



## **MOISTURE MEASUREMENT ON BALED FIBERS WITH THE BERTHOLD MICRO-MOIST**

**The Requirement:** The major manufacturers of cellulose acetate fiber for cigarette filters require a constant and accurate indication of product moisture, for process control and for final product quality. The cellulose acetate bands are packed in cardboard shipping bales as the final step of the manufacturing process. Historically, free water content varies from 4% to 10%. but quality control staff wants it controllable in a narrower range, for example 5% to 6%.

Measurement of the moisture content of the bale as it moves to storage or shipment is timely for both needs. Laboratory sampling results in moisture information that is too late to satisfy quality control and, since it is destructive, results in a lost bale. Also the laboratory samples a very small part of the bale, while the Micro-Moist analyzer measures completely across the bale

**The Solution:** US manufacturers have utilized a Berthold LB 356 Micro-Moist on-line moisture analyzer (**Now LB 456 MicroMoist**), installed in a unique way. As the baled fiber moves from the compactor to the warehouse, it passes along a rolling conveyor for weighing and labeling. By mounting the microwave horns across the conveyor at a height to accommodate the various bale dimensions (typically 12" above the rollers,) all metallic interferences are avoided. This type of installation has minimum requirements and does not involve modification to the conveyor.

The bales typically measure approximately 48" on all sides, with other sizes occasionally seen. The distance between the horizontal microwave horns is approximately 56". The belt speed should assure that a minimum of approximately 10 seconds measuring time is available on each bale. Pausing the bale for the measuring time is found to be acceptable for production and shipping needs.

The Micro-Moist provides a continuous reading and analog output of product moisture. Berthold technology relies on numerous microwave frequencies penetrating the product every half-second, with the instrument basing its moisture reading on changes in microwave attenuation and/or phase shift. Micro-Moist readings are independent of variation in product size, color and temperature.

Parameter setup allows the user to define an external signal to start/stop measurements on each bale or the 4 – 20 mA output of the analyzer may be used to determine the presence of a bale, as the empty path reading will be 0% moisture.

The installation does not require bulk density compensation however if density compensation is required, an external signal may be computed by bale size and weight and fed to the current input of the MicroMoist.

**Testing Results:** Accuracy for these type installations are expected to be +/- 0.5% with repeatability in the range of +/- 0.3%.

### **Expected Benefits:**

1. Faster moisture feedback for process control.
2. Reduced bale loss for testing, due to long term stability of the measurement.