



CCS

COTTON CLASSIFYING SYSTEM





COTTON TESTING

In production of spun yarns an effective quality control of fibres, slivers, rovings, and yarns serves to secure material properties as well as optimal spinning machine settings. With the new Cotton Control Line Textechno supplies quality control systems and knowhow for the entire spinning process from one source

An alternative Cotton Testing System

Mostly High-Volume Instrument systems are used for quality control of cotton fibres, however, such systems have several disadvantages. First, such systems were developed for the classification of cotton for cotton trading and do not allow testing slivers and rovings. High-Volume Instrument systems are very good tools in highly developed areas (such like Europe and USA), but problematic in countries with unstable voltage supply or laboratories without air conditioning.

In addition, the daily necessary calibration of such systems requires a stable climate in the laboratory; in case no calibration can be reached, the results are not accurate.

The Textechno CCS is an alternative to High-Volume Instruments - overcoming the above-mentioned drawbacks. It considers cotton testing from a different point of view, taking the spinning method into account in order to assess the spinability of fibres within the spinning process. The below table indicates the importance of certain fibre properties for the existing spinning systems.

The CCS - a new generation of Cotton Testing Instruments - is designed as a so-called MVI (Medium Volume Instrument), realizing a capacity of 20 tests per hour.

Order of importance	Ring spinning / Compact spinning	Rotor spinning (OE)	Air-jet spinning
1	Fibre Length and Length Uniformity	Fibre Strength	Fibre Fineness
2	Fibre Strength	Fibre Fineness	Neps-, Trash-, and Dust Content
3	Fibre Fineness	Fibre Length and Length Uniformity	Fibre Strength
4	Neps-, Trash-, and Dust Content	Neps-, Trash-, and Dust Content	Fibre Length and Length Uniformity
5	Fibre Friction	Fibre Friction	Fibre Friction

CCS – Cotton Classifying System

The system provides Micronaire values (including Maturity MA, MA%, and linear density), fibre length properties (including UI, UR, 2,5% SL, 25% SL, 50% SL, UHML, ML, UQL, SFC, SFI), fibre strength properties (strength and elongation), whiteness degree Rd and yellowness degree +b, as well as neps- and trash content.

The modular CCS system determines the quality of the incoming raw cotton fibres and cotton slivers in order to optimize the spinning process. Additionally, the CCS test data can be used to verify the cotton quality according to recommendations by USDA or similar organizations.

The CCS provides

- Test reports for each single test method,
- Test reports of all methods in one document,
- A lot/bale mixing function,
- A data base including all test data, e.g. for long-term trend analysis, repeated evaluation, etc.

All above parameters are measured as absolute figures (“direct mode”), i.e. without using calibration cotton. In this way problems resulting from the use of calibration cotton are completely avoided. If required, relative testing using calibration cotton (“High-Volume Instrument mode”) is possible, too. In this case the cotton specimen is measured in relation to short/weak and long/strong calibration cotton. Nevertheless the system can be calibrated with calibration cotton to duplicate High-Volume Instrument results.

FIBROTEST

Fibre Length- and Strength Tester

This instrument is the main station of the CCS and incorporates both, fibre length measurement and fibre bundle strength test within one instrument. The two measurements – first fibre length and thereafter fibre strength – are executed in succession on the same sample. After completing these measurements the sample mass is automatically determined, which enables to calculate the exact and absolute value of the tenacity.

The operation of the FIBROTEST does not require any calibration cotton and is, therefore, independent of any influences from this side.

The FIBROTEST is the first testing instrument worldwide which has received the **ITMF recognition**, indicating that the instrument is well-suited for spinning mills and research institutes.



FIBROTEST

FM 30 Neps and Trash Analyzer

The FM30 tester separates the impurities from the clean cotton, which adjacently can be weighted by a balance or analyzed by the ND-TA module. The tester can be applied on raw cotton as well as on rovings and slivers, e.g. to measure the cleaning efficiency of a carding machine.

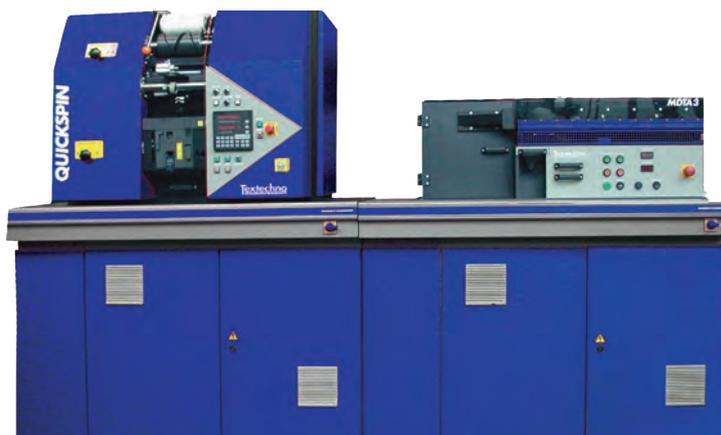
The FM30 is fed with a sample mass of 10 to 50 g, which simply is placed on the front feed plane. The impurities are separated mechanically and pneumatically, by means of a high-speed rotation taker-in and suction unit.



FM 30 Neps and Trash Analyzer

QuickSpin System

Alternatively to the FM 30, Textechno’s QuickSpin System consists of two independent testing units, the **Micro-Dust- and Trash Analyzer (MDTA-3)** and the **QuickSpin Unit (QSU)**.



QuickSpin System

The **MDTA-3** processes raw cotton from the bale, tufts before carding, carding- and draw-frame slivers, it provides data relating to impurities – such as neps, seed-coat neps, trash, dust, and fibre fragment content.

By processing the cleaned cotton ring provided by the MDTA-3, the **QuickSpin Unit** generates an OE yarn for further analysis, e.g. measurement of evenness, hairiness, tensile strength, and elongation. When using a mixture with chemical fibres instead of pure cotton, the combination of MDTA-3 and QuickSpin System can even produce a blended yarn in laboratory scale.

Hence, the QuickSpin System allows to measure and to predict all physical fibre- and yarn properties along the complete production chain of a spinning mill.



Micronair Station

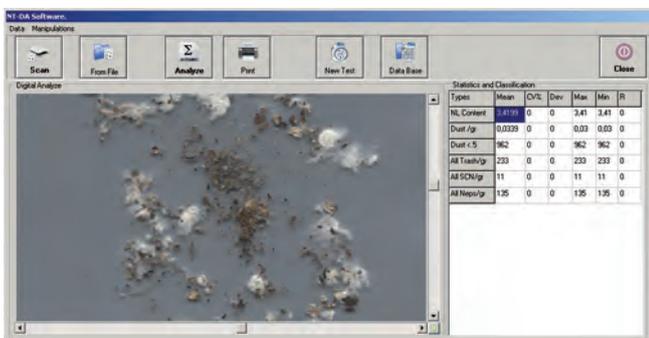


Fibrocolor Station

NT-DA Module

In contradiction to widely-spread measurement of the trash weight relative to the test sample only, the **NT-DA (Neps and Trash – Digital Analysis)** module for the first time allows counting and classifying of neps, seed-coat neps, and trash parts within one device. The results are displayed per 1 g of fibre sample.

The module consists of a special scanner and image processing software; it can be used together with the FM-30 or the MDTA-3.



Neps and Trash – Digital Analysis

Micronair Station

The Micronair station is designed to measure micronair properties as well as maturity of cotton. It includes the micronair tester, which is equipped with a vacuum pump, and a high-precision balance. The station is working in accordance with international standards, such as ASTM D1448 or ISO 10306.

Fibrocolor Station

Textechno’s Fibrocolor spectrophotometer station is used to measure the whiteness degree Rt and yellowness degree +b of both, cotton and man-made fibres. It is equipped with an Ulbricht sphere (d/8° geometry) and an integrated micro processor system, delivery also includes a calibration standard.

Characteristics of the CCS

The CCS is applicable for assessment of spinnability as well as for the classification of cotton according to the USDA recommendations (only the latter job can also be done by High-Volume Instrument systems). In addition to raw cotton also slivers and rovings can be tested.

The CCS is designed as a modular system, consisting of several modules (stations). The stations can very flexibly be combined to a custom-tailored laboratory; all stations are working independently and are connected to a central processing station. The operation is very simple and does not need calibration cotton.

An integrated database provides long-time storing of tested data for a later analysis and repeated evaluation. One more outstanding feature is that the CCS can calculate important parameters for spinning mills producing blended yarns.



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