Wavetester ™

MEET Ltd, 2015

The materials moisture measuring system

Wavetester™ is a complete system for the continuous measurement of the moisture content of materials. It is designed to be applied on conveyors or at the outlets of silos. The system is composed of an acquisition and control unit to which the sensors are attached and a PC where the measure results are presented.

Thanks to its non-intrusive and non-destructive measuring principle, Wavetester is able to detect a material's moisture content without requiring any physical contact with it. This property makes the system very reliable and maintenance-free, since it is not subject to any wear or ageing due to abrasion.

The employed technology, based on microwaves, along with the innovative non-contacting transmission measuring method allow to obtain an integral measure of the whole material volume.

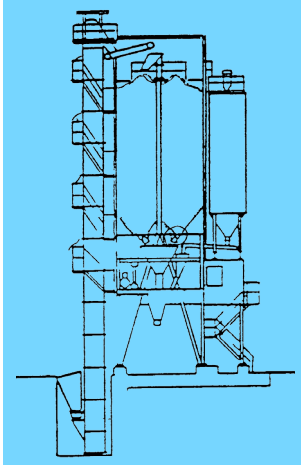
Wavetester is an ideal system for the industry: thanks to its properties, it makes it possible to measure any moisture profile with high accuracy, even on material in movement, granting the quality and reliability of a product over time.

It can easily be integrated into existing Process Control Systems (PLC) to build a real-time control of the moisture parameter.

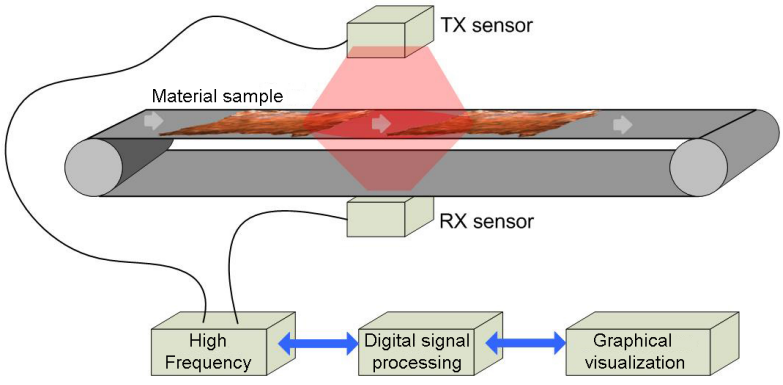
The advanced analysis and reporting software easies the monitoring of the measured parameters.

Features:

- *Measures through the entire material, in depth*
- *Non-invasive (no abrasion and wear)*
- *Accurate and reliable*
- *Broad moisture range (up to 50% and more)*
- *Compatible with existing systems*
- *Instantaneous measurement*
- *Automated data logging and reporting*
- *Safe and easy to use*
- *Easy integration with PLC systems (0-20mA interface)*



A revolutionary measuring principle



The core of a Wavetester is an innovative microwave measurement principle. Its particularity is in the fact that, in contrast to the other existing systems, the entire thickness of the material is analyzed due to a double antenna system.

At the same time, the system offers the advantage to be able to measure without any contact with the material under test.

The microwaves interact more or less with the material, according to the water content. This interaction is recorded by the Wavetester. Thanks to sophisticated signal modulation techniques along with the dedicated digital processing (DSP) of the measurements, the Wavetester delivers a repeatable and reliable measurement of the moisture.

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Wavetester and today's measurement systems

The Wavetester has been developed as an answer to explicit needs of the market: the in-line execution of integral measures with a high accuracy over a broad moisture range, while at the same time avoiding the physical contact with the material under test.

The well-known systems available on the market today fulfill these requirements only partially. In fact, the direct contact with the material produces a strong wear of the sensors an limits the measuring depth to the material's surface, which is not always representative of the whole volume. In addition, such systems requires frequent recalibrations over the time.

Wavetester is intended as an alternative to measuring systems based on contacting microwave probes, capacitive or conductance sensors, by offering many advantages.

The installation on conveyor belts is quick and easy.

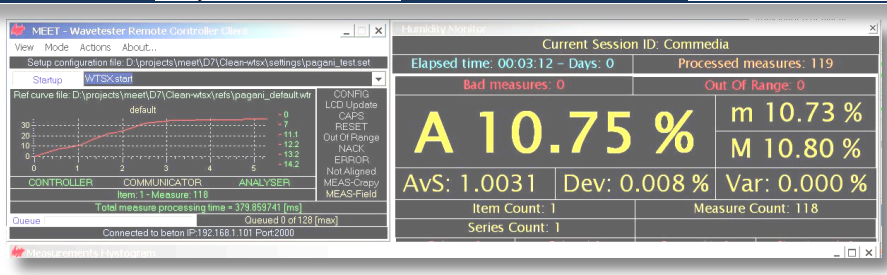
A look at the costs

The initial cost of a Wavetester system lies between that of a traditional (contacting) microwave probe and that of a nuclear probe.

But already after 12-24 months, the additional costs compared to a traditional probe are amortized thanks to low usage costs (no wear) and the savings resulting from the process optimization (accuracy and reliability.

Specifications

Measure on a conveyor belt - conveyor speed - Minimum material thickness - Moisture range - Resolution - Measures per second	 No limit approx. 1 mm 0 a 40 % < 0.1 % up to 3 measures/sec (configurable)	Mechanical - Antenna dimensions - Control unit	 120 x 70 x 40 mm 330 x 260 x 170 mm
Output interfaces: - moisture signal - moisture measure logging	 0..20mA file .txt	Optional accessories - Material thickness gauge - Photo interrupter	 Interface to external sensor Light barrier to start/stop the measure
Input interfaces: - Digital - Analog	 6 inputs 0-24V (isolated) 4 inputs 0-10V	Software - Visualization, configuration	 Customizable user interface running on Windows



MEET Electronics

Established in 1996, MEET is an independent engineering and development company, active in the area of industrial electronics.
Thanks to a strong background and experience in the field of sensors and industrial control, MEET has been quickly recognized as a reliable and competent partner for the in-sourcing of electronic design projects for Swiss and European companies.

MEET develops and sells different own products in the area of electronic test and measurement, more specifically in microwave based measurement systems for water content and inhomogeneities for different materials (aggregates, ceramics, tobacco, wood, leather, food, etc.)

For the basic research on the operating principles of these complex systems, in which both HF-technology and digital signal processing are involved, MEET relies on the collaboration with the University of Applied Sciences of Southern Switzerland (SUPSI, www.supsi.ch), which is located in the vicinity of Lugano (Switzerland).