

QUALITY AND PROCESS CONTROL IN A **Pet Food Mill****Introduction to the Market****Quality and Process Control in a Pet Food Mill**

The pet food industry has several characteristics that make tight process control a requirement for profitable feed production.

A key aspect to modern pet food production is the requirement to meet labeled specifications for each product. This is complicated by production of many different recipes and products per feed mill, with some mills producing over 150 distinct products. A fast and reliable means to analyze both the incoming ingredients and the finished product is required to ensure the efficient production of assorted products that meet the label requirements while minimizing re-work and out of specification production.

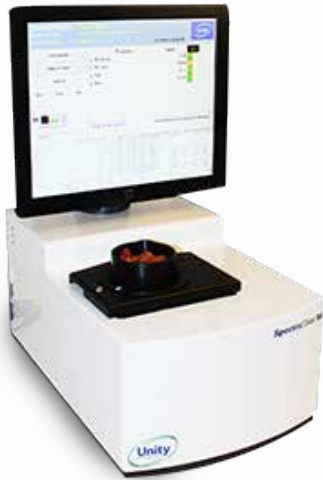
The second key aspect of modern pet food production is the variety and high cost of the incoming ingredients. These relatively expensive ingredients can show significant variations in nutritional quality batch to batch and across various ingredients. Least cost formulation in combination with accurate and timely compositional analysis can provide the inputs required to consistently formulate various recipes in the most cost effective manner.



Process Control Analysis Points in a Pet Food Mill

There are multiple points in a pet food 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
- Raw material testing to guide proper ration supplementation
- 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 pet food label claims



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 pet food production can include the analysis of both the raw ingredients as well as the finished product which enables optimization of the process from start to finish.

The speed of analysis allows 100% measurement of incoming ingredients and finished pet food. Raw ingredients suppliers can be verified to ensure they are providing quality materials. The use of NIR ensures consistent quality in manufacturing and reduced re-work costs.

Value Proposition

There are many areas in a pet food mill where rapid analytical results can lead to increased efficiency and large cost savings, but perhaps the easiest to quantify is the moisture levels in the finished product.

Typical moisture calibrations have an error of less than 0.5%. These highly accurate results combined with increased testing and immediate results from NIR analysis often times allows operators to run 1% closer to the labeled moisture levels, increasing yield and reducing raw feed costs.



The example at right demonstrates the typical savings for a small- medium sized pet producing 200,000 pounds of pet food per day. At \$0.30 per pound (0.45 kg), producing feed 1% closer to the moisture target results in \$150,000 of additional revenue, paying for a typical NIR in less than 6 month and thereafter increasing running profit levels. If more constituents are controlled, the payback time is even shorter.

Daily Production	200,000 lbs.
Annual Production (lbs.)	50,000,000
(Additional yield by running 1% closer to moisture target)	X 0.01
Additional product	500,000 lbs
@ \$/ lb.	X 0.30
Additional revenue	\$150,000

In addition to the moisture savings, pet food manufacturers can realize significant savings in production time and re-work costs and product claims from the consistent formulation and product verification possible with rapid and accurate NIR analysis.



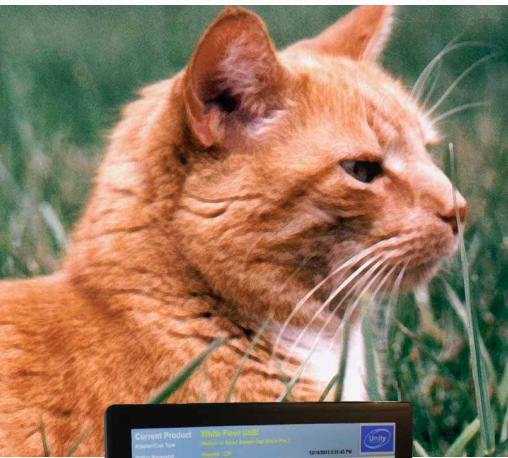
Unity Introduction to this Industry



Quality and Process Control in a Pet Food Mill

Unity Pet Food Analyzers are based on the SpectraStar Analyzer, featuring a sealed analyzer case and touch screen operation ready for at-line process control in pet food plants.

The pet food analyzer packages are configured with several calibration options:



The **US-2600-PET1 Pet Food Analyzer Basic** is designed for the analysis of hard and soft flours and includes:

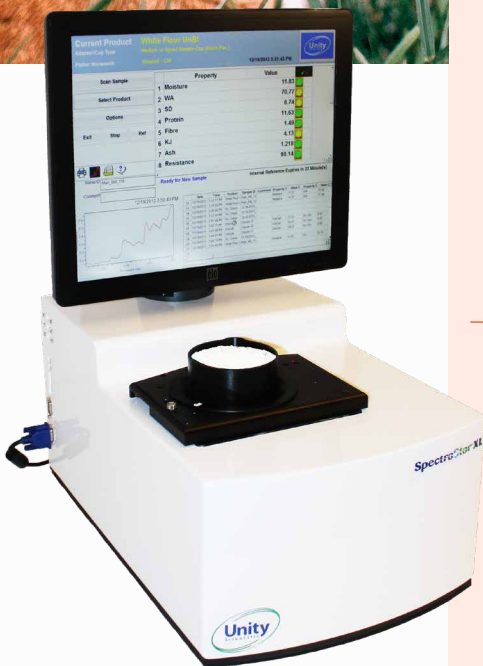
- SpectraStar 2600XL(Rotating) Spectrometer (1100 – 2600 nm)
- Large open sample cups with plunger US-LGOP-0001
- Unity calibrations for dry, finished pet food
- 1 year free calibration support

The **US-2600-PET2 Pet Food Analyzer Deluxe** adds INGOT calibrations from Aunir for finished feeds and over 70 ingredients. The Pet Food Analyzer Deluxe includes:

- SpectraStar 2600XL (Rotating) Spectrometer (1100 – 2600 nm)
- Large open sample cups with plunger US-LGOP-0001
- Ingot calibrations for finished feeds including dog, cat, ferret, rabbit, guinea pig, avian pet foods
- Ingot calibrations for feed ingredients including cereals, oil seeds, nuts, vegetable and fruit pulps, legumes, roughage and animal meals
- 1 year calibration support and guarantee from Aunir

The **US-2600-PET3 Pet Food Analyzer XLR** includes the extended range XLR spectrometer for maximum versatility. The Pet Food Analyzer XLR includes:

- SpectraStar 2600XLR (Rotating) Spectrometer (680 – 2600 nm)
- Large open sample cups with plunger US-LGOP-0001
- Ingot calibrations for finished feeds including dog, cat, ferret, rabbit, guinea pig, avian pet foods
- Ingot calibrations for feed ingredients including cereals, oil seeds, nuts, vegetable and fruit pulps, legumes, roughage and animal meals
- 1 year calibration support and guarantee from Aunir



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