OPTIMIZE LEVELS OF COMPONENTS IN INFANT FORMULA/NUTRITIONAL SUPPLEMENTS

APPLICATION NOTE

Maintain complete real-time quality control of nutrient levels in infant formula and more using In-line Dairy Analyzer

Introduction

Infant formulas are developed mainly from dairy products to provide the proper level of nutrients required maintain development and growth. Other nutritional supplements for seniors are similarly produced. The base of these formulas and supplements come from dairy products. These products are manufactured mainly by starting with milk and blending various products to a certain finished product specification. Milk and whey concentrate in liquid and powder form are used to supplement protein and carbohydrates.

Challenge

The challenge is mainly maintaining the consistency of the blending process while monitoring and controlling the proper level of components. This responsibility falls on the production supervisor and operators. This is difficult to do with standard testing as collecting samples and performing the test takes considerable time.

ProSpect real time in-line analysis

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PROSPECT IN-LINE PROCESS BENEFITS

Solution

ProSpect In-line Process NIR for measurement of fat, protein and total solids in formulas.

- ProSpect In-line Process NIR provides continuous output of precise and accurate analytical results. Results in operating the continuous blending of components to optimize consistency of product, closer to target specifications.
- Continuous measurement of Fat, Protein and Total Solids in formulas.
- Provides constant feedback data for process control.
- Simultaneous output of results for all constituents.

Benefit

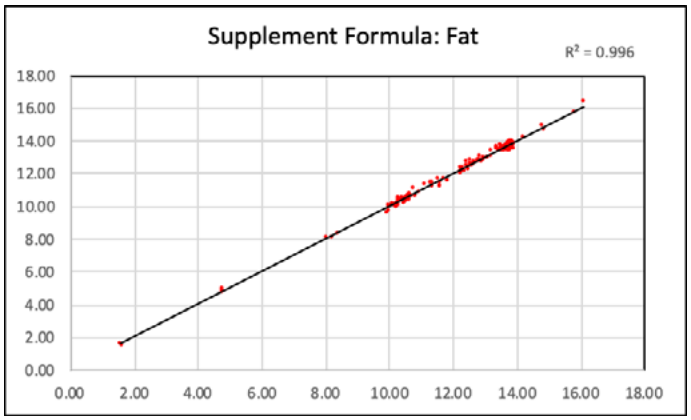
The ProSpect in-line analyzer's proven performance demonstrates the advantage of real time analysis for quality process control. With this performance, the operator has the ability to move the product constituents closer to specification. The customer can then realize a rapid return on investment, typically < 12 months and continuing overall profit.

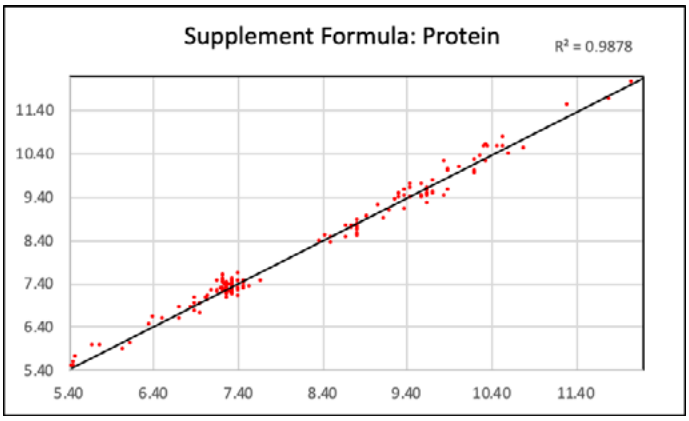
Production anomalies can be immediately detected resulting in timely corrective action. This greatly reduces the amount of product rework and/or waste.

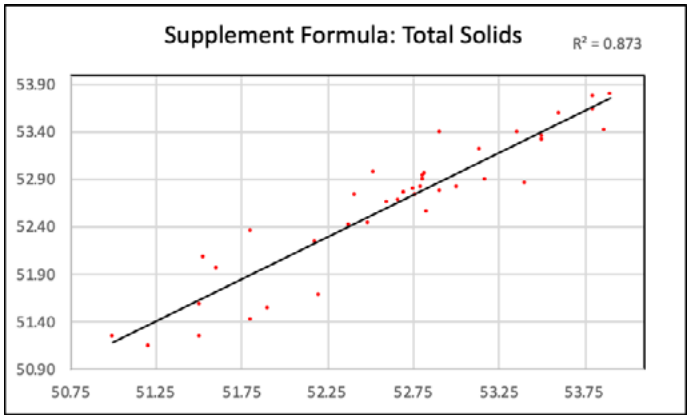
INFANT FORMULA / SENIOR NUTRITIONAL ANALYSIS STATISTICS			
	Range	SECV	R^2
Fat	1.5 – 16.1%	0.14%	0.9960
Protein	5.4 – 12.2%	0.16%	0.9878
Total Solids	51 – 54%	0.27%	0.8730

R^2 = The correlation between the lab reference value and the ProSpect predicted value

- SECV = Standard Error of Cross Validation. This is the Standard Error of differences between ProSpect Predicted and Lab Reference Value







PROSPECT FULLY INTEGRATED SYSTEM

The ProSpect is a fully integrated system with:

- Built-in process computer with touch screen interface
- Built-in PLC which includes bi-lateral communication to the plant PLC.
  - Output of analytical results to the plant PLC via ethernet or analogue
  - Input of production signal from the plant PLC to automatically select the product that is in production
- Built-in power conditioning
- Built-in air-conditioned temperature control
- Insensitive to vibration
- Ethernet ready
- Self-diagnostics
- All housed in a NEMA 4X environmental enclosure
  - Wash down ready
- 3A compliant CIP measurement flow cell with NIR energy transmitted through fiber-optic bundles.

ProSpect In-line Process NIR for measurement of fat and protein in cheese milk.

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