

APPLICATION

KEY FEATURES

- Inline moisture measurement in realtime
- NIR spectral sensor integrated with measurement probe
- Automated Self Cleaning and Recalibration option
- Suitable for continuous and discontinuous (batch) installations
- Hazardous area/ hygienic design certified
- Extremely low cost of operation



**BLUE OCEAN
NOVA®**

Moisture in powder and bulk material

Moisture has a crucial impact on processing in all industries. Because water is one of the strongest absorbing compounds in the NIR spectral region, and also detectable in MIR, moisture can be measured at very low concentrations. Traditionally, production samples are taken throughout the process and transferred to the lab for quality analysis using a variety of instruments. The bulk of these tests has a destructive nature to the product and consumes a considerable amount of time. During the analysis, the process is either stopped or runs blindly resulting in the loss of valuable process time or, potentially, out of spec material, that is going to waste. The combination of this traditional sampling regime and the time lost during the analysis leads to lower yield and higher product risk.



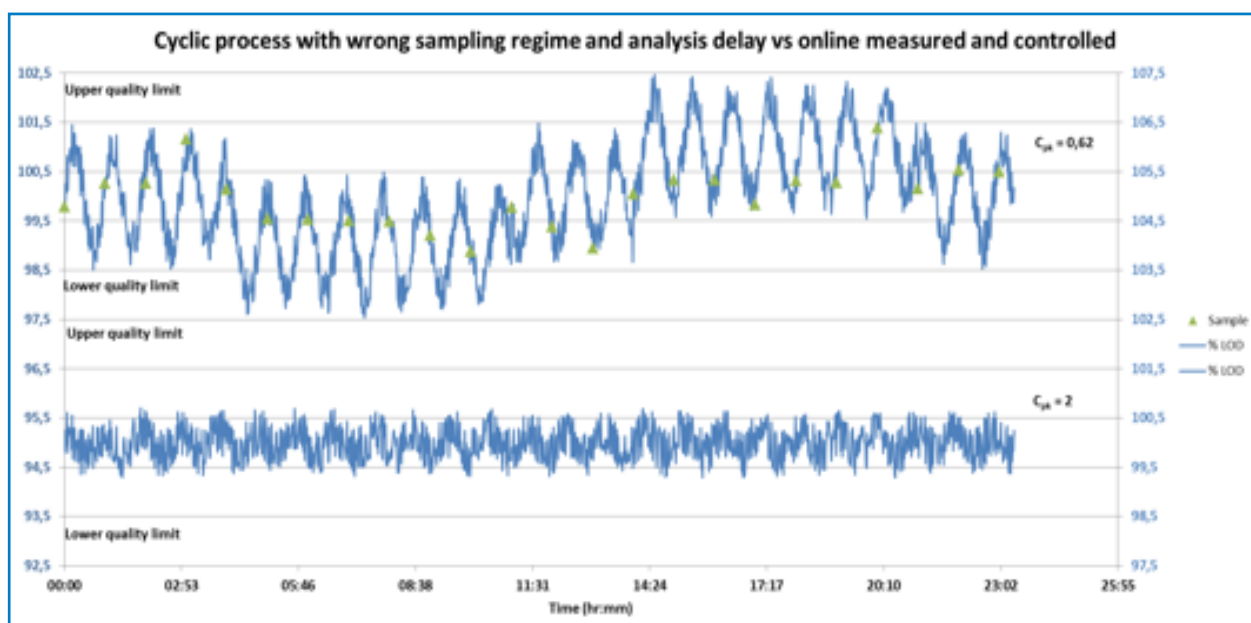
BLUE OCEAN NOVA'S proven moisture sensors provide an efficient alternative to traditional analytical products. By deploying NIR and MIR spectroscopy, based on diffuse reflectance from the powder blend, moisture measurements can be taken inline in real time. With a patented self cleaning and auto calibration mechanism, the Lighthouse Probe™ allows for higher yield and eliminates product waste from continuous and batch processes.

MOISTURE MEASUREMENT SOLUTION

REALTIME INLINE MOISTURE MEASUREMENT

Blue Ocean Nova provides inline measurement capabilities for moisture in powders and bulk materials. Dependent on the target concentration, the sensor utilizes NIR techniques for concentrations down to 1% with +/- 0.3% accuracy or MIR for the concentrations below 1%. Our new, optics-based moisture sensor is installed at process-relevant points and comes in direct contact with the product (in situ). The sensor is equally suitable for continuous and batch installations. Due to the proven Lighthouse probe™ technology, the system can clean its measurement windows in process and guarantee a correct moisture reading at any time.

Determining the actual moisture content of your product in a dispersed process needs neither chemometrics nor complex model construction. Measurements at the drying end-point in discontinuous processes can still be carried out as a supplementary procedure by taking samples and sending them for laboratory analysis without any need to change existing guidelines or the process description. With the moisture sensor, the precise end point of the drying process can be detected and the process concluded according to a pre-arranged plan, potentially with an immediate release of the product in real time. Continuous processes benefit from a large number of measurement points. The automatic cleaning of the probe, combined with the ability to continuously measure moisture at a high frequency (<1 second), enables substantial process optimization resulting in higher efficiency and profitability.



DRYING PROCESS SAMPLE: The target moisture in this example corresponds to 100% with an acceptable variation of 2% for this specific product. For quality assurance, a sampling plan has been implemented to take samples every hour to conduct offline analysis in a laboratory. The upper graph shows the moisture content of the traditional approach with interruptions for manual sampling. Production decides to adjust the process parameters in order to get the quality of the product closer to the target moisture. Due to the interference between the cyclic process and the sampling regime, the actual process capability is going down.

The graph below shows the correct application of a robust online measurement, with continuous monitoring of the quality attribute and realtime adjustments of the process settings ($C_{pk}=2$).

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