NDC

InfraLab™
e-Series

- At-Line
- Quality Assurance
- Laboratory
- Quality Control

AT-LINE INDUSTRIAL MOISTURE ANALYZER

InfraLab™
Analyzer

InfraLab™   e-Series

5.65

NDC

The Measure of Quality™

At-Line Moisture Measurement

NDC & Industrial Processes

NDC Infrared Engineering has over 40 years of experience in the design and manufacture of NIR (near infrared) instrumentation developed specifically to meet the exacting requirements of a wide range of industrial processes.

A key parameter of many processes is the product moisture or water content. In so many industrial processes considerable energy is expended heating and drying products until they reach a required end point which gives them the desired physical and chemical properties needed to make them function optimally in their final form.

Our Applications Engineering team has in-depth knowledge of the characteristics and behaviour of mineral and chemical products, the measurement and control requirements in the process, and the many analytical methods used to determine moisture content in quality assurance systems.

The InfraLab e-Series Industrial Moisture Analyzer - the 5th generation of InfraLab - is designed for use in a wide range of manufacturing processes for analyzing samples rapidly to ensure that the moisture content meets specified values.

Performance, convenience and ease-of-use make InfraLab the analyzer of choice for manufacturers worldwide.

Achieving Right-First-Time Production through Reliable Moisture Control...

Assuring and Controlling Quality

Quality and efficiency initiatives in industrial processing frequently focus on the water content of the product.

Not only does the way in which the water content is controlled impact significantly on energy costs, the final product quality is also dependent on how effectively the specified water content has been achieved, influencing such characteristics as packing density, shelf life, and in the case of tableting or forming processes, how the product behaves under compaction in the press or former.

The fact that many processes allow for only limited or even no rework of batches, achieving consistent right-first-time moisture values improves process profitability and avoids rejects later in the process or supply chain.

Reducing the spread within the process enables the mean value to be controlled closer to the specification limit.

The Need for Analysis

The quantifiable benefits of good moisture control demand reliable analytical methods that are compatible with the demands of the process both in terms of rate of production and how representative the analyzed samples are of the process.

Fast accurate analysis enables critical production decisions, such as batch release, to be made in a timely and efficient way.

Yet many laboratory test methods take many minutes or even hours to complete and may require skilled technicians to use the apparatus.

In addition, these methods may only analyze a few grammes at a time, bringing into question how representative a tiny sample can be of a process which is making many kilogrammes per hour.
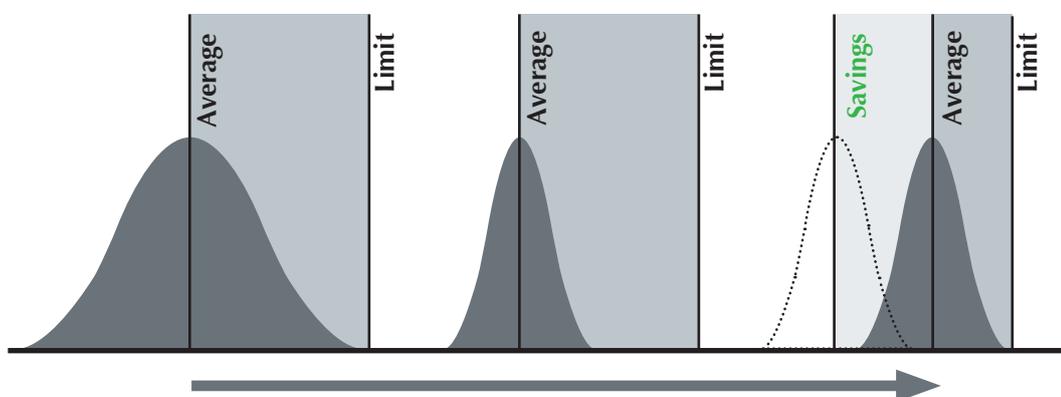
In Ceramics, Chemicals, Detergents, Pharmaceuticals, Minerals and other Bulk Powder production processes, water content is critical every stage...

Replacing LOD, Oven & Chemical Methods

Replacing LOD, Oven Methods and Chemical Determination of Water Content, in a Fast, Accurate, Robust and Easy-to-Use Format...

InfraLab - the At-Line Solution

The InfraLab Analyzer meets the demand for rapid, at-line analysis and, without the need for skilled operators, provides accurate results on larger more representative samples. In less than 10 seconds, results are displayed, stored and, if required, transmitted, enabling the process manager to make informed decisions on process control.

As a direct replacement for Loss-on-Drying, Oven Methods and Wet Chemical Analysis, it is designed to be calibrated to your reference method of choice, thereafter providing equivalent measurements in a fraction of the time.

Using the InfraLab could not be simpler and operators require minimal training to learn how to use it effectively.

Data security is achieved through the user log-in system and automatic logging with time and date stamp of every interaction.

Calibration

The initial calibration process of the InfraLab to the Primary Reference Method is simplified by NDC's SpeedCal™ measurement algorithms.

Each algorithm is already optimized over the specified range, and in most cases, only the offset (TRIM) value will require adjustment.

InfraLab is also delivered with InfraLabXL Calibration Management Software which facilitates the calibration adjustment process and also provides access from a PC, connected via Ethernet, to data displays, trends, historian function and more.

InfraLab's inherent long-term stability eliminates the need for any routine re-calibration.

Process Adjustment & Quality Assurance Records

Process Samples
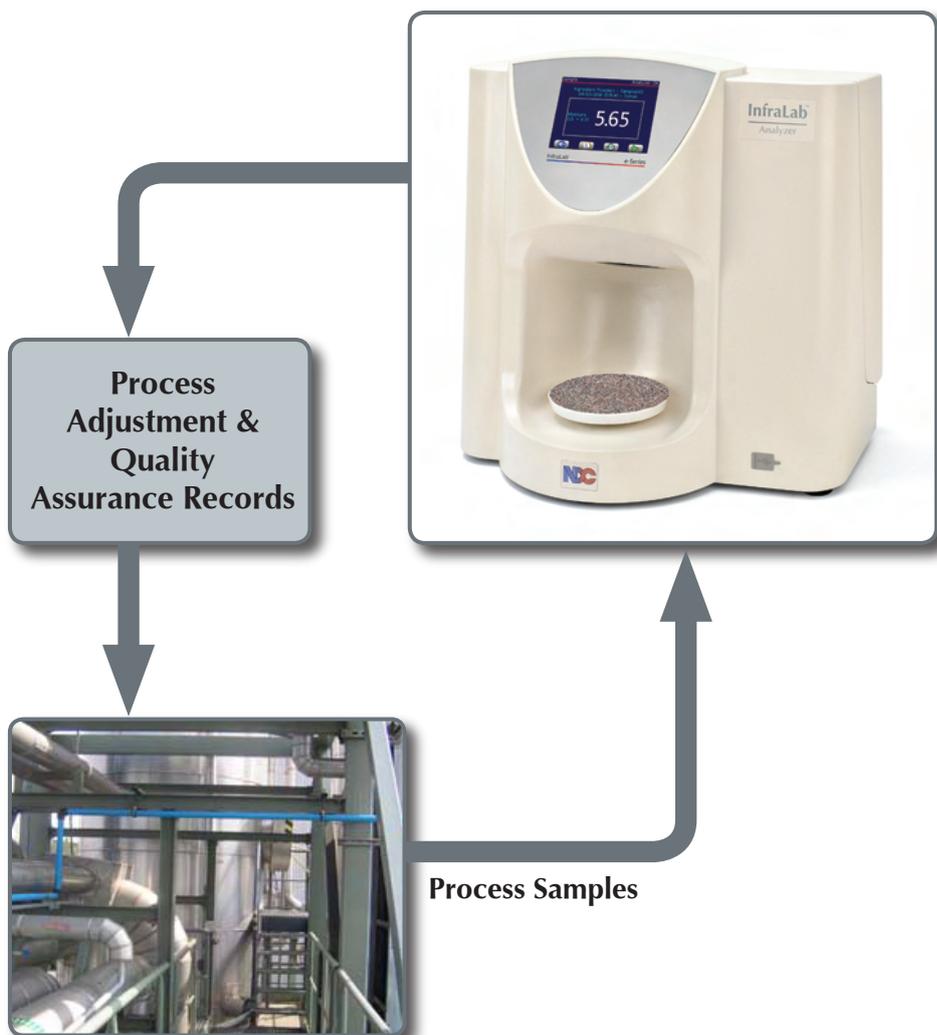
Using the InfraLab

- user logs on
- selects product definition
- presents sample
- within 5-10 seconds, data is presented on screen and stored in the memory or transmitted via Ethernet

Fast, Accurate, Easy-to-Use

InfraLab is a fully featured and versatile Analyzer with a choice of commmunications and data extraction and storage options...
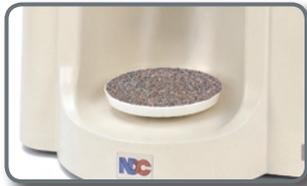
Display	**USB Data Port**	**Bar Code Reader (option)**
Standard Dish (rotating)	**Shallow Dish (rotating)**	**Petri Dish (static) (option)**

Stability

InfraLab automatically monitors its own opto-electronic stability, making it insensitive to environmental changes such as ambient light or temperature and relative humidity. If ever there is a need to understand an unexpected result, the External Reference Standard can be used to check the InfraLab. Forcing the InfraLab to make the same reading with the same calibration, you will always see the same value displayed on the screen when you attach the Standard. If readings are stable, then it is the process that has changed. Process specification limits can also be programmed into the InfraLab to alarm when exceeded.

External Reference Standard

Communications and Networking

Though fully functional as a standalone device, InfraLab is Ethernet enabled, making integration into factory and LIMS networks straightforward.
InfraLabXL allows communication with all InfraLab units on the same network from a single PC.

Ethernet

InfraLab e-Series Key Features:

- Rapid analysis with a measurement time of less than 10 seconds

- Ergonomic hygienic design

- InfraLabXL PC Software for data management and enhanced functionality

- Quarter VGA colour touch screen with multi-lingual interface

- User security protocol with pass code protection for operator, supervisor and administrator levels for up to 200 users

- USB ports for data download to memory stick and barcode reader and printer connection

- Automatic window contamination monitor

- Internal (automatic) and external (manual) Reference Standards

- Capacity for up to 200 product definitions and 10,000 sample files

- History audit log (time & date) of calibration records and Reference Standard Values

- Ethernet networking for PC connectivity, remote data storage & LIMS capability

- Choice of 3 sample dish sizes, static or rotating

InfraLab Industrial Applications

KEY INFRALAB APPLICATION AREAS:	
PRODUCT GROUP	**APPLICATIONS**
Ceramic/Clay Powders	Ball, Refactory or China Clay (Kaolin), Spray Dried Clay
Chemicals	Aluminium Hydroxide, Amino Acid Powder, Boric Acid Powder, Calcium Carbonate, Calcium Oxide/Hydroxide, Nitrocellulose Chips, Nylon Granules, PVC Powder, Rubber Crumb, Salt (Sodium Chloride), Sulphur, Titanium Dioxide Powder
Detergents	Zeolite, Phosphate or Carbonate based Powders or Slurries
Minerals	Aluminium Oxide (Bauxite), Calcium Fluoride, Cement Meal, Crushed Dolomite (Calcium Magnesium Carbonate), Furnace Slag (Milled), Kaolin Granules, Limestone (Crushed), Peat, Phosphates, Potassium Fluoride, Sand (Washed), Sinter Mix (Iron Ore, Coke Breeze, Limestone), Talc (Powdered)
Pharmaceuticals	Pharmaceutical Powders (consult NDC)
Textile Products	Cotton - Pre-Ginning/Baling, Rayon Fibre, Textile Fibres, Wool
Wood Products	Cellulose, Cork Chips, Paper Fibre Pulp, Sawdust, Woodchips
For application details, please refer to the relevant Application Notes or consult our Applications Technical Support Group. This list is not exhaustive and other measurements are possible. Key to measurement feasibility is representative sampling and presentation to the InfraLab using one of the three available bowl sizes.	

Applications

Each InfraLab is optimized for the required application(s) and contains the relevant algorithm(s) for each moisture measurement.

The InfraLab Application Notes for each Product Group detail available measurements and ranges.

Accuracy

It is NDC policy to express accuracy as *twice* the Standard Deviation of the differences between the values measured by the InfraLab and the values obtained for the same samples using the Primary Reference Technique.

Achievable accuracy is dependent on the product being measured, the Primary Reference Method and the range of moisture measurement. Typical indicative accuracy achieved in comparison to reliable reference values is: 0.1 to 0.2% (2σ)

Maintenance

Other than simple cleaning, the InfraLab requires no routine maintenance, nor does it require any routine re-calibration.

TYPICAL PERFORMANCE:

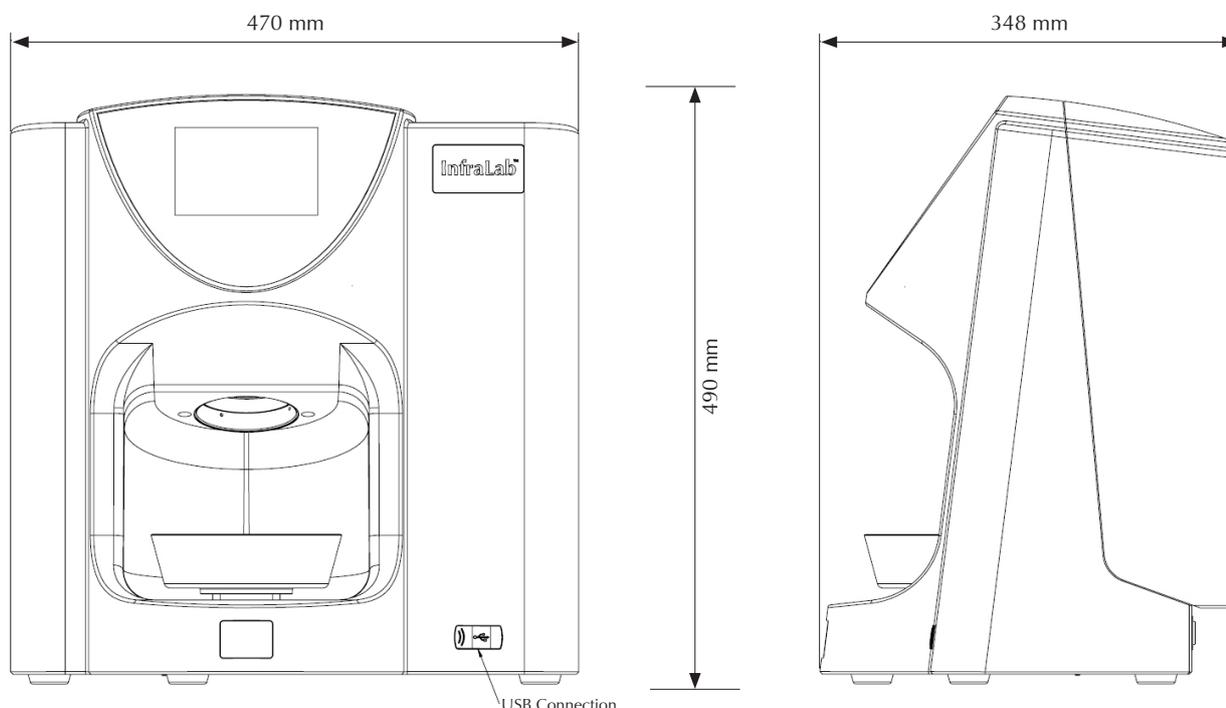**Optimized algorithms ensure linearity & repeatability across the range: example of a moisture calibration**
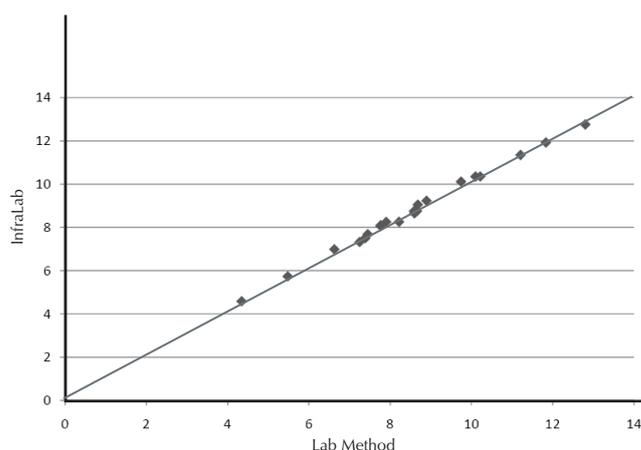
Technical Specifications

Dimensions:

Weight: 12kg

470 mm

490 mm

348 mm

InfraLab

USB Connection

Technical Specifications:

Measurements
Moisture, % Solids, Moisture as % of Dry Weight - depending on application.

Sampling Period and Measurement Speed
Sampling Period: User-configurable, typically 5 - 10 seconds
Measurement Speed: 133Hz equivalent to one complete measurement, single or multi-component, every 7.5 milliseconds

Sample Preparation and Size
See separate application notes for detail, but in most cases, samples are simply presented to the InfraLab in the appropriate bowl: a choice of Deep or Shallow Sample Bowl or (with optional adapter) 90 mm Ø Petri Dish. Measurement Area is a 50mm diameter circle

Sealing
The InfraLab Housing is constructed from tough Polyurethane and sealed to IP65 [NEMA 4 Equivalent] (excluding rear connector panel)

Product Height
Note that the height of the product within the sample bowl is not critical and there is no sensitivity to changes. The only important criterion is that the bottom of the sample bowl must be completely covered by product
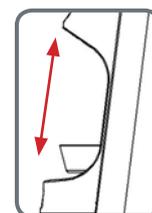
Storage, Safety, Environmental and Electrical
Power Supply: 80-265VAC, 50/60Hz
Power Consumption: 50 Watts
Pollution Degree: Degree 1
Ambient Temperature Range: Storage -20 to +70°C, Operation 0 to 50°C
Humidity: 80% max. (non-condensing) over full operating temperature range

Connectors:
2 x USB, one front, one rear
1 x Ethernet Port
1 x IEC Mains Socket

In line with its policy of continuous improvement NDC Infrared Engineering reserves the right to revise published specifications and details of this equipment without prior notice.   Product Brochure - InfraLab e-Series Industrial - A4

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