most critical factor in yarn manufacturing. It directly impacts on whether a yarn meets the mill's cost requirements and the quality/performance specifications of the customer.

With raw-material accounting for more than 50% of the total yarn-making cost, the key is to preserve the quality of the purchased fiber throughout the manufacturing process. And the USTER® AFIS PRO 2 achieves this by testing the material at each stage of preparation, from blowroom to roving.

With rising raw-material costs spinning mills with optimized processes are often forced to buy or utilize cheaper raw material because it is the only way to keep the profit margin on the same level. This requires, however, that the yarn quality does not deteriorate. For such a difficult balancing challenge between profit and quality the measurement of the fiber characteristics from the blowroom to the roving frame is a must.

	Length	Trash	Neps	Seed coat neps	Short fiber	Maturity
Blowroom	•	•	•	•	•	•
Carding	•	•	•	•	•	•
Lap winding	•	•	•	•	•	•
Combing	•	•	•	•	•	•
Drawing	•	•	•	•	•	•
Roving	•	•	•	•	•	•

Significance of fiber properties in yarn preparation processes

Several different fiber quality characteristics affect quality and performance through the various prespinning operations – opening, cleaning, carding, combing, roving – so testing needs to take account of the impact of each. The USTER® AFIS PRO 2 handles this by measuring, in as little as 2.5 minutes, up to 11 different fiber characteristics describing the length, fineness, maturity, neps, trash, and dust in a particular test specimen.

Only by this intensive monitoring it is possible to detect fiber quality issues before they get into the yarn and lead to a quality claim from the customer. The result is better overall control of cost, by reducing waste raw material and off-quality yarn. And to maximize laboratory efficiency still further, the optional AUTOJET Module can be used to automate the sample-testing operation of the instrument. Only USTER® AFIS PRO 2 can deliver these advantages with the industry-leading level of accuracy USTER customers expect.

Monitor every process to get good cost control

- Poor control of fiber quality before and during processing leads to the most costly quality claims
- USTER® AFIS PRO 2 measures all the critical parameters needed to control all the spinning preparation processes and thereby allowing for consistent cost control
- Eleven characteristics are measured in as little as 2.5 minutes
- Testing efficiency in the laboratory can be improved with the optional AUTOJET

Test modules and options for a real competitive edge

USTER® AFIS PRO 2 provides the essential data necessary for modern process optimization techniques in the spinning mill. The Neps Length and Maturity Module (NLM) is the basic configuration which measures the amount of cotton fiber and seed coat neps as well as fiber length, short-fiber content, plus cotton maturity and immature-fiber content.

The optional Trash Module (T) measures the trash and dust content in cotton. Any material in the form of bale, matt, sliver or roving can be tested – repeatedly and reliably – on the USTER® AFIS PRO 2. Even fiber blends can be tested, up to a ratio of 50% cotton, 50% synthetic.

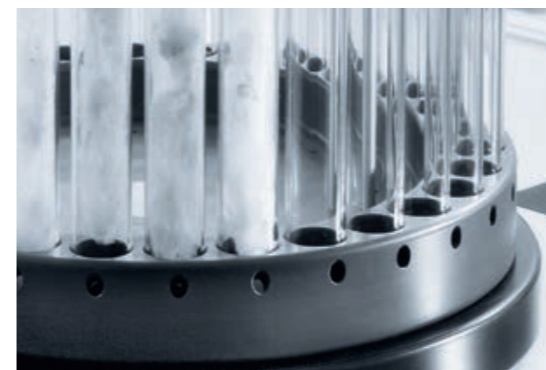
For improved laboratory testing efficiency, the optional AUTOJET device is designed to run up to 30 samples automatically. After loading the AUTOJET cassette, the operator can attend to other duties, making the best use of lab time and avoiding the need for extra staff.

A special feature of the USTER® AFIS PRO 2 is the critical nep size report. This allows a mill to assess the visual impact of larger-size neps in the raw fiber, in finisher sliver (for rotor spinning) or in roving (for ring spinning). Nep size is important, since larger neps are more likely to have a visual impact on yarn appearance – especially in finer-count yarns, where nep size is even more critical. And yarn appearance is, of course, a good indicator of fabric appearance – which in turn is often a determining factor in winning or losing business.

Only with USTER® AFIS PRO 2 and its wide range of test options and application reports can this degree of process optimization be realized as a genuine competitive advantage.

Testing the widest range of parameters gives a competitive edge

- USTER® AFIS PRO 2 provides the essential data necessary for modern process optimization techniques in the spinning mill
- The Neps Length and Maturity Module (NLM) is the basic configuration which measures fiber and seed coat neps, all the length components, and fiber maturity, the optional Trash Module (T) measures the trash and dust content in cotton
- For improved laboratory testing efficiency, the optional AUTOJET device is designed to run up to 30 samples automatically
- Widest range of testing options and application reports to get the most out of the test data



AUTOJET device runs up to 30 samples automatically

Unique technology for accurate test results

The USTER® AFIS PRO 2 sets the standard for process optimization in spinning mills. Class-leading, patented technology and over 60 years of fiber testing and textile processing know-how are the foundations for its success.

Spinners know that decisions they make in the mill concerning production rates, machine settings, and maintenance cycles have a significant impact on profit margins and quality. These critical decisions need to be based on the best-available fiber quality data – as provided by USTER® AFIS PRO 2, the most accurate instrument for fiber-processing optimization.

Vital technology which makes the USTER® AFIS PRO 2 unique includes the patented fiber individualizer and dedicated sensors for measuring Neps, Length, Maturity (NLM) and Trash (T), as well as the AUTOJET (A) Module.

The individualizer separates fibers, neps, and trash into an airstream so that each 'event' is presented to the sensors individually – this ensures every fiber, nep, and trash particle 'event' is counted and the length or size determined. Knowing the number and length/size of each 'event' is critical in determining if fiber quality is being preserved during each processing stage. Any damage to the fiber will mean more waste, lower efficiency and inferior quality – amounting to a negative impact on overall manufacturing costs for the spinning mill.

Accurate results delivered through our unique technology

- What makes USTER® AFIS PRO 2 unique is the patented fiber individualizer and dedicated sensors for measuring Neps, Length, Maturity (NLM) and Trash (T), as well as the AUTOJET (A) Module
- This technology allows for the measurement of individual events in each quality parameter leading to unrivaled data accuracy
- The decisions made concerning production rates, machine settings, and maintenance cycles need to be based on the best-available fiber quality data – as provided by USTER® AFIS PRO 2





Practical examples of the benefits

Today, there are more than 900 USTER® AFIS instruments installed in more than 60 countries worldwide. They are measuring quality throughout the spinning preparation processes – providing industry-standard results with practical commercial benefits. AFIS® figures are widely used as a statistical basis for product specifications, or resolution of quality claims, as well as an essential aid to meeting operational efficiency and cost goals for spinners.

Throughout the textile industry, leading mills depend on AFIS® for optimizing product quality, mill efficiency, and production cost – while the world's top research institutions rely on AFIS® for their researches into improving fiber quality and production processes.

Their confidence comes from the unmatched accuracy and reproducibility of test results with USTER® AFIS PRO 2. Time after time, USTER® AFIS PRO 2 comes out on top for test result accuracy and machine-to-machine test reproducibility, as measured by independent worldwide comparison trials. It is an assurance of performance which can deliver positive results to the bottom line of any spinning mill – as exemplified by the following practical examples.

Since the introduction of USTER® AFIS PRO 2, a major Turkish spinning mill, producing more than 10 tons of combed and carded 100% cotton yarn per day, reports some impressive gains. The plant now enjoys about 5% less blowroom and card waste. Additionally, comber noil has been reduced by 2–3%, and a sizable improvement has been made in yarn quality levels as related to USTER® STATISTICS.

Even more importantly, monitoring short-fiber content and critical nep size has allowed the mill to determine the finest yarn count it can produce from each batch of cotton. As a result, the mill has been able to spin finer counts from the same cotton supply, saving on raw-material cost, thanks to the accurate fiber quality data obtained from USTER® AFIS PRO 2.

At the same time, a Chinese spinning mill operating 300 000 spindles and supplying yarn to major global clothing and furniture brands has reached new quality and cost levels using USTER® AFIS PRO 2. After optimizing the mill's processes, waste has been reduced, leading to a 5% reduction in raw-material needs and a yield improvement of almost 4%.

Real-world examples of success using USTER® AFIS PRO 2

- Leading mills depend on AFIS® for optimizing product quality, mill efficiency, and production cost
- A Turkish spinning mill now enjoys about 5% less blowroom and card waste, and comber noil has been reduced by 2–3%
- A Chinese spinning mill operating 300 000 spindles realized a 5% reduction in raw-material needs and a yield improved by almost 4%
- These improvements lead to quick paybacks in investment

Product configuration

AFIS PRO 2

Modules and their functionalities

	AUTOJET Module Optional module for increasing testing efficiency in the laboratory
	T Module Optional module for testing the trash and dust content
	NLM Module For testing the nep, length and maturity characteristics

■ Basic ■ Options

A modular system allows to tailor the product configuration to one's need. Starting from the basic module further modules can be added.

	Length	Trash	Neps	Seed coat neps	Short fiber	Fineness	Maturity
Yarn and fabric fineness	•	—	—	—	•	—	—
Yarn and fabric strength	•	—	—	—	•	•	•
Nep formation during processing	•	—	—	—	•	•	•
Yarn evenness	•	—	•	•	•	—	—
Yarn imperfection	•	—	•	•	•	—	—
Processing waste	•	•	•	•	•	•	•
End breaks in spinning	•	•	•	•	•	•	•
Textile-machinery contamination / component wear	—	•	—	—	—	—	—
Cotton dust levels	—	•	—	—	—	—	—
Weaving efficiency	—	—	•	•	—	—	—
Fabric neppiness	—	—	•	•	•	•	•
Fabric appearance and barré	—	•	•	•	•	•	•

Fiber properties (right) and processing characteristics affected (left)

The future has a past

1992



USTER® AFIS
First development of single-fiber-testing system for cotton

1996



USTER® AFIS
Second product development of USTER® AFIS

1998



USTER® AFIS PRO
The fiber process control system

2007



USTER® AFIS PRO 2
The standard fiber-testing system for process control

USTER started with field trials and sales of the first single-fiber-measuring systems in 1990. For the first time, an instrument was capable of automatically determining the number and size of neps. AFIS® stands for advanced fiber inspection system.

USTER® AFIS-N was the first generation, introduced in 1992, followed by the second development step. As further research was conducted to develop the instrument, the additional parameters of fiber length, short-fiber content, diameter, maturity, dust and trash were added. This evolution resulted in the development of the USTER® AFIS PRO.

The current version is the USTER® AFIS PRO 2. This instrument has an improved data output and reporting package based on the field experience of the previous generations of the instrument.



The standard from fiber to fabric

USTER is the world's leading supplier of total quality solutions from fiber to fabric. USTER® standards and precise measurement provide unparalleled advantages for producing best quality at minimum cost.

Think quality

Our commitment to state-of-the-art technology ensures the comfort and feel of the finished product – satisfying the demands of a sophisticated market. We help our customers to benefit from our applied knowledge and experience – to think quality, think USTER.

Broad range of products

USTER occupies a unique position in the textile industry. With our broad range of products, we have a wide reach across the textile chain that is unmatched by any other supplier in the market.

Optimal service

Know-how transfer and instant help – we are where our customers are. A total of 200 certified service engineers worldwide grants fast and reliable technical support. Benefit from local know-how transfer in your specific markets and enjoy our service à la carte.

USTER® STATISTICS – the textile industry standards

We set the standards for quality control in the global textile industry. With USTER® STATISTICS, we provide the benchmarks that are the basis for the trading of textile products at assured levels of quality across global markets.

USTERIZED® – brand your products with quality

USTERIZED® stands for 'defined quality assured' within the textile chain. We invite selected customers to join the USTERIZED® Member Program. More information at www.usterized.com.

USTER worldwide

With three technology centers, five regional service centers and 50 representative offices around the world, USTER is always sure of delivering only the best to its customers. USTER – committed to excellence, committed to quality. And that will never change.



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