



Application Note AN N523

Online Quality Control of Soybean Meal with FT-NIR Spectroscopy

The worldwide production of soybeans has continued to increase in recent years. Both in the food industry and animal feed industry, soy is valued as a major source of vegetable protein. To ensure optimum quality, monitoring the manufacturing process and controlling the finished product is essential. With FT-NIR spectroscopy, important parameters can be determined, production steps optimized, superior quality control ensured, and ongoing costs reduced.

Ensure consistent quality

A major challenge in today's feed industry is inconsistencies between batches of ingredients, since they can vary based on weather, season, and geographical origin, leading to a wide variation in protein, fat and moisture content. To fully understand these variations in the raw material enables the processors to make recipe adjustments accordingly to ensure consistent product quality.

Benefits of online monitoring

By integrating real-time process analysis into the manufacturing processes, it is possible to optimize the use of materials, increase the overall equipment efficiency, ensure product quality and reduce or eliminate the production of off-specification batches, thus saving reprocessing or disposal costs.



Sensor head mounted over a conveyor belt for the continuous analysis of soybean meal.

Real-time analysis of soybean meal

To illustrate how the online process control with FT-NIR can improve the manufacturing process, the charts on the right show a comparison between online measurements during 24 hours and a conventional offline analysis of the parameters protein, fat and moisture.

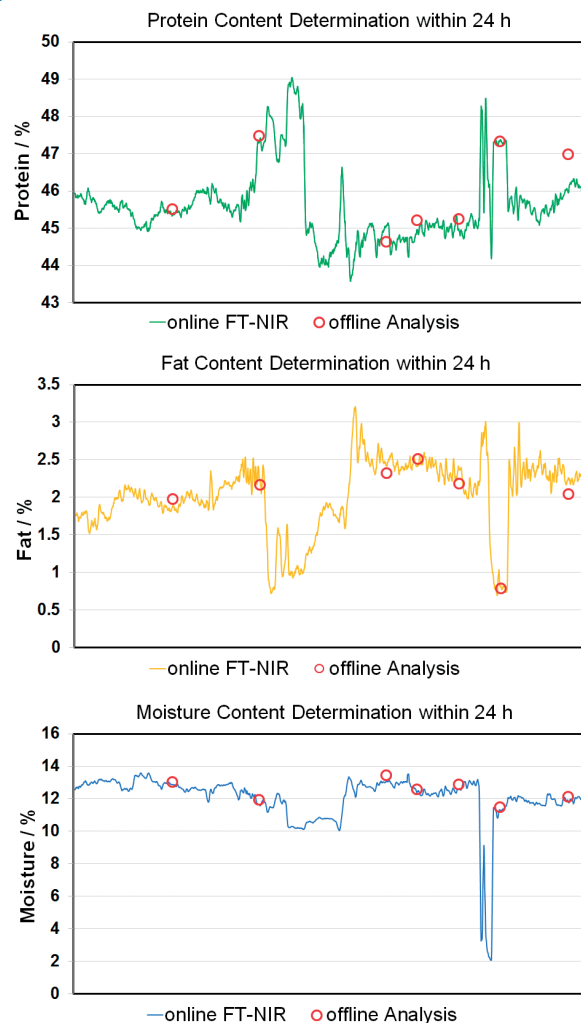
It can easily be observed that offline analysis was not able to detect all major fluctuations in product quality. Continuously monitoring the efficiency of fat extraction, maximizing the water content and checking the protein level in the soybean meal can save a substantial amount of money per day, ensuring a fast return on investment of the initial system costs.

Ready to use calibration packages

FT-NIR spectroscopy is however not limited to the analysis of soybean meal and its main constituents. A comprehensive set of universal calibrations for the analysis of raw materials and finished products in the feed and food industry is available on request. These calibrations enable a quick and cost-effective start to your FT-NIR analysis, in the lab or online.

Measurable Parameters in Soybean Meal:

- | | |
|------------|------------|
| ■ Moisture | ■ Fiber |
| ■ Fat | ■ Ash |
| ■ Protein | ■ ADF, NDF |



Monitoring protein, moisture and fat over 24 hours with FT-NIR.

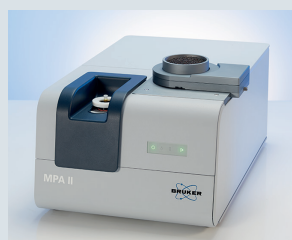
FT-NIR Spectrometers: Bruker Optics offers various FT-NIR spectrometer models for lab, at-line and on-line applications:

TANGO



FT-NIR analyzer for routine use in the lab.

MPA II



Multi Purpose Analyzer for maximum flexibility.

MATRIX-I



At-line analysis with optional NEMA4/IP66 protection.

MATRIX-F



Process monitoring with probes and sensor heads.

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