



# PROPER MOISTURE CONTROL

Consistent Product Quality from Lab to Line

**D**esigned with full real-time process control in mind, online moisture sensors designed specifically for measurement and control are developed for instant non-contact measurement for all types of moisture sensor applications. Engineered to allow users to both optimise their processes whilst dramatically improving product quality, MoistTech sensors afford manufacturers a process quality that is instantly measurable.

Product quality and consistency was at the forefront when MoistTech developed the IR3000 sensor.

This particular sensor is equipped to accurately provide moisture measurements in grains throughout the process, yielding a consistent quality product from lab to line that immediately reduces downtime, wasted energy and product loss.

The MoistTech series of moisture analysis sensors may also increase the quality and efficiency of the manufacturing process.

## **Saving time and money**

Moisture measurement and control analysers can be found in thousands of applications all over the world as they save manufacturers a large amount of time and money by detecting variables in the manufacturing process and allowing corrections

to be made in real time. The IR3000 sensor uses Near-infrared (NIR) technology for instant on-line, off-line and laboratory moisture instrumentation.

Moisture levels in grain production are a critical component during the various stages of production as grain products can become either too wet or dry, wasting manufacturer's time and money as well as impacting the quality of the product.

Ideally, a moisture control system should be able to accurately detect moisture at different stages of the manufacturing process, be easy to maintain and tough enough to withstand the harsh, abrasive nature of the raw materials and the mixer environment.

The installation of MoistTech's online sensors helps to prevent bad product due to unsuitable moisture levels. Once installed the sensor can be used to fine tune a setup to make sure it's putting out a higher quality and more consistent product and ultimately improving the bottom line, thus potentially saving money and time whilst helping to prevent negative results caused by inconsistencies and human error.

MoistTech's IR3000 sensor technology monitors the product even with small gaps in product flow and is unaffected by ambient light.

The sensor is insensitive to material variations such as particle size, material height and colour, whilst providing continuous, reliable readings with zero maintenance and an only one-time calibration. A non-drift optical design that allows operators to

make immediate process adjustments confidently based on real-time measurements, are also supported by a non-contact, zero maintenance plug and play solution.

### Repeatable results

The sensor features are enhanced to include the ease of the burden of measurement, as well as those most requested by customers.

The non-drift optical design gives you repeatable results in the most accurate measurements available, with hundreds of readings per second. The sensors are calibrated at the factory and require no further maintenance to maintain their accuracy.

Near-infrared spectroscopy and imaging are fast, non-destructive analytical techniques that provide chemical and physical information of virtually any matrix. NIR can tell us things about a product in a similar way to visible light; transmitted light will pass through the product while backscattered light will reflect from the product as well as be absorbed – light absorption is the key to MoistTech's NIR analysis.



Designed to provide accuracy and repeatability, the MoistTech NIR technology is a ratio-based measurement with prime beam; this eliminates the sensitivity to distance, improves stability and accuracy; whilst the algorithms, wavelengths and sensor optical requirements enable the sensor to take thousands of detailed, accurate measurements per second.

The ability to pre-set the measurement rate to match the production rate is available on the technology and because there are no routine re-calibrations, MoistTech NIR is also low to zero maintenance. With the ability to store up to 50 product/calibration codes, operators can adjust the sensor for changing products immediately.

By connecting the sensors to a computer network or production laptop, complete software control of the production line can be achieved.

Once connected, immediate changes can be made to the production line to stop extra waste and keep the line moving; Avoid costly downtime and excessive waste by catching any out of tolerance readings as quickly as possible.

The outputs can be adjusted to optimize PLC or recording requirements. By mounting the sensor several inches above the conveyor and/or after the dryer so it can continuously monitor the process and can control the moisture content either manually or automatically in grains.

### Managing in dusty conditions

A further consideration that can significantly and negatively impact on product quality is dust.

Dust can also have a severely adverse effect on how your machinery and in particular your sensors operate. If you are operating in an extremely dusty environment, MoistTech

recommend that in order to prevent the accumulation of material on the sensor's window, an air purge system is installed.

If the sensor must be installed close to the dryer outlet where it will be susceptible to extreme heat conditions, cooling the sensor with either air or water will therefore be necessary. It is also worth bearing in mind that typical analogue range is one to ten per cent moisture.

When one measurement is out of tolerance, a quick automatic or manual adjustment can be made to keep things moving correctly before costly time is lost and waste is produced.

Regular measurements of moisture remain a necessity for control of drying, thereby reducing treatment costs.

Additionally, small variations and excess moisture in mixes can result in clumping affecting quality and consistencies in mineral and other similar materials; too dry of a product can result in excess dust.

### Instant and precise measurements

MoistTech's NIR moisture sensors are which will provide instant and precise measurements due to no constituent losses in handling. MoistTech recommend installing several of their easy to set-up and use sensors throughout the manufacturing process.

For example, a sensor should be installed over the conveyor before the final crusher to enable elimination of impurities, as well as at the exit of the final crusher or dryer, to prevent over drying and dust. T

he sensor should be installed several inches above the conveyor belt or screw conveyor so that it can continuously monitor the process whilst either manually or automatically ensuring that the moisture content in the finished product is entirely satisfactory.