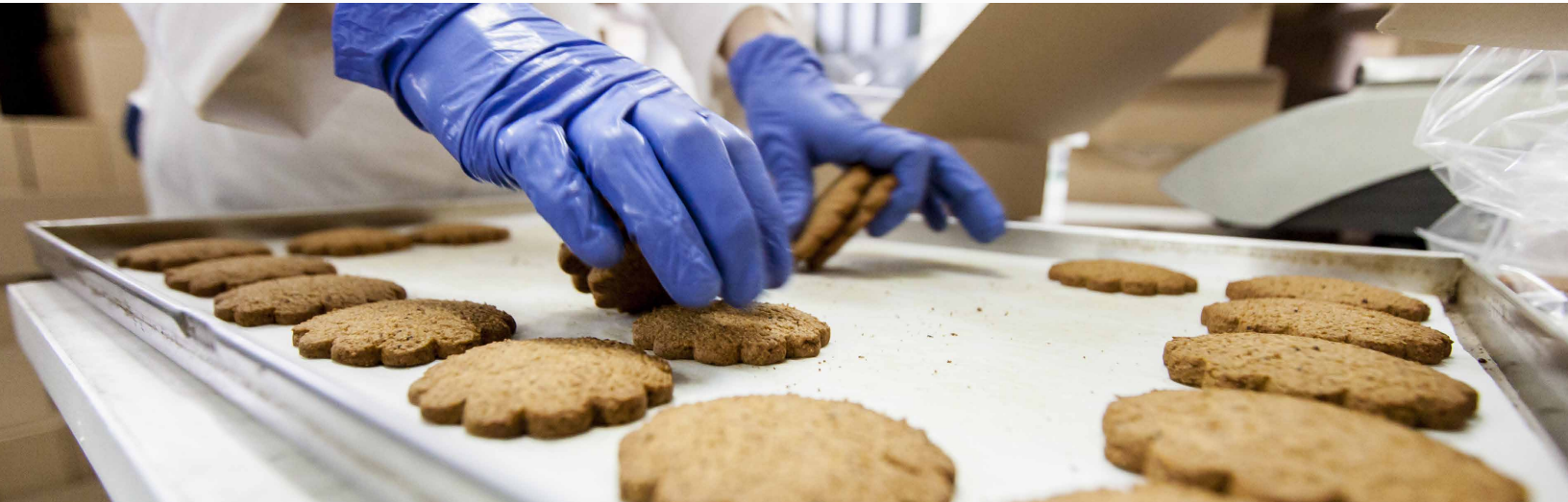


QUALITY CONTROL IN A **Cookie and Cracker Plant**

Introduction to the Market



Quality Control in a Cookie and Cracker Plant

Cookies and crackers represent billions of dollars annually in the global food market, and are a significant part of food purchases around the world. This food segment includes saltines, graham crackers, cracker meals, chocolate chip cookies, oatmeal cookies, wafer cookies and sandwich cookies among others

The cookie and cracker segments are highly competitive markets where brand loyalty and consistent product quality can result in increasing market share and concomitant production and distribution efficiencies. Several large multi-national companies dominate the various product segments, however many smaller companies are also present with allergen- or sugar-free products or high end cookies and crackers with novel ingredients. Consistent product quality is a key to commanding and maintaining market share.



Process Control Analysis Points in a Cookie and Cracker Plant

There are multiple points in a snack food or cereal plant where quality measurements can help control the process, saving money and improving consistency and quality including:

- Raw material testing to verify supplier integrity and ingredient quality
- Monitoring and controlling mixers to ensure dough consistency
- Monitoring and controlling moisture levels at the 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 cookie and cracker production 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.

Value Proposition

Moisture Control

The most common analysis point for cookies and crackers 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.



Raw ingredient monitoring

Incoming raw ingredients such as wheat flour and corn meal, as well as whole grains like wheat, oats 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

Various cookies and crackers are finished with a spray containing shortening and / or sugar. NIR monitoring can ensure that the proper amount of coating is applied to the products as they leave the oven.

Quality Control laboratory costs

At-line analysis of raw ingredients and finished products will significantly reduce the need for laboratory analysis while producing real-time analytical data in time to be of use to the plant operators. The savings in technician resources, chemicals, hazmat disposal and instrumentation can be several thousand dollars a month or more at a medium sized cracker facility.



Unity Solutions to this Industry



Cookie and Cracker Plant Solutions

Unity Scientific offers a variety of ready-to-use solutions tailored to the cookie and cracker plant industry. All of our cookie and cracker 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 Food Analyzer packages in support of the cookie and cracker industries. 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 cookie and cracker 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 cookie and cracker plants. The food analyzer packages are offered in two configurations:

The **US-2500F0D1 Food Analyzer Package** includes The Feed Analyzer includes:

- SpectraStar 2500XL(Rotating) Spectrometer (1100 – 2500 nm)
- Large sample cups with plunger US-LGOP-0001
- Starter calibrations for your products (most cracker and cookie applications available)
- 1 year calibration development and validation support

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

- SpectraStar 2500XLR(Rotating) Spectrometer (680 – 2500 nm)
- Large sample cups with plunger US-LGOP-0001
- Starter calibrations for your products (most cracker and cookie applications available)
- 1 year calibration development and validation support

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