

Textechno
textile testing technology



DYNATENS

High-Speed Tensile Tester



The importance of detecting weak spots in spun yarns

During winding, twisting, knitting, or weaving, yarns are stressed over their full length with tensile forces that may exceed their breaking strength in a few places. These weak spots lead to yarn breaks that result in downtime in the production process and may cause faults in the final product. They are caused for instance by very thin places in the yarn, sections with improper twist take-up, or segments with inclusions of foreign matter. The increasing use of recycled fibre material makes the control of weak spots even more important.

Usually, the average breaking strength of a yarn shall be significantly higher than the tensile forces in the downstream manufacturing processes. Even though this safety margin is used, staple fibre yarns inevitably contain weak spots, where the safety margin is exceeded.

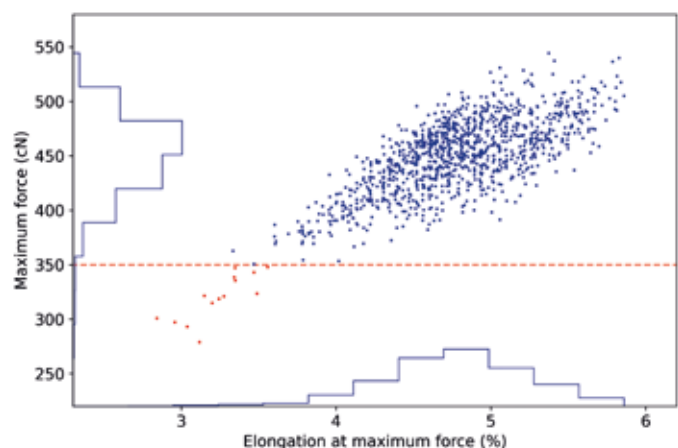
The average breaking strength is typically measured with a conventional static CRE tensile tester as in case of our **STATIMAT** line of instruments. Here, usually only a few ten meters of a yarn are tested. This is a small amount of yarn in comparison to the large distances between individual weak spots ranging between hundreds or thousands of meters. Since weak spots are rare events, they are difficult to discover with a static tensile tester at sufficient statistical probability.

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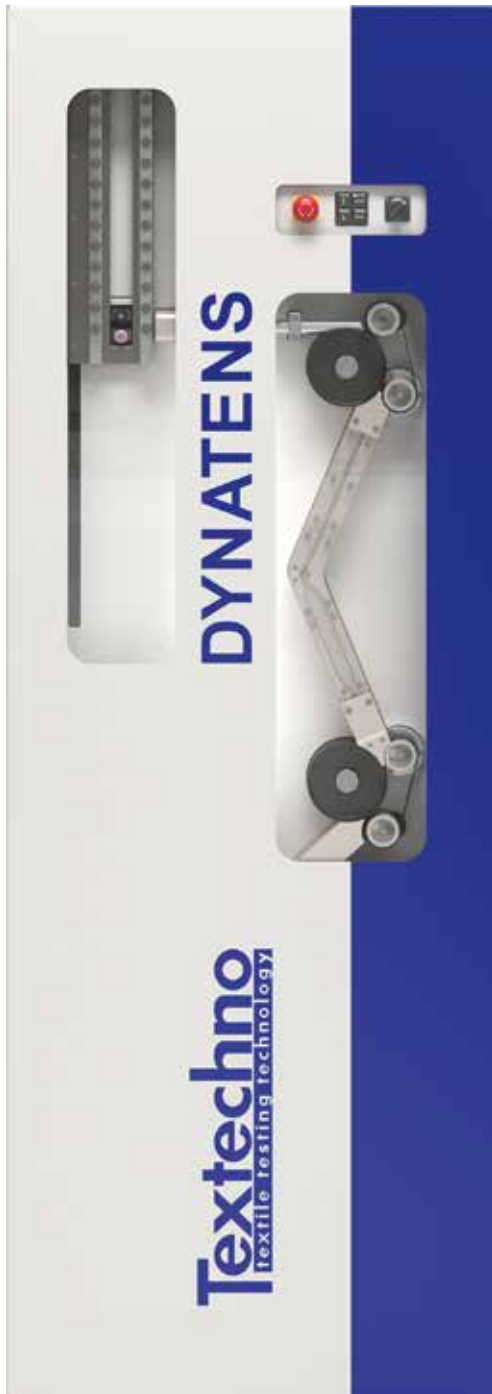
DYNATENS is a dynamic tensile tester dedicated to the detection and characterization of weak spots in staple fibre yarns.

The instrument continuously subjects the tested yarn with an increasing amount of stretch resulting in up to 12 yarn breaks per second at yarn feeding speeds of up to 800 m/min. Additionally, almost the full length of the yarn (> 90 %) which is passed into the instrument is checked. In this way, the chance of overlooking a weak spot is minimized which corresponds to highest testing efficiency.

At the same time, **DYNATENS** also measures the average breaking strength and the average elongation at break reliably.



Force/elongation scatter plot of 1000 yarn breaks



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In **DYNATENS** the very high testing rate and highest testing efficiency is achieved using two co-moving godets. Since both godets rotate in the same direction, the stretching and breaking of the yarn is induced by the second godet running at a faster speed than the first one.

After each yarn break, the yarn threads itself through the second godet without the need of any additional moving parts or yarn reservoir inside the tester. In this way, **DYNATENS** also only requires a minimum level of maintenance resulting in low total cost of ownership.

Technical data

- Yarn feed by nip roller/apron delivery device with automatic traversing motion;
- Suction clearing of waste yarn;
- Testing speed: up to 800 m/min;
- Maximum yarn breaking force: 3000 cN;
- Testing capacity: up to 43.000 breaks per hour;
- Mains supply: 220V, 50 (60) Hz, approx. 5 A;
- Compressed-air supply: 6 bar, max. 150 l/min;
- Lacquer finish: RAL 9006/5002;
- Dimensions, weight:
Height 1730 mm, width 610 mm, depth 685 mm,
weight approx. 145 kg.

Technical contents can be subject to changes by Textechno.



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