Optimizing Material Processing with Smart Moisture Measurement

By Del Williams

On the production floor, "smart" means the ability to continually monitor conditions, such as moisture content, in real time to optimize quality. Assessing proper moisture level in products and processes is essential for many reasons, including meeting regulations, ensuring proper chemical reactions and maximizing shelf life.

"Smart inline technology can enable the rapid, automatic measuring of moisture in 100 percent of product or inputs, along with the ability to immediately fine tune the process," says John Bogart, managing director of Kett U.S., a manufacturer of moisture and organic composition analyzers.

This technology is smart, because all the calculations are performed inside the sensor and measurements are sent on a 24/7 basis to smartphones, PCs and other devices, without having to be connected.

If desired, these instruments can prompt operators and managers with alerts as needed. Bogart notes that smart technology enables taking multiple precise moisture measurements each second, sorted within integrated software. This enables not only real-time analysis and error detection, but also more accurate results in products subject to variable, fast-changing conditions and processes.

24/7 Monitoring

Continuous moisture monitoring, which is available for about $10 per month when leased, also allows the tracking of historical performance trends, cyclical rhythms, and periodic failures, so corrective adjustments can be made to enhance production.

Traditional data collection is usually too slow, cumbersome, and hindered by cords and cables. Manufacturing floors are already crowded with equipment and dealing bulky cords and connections to PCs, keypads and external switches to transfer data can be restrictive.

Kett offers near-infrared (NIR) inline sensing systems that can take moisture measurements multiple times per second. NIR light provides a highly accurate noncontact measurements of solids, liquids and slurries with no need for sample preparation.

"NIR moisture and organic composition meters follow the principle that water and other organics absorb certain wavelengths of light," says Bogart. "The meter reflects light off the sample, measures how much light has been absorbed, and the result is automatically converted into a moisture (or organic component) content reading."

An example of this kind of smart technology is the Kett KB30 inline NIR moisture meter system. The device, which utilizes smart sensor design and is approximately the size of a car battery, enables measurement without connection to controllers, PCs or other cumbersome I/O devices. Its connections enable local process control and remote integration, and converters are available for wireless, IP, DeviceNet and other interconnection and communications protocols.

Its quick response time enables faster production line rates with superior

moisture measurement. It has been used in various industrial production lines to test pharmaceuticals, chemicals, foods, textiles, minerals, lubricants, pulp/paper goods, and personal care products. When its monitoring capabilities are integrated with accompanying Kett Tracker™ data collection and analysis software, improved error detection, defect analysis, and product quality are the result.

"Ultimately, smart moisture measurement technology translates into superior process control, quality, and production without the inherent drawbacks of slower, labor-intensive lab or batch testing," says Bogart.

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