

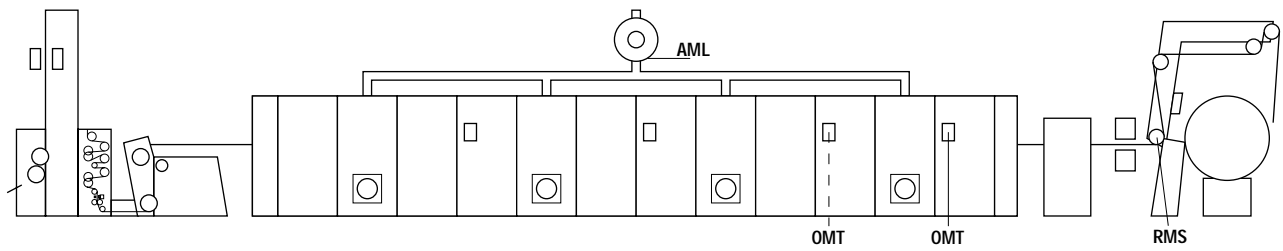


 **ECOPAC EMC-12**
Control system for drying processes

Measurement
Control
Automation

Control system ECOPAC EMC-12

Ensures a quality finish and efficient use of energy on drying ranges



Typical assembly:
An HP-250A sensor installed between 2 hot-air ducts

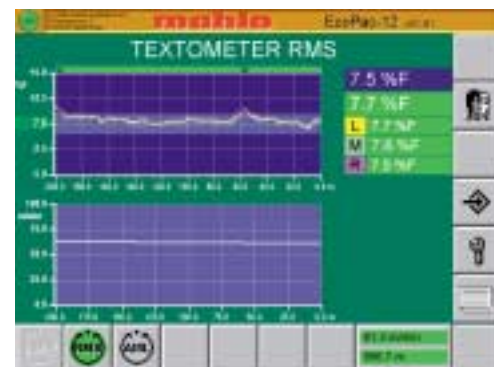
An Ecopac monitors and controls vital fabric and process-related parameters such as moisture retention, fabric temperature and exhaust humidity. It is a flexible, modular system that can monitor and control all three parameters simultaneously, or can be adapted to suit specific needs. An Ecopac can accommodate up to three identical, or assorted modules, each with its own microprocessor. Data can be exchanged between an Ecopac and external computer systems (eg. host-computer) via various types of interface (eg. Profibus, TTY/RS232 etc.). The sensors are linked to the basic system by a single CAN-bus cable, thereby simplifying wiring and connection.

Informative display:

Each module has its own display.



Length-related histogram - helps pinpoint errors by indicating the progressive readout during the passage of 200 m of fabric.

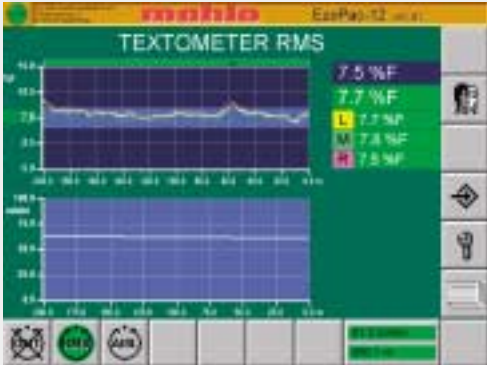


Target/actual graphics indicates actual readout, target moisture with tolerance limits, momentary line-speed, and status of auto-control.

Textometer module



Electrode for measurement of moisture retention



Control panel with 6.5" TFT touchscreen monitor

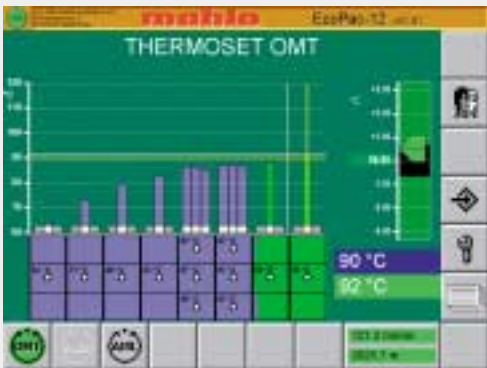


Display and controls in one = basic system

Thermoset module



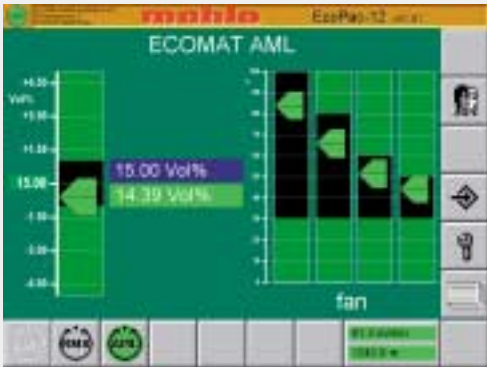
Radiation-pyrometer for measurement of cloth temperature



Ecomat module



Sensor for measurement of exhaust humidity

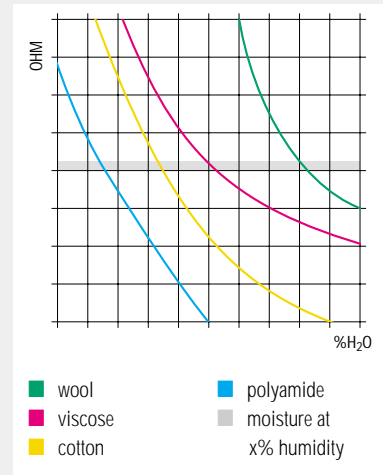


Moisture retention Textometer module

The amount of moisture retained by a dried fabric is a vital criterion with regard to finished quality and the economical use of energy. A Textometer module determines the amount by measuring electrical conductivity. Almost 50.000 fibre combinations of up to 3 different types of fibre (from a choice of 12 basic fibres) can be set to whatever percentage ratio is required. Roller or bar-type electrodes can be supplied to suit all applications.

To satisfy the most exacting requirements, an alternative version can detect and control exceedingly low degrees of moisture, from 1.5% upwards, with a specially designed electrode and associated electronics. This module can also be switched to provide three separate readouts at the right, centre and left of the web.

- Calibration curves for various types of fibre.

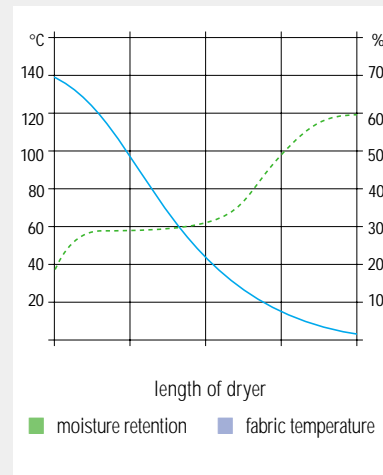


Fabric temperature Thermoset module

Awareness of the temperature of a fabric is vital for reliable control of drying processes. This applies in particular to synthetic materials, as experience has shown that the moisture-related temperature of such fabrics can be used as a most reliable variable to control moisture retention.

The module measures the temperature of the on-line web with an infrared radiation-pyrometer, robustly constructed to resist the harsh environment of a textile mill.

- Relationship between temperature (°C) and moisture (%) when drying cotton.

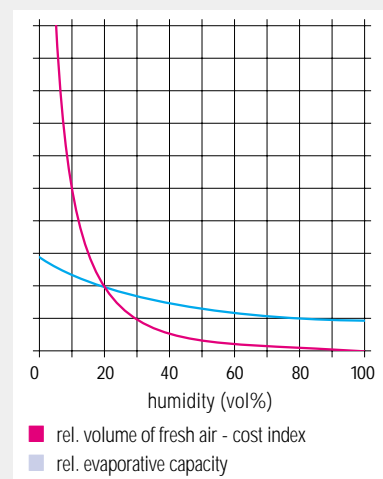


Exhaust humidity Ecomat module

Energy is expensive! An Ecomat module restricts energy consumption to the actual amount required for drying purposes. It measures the humidity of the circulating air, and controls its flow by regulating exhaust dampers or the speed of an exhauster. The sensor is basically a dual zirconium cell, and the patented 2-sensor system can establish the amount of water in the air, irrespective of the presence of other gases.

The sensor is heat-proof, impervious to fume-laden deposits, and is distinguished by its lasting stability, and exceptional accuracy.

- The graph clearly shows how quickly costs soar when exhaust dampers are left wide open, and there is thus very little vapour in the exhausted air. The ideal is to control the dampers such, that the air becomes saturated with steam, without adversely affecting the efficiency of the drying process.



Technical data

Textometer module: Moisture retention

Measuring range	in accordance with type of fibre, mixture and electrode e.g. cotton: 3 – 20 % linen: 7 – 43 % linear: 0-78 graduated scale (low-regain electrode: from 1%)
Indicated readouts	standard electrode (1-channel): highest moisture measurement 3-channel electrode: highest, lowest or arithmetically mean measurements
Maximum working temperature	Sensor controller: 0 ... + 50 °C

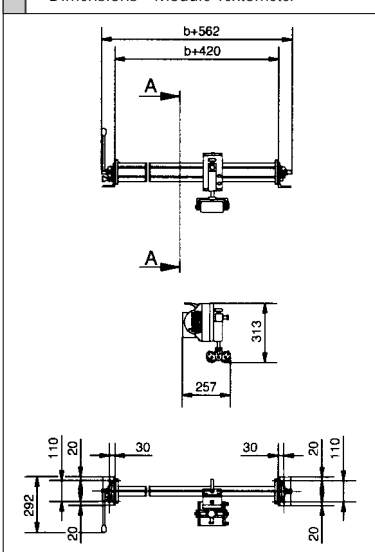
Thermoset module: Fabric temperature

Measuring range	0...+250°C
Scanning area	Vee-angle 120 °
Accuracy	≤ 1% of readout range (at 23°C)
Safe working temperature	Signal amplifier: 0...+85°C, Sensor plus cable: 0...+250°C
Climatic grade	KPA to DIN 40040 standards

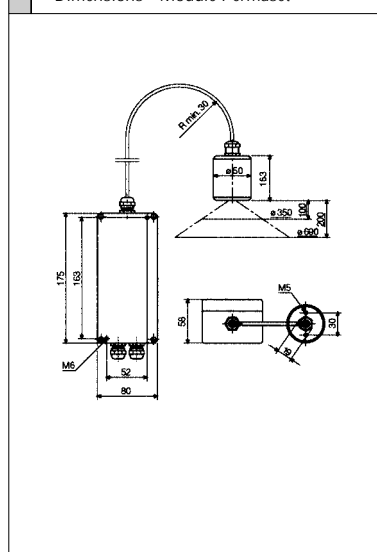
Ecomat module: Exhaust humidity

Measuring range	H ₂ O	O ₂ /noxious gas
Measuring range	30/50/100 Vol. % 266/622/1000 g/kg Dew point	100 Vol. % (CAN)
Sensitivity	≤ 1 % of range's scale-end value	
Reproducibility	± 0,2 Vol. %	
Maximum working temperature	Sensor controller: 0... + 50 °C, sensor: 0... + 300 °C	
Environmental grade	JWE to DIN 40040 standards	

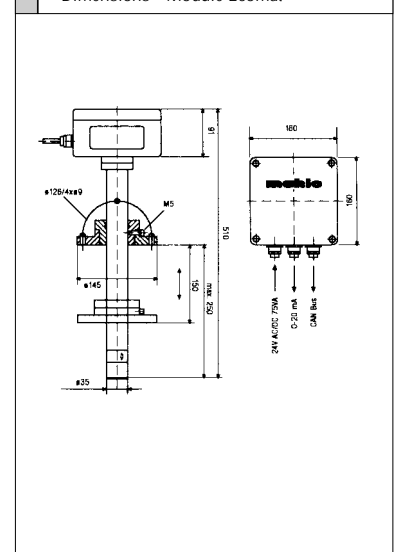
Dimensions - Module Textometer



Dimensions - Module Permaset



Dimensions - Module Ecomat





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A new, remote-diagnostics system enables our technicians to access, via telephone, the software in our customers' systems, and make any necessary adjustments, or resolve problems promptly.

Mahlo-service – we are very near at hand should you need us!