Textechno
textile testing technology

STATIMAT DS

Automatic Tensile-, Evenness-, and Count Tester

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Tasks of the quality control on yarns and threads

In the production of staple fibre- or filament yarns as well as in twisting or texturizing operations quality control serves to secure material properties which ensure trouble-free downstream processing as well as flawless final products. On the other hand, by routine testing of yarns it is possible to recognize faults in the production process early enough to analyze the causes of such defects and to take corrective actions.

The most important properties of yarns are tensile strength and elongation, mass unevenness, and yarn count (linear density). Static tensile tests, yarn evenness tests, as well as various methods of yarn count testing, e.g. by means of wrap reel and balance, serve for the assessment of these yarn properties. The operation of different test equipment to which the yarn samples are presented one after another, results in high expenditure of labour and, especially in case of modern automatic computer-controlled testing equipment, in considerable financial investment.

STATIMAT DS

This new model of the well-proven STATIMAT series of Textechno combines testing of tensile properties according to the CRE principle, uneven-ness, and count of yarn and thread in one tester. The essential advantage of such a combination of different test methods lies in the common use of peripheral components like package changer, threading mechanism for inserting the yarn sample into the test sections, yarn feeding device, waste yarn disposal, instrument housing with protective front panel, as well as control electronics including the PC-based Textechno TESTCONTROL system. The three tests on each package presented by the package changer are performed in succession. Optionally it is possible to test unevenness and yarn count in one test run.

Tensile Test

Test methods

Tensile test

The essential features of this STATIMAT DS test procedure are the high clamping force of the pneumatic jaws for tensile tests up to 1000 N, the long path of the draw-off clamp for breaking extensions up to 1000 %, the quick yarn threading reducing idle time to only a few seconds, the force-measuring system with a range of 500 N (optional 1500 N), as well as high variability of the test process and the evaluation of the measured data. In addition to the static tensile test, for instance according to ISO 2062 or ASTM D2256, D885, alternating load tests (hysteresis tests) are possible according to freely selectable programs, as well as creep and relaxation tests.
A yarn feeding device enables high-speed take-off of selected yarn lengths prior to starting the tensile test on a new package or between individual tensile tests. This means that tensile tests can be carried out on yarn lengths both from the package outer and inner layers.

Beside the standard automatic yarn clamps, various special clamps for manual introduction of the test sample are available. These enable tensile- and elasticity tests on fabrics and cohesion tests on slivers or rovings.

Yarn evenness test

A new innovative capacitor system enables capacitive testing of the mass unevenness according to ISO 16549 within a wide yarn count range by individual adaptation of the measuring sensor to the properties of the yarn material. As a new feature in yarn evenness testing the yarn tension can be monitored in order to ensure proper testing conditions. Measurable variables delivered by the system are the coefficient of variation of the mass distribution along the yarn length, the spectrogram, and for staple fibre spun yarns the numbers of neps, thick and thin places.

In case of continuous multifilament yarns, interlaces (entanglements), too, influence the uniformity of the yarn. A sophisticated optical sensor system serves for measuring the number as well as the regularity of interlaces both in flat and textured yarns.

Yarn count test

In this test, e.g. according to ISO 2060 or ASTM D6587, a preselected yarn length, e.g. 100 m, is delivered by the yarn feeding device into a collection chamber, and subsequently the weight is measured. By using the principle of a vacuum conveyer the yarn is permanently in contact with the ambient (laboratory) climate. In this way drying of the yarn as would occur with a compressed-air system does not happen.
Another advantage is the yarn tension measurement during the test. If tension limits specified by the relevant standards are exceeded, a correction is automatically made based on the same yarn‘s tensile properties.

Yarn evenness and count test

Technical data

Tensile test:
- 2 pneumatic yarn clamps, automatic threading by rotating gripper arm, min. gauge length 80 mm, max. travel of draw-off clamp 1000 mm for 100 mm gauge length, draw-off speed 1...10.000 mm/min;
- Force-measuring device with a measuring range of 500 N (optional: 1500 N);
- Elongation-measuring device with resolver, resolution 2 µm.

Yarn evenness test:
- Capacitive measuring system, yarn count measuring range 5...150 tex, max. test speed 500 m/min with yarn feeding device;
- Optical sensor for interlace tests in multifilament yarns.

Yarn count test:
- Yarn collection chamber and electronic balance, weighing range 300 g, resolution 1 mg (higher resolution on request), yarn length selectable in the range 1...1000 m, max. test speed 500 m/min with yarn feeding device.

Package changer:
- Standard version with 20 positions, expandable to 40 positions, free selection of package changer positions to be tested in succession.

Yarn feeding device:
- Nip roller/apron system, max. yarn delivery speed 500 m/min, resolution of length measurement 0.3 mm.

TESTCONTROL:
- PC system for control of the test processes and for evaluation of the measured data, connection via USB interface;
- Textechno software as a WINDOWS application, input of all parameters for testing and measured data evaluation, saving of selected parameter sets under code words;
- Easy integration into any network type.

Further technical data

Mains supply	: 230 V, 50 (60) Hz, current requirement approx. 1 A
Compressed-air supply	: 6 bar, 60 l/min (with yarn feeding device/ AUTOCOUNT: 150 l/min)
Lacquer finish	: RAL 9006/5002
Dimensions, weight	: Height 1680 mm, width 825 mm, depth 830 mm, approx. 250 kg

The above technical contents can be subject to changes by Textechno.

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