IN-PROCESS

Nordson

Measurement & Control

A NEW ERA IN GAUGING FOR POTATO-BASED PRODUCTS AND SAVOURY SNACKS

NDC Products

Advance Your Process.
Realize Immediate and Long-Term Value.

We understand your process challenges

Consistent product quality

Our Series 9 gauge meets the potato processing industry demands for accurate, reliable and continuous measurements of moisture, fat/oil and surface brownness.

Regardless of whether the product is fried or baked, these measurements can be used to enhance quality and process control.

Specifically engineered out-of-the-box solution

Taking a generic approach to process measurements cannot work.

Nordson understands these critical factors. That's why we've engineered robustness into our measurement solutions. This ensures that any changes in the measurement output are due solely to varying levels of the measured parameter, without influence from other product or process variables. With immediate access to data, our gauges take you one step further towards maximizing the performance potential of your process.

Operate your process at peak performance with single- or multi-component measurements:

Optimize cooking control with confidence for consistent product quality

- Potato crisps/chips – moisture, oil, degree of brownness and bed height

Optimize solids and browning for consistent product quality

- French fries – moisture, solids, oil, degree of brownness and bed height

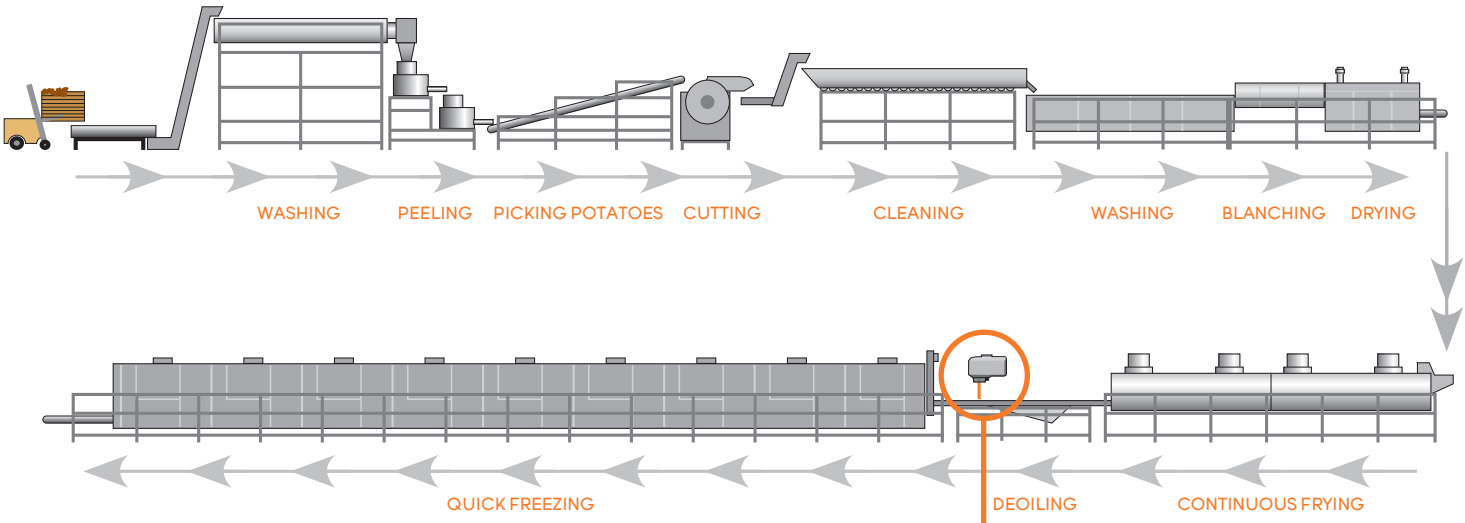
Optimize process efficiency and yield with tighter control of moisture

- Potato starch – moisture

Product	Measurement
Potato fibre	moisture, protein
Potato powder or flakes	moisture
Potato protein extract	moisture, protein
Potato snack pellets	moisture
Baked snack products (chips/crisps etc)	moisture, oil, degree of brownness
Fried snack products (chips/crisps/french fries etc)	moisture, oil, degree of brownness
Snack products (corn or potato): pre-baking/frying	moisture
Starch	moisture
French fries	moisture/solids, oil, degree of brownness

Fully Engineered for the Process to Deliver Accurate, Reliable Measurements

French Fry Processing



Installation

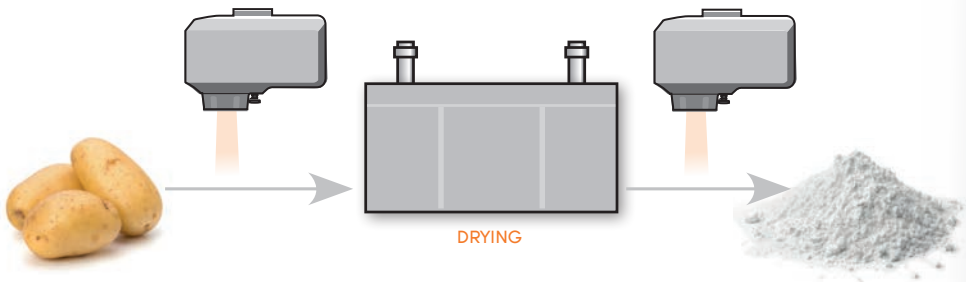
The Series 9 gauge measures over a 60 mm diameter standard beam patch size. It is suspended over the process line at a distance of 250 mm from the mean product height, and tolerates product height fluctuations of ±100 mm.

Cooling options

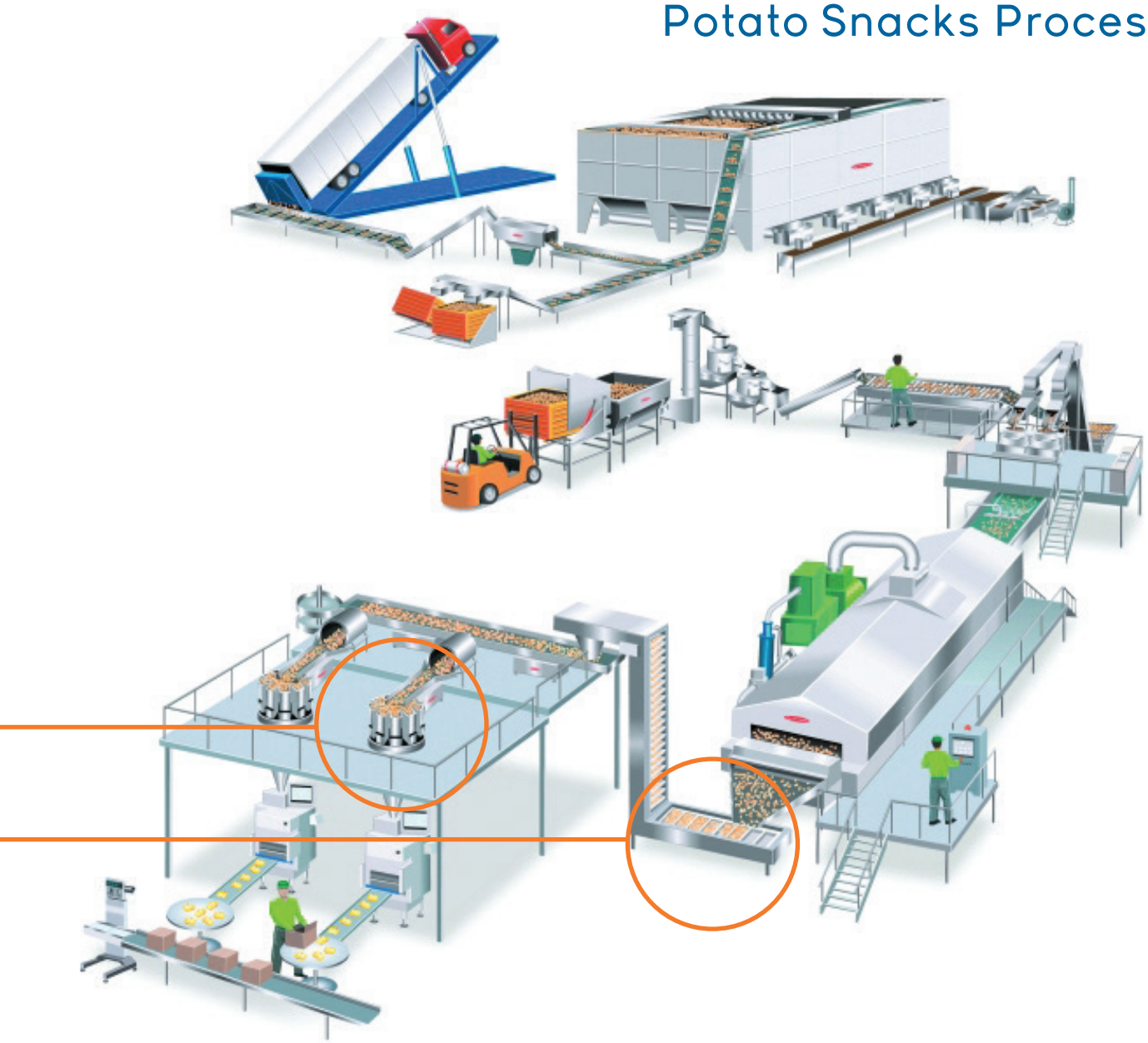
For ambient temperatures above 50°C, these cooling options are available:

- **Vortec air cooling:** with an optional air control solenoid to optimize air consumption and reduced operating cost
- **Water cooling**

Potato Starch Processing



Potato Snacks Processing



Starch Drying

Moisture Content and Bed Height

Fryer Exit

Moisture and Oil Content

Flavoring and Packing

Moisture and Oil Content

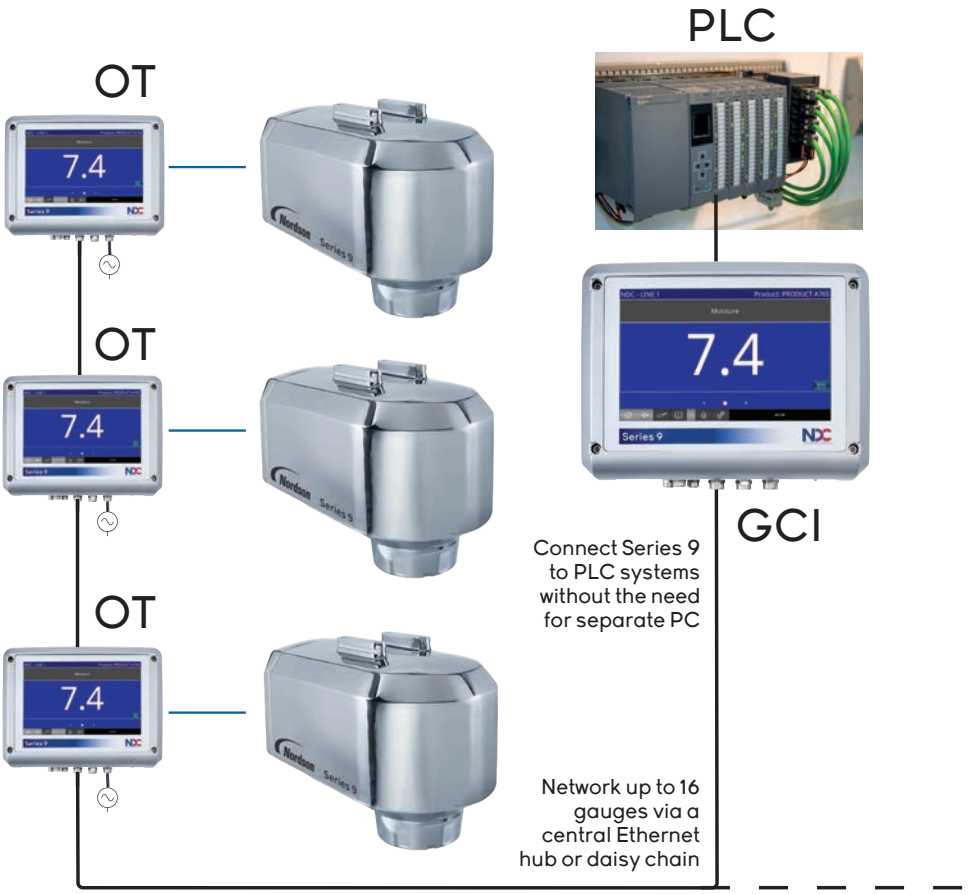
Connectivity and Interfacing to Enhance Process Insight and Control

A flexible and scalable in-process gauging system for the snack food industry

Gauge Control Interface (GCI)

Series 9 gauge control interface

- 10-inch, touch-screen GCI
- Three Ethernet ports and RJ45 external port
- Interfaces up to 16 gauges
- Multi-lingual interface



Portable interface

Accessing your Series 9 gauge is even easier with our portable operator terminal. It can be docked in the control room or operated near the gauge (wirelessly or via Ethernet cable) for sampling and configuration.

Series 9 devices

Series 9 peripheral devices all run on 24V DC power and include:

- Operator Terminal
- Gauge Control Interface
- Gauge Control Port
- Power Hub

OT — Operator Terminal

The OT provides 24V DC to a single gauge and operator-level interaction access to its measurement, data trending, sampling and diagnostic functions. Three (3) Ethernet ports are available for convenient networking configurations.

GCI — Gauge Control Interface

The GCI provides 24V DC power to a single gauge. It enables you to perform multi-gauge setup (up to 16 gauges), calibration adjustments and product management. Both the GCI and OT feature high-definition, multi-lingual, color touch-screen displays.

GCP — Gauge Control Port

The GCP provides three (3) Ethernet ports, allowing multiple gauges to be networked (daisy chained). It also has additional options for analog outputs and digital I/O for any connected gauge.

PH — Power Hub

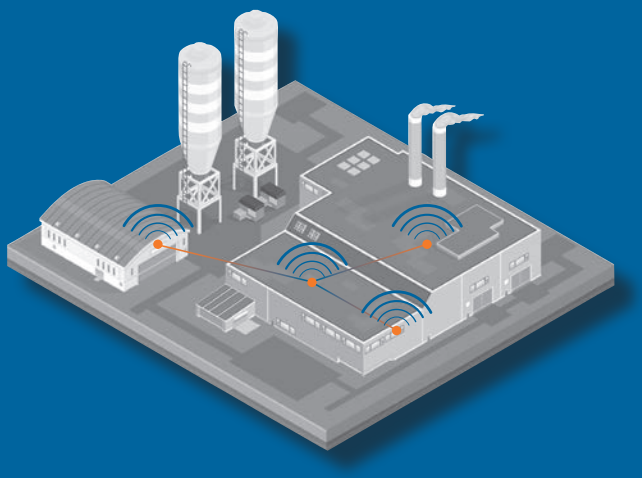
The PH provides 24V DC power to a single gauge. It also enables convenient networked arrangements of multiple Series 9 gauges and devices via three (3) Ethernet ports.

Industry 4.0

Scalable solution to meet your plant configuration

Series 9's flexible building-block architecture enables you to scale Nordson's gauging system to meet current and future site requirements.

- Keep pace with changing demands
- Meet the needs of your plant
- Protect current investment while realizing additional benefits
- Maintain a competitive edge



Stay Ahead with the Series 9 On-Line Gauge

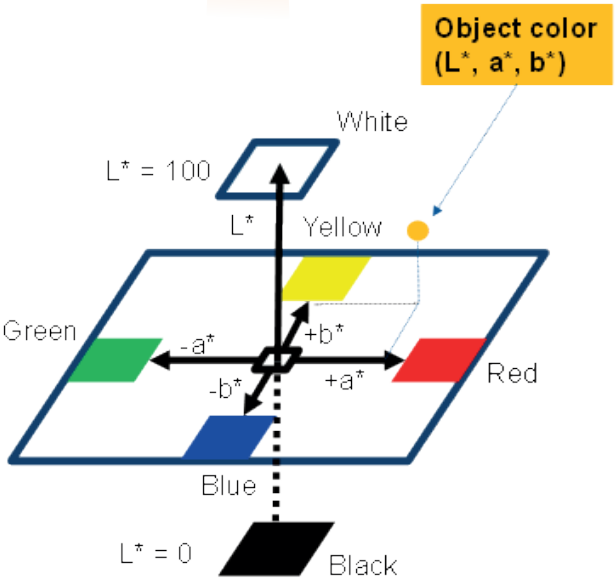
The Only On-Line Sensor on the Market that can Simultaneously Measure Color, Moisture, Fat/Oil, and Protein...Out of the Box

The Series 9 gauge is a best-seller in the potato industry. It is specially engineered for 24/7 duty, helping manufacturers to meet product quality demands and efficiency goals.

Installed directly on-line, it delivers unparalleled measurement performance while maintaining simplicity and versatility in design and operation. It doesn't require special operator skills or expert knowledge.

The Series 9 can simultaneously measure key constituents such as Moisture, Oil/Fat, Protein and Color in potato products. Color can be measured across a wide range of standard scales, including CIELAB (L*, a*, b*), Tristimulus (X, Y Z), RGB, CIELCh (L*, C*, h) ΔE* & ΔEcmc.

Application tests in leading companies have proven that repeatable numeric color readings, combined with other critical measurements such as moisture, fat/oil, and protein, can be confidently used as part of a process control strategy to deliver consistent product quality every time.



The Series 9 Color Gauge keeps you ahead with:

- Evolutionary technology that is flexible, adaptable and scalable to meet your changing needs
- Enterprise-level intelligence compatible with Industry 4.0
- Easier operation and maintenance
- Lower cost of ownership over a long lifetime of operation

The NEW InfraLab Series 9 Potato Analyzer

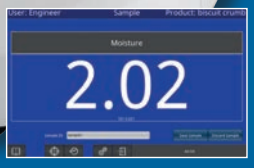
Fast, accurate and easy to operate, InfraLab is the viable alternative to laboratory methods

The InfraLab Series 9 potato analyzer, designed for both at-line and laboratory use, measures samples taken from the process in less than 5 seconds. Available in single- or multi-component formats, InfraLab is able to simultaneously analyze:

- Moisture
- Fat/Oil
- Degree of Brownness

InfraLab is designed as a routine replacement for loss-on-drying, Karl Fischer or gravimetric moisture testing and to replace chemical methods for fat or protein analysis, such as Soxhlet, Weibull-Stoldt or Kjeldahl.

Once calibrated to your preferred reference methods using the built-in calibration tools, its key advantages are: speed, minimal sample preparation and the fact that it measures a larger, more representative sample than other techniques. InfraLab is accessed via its intuitive, touch-screen interface and requires no special user skills in routine use.



10-inch, high-resolution capacitive touchscreen display

Use encrypted USB sticks (BitLocker) for data download to spreadsheet programs

Reference standard for routine stability checks and standardization after servicing

History Audit Log and On-board data storage (up to 10,000 sample measurements)

The InfraLab Series 9 Advantage:

- Advanced high-accuracy, at-line snack analyzer designed for rapid analyses in process environments
- Direct replacement for time-consuming laboratory analyses or at-line instruments such as loss-on-drying or gravimetric moisture or testing which has inherent operator-dependent repeatability and reproducibility performance issues
- Intuitive to use with user-friendly reporting of measurement values for rapid monitoring of processes
- Reduces the burden on over-stretched QA Laboratory resources
- Enables cross-checking of on-line measurements
- Enables greater processing and measurement capability for deeper process insight, creating new and exciting opportunities for application development
- Significantly reduces your operational expenditure and delivers a strong return-on-investment over the lifetime of operation

What's NEW

The InfraLab Series 9 platform is 25x more powerful than the previous generation, enabling it to deliver unparalleled capability to snack processors.

- **Unlimited Potential**
  New, innovative processor allows the InfraLab Series 9 to perform more processing operations and includes embedded calibration tools, a comprehensive user interface with rich feature set of functions.
- **Unrivaled Performance**
  Ultra-high-speed measurement outputs capture changes in the process in real-time. The InfraLab Series 9 boasts a faster sampling rate and several filter wheel options for all current and future single- and multi-component measurement opportunities.
- **Intuitive Operation Consistent with Series 9**
  The InfraLab Series 9 includes a graphically rich software interface that's displayed on a large 10-inch, high-resolution capacitive touchscreen.
- **Enhanced Secure Data Storage**
  In addition to its speed and precision, InfraLab Series 9 benefits from substantial data storage (up to 100,000 sample measurements) and security features.
- **Advanced Diagnostics**
  Ready for Industry 4.0, the InfraLab Series 9 provides advanced warning of failures related to power supply voltages, lamp, motor and vibration.
- **Improved Robustness**
  The rugged InfraLab Series 9 is fit-for-purpose for a broad range of production environments. The technology has a serviceable lifetime of at least 10 years.
- **Compatibility**
  InfraLab Series 9 lamp and motor can be used in InfraLab e-Series. Sample bowls are also interchangeable. Guaranteed measurement proof of equivalence.

Calibration Software

The Series 9 and InfraLab are delivered with Nordson's unique factory calibrations that are ready for use for the specified measurements and ranges. On installation, they are adjusted to agree with the local reference method. The software provided simplifies this process by enabling a comparison of instrument values with laboratory results and features the following tools and functionality:

- Instrument setup and calibration
- Product management (product settings)
- Displays of measurement and other key parameters
- Data logging and export
- Diagnostic functions

Notes:

Optimizing Your Investment with World-Class Service and Support

Nordson Measurement & Control's technical expertise comes from deep experience supporting thousands of products at the world's leading manufacturers. Our portfolio of support offerings leverages this expertise to assist you through the service lifecycle. We offer a complete range of cost-effective support solutions including commissioning, training, technical assistance and service agreements. Customers rely on our 24-7 availability via myNDC – the industry's most progressive service cloud portal. Whether it's configuring new equipment, training your technical staff or solving a technical problem, you can count on our experienced team to help maintain the health and performance of your Nordson product.

Visit myNDC service cloud at myndc.com.

For questions or support go to: https://ndc.custhelp.com/

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