TECHNOLOGY
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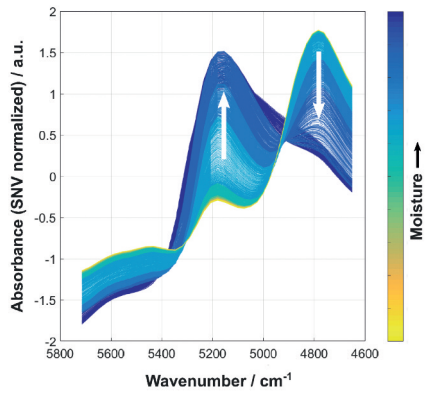
RECENDT
RESEARCH CENTER NON DESTRUCTIVE TESTING

Contactless in-situ moisture measurement based on modern fully-integrated spectrometer technology

Precise moisture readings of your product – inline, real-time and cost-efficient

Latest infrared spectrometer technology based on micro-opto-electro-mechanical systems (MOEMS) allows for the first time to implement contactless moisture measurements in a both cost-efficient and industry-suitable way. Using modern data analysis methods and machine learning, precise values for product moisture can be extracted from the acquired absorption spectra in real-time and can be used for inline process monitoring and control.

Exact knowledge about product moisture content has a high importance in many industrial branches including wood, paper, food, as well as chemical and pharmaceutical industry. This is due to strict limits that must be adhered to when it comes to water content of the products to ensure high product purity and quality, as well as increased shelf life, especially in the food industry. Furthermore, many products are traded by weight, causing direct economic consequences in case of non-optimal moisture content. Despite these facts, product moisture determination in the industry is mainly carried out using gravimetric offline measurements, which can only provide time delayed values and are thus not suitable for inline measurements and process control. The offered measurement solution can precisely determine the moisture content, by directly measuring the characteristic absorption that is caused by the water molecules. Since a full spectrum is acquired, enhanced data analysis techniques can be applied to correct for cross-talk and environmental influences or changes in product composition. Furthermore, the information encoded in the acquired NIR-spectrum can be exploited to simultaneously measure additional product parameters (e.g. protein content, ash content, etc.).
The offered measurement technique is suitable for all sorts of solid as well as powdered materials and can also be adapted for liquid samples. It enables better control of the production or drying process, which in turn allows for optimization and potentially early corrections of process parameters, resulting in both energy savings and increased product quality.



Facts/Key-Values/ Features & Benefits

- Low-cost, compact, and rugged hardware
- Real-time and contactless measurement
- No harmful radiation
- No sample preparation
- Short measurement times
- Relatively large measurement distances are possible

Potential Users & Fields of Application

- Food industry
- Chemical Industry
- Wood and paper industry
- Pharmaceutical industry

Status – what do we offer?

- Development of customer specific real-time moisture sensing solution
- Integration of the sensor in the production process
- Multivariate data analysis and chemometric modelling
- Chemometric model maintenance for prolonged measurement reliability and accuracy

Contact data

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