

# HPNA - Moisture measurement system



## Introduction

The page includes a short introduction of the HPNA moisture measurement system from technical, economical and from business point of view.

The HPNA system is a new generation of moisture measurement applications created for plants and mills receiving fibrous material in large quantities.

## Short description of the operation

**ACTUAL:** At present in paper mills the moisture measurement for the incoming waste paper bales, delivered by truck, takes place in a subjective way by a manual method. In case of manual measurement the results can get easily very different, depending on how the device is used.

A significant limitation of the manual measurement is, that only the moisture content of the surface of the waste paper bales will be measured, and usually less than 1% of the whole load will be covered.

The HPNA system is a microwave moisture measurement system which is able to measure the moisture content of similar materials in large quantities. At present two models are available, one of them is to determine the moisture content of baled waste paper while the other is to measure the moisture content of baled straw.

The HPNA measurement system offers a solution for this task as more than 70% of the total truck's load can be examined, and the device provides an average moisture content. Measurement takes place with microwave signals. The system radiates the area between the antennas and based on the acquired parameters it calculates the average moisture content of the measured volume. With each single scan the moisture content of some m<sup>3</sup> of material is measured. For proper measurement some preconditions like the same paper quality on one truck, the truck is fully loaded, no metal bars for load securing, minimal empty space between the bales, have to be fulfilled.

## Advantages

- fast operation, automatable system
- easy to install, modular
- objective
- Examines usually more than 70% of the load
- reduces the manual moisture measurement
- No additional staff necessary
- No moving parts, no maintenance

## Disadvantages

- does not measure supplies delivered in metal containers

## Technical parameters

Technical details of the HPNA system:

- Moisture content between 5 - 35 %
- Results in an average moisture value of the investigated material
- Duration of one scan: less than 1 sec
- Frequency of the measurement: 915-925 MHz
- Capable to measure single spot or pass through continuously
- the system radiates only during measurement
- The highest emitted level is the tenth of the allowed medical limit
- a scan covers 5-6 m<sup>3</sup> of material at the same time
- accurateness: ±2.0% relative to measured value
- (confirmed by the University of West Hungary)

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Power supply, Microwave, Moisture Theory

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Control moisture measurement, Qualification