QUALITY CONTROL IN A Snacks Food Plant

Introduction to the Market

Quality Control in a Snacks Food Plant

Snack foods represent hundreds of billions of dollars annually in the global food market and are a significant part of food purchases around the world. This food segment includes potato chips, tortilla chips, and various other prepared snacks like nuts, dried fruits and granolas.

The snack food segments are highly competitive markets where brand loyalty and consistent product quality can result in increasing market share and concomitant production and distribution efficiencies. Consistent product quality and efficient production are keys to a successful product.

Process Control Analysis Points in a Snacks Food Plant

Production of snack foods varies widely depending on the nature of the product, from a simple multi-stage dehydration for dried fruits to a lengthy cooking, grinding, pressing, baking, frying and coating process for tortilla and other chips. Many steps in these processes offer the opportunity to improve the process or ensure product quality if the proper analytical data are available. Some of the process points in a snack food plant where quality measurements can help control the process, saving money and improving consistency and quality include:

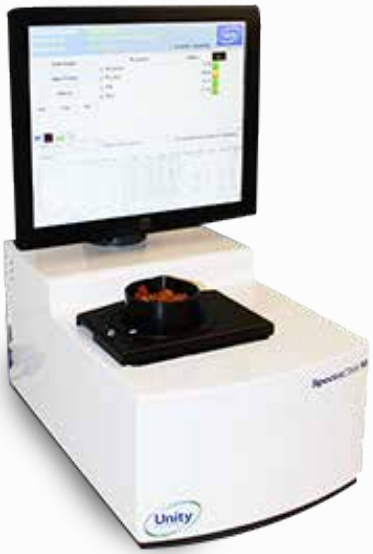
- Raw material testing to verify supplier integrity and ingredient quality
- Monitoring dough or masa for consistency
- Monitoring moisture and fat levels at fryer or oven exit
- Monitoring and controlling oils, cheese or other ingredients sprayed on the product

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 snack 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 products. Raw ingredients suppliers can be verified to ensure they are providing quality materials, ensuring production and product consistency and reducing re-work and discard costs. Final products can be monitored to ensure product quality and optimize the manufacturing process.

QUALITY CONTROL IN A **Snacks Food Plant**

Value Proposition



Moisture Control

The most common analysis point for snack foods is at the oven exit. Controlling the moisture levels for the final products is critical for product quality. Elevated moisture affects the texture and mouth feel of the product, and can also have an adverse microbiological and product stability effect if not controlled. Over drying the product can also affect the palatability of the product and increases drying and ingredient costs. NIR analysis at the oven exit provides almost instant feedback to the plant operators allowing them to adjust the oven temperatures and optimize the moisture levels, usually within 0.5%. The result is more consistent product quality, lower energy and ingredient costs, and less out of specification product. In many plants, controlling moisture alone can result in a payback time of less than 6 months for a SpectraStar analyzer. In the case of dried fruits, the payback time can be a couple of months.

Raw ingredient monitoring

Incoming raw ingredients such as flour and corn, as well as whole grains like wheat, corn and rice can be highly variable in composition and quality, and yet many manufacturers do little quality control of these ingredients. Critical ingredients can be analyzed for protein, moisture, ash and other parameters to ensure consistent quality from the raw materials. Quality monitoring of raw ingredients will produce more consistent products and reduces re-work and discard.

Final product monitoring

Many snack foods have oil, cheese or other coatings applied to the product after the oven. In many cases, NIR can be used to ensure the consistent application of these coatings.

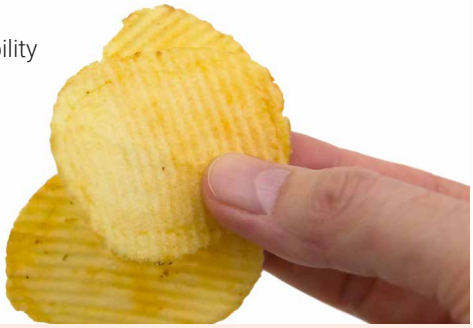
Unity Solutions to this Industry

SpectraStar™

Snacks Food Plant Solutions

Unity Scientific offers a variety of ready–to-use solutions tailored to the snacks food plant industry. All of our snack food analyzer packages start with the SpectraStar XL analyzer, an advanced, high performance at-line scanning monochromator. All SpectraStar XL models come standard with the following features:

- TRUE NIR™ Spectrometer for ultra-performance
- Advanced TRUE NIR detector and electronics for low noise and high repeatability
- 17" high resolution touch screen for intuitive, easy operation
- Fast Windows®7 computer with Solid State Drive for reliability and speed
- Sealed case for reliable operation at-line
- 5 W 10,000 hr lamp
- Unity Check Cell for daily performance validation



Unity Scientific offers its Snacks Food Analyzer packages in support of the snack food industry. As each product is unique, starter calibrations and complimentary calibration support for one year are included to ensure that the customer's unique products are properly analyzed. Unity Scientific has implemented hundreds of analyzers in support of snack food applications and has many starter calibrations to ensure quick implementation and validation of each system.

Unity Food Analyzers are based on the SpectraStar Analyzer, featuring a sealed analyzer case and touch screen operation ready for at-line process control in snacks food plants. The food analyzer packages are offered in two configurations:

The **US-2600F0D1 Food Analyzer Package** includes The Snacks Food Analyzer includes:

- SpectraStar 2600XL(Rotating) Spectrometer (1100 – 2600 nm)
- Large sample cups with plunger US-LGOP-0001
- Starter calibrations for your products (most snack food applications available)
- 1 year calibration development and validation support

The **US-2500F0D2 Food Analyzer XLR Package** includes The Snacks Food Analyzer includes:

- SpectraStar 2600XLR(Rotating) Spectrometer (680 – 2600 nm)
- Large sample cups with plunger US-LGOP-0001
- Starter calibrations for your products (most snack food applications available)
- 1 year calibration development and validation support

Unity Scientific
113 Cedar St. S-3 | Milford, MA 01757 USA
Phone: 203-740-2999 | Fax: 203-740-2955
www.unityscientific.com | email: info@unityscientific.com