

# **USTER® HVI 1000**

The fiber classification and analysis system

## Fast and objective results

Cotton growers and traders rely on their years of experience to set the right price for a lot of cotton – but that's a risky business, based partly on guesswork.

For spinning mills, cotton purchasing accounts for more than 50% of costs, so it's even more critical to get it right. Yet some spinners still put their trust in the traditional skills of experienced specialist personnel, who have to sort bales according to quality and end use.

That solution is potentially dangerous, since human assessments can be highly variable and subjective, and are always time-consuming and labor-intensive. Worst of all, different human cotton classers do not always agree on grading levels. And that makes it even tougher to make the right decisions about raw-material purchasing and consumption.

USTER® *HVI 1000* solves all these problems. USTER® instrument-based cotton classing produces test results that are the most accurate and repeatable in the world. Testing can be completed in seconds, by only one operator.

And the USTER® *HVI 1000* rapidly provides full reports on eleven important quality characteristics describing the length, strength, fineness, color, and moisture content of the fiber.

The result is consistent and objective fiber quality data, allowing spinners to make smarter and simpler pricing and purchasing decisions. In today's demanding market environment, that's the way to keep spinners profitable and their customers satisfied.





# Recognized by major cotton authorities

With USTER® HVI technology, the facts and figures speak for themselves. More than 2 300 HVI® units installed in more than 70 countries. Over half of all cotton produced worldwide is classed by USTER® instruments. And 95% of all classed cotton has been measured by USTER® instruments.

It's clear that USTER sets the standard for cotton classification worldwide, testament to the industry's confidence in the 60-plus years of cotton fiber testing experience behind USTER® HVI – and the performance and accuracy of the data it delivers.

The recognition accorded to USTER® HVI is underscored in the Universal Cotton Standards agreement – signed by 24 cotton associations from 21 countries – which approves universal cotton quality standards for strength, length, uniformity index, micronaire, color grade. These standards are fixed as the Universal HVI® Standards and are maintained using USTER® HVI 1000 to establish the values. A worldwide agreement which reinforces still further the strength of the USTER® HVI 1000 in producing accurate and repeatable results every time.

Classification of cotton with HVI® has been increasing, especially in the past 15 years, during which USTER® HVI has been the favored choice of most users. Even more impressive is the continuous endorsement of USTER® HVI by the US Department of Agriculture (USDA) for the past 30 years. In that period, USDA performance standards have become stricter, and USTER® HVI never fails to satisfy those requirements.

And USDA is not the only giant cotton-classing organization with a need for tens or even hundreds of machines to keep the industry moving. USTER has also delivered many installations for major classing bodies such as the China Fiber Inspection Bureau (CFIB), Uzbekistan's SIFAT, and Pakistan's PCSI – the largest government-supported organizations in the cotton business. Added to those are hundreds of USTER® HVI systems in private or government-run classing operations, producing accurate and reliable data on the market value of cotton.



Top: Reference cotton standards

Bottom: Cotton-classing production line at USDA

### The global standard accepted worldwide

- 2 300 USTER® HVI units installed worldwide including the largest government-run classing organizations around the world
- Over half the world's cotton is classed on USTER® HVI each year and growing
- The universal cotton standards agreement depends on USTER® HVI to establish the values of the Universal HVI® Standards
- Consistently meets the strictest of measurement tolerance requirements of USDA

# When reputations depend on quality

Reputation is everything in a competitive market. Good reputations often take years to build, yet can be destroyed in minutes if quality standards decline. So, customers need to be confident that the product delivered to them actually meets their quality needs.

In the cotton trade, the first and most important factor is the fiber quality of the bales. Fiber quality is extremely important to the spinner – as it will largely determine the mill's cost to convert the fiber into yarn. That is why spinners need accurate quality data to base purchase decisions on. It's a business in which a single mistake in cotton classification can cost either the buyer or seller millions of dollars. That's how a reputation can be destroyed in minutes.

The USTER® HVI 1000 has an unrivaled track record of producing precise, dependable test results in classification of raw cotton. Getting the quality assessment correct is how reputations are built and enhanced.

Compliance with the strictest measurement tolerances set down by the USDA has contributed to USTER® HVI 1000's reputation for unmatched accuracy. It has been confirmed in independent trials, including other fiber testing instrument types, in which the USTER® HVI 1000 has consistently set the standard for reproducibility of test results between instruments around the world.

The most important confidence builder between cotton buyers and sellers is that cotton classification data from instruments in any part of the world matches perfectly. Trading partners will often test cotton samples on different instruments to check bale quality, and it is vital for mutual trust and confidence that the quality data each obtains is both accurate and in agreement with that of the other party. USTER® HVI 1000 is the only cotton classification instrument in the world able to deliver those requirements, promoting global confidence in cotton-trading decisions.

### Reputations are built on quality

- Customers need to be confident in what they buy and this can only be built on reliable and accurate quality data
- USTER® HVI consistently produces the most accurate and precise data as confirmed in independent trials
- The reproducibility of data between USTER® HVI's is what promotes confidence in cotton-trading decisions

	Strength	Length	Length uniformity	Fineness	Cleanliness	
Ring	3	1	2	4	—	Significance of fiber properties for yarn processing and priority of material quality characteristics
Rotor	1	3	4	2	5	
Air-Jet	3	4	5	1	2	

## Advanced technology for critical decision making

When spinners are making million dollar decisions about raw material, they need to be sure those decisions are accurate and consistent.

The USTER® *HVI 1000* has proven itself as the most dependable cotton classification platform worldwide. This reputation is rooted in the years of experience USTER has with cotton fiber testing and classification. It is the source of the unique, patented technology that makes the USTER® *HVI 1000* the most accurate cotton classification instrument on the market.

Every element of the USTER® *HVI 1000* has been designed with the latest technology, to ensure that the data delivered is accurate. This technology includes the FIBER COMB, COMB MOISTURE, XENON FLASH, automatic sampling, and on-board diagnostics – all developed on the basis of USTER's years of practical experience in fiber testing.

The XENON FLASH color head is a real 'game changer' in cotton color measurement technology. This patented technology provides for more stable color measurement, with less calibration and maintenance frequency. The result is better comparability between machines – especially important when cotton purchased on the other side of the world needs to be color-checked when it reaches the spinning mill. It also means the merchant can be confident of delivering exactly what the customer specified.



Top:  
Color measurement of the USTER® *HVI 1000* utilizing the patented XENON FLASH

Bottom:  
Length and strength measurement with USTER® *HVI 1000* FIBER COMB and COMB MOISTURE

### Top technology supporting the big decisions

- Million dollar fiber-purchasing decisions require accurate decision data
- USTER® *HVI 1000* is built on a solid heritage of cotton classification experience
- Patented technology and USTER's unique know-how and experience deliver unmatched accuracy in testing results
- Machine performance is constantly monitored to insure the highest level of operation

# Accurate and consistent measurement for true values

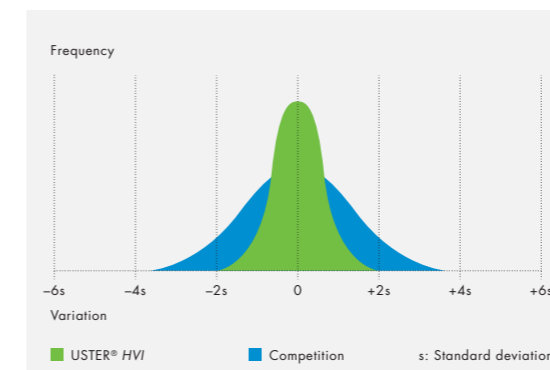
The FIBER COMB is critical to the length and strength measurement of the USTER® HVI 1000. This is a unique USTER design which provides the most accurate and comparable data in the market, combined with its automatic sampling function.

Such tests require standard laboratory conditions – not always easy to achieve. The COMB MOISTURE technology with USTER® HVI 1000 has the solution, allowing measurements to be corrected to reflect true values under standard conditions. Another example of USTER's unrivaled experience being applied to develop ideal technology.

The accuracy of data from the USTER® HVI 1000 is a priority for USTER, but equally important is monitoring of the operating condition of the instrument itself. This is especially important for a cotton-classing business, where the USTER® HVI 1000 is actually the 'production' machine – the basis for market valuations. Cotton testing has to be maintained at a high level, and machine stops are potentially damaging for the business. So USTER has equipped the USTER® HVI 1000 with onboard diagnostics, so that downtime can be minimized.



	Strength	Length	Length uniformity	Fineness / Micronaire	Trash	Color	Neps	Short fiber
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	—	—	—	•	•	•	—	—



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

Bottom:  
Measurement accuracy – USTER  
versus other available instruments  
on the market

# Product configuration

M1000	M700	Modules and their functionalities
		<b>Nep Testing Module</b> Optional module for testing nep content of cotton samples – a source of yarn and fabric appearance defects
		<b>Bar Code Reader</b> For automatic entry of bale tag bar code identification
		<b>Dual Sampler</b> Increased sampling for higher testing throughput as required for large cotton-classing organizations and textile mills
		<b>Automatic Color Tray</b> Increased sampling for higher throughput as required for large cotton-classing organizations and textile mills
		<b>Length/Strength Module</b> For testing fiber length and tensile properties
		<b>Micronaire Module</b> For testing fineness and maturity properties
		<b>Color/Trash Module</b> For testing the color characteristics and trash particle content

■ 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.

# The future has a past

1940



**USTER® STELOMETER 654**  
Strength and elongation measurement instrument

1950



**USTER® FIBROGRAPH 730**  
First digital fiber length tester

1980



**USTER® SPINLAB 800 SERIES**  
First generation of high-volume classing instrument

1990



**USTER® HVI 900 SA**  
Semiautomatic fiber-testing system

1992



**USTER® HVI 900 A**  
Third generation of fiber length, fiber uniformity and short-fiber system

1998



**USTER® HVI SPECTRUM**  
Cotton classification system with improved features

2005



**USTER® HVI 1000**  
World standard for cotton classing

For a long period in the history of fiber testing the most important quality parameters were determined with time-consuming instruments. Examples of these instruments are represented by the USTER® FIBROGRAPH for the measurement of the fiber length and the USTER® STELOMETER for the measurement of the fiber strength.

The first classing lines for USDA in the 1970's used low-volume type fiber-testing instruments. Uster Technologies started with High-Volume Instruments (HVI®) for the measurement of cotton in 1984. This instrument, SPINLAB HVI 800, was first used in the classification of cotton on a large scale by the United States Department of Agriculture (USDA). A few years later HVI® systems were also sold to spinning mills for the control of cotton purchasing and their bale laydown management.

Spinlab was acquired by Uster Technologies in 1990 which marked the introduction of the USTER® HVI 900 with a semiautomatic and an automatic version. The automatic version eliminated the need for the operator to manually prepare the sample for the length and strength measurement, greatly improving the data accuracy of the HVI®.

The next generation of fiber bundle testing systems was the USTER® HVI SPECTRUM with improved features in 1998.

The USTER® HVI 1000 was introduced to the market in 2005 with a higher testing capacity, and a minimum of operators. In addition, the footprint of the instrument was reduced considerably compared to the older-generation instruments. This latest generation HVI® is the world reference for cotton classification and establishing universal HVI® reference cotton values.





### 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](http://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.



### Uster Technologies AG

Sonnenbergstrasse 10  
8610 Uster  
Switzerland  
T. +41 43 366 36 36  
F. +41 43 366 36 37  
[sales@uster.com](mailto:sales@uster.com)  
[www.uster.com](http://www.uster.com)