

MOISTURE MEASUREMENT ON BALES OF LUCERNE

Precise and reliable control
of product moisture



ONLINE MOISTURE MEASUREMENT ON BALES OF LUCERNE & TOBACCO

The moisture content inside bales of lucerne and tobacco is a critical parameter for ensuring product quality, safe storage, and long-term durability. For lucerne, excessive moisture can lead to spoilage, mold growth, and even the risk of self-ignition due to microbial activity. For tobacco, maintaining the correct moisture content is essential for product quality, preventing degradation, and ensuring proper curing and handling.

To safeguard quality, continuous moisture monitoring is performed on the bales to ensure moisture levels remain within the desired range of typically 8% to 15% for lucerne. In addition, when lucerne is used for bio-ethanol production or power generation, online moisture measurement plays a crucial role in optimizing process efficiency and energy yield. The MicroPolar series from Berthold uses highly reliable microwave transmission technology to scan each bale and measure its internal moisture in a non-contacting, precise, and highly representative manner. Unlike conventional technologies, microwaves penetrate the entire bale, ensuring that moisture is measured across the complete cross-section. This creates an accurate and representative moisture profile for each bale.

Measuring system MicroPolar LB 567

The system consists of one emitting and one receiving horn antenna, installed on the bale conveyor system. Microwaves generated in the MicroPolar control unit are transmitted from the emitting antenna, pass through the bale, and are received by the receiving antenna on the opposite side. As water attenuates microwave signals significantly more than dry matter, the measured attenuation is directly related to the bale's moisture content.

Because the antennas do not contact the bales, the system experiences no wear and tear, meaning no regular maintenance is required over the lifetime of the instrument. For even greater accuracy, the system can be connected to a weight sensor, allowing automatic weight compensation to optimize measurement precision.

Measuring principle

Microwave transmission method Berthold's microwave system generates microwaves that interact with water molecules, which have a high dielectric constant. This interaction results in energy attenuation and phase shift, both of which are directly proportional to the material's moisture content. By analyzing these changes, the system accurately determines moisture concentration or dry substance content. Berthold's multifrequency technology ensures stable and reliable measurements. The system can be installed on conveyor belts or chutes, providing real-time, representative moisture data for optimized process control. The non-contact measurement method eliminates wear and tear, ensuring maintenance-free operation and long service life.

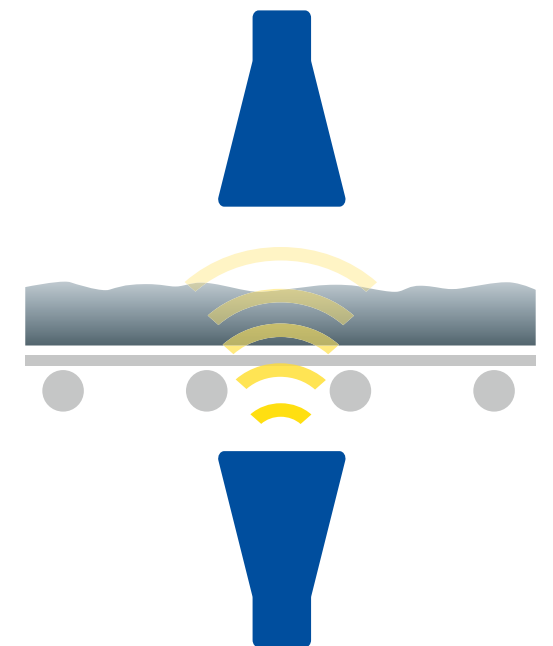


Customer Benefits

- Measures moisture across a representative product path
- Precise determination of moisture inside the bale
- Maintenance-free
- Cost-optimized production through real-time measurement

Technical Features

- Installs around existing conveyor belts
- Non-contacting measurement
- FCC compliant
- Measurement of the entire material cross section
- Extremely representative, accurate and reliable measurement without recalibration



Typical arrangement of a online moisture measurement system with horn antennas



THE EXPERTS IN MEASUREMENT TECHNOLOGY

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