KPM

WE CRAFT ASSURANCE

Quality Control in a Feed Mill

APPLICATION BRIEF

The feed industry has several characteristics that make tight process control a requirement for profitable feed production. The first requirement is that the feed must meet the specified nutritional specification for the formula or recipe. Frequent analysis of the in-process samples as well as the final product ensures that the product meets the specified nutritional requirements.

A second aspect of animal feed production is the tight profit margins and production efficiency required to be profitable. Least cost formulation can help a producer take advantage of locally sourced or seasonal high value ingredients, but variation between loads of each ingredient make it difficult to fully realize full value without nutritional analyses of the raw ingredients.

PROCESS CONTROL ANALYSIS POINTS IN A FEED MILL

There are multiple points in a feed mill where accurate and timely analytical values can help control the process, saving money and improving yield, including:

- Raw material testing to verify supplier integrity and produce claim evidence if out of specification
- Raw material testing to guide proper ration specification
- Raw material testing to control meal formulation
- Monitoring and controlling mixers and optimizing the addition of liquid fat
- Monitoring and controlling moisture levels in extruders and driers
- Verifying production batch values and optimizing fat spraying on pellets
- Verifying and documenting finished feed nutritional composition

SpectraStar™ XT Series NIR Analyzers, shown above, offer outstanding accuracy and reliability for rapid compositional analysis of solid, slurry, or liquid samples.

WHAT IS NIR ANALYSIS?

NIR analysis is a proven technique that provides simultaneous results for moisture, protein, fat, fiber, ash, and other parameters in under a minute. Applications for compound feed production can include the analysis of both the raw ingredients as well as the finished product that enables optimization of the process from start to finish.

The speed of analysis allows 100% measurement of incoming ingredients and finished feed. Raw ingredients suppliers can be verified to ensure they are providing quality materials, and to flag out of specification loads for claims. The use of NIR ensures consistent quality in manufacturing and can reduce re-work costs.

One popular NIR analyzer used in feed mills today is the **SpectraStar™ XT NIR Analyzer Series** from KPM Analytics. In particular, the SpectraStar XT-R includes broad wavelength coverage to support calibrations for fiber, ash, fatty acids, and other important constituents in feed products, in addition to moisture, fat, and protein analysis.

VALUE PROPOSITIONS FOR NIR IN FEED MILLS

Raw Ingredient Costs: The cost of the raw ingredients account for approximately 70% of the finished feed cost, and optimizing the use of high value ingredients can result in significant savings. How? Feed producers of all kinds can experience rapid savings on protein optimization alone. With the ability to completely optimize feed ingredients and supplements in their compound feed products feed mills can typically pay for their SpectraStar XT instrument in months.

Laboratory Quality Control Costs: All feed mills must analyze at least a minimum number of finished feed samples to ensure consistent and claimed specifications. At a cost of $25 / sample for basic nutritional analysis, **the feed mill will spend over $35,000 / year analyzing 5 samples per day for quality data within 24 – 72 hours.** At-line NIR analysis with the SpectraStar XT can analyze hundreds of raw ingredient and finished feed samples per day and deliver the results in less than a minute, when the plant operator has the opportunity to act on the results and realize increased value.

In addition to the raw material and QC cost savings, compound feed manufacturers can realize significant savings in production time, re-work costs and product claims from the consistent formulation and product verification possible with rapid and accurate NIR analysis. Poultry and livestock producers will realize increased animal performance from consistent and reliable feedstock. While these costs are more difficult to quantify, the consistency and efficiency gains can be the difference be profit and loss during difficult market conditions.

ABOUT THE SPECTRASTAR™ XT SERIES NIR ANALYZER

From analyzing moisture, protein, fat, sugar, and fibers, to more complex parameters such as ash, fatty acids, and lignin, the SpectraStar™ XT NIR Analyzer Series is trusted by thousands of quality laboratories and production facilities to enhance their processes and make data-driven decisions.

- Obtain vital quality parameter data in about 30 seconds, enabling quick response for quality control.
- Access an extensive library of robust calibrations developed from hundreds-to-thousands of samples. Calibration customization is also available.
- Minimal sample preparation, only minimal training required, and environmentally friendly.
- Available with KPMLink™, a cloud-based software suite to support the real-time remote configuration of product settings, calibrations, and more.

Ready-to-Use SpectraStar XT-R Calibrations for Feed Applications			
SUBSTANCE	**CONSTITUENTS**	**SAMPLING ACCESSORIES**	**PART NUMBER**
Concentrates	Moisture, Protein, Fat, Fiber, Ash, Ca, P	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-127
Cow and Cattle Feed	Moisture, Protein, Oil, Fiber, Starch, Ash, ADF, NDF, ADL, Ca, P, NaCl	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-023
Duck Feed	Moisture, Protein, Fat, Sugar, Starch, Energy (MJ/kg), Lysine, Methionine, Cysteine, Calcium, Phosphorus	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-076
Feed - Poultry	Moisture ,Protein, Fat, Fiber, Ash, Ca, P, Cl, Met, Cys, Met+Cys	US-LGOP-0001 Large Open Cup with plunger	US-CALB-150
Feed - Swine	Moisture, Protein, Fat, Fiber, Ash, Ca, P, Lysine, NaCl	US-LGOP-0001 Large Open Cup with plunger	US-CALB-151
Feed General	Protein, Moisture, Fat, Ash, Fiber, Calcium, Sodium, Phosphorus	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-007
Feed Pellets	Moisture, Oil, Protein	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-052
Finished Feed	Moisture, Protein, Fat, Fiber, Ash, Acid Insoluble Ash	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-053
Fish Feed	Protein, Fat, Moisture, Ash, Fiber	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-024
Horse Feed	Moisture, Protein, Fat, Ash	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-058
Mixed Feeds	Protein, Fiber, Fat, Moisture, Ash	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-084
Pig and Swine Feed	Moisture, Protein, Fat, Fiber, Lysine, Ash, Ca, P, NaCl, Cu, Zn	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-087
Poultry Feed Combo	Moisture, Protein, Fat, Fiber, Sugar, Starch, ME[MJ/KG], Ash, Ca, P, NaCl, Lysine, Methionine, Cysteine	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-137
Salmon Feed Pellets	Fat, Moisture, Protein, Ash	US-LGOP-0001 Large Open Cup with plunger	APPS-CALB-106

CONTACT US TODAY

sales@kpmanalytics.com | +1 774.399.0500

KPM Analytics
8 Technology Drive | Westborough, MA 01581 USA
Phone: +1 774.399.0500
www.kpmanalytics.com | sales@kpmanalytics.com