



FL-MIKRO-LAB and FL-MIKRO-LAB-KOMPAKT

Laboratory Devices for Moisture Measurement in sample materials



Modern process engineering can no longer be imaged without moisture measuring systems which integrates directly into the process control and thus affect the product features ,online' or manipulates the control functions.

Systems indicating the moisture content of material samples must be fast and accurate. It supports laboratories for quality as well as product management, which are typical applications. It can be used during the raw material delivery as well as during the production process.



Picture 1:
FL-MIKRO-LAB with measured value evaluation at a Laptop /PC

Requirements and Selection of the measuring principle

Such a moisture measuring device has to be compact but also ,mobile' to perform moisture measurements on-site in a very short time for direct influence on actual processing.

The entire measuring cycle should be achieved in a short time frame (filling the device and measuring the moisture content).

When developing suitable laboratory equipment, indirect measuring methods can be supplied, such as measurement that will always lead to rapid, yet accurate measurement results.

It is a requirement that pressure and density are constant in the area of the probe during every measurement, to guarantee maximum accuracy and appropriate repeatability.

Furthermore, these systems must be robust enough to survive the harsh conditions in the production environment without problems.

The operation and cleaning of the equipment should be as fast and simple as possible, comparable to that of the filling process. To determine a representative average humidity, the sample quantity must be sufficiently large.

The FL-MIKRO-LAB

With the laboratory moisture measuring device FL-MIKRO-LAB the above mentioned requirements and conditions are met.

This is a three-piece, cylindrical container made of high strength aluminum; the microwave probe is situated in its lower part.

The sample material is placed in the middle section. In the upper part there is a spring arrangement. With the hand wheel and the corresponding scale the same pressure conditions can always be set in the unit.

The FL-MIKRO-LAB enables hitherto unrealized, short measuring times. The whole cycle (filling of the device and measurement) amounts to about 1 minute. Fast response to changes in the production process is thus guaranteed.

The microwave moisture measurement is a non-destructive measurement method in which neither high temperatures occur nor mechanical forces acting on the measured material.

The same continuous pressure conditions ensure the highest possible measuring accuracy. Even in difficult cases, for example with low material density, the moisture content can be measured reliably.

This allows for a universal use in various industries: building materials, glass, ceramics, foundry, food, paper, wood, textile, mining and sewage treatment, in the pharmaceutical and chemical industry as well as with agriculture or biomass processing.

The three-part design guarantees an easy handling and quick cleaning of the entire test unit. The FL-MIKRO-LAB is especially constructed that it can be cleaned using a commercial high pressure cleaner.

The sufficiently large sample quantity ensures the accurate measurement of the moisture value.

The FL-MIKRO-LAB-KOMPAKT

If the mobile use of the moisture measuring device is required, we can offer the FL-MIKRO-LAB-KOMPAKT. Its small dimensions allow for easy handling: diameter of only 11 cm, length of 17 cm and weight of about 2.8 kg.

This system provides the same pressure conditions at the microwave moisture probe and an exact measurement using an internal spring arrangement at the pressure plate. The bayonet fitting ensures easy filling and cleaning.



Picture 2:
FL-MIKRO-LAB-KOMPAKT for mobile use

Measured Value Display and Parametering

The internal evaluation electronics of the FL-MIKRO-LAB can be connected to a Laptop or PC using a USB interface, which also provides the power supply for standalone use.

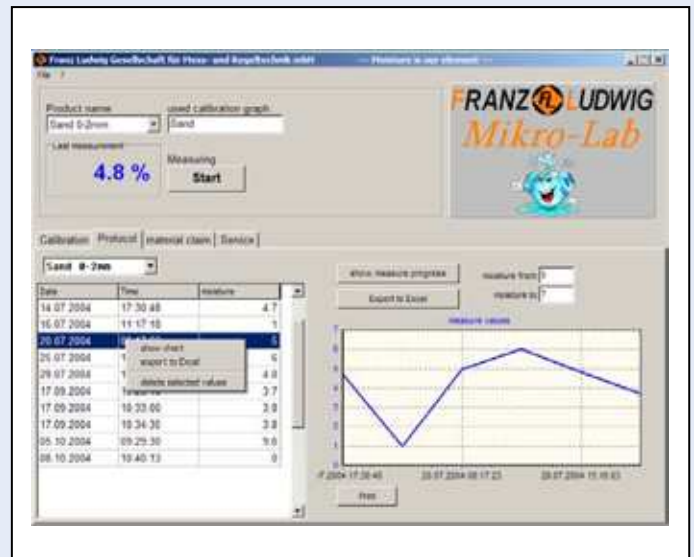
The WINDOWS compatible evaluation electronics enables the measured result evaluation and archiving as well as the device parametering. Any free to set calibration curves allow the adaption of the moisture measuring devices to different materials. A number of pre-calibrated standard curves simplify the start-up.

Summary

In conclusion, these practically adapted systems provide further, optimized variations for moisture measurement

Special Features

- Exact moisture determination through stable pressure conditions during the measuring process
- High repeatability of the average moisture through sufficiently large sample quantities
- Interference-free measuring method
- Shortest measuring times (approx. 5 sec.)
- Long range of use possibilities in various production processes
- Easy handling and fast cleaning
- Sturdy construction
- Automatic calibration mode with unlimited numbers of calibration curves
- Calibration curve archive with pre-calibrated calibration curves
- Simple software installation on the evaluation computer and EXCEL data use on other computers



Picture 3:

Evaluation and Archiving Software of the FL-MIKRO-LAB

Technical Data

Dimensions (FL-MIKRO-LAB)	H: 660mm, Ø of Sample Container: 90mm, Volume: 680cm ³
Dimensions (FL-MIKRO-LAB-KOMPAKT)	H: 170mm, Ø: 110mm, Volume: 180cm ³
Power Supply / Power Consumption	5V/DC via USB Interface / 3 Watt
Interface	USB A, (Connection cable length: 3 meters)
Accuracy	Depending to measuring range and material (approx. ±0,3%)
Cover / Weight	High resistant Aluminium / FL-MIKRO-LAB:11kg / FL-MIKRO-LAB-KOMPAKT:2,8kg
Temperature Range	0.....+80° C
Measuring Principle	Microwave / 433 MHz

System Requirements

Operating System	WINDOWS -2000 SP4, -XP SP2, -VISTA 32-bit, -7
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