

MOISTURE-REGAIN TESTER FOR FIBRES & YARNS

AQUA-LAB



COMPANY WITH
MANAGEMENT SYSTEM
CERTIFIED BY DNV
= ISO 9001 =
= ISO 14001 =

AQUA-LAB code 2450

Moisture-Regain Tester for Fibres & Yarns

Description

AQUA-LAB is an innovative instrument for a fast and accurate assessment of moisture regain and content in textile materials.

AQUA-LAB measurement speed allows high volume control of moisture throughout every stage of the textile chain raising consequently the quality of the process and of the final product.

AQUA-LAB speed and absolute correlation with the regain oven-drying system (the only Standard Reference instrument for moisture measurement in textiles) make it indispensable for commercial transactions and pricing management. AQUA-LAB automatically calculates the commercial weight and other information useful to business transactions based on the amount of water content in the tested material.



Field of application

AQUA-LAB is suitable for any textile fibre such as cotton, linen, wool, cashmere, viscose, silk, acrylic, synthetics as well as blends.

Main Features

- Fast, a measurement takes only a few seconds
- High repeatability and reproducibility of results
- Perfect correlation with oven-drying
- No sample weighing or preliminary preparation of the sample
- Non-destructive method, no waste of material
- Simple test execution which can be performed by unskilled personnel
- Maintenance free: no consumables, no wear

Benefits for the Users

- Energy-saving: low power consumption (≈ 0.125 kW) compared to drying-ovens (≈ 10 kW)
- Cost-saving: by means of accurate control of water content in raw material
- Increase quality of textile processing and of final product
- Fast pay-back
- Low power microwave radiations released do not endanger the end user.
- Compact and robust instrument that does not require special environmental conditions to operate properly

Measuring principle

AQUA-LAB moisture measurement is based on an innovative microwave low power resonance technology, where the resonance field is characterized by specific parameters, depending on the amount of water contained in the tested material and independent from its mass/density (wet and dry materials have a different permittivity typically $\epsilon' \approx 80$ and $\epsilon'' \approx 1,5-3$).

The instrument, whose components are shown in Fig.1, includes a sensor which is filled with the sample of which moisture regain and content are to be measured; this sensor, having a characteristic natural resonance in empty state, is connected to a low power microwave generator and receiver, which detects resonance change due to the presence of water in the tested fiber sample. The measuring system is entirely managed by a central processing main unit that interfaces to the end user (PC and printer).

AQUA-LAB calibration algorithm associates the mass-independent microwave moisture values measured by AQUA-LAB with the moisture regain values measured by the drying oven (the only reference instrument for measuring the moisture content of textile fibers in accordance with ASTM D-2494, ASTM D-2495, ISO 6741-1,2,3,4 and many others).

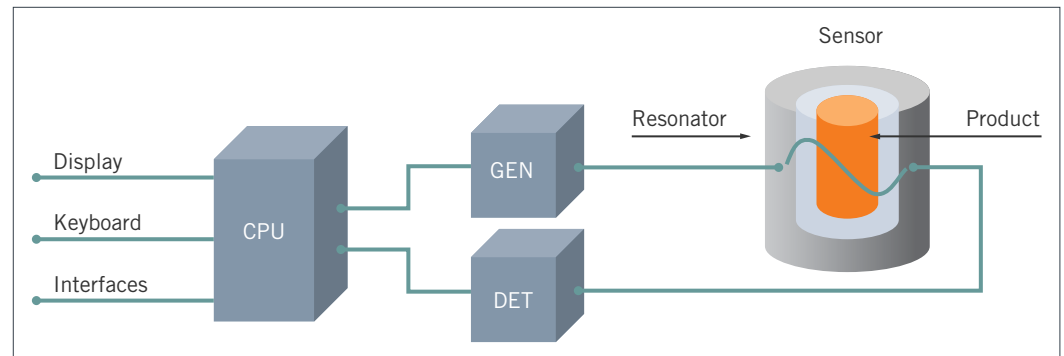
Specific preset calibrations are available for different textile materials that the operator can easily select in the starting menu.

Sensors

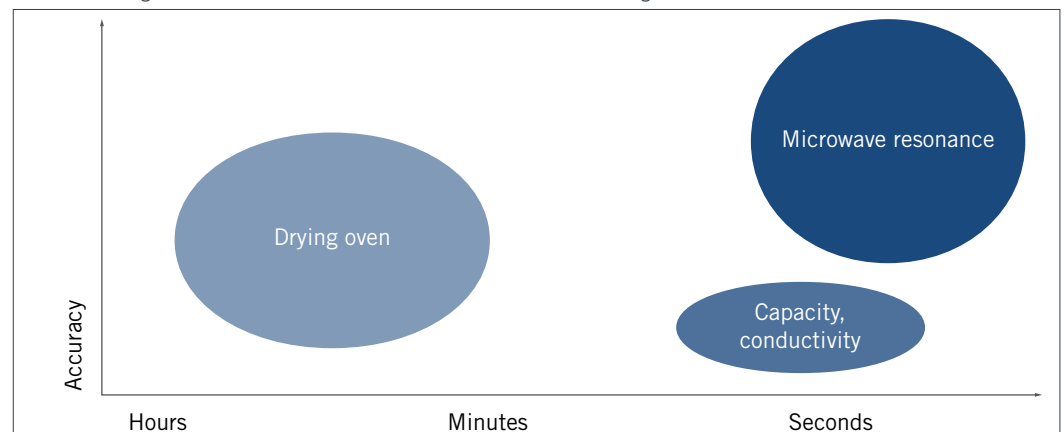
AQUA-LAB can be equipped with a sensor suitable to test raw fiber material and tops and/or a sensor suitable to test yarn cones/roving cops.

AQUA-LAB can be connected to both sensors at the same time and the operator can simply switch from one to the other depending on the type of material to be tested.

Components (fig 1)



Main measuring methods for moisture content measurement in textile (fig 2)



Target Customers

Ginners, Top Makers, Spinning Mills, Wool Combers, Yarn Buyers, Dyeing Mills, Textile Laboratories

Results

AQUA-LAB measures and calculates automatically:

- Moisture regain % (mass of water to be added on the dry weight)
- Moisture content % (mass of water contained in the wet weight)
- Mass correction % (based on the specific commercial moisture regain of the tested fiber)

The definition of the test results complies with the International Standards.

AQUA-LAB determines additional test results based on optional test parameters:

- Dry Weight
- Wet Weight
- Commercial Weight (based on wet weight corrected by the % Mass correction)
- Statistical results of moisture regain and content (mean, CV%)

AQUA-LAB

AQUA-LAB is recognized by the ITMF-ICCTM

The ITMF International Committee on Cotton Testing Methods (ICCTM) gave full recognition to AQUA-LAB, during the ICCTM held in Bremen/Germany on March 18, 2014 at the start of the 32nd International Bremen Cotton Conference, as instrument that according to the ICCTM, is beneficial for the cotton value added chain: rapid measurement of moisture content and regain is useful throughout every stage in the cotton value chain to optimize yarn and fabric production and accurately determine values.

Abstract from the ITMF press release dated 04-04-2014



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- Non-destructive method, no waste of material
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Photograph and description of present leaflet have to be considered as purely indicative and not binding
Ref. En 2014-05

AVAILABLE MODELS

FULL VERSION with both fiber and cone sensors	code	2450
FIBRE SENSOR VERSION to control raw material and tops	code	2540A
YARN CONE SENSOR VERSION to control cones and roving packages	code	2540B

DIMENSIONS / POWER SUPPLY

Main Unit: (L) 190 x (W) 110 x (H) 140 mm. 2.6kg
Yarn Sensor: (L) 255 x (W) 210 x (H) 70 mm. 2.5kg
Fibre Sensor : (L) 325 x (W) 370 x (H) 350 mm. 15.5 kg
Power supply: 110/220V 50/60 Hz single-phase