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MOISTURE MEASUREMENT

FOLDING BOXBOARD'S  
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## CLOSING THE LOOP ON PAPER COSTS

# MONITORING MOISTURE

Near-infrared moisture meters combine optimal quality and efficiency

BY P&PC STAFF

Measuring and controlling moisture content can impact product quality, production throughput and processing efficiency in the pulp and paper industry, not to mention the purchase price of wood chips, pulp, converted paper products and shipping costs.

Because paper is made from pulp wood fibres that are boiled, bleached, strained, flattened, dried into continuous webs, and then converted into various paper products, measuring and controlling moisture content is critical every step of the way. A pulp or paper product's quality, drying efficiency and weight-based transactions can be adversely affected by improper moisture content.

Although traditional laboratory and online-based moisture measurement techniques are useful in the right settings, they have lacked the simplicity and flexibility required for frequent spot checks, which are key to analyzing a paper product's eventual physical properties.

One common test is loss on drying, which measures the total material weight change after drying. However, such tests typically require a sample to be prepared and brought back to the lab. The test takes at least 15 minutes to several hours to perform.

The other common test is a Karl Fischer test. This procedure calls for chemical reagents to be added to the sample to separate the water from the remaining product, and is normally used on liquid samples. The water removed is compared with the initial mass or volume. Samples are generally small, making the assumption that a large batch is homogenous.

As a result, secondary test methods



Kett's KJT130 moisture meter is a secondary measurement method that uses near-infrared light to deliver accurate, instantaneous readings.

Photo: Kett US

have typically been used to deliver faster results. This type of test uses an indirect method and a single conversion to achieve accurate results. Secondary measurement techniques are routinely accepted as equal to the gold-standard methods.

Industry innovators have developed a simplified approach that allows even less-trained personnel to take portable, instant moisture reading spot checks of pulp and paper industry inputs, in-process conditions, or finished products as needed. This can be used for measuring wood chips and incoming fibre before the "value-add" of the mill begins. It can include checking pulp sheets before pulp mill processing, analyzing the web for wet streaks and uneven drying before or after dryer cans, inspecting incoming roll stock before conversion, and at end-product quality checks.

The approach involves moisture meters that use near-infrared (NIR) light for a highly accurate, non-contact, secondary measurement method that can deliver immediate, laboratory-quality moisture readings.

Unlike complex laboratory equipment, portable NIR equipment is designed for ease of use. For example, with Kett's KJT130 handheld portable instant moisture meter, the user simply points the instrument at the product and the moisture content is instantly shown on a digital display, with results accurate to .01 per cent in a 0 to 100 per cent measurement range.

Such continuous monitoring can help to eliminate costly batch waste and provide superior data to optimize the process. Instant desktop options are available as well.

Not only can measuring moisture content in batch or continuous drying processes can help to optimize the process and significantly reduce energy costs, but also since moisture content contributes to the weight of pulp and paper, properly drying a product to acceptable limits before it is transported can greatly reduce shipping costs. **PPC**

For more information on the KJT130, visit [kett.com](http://kett.com).