Nordson
MEASUREMENT & CONTROL

A NEW ERA IN GAUGING FOR INDUSTRIAL BULK APPLICATIONS

Series 9

NDC
TECHNOLOGIES

Empowering True Process
and Quality Control

NDC Products

Intelligence that transforms the world.

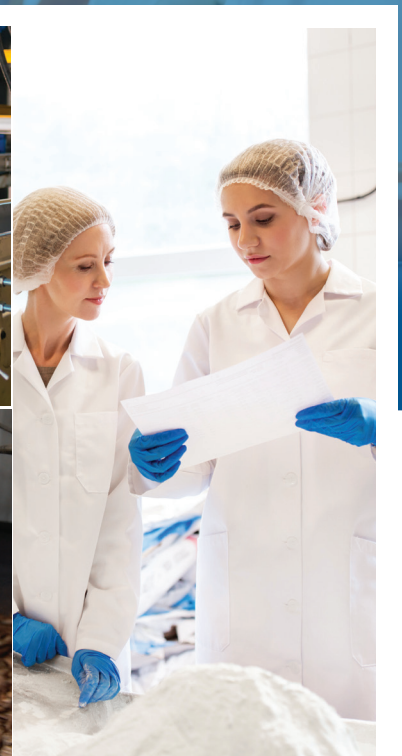# Maximizing Process Performance and KPIs

Through Moisture Measurement

For more than 50 years, Nordson Measurement & Control has designed and built measurement solutions specifically developed to meet the manufacturing challenges faced by the bulk material, mineral, chemical and pharmaceutical industries.

Our leading position in process measurement has been achieved by working closely with our customers and developing solutions that meet their needs – for better process insight and quality control. We set the bar in the industry for best-in-class performance with our CM710e and PH710e on-line industrial gauges and InfraLab e-Series at-line analyzer. Our legacy of innovation continues with the Series 9 gauge.

By solving process-specific application challenges, we play a dominant role in supporting industry and forging successful relationships with the leading manufacturers.

Today, tens of thousands of Nordson gauges are in service around the globe. That's because we are trusted not just to meet process needs, but to uncover new efficiencies, ensure quality and add value wherever our products are installed.

NDC Products

Stay Ahead with the Series 9 On-Line Gauge

Process demands keep changing, but our Series 9 on-line industrial gauge is your **next-generation process optimization solution** for measuring moisture. It is specially engineered for 24/7 duty, helping you to meet product quality demands and efficiency goals.

The Series 9 delivers unparalleled measurement performance while maintaining simplicity and versatility in design and operation.

The **flexible, future-proof platform** harnesses the full power of infrared spectroscopy. The user-friendly format requires no special operator skills or expert knowledge, yet it allows expert users to access the enhanced interaction capabilities as desired.

The Series 9 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

Driven by our industry-leading expertise and unrivalled applications knowledge, the Series 9 delivers the performance and productivity you need – now, and for the challenges yet to come.

Leverage the Power of At-Line Analysis

The **NEW** InfraLab Series 9 is the latest leading at-line analysis solution on the market today. Designed to be used anywhere in the process, the InfraLab Series 9 offers an expanded range of features and capabilities that will elevate your quality assurance process. Benefit from rapid, accurate and consistent measurements for a wide variety of industrial applications. Learn more about this powerful analyzer on page 12.

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

We understand your process challenges

Automated process control

Automated process control using real-time, on-line moisture measurement is a primary objective for many processes in order to achieve consistently optimal product quality, meet required product flow or compression characteristics or ensure the product can be correctly stored or transported prior to end use.

Tighter control of moisture

In addition to great quality, moisture content greatly impacts process efficiency and yield. Whether you're achieving the correct end-point moisture prior to forming a product, monitoring moisture in a slurry before the spray dryer or using feedback control at the dryer exit to optimize moisture levels, these and many other processes can benefit from tighter control of moisture levels within your product.

Accurate, robust measurements

Measurements must be robust enough for the process environment and accurate and reliable enough to be trusted for control. The process may also demand specifically-engineered solutions to gain access to the product to make an effective measurement.

While many products are transported on conveyors that provide convenient measurement access, pneumatic transport systems require automatic samplers, discontinuous product flows require product presence/absence detection and a measurement may also be required through a sight glass.

We offer a range of well-engineered solutions

We offer a wide range of well-engineered solutions to ensure that the measurement can be made where and when you need it. Nordson industrial moisture gauges have been installed and are in daily use around the world in demanding industrial processes, helping manufacturers to optimize quality and process performance. Our gauges will also help you to:
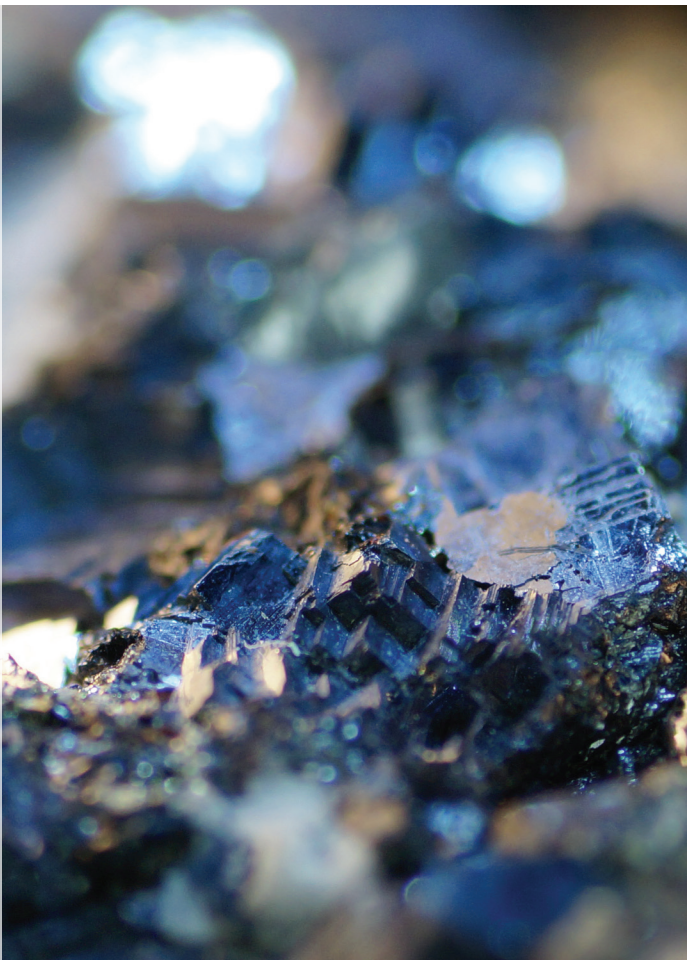
- Improve production efficiency
- Reduce fossil fuel consumption
- Achieve right-first-time batch drying

Operate your process at peak performance with moisture measurements in applications, such as:

- ■ Powders and Aggregates
- ■ Flakes and Granules
- ■ Slurries and Paste

Refer to the list of applications later in this brochure to see how the Series 9 delivers value to your process.

Meeting Your Application Needs Today and Tomorrow to Fully Leverage Your Investment

Greater processing power to perform more advanced measurements and gauge operations

- Powerful, dual-core processor with large on-board storage

Unparalleled process vision

- 12 hours of measurement trending and embedded product calibration adjustment tools

Expansive measurement database to meet your needs

- Every Nordson application is fully documented

Hygienic, seamless stainless-steel enclosure with sapphire window

- 316L stainless steel, sealed to IP67

Integrated Air Purge Window shield to keep window clean from process environment

- Advanced window contamination monitoring with an optional air flow monitor

Simple slide-on sensor mounting

Series 9

NDC TECHNOLOGIES

Integrated Air Purge Window

Removable service backplate

Innovative removable backplate for easy service and maintenance

- Remove gauge internals while leaving enclosure in place

ATEX certification for safe use in dust hazardous environments

- DUST: II 1 D Ex Ta IIIC T288°C Da Ta -20°C to 50°C and II 2D Ex Tb III C T80°C Db

Versatile connectivity for flexible integration into production networks
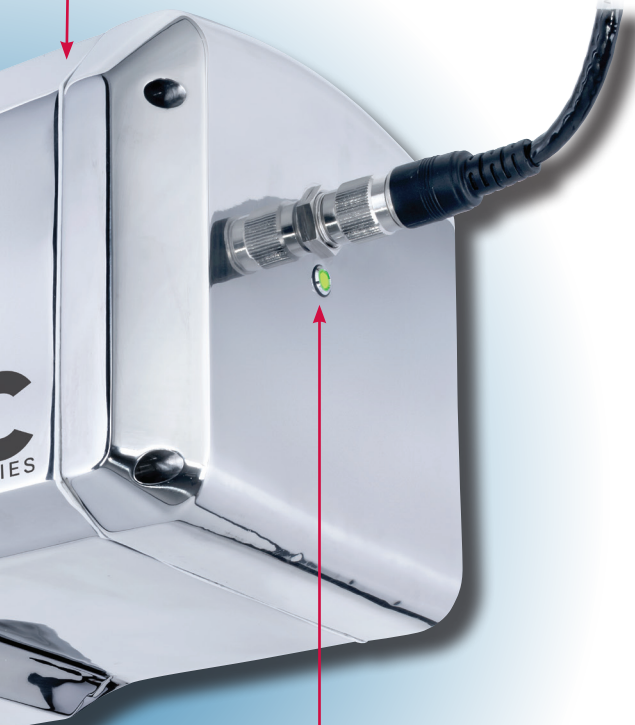
- Ethernet and fieldbus networking with digital and analog connectivity

Easily connect to Series 9 via hand held tablet

- Connect from any location wirelessly or via internet for sampling and configuration

Advanced diagnostics for maximum uptime

- Includes Status indicator light for at-a-glance confirmation with integrated Auto-Check feature for total piece of mind

Status indicator light

Easy to Install, Integrate and Operate

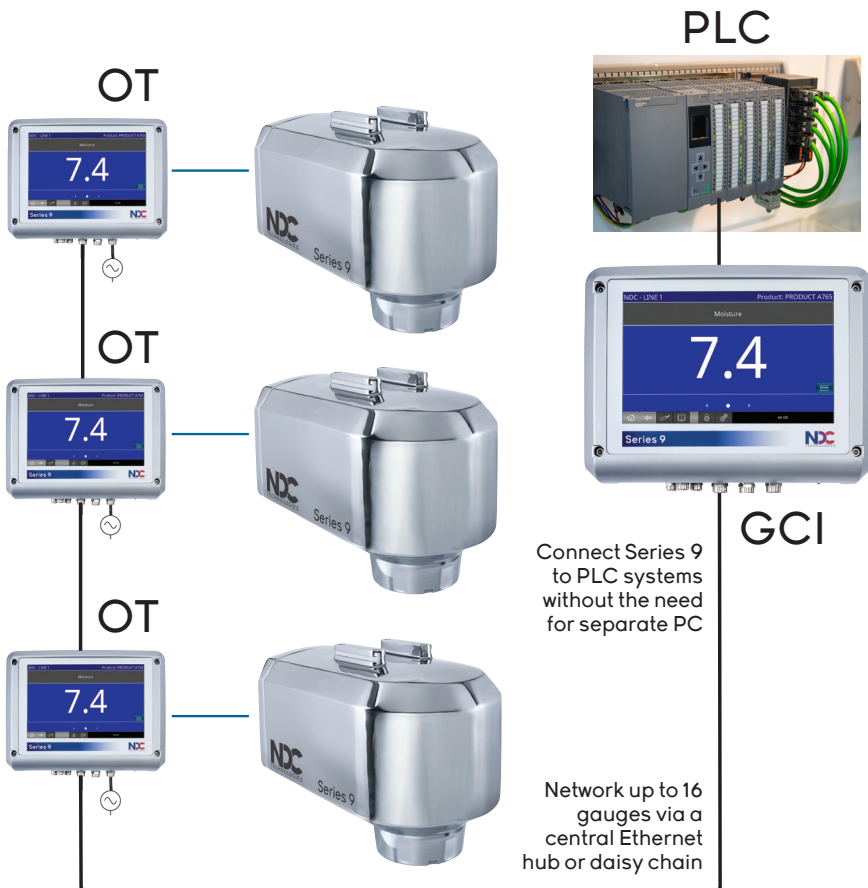# Connectivity and Interfacing to Enhance Process Insight and Control

A flexible and scalable in-process gauging system for industrial applications

NDC - LINE 1   Product: PRODUCT A765
Moisture
7.4
All OK
Series 9

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

OT

OT

OT

PLC

GCI

Connect Series 9 to PLC systems without the need for separate PC

Network up to 16 gauges via a central Ethernet hub or daisy chain

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.

![Nordson MEASUREMENT & CONTROL]

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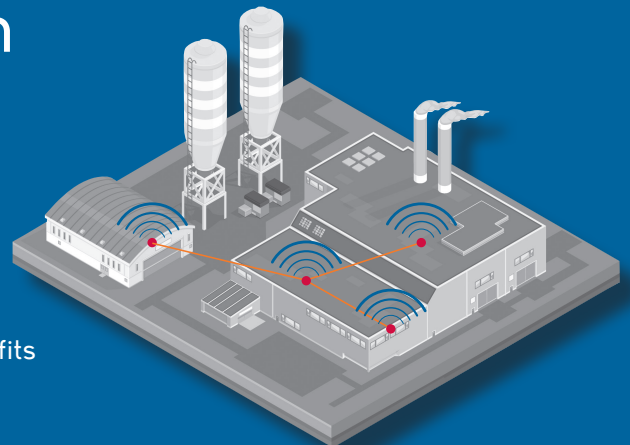
PH — Power Hub
The PH provides 24V DC power to a single gauge. It also enables convenient networked arrangements of multiple Series 9 gauges and devices via three (3) Ethernet ports.

Industry 4.0

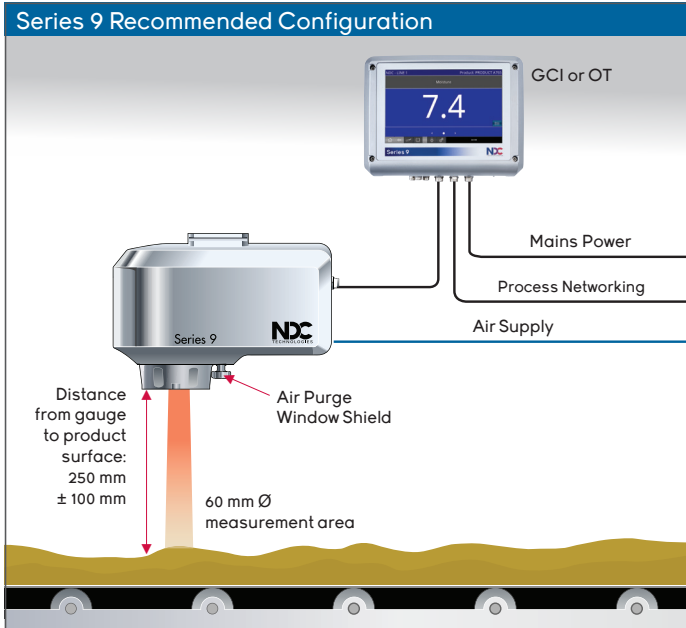# Scalable solution to meet your plant configuration

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

Fully Engineered for the Process to Deliver Accurate, Reliable Measurements

In continuous product flows...

Series 9 Recommended Configuration

GCI or OT

7.4

Mains Power

Process Networking

Air Supply

Series 9

Distance from gauge to product surface: 250 mm ± 100 mm

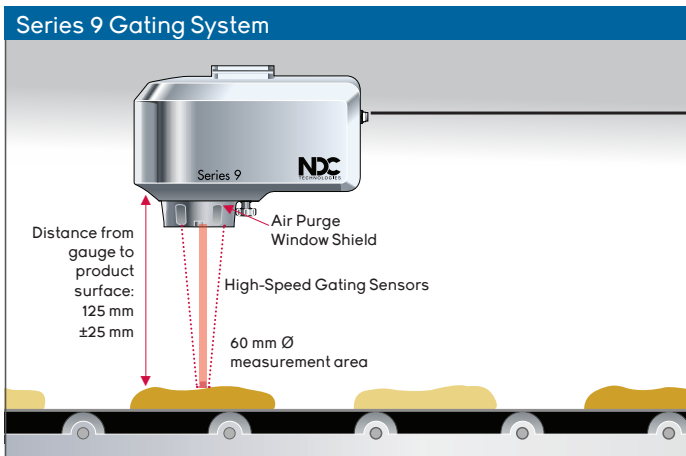Air Purge Window Shield

60 mm Ø measurement area

Installation

The Series 9 measures over a 60 mm diameter area (optionally 25 mm or 10 mm) and is suspended over the process line at a distance of 250 mm from the mean product height to the Series 9 measurement window.

The gauge tolerates product height fluctuations of ± 100 mm without the measurement being affected.

Ambient lighting, temperature or relative humidity changes do not affect the Series9 measurement.

Series 9 Gating System

Series 9

Distance from gauge to product surface: 125 mm ±25 mm

Air Purge Window Shield

High-Speed Gating Sensors
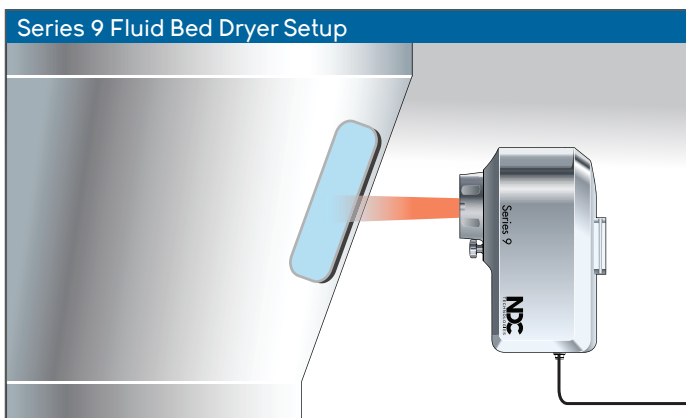
60 mm Ø measurement area

Discontinuous product flows

The optional integrated "high-speed gating" system detects the product's presence or absence in discontinuous flows and avoids recording of data when nothing is passing across the measurement area.

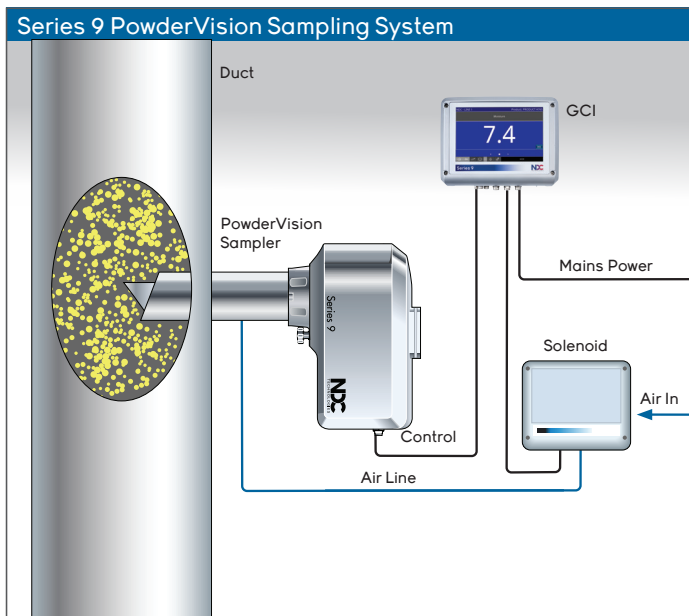High-speed gating can be used for processes which simply do not flow continuously.

Beam patch sizes of 60 mm or 10 mm are available.

Series 9 Fluid Bed Dryer Setup

Series 9

Powders in fluid bed dryers

The Series 9 moisture gauge can be installed to measure moisture in powers in a fluid bed dryer through a sight glass, while ensuring that the measurement area is below the powder line. For powders that adhere to the sight glass, ask about Nordson's unique cleanable fiber probe solution.

Used with a PowderVision sampler in gravity-fed product flows

Series 9 PowderVision Sampling System

Duct

GCI

7.4

PowderVision Sampler

Mains Power

Series 9

Solenoid

NDC

Air In

Control

Air Line

Measuring powders in gravity-fed ducts

The pneumatic PowderVision sampler can be used with the Series 9 gauge for powders transported in enclosed ducts.

This device comprises of a tube fitting with window and a sample collection cup which fills with the falling product. Once a sample has been collected and measured, a jet of air ejects it and the cycle repeats.

Additional technical information sources

For additional technical information about installation, calibration, networking and process connectivity, and to learn more about the Series 9 gauge generally, please consult the product manuals.

Ready for any process condition

The Series 9's stainless-steel hygienic housing is sealed to IP67 requirements and optionally ATEX certified. Its seamless hygienic design is a must for industrial applications and allows operation in ambient temperatures from 0-50°C without cooling.

For higher ambient temperatures, cooling options using a novel heat exchanger arrangement are available:

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

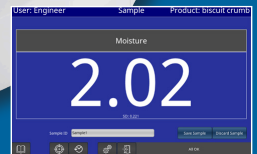**TEMPERATURE**　　**DUST**　　**AMBIENT LIGHT**　　**HUMIDITY**

The NEW InfraLab Series 9 Moisture Analyzer

Raising the bar to give you the competitive edge for fast, accurate and easy measurements.

For over 30 years, the InfraLab e-Series has been a popular solution for Quality Assurance testing both at-line and in laboratories. Thanks to its speed and precision, this model has become a benchmark for the best industrial manufacturers worldwide. Now, we have built upon the success of the e-Series to take this leading solution to a whole new level and deliver the next-generation, industrial at-line analyzer – the InfraLab Series 9. Incorporating the extensive feature set of the Series 9 gauge, this next-generation InfraLab provides more value and flexibility to industrial bulk material processors.

The Series 9 platform is a logical evolution, delivering innovative capabilities in all areas. Its incorporation into the new InfraLab Series 9 creates the most powerful, high-performance at-process NIR analyzer on the market today.
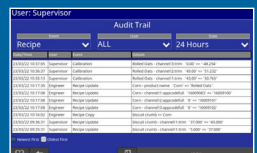

10-inch, high-resolution capacitive touchscreen display

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 NIR 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 powder and bulk material 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 feature the following tools and functionality:

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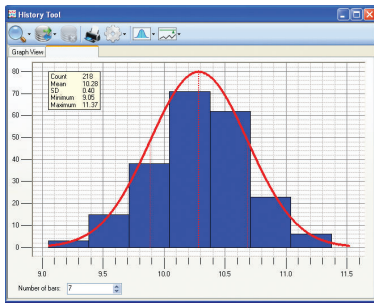- Diagnostic functions

Get Unparalleled Performance in the Following Industrial Applications

Minerals and Bulk Applications

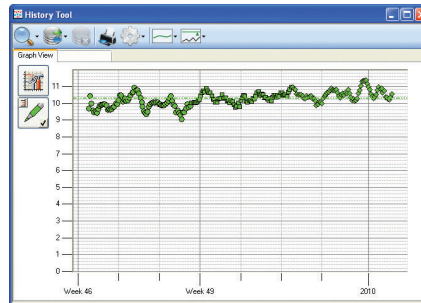| Industry Sector	Moisture	Application Areas
Ceramics and Clay	■	ball clay, refractory clay, china clay (kaolin), spray dried ceramic powders, red clay spray dried ceramic powders, clay for roofing tiles
Fibers and Polymers	■	cellulose acetate tow, yarn or chips, glass fiber chips, nylon granules, rubber crumb, PVC powder
Nitrocellulose	■	nitrocellulose chips, nitrocellulose with nitroglycerine
Minerals – mining	■	bauxite (aluminum oxide), calcium fluoride (fluorspar), copper concentrate, copper ore powder or granules, copper tailings, crushed dolomite (calcium magnesium carbonate), gold ore, gypsum (calcium sulphate), ilmenite, kaolin granules, molybdenum sulphide, peat, phosphates, refined potash, potassium fluoride, powdered talc
Minerals – industrial	■	ash (power station and fly ash), coke breeze (powdered), crushed or powdered coal, milled furnace slag, raw sinter mix, sinter mix (mixture of iron ore + coke breeze + limestone) [not pure iron ore], Laponite, bentonite (Wilkinite)
Minerals – building and construction materials	■	cement meal, concrete mixes, roofing tile chips, washed sand, sand for roofing tiles
Industrial Textiles	■	cotton: Input – prebaling – pre-ginning, neoprene rope, rayon fiber, textile fibers, wool
Wood and Cellulose Products	■	cellulose pulp sheet, cork chips and sheet, paper fiber pulp, particle board, fiber board, OSB, sawdust, wheat straw, wood veneers, woodchips (frozen or unfrozen), wood fiber
Organic Waste and Biofeed	■	sewage sludge
Other	■	lead acid battery paste

Chemical and Pharmaceutical Applications

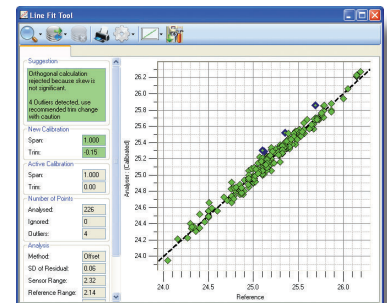| Industry sector	Moisture	Application Areas
Chemicals	■	aluminum hydroxide, alumina/aluminum oxide, amino acid powder, ammonia oxide, ammonium/potassium chloride, boric acid, bromine, calcium carbonate, ferrite powder, sodium chloride (salt), sodium carbonate/bicarbonate, sodium sequicarbonate, sulphur, titanium dioxide paste/powder, uranium dioxide
Detergents	■	detergent powders: zeolite, phosphate- or carbonate-based detergent slurries; phosphate or zeolite based
Fertilizers	■	ammonium, phosphate or nitrate based
Pharmaceuticals and Nutraceuticals	■	pharmaceutical and nutraceutical powders, sugar coatings in the pan coater

Infralab Manager Software

Advanced Data Analysis for Deeper Process Insight

Histogram

Data display

Calibration

Network connectivity

Optional communications interface for sending measurement data over Ethernet for capture and storage in a centralized database.

Ethernet

With InfraLab Series 9, you realize a greater return on investment by reducing routine sample testing costs.

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.

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NDC Products

Intelligence that transforms the world.