![NDC Technologies, a spectris company]

InfraLab
Meat Analyzer

04/03/2010
Moisture **15.85**
S.D. = 0.32
Fat **25.46**
S.D. = 0.38
Protein **56.48**

At-Line NIR Meat Process Measurements

- ▶ **Fat**
- ▶ **Moisture**
- ▶ **Protein**
- ▶ **Collagen**
- ▶ **Collagen/Protein Ratio**

- ▶ **Achieve Consistent Quality**
- ▶ **Optimize Batch Fat Values**
- ▶ **Reduce Lean Giveaway**
- ▶ **Replace Laboratory Testing**
- ▶ **Ensure Supply Chain Satisfaction**

NDC and the Meat Further Processing Industry

Achieving right-first-time production through reliable fat, protein and moisture measurements...

NDC Infrared Engineering has over 40 years' experience in the design, development and manufacture of process instrumentation developed specifically to meet the exacting requirements of the foods industry.

Our Applications Engineering team has a thorough knowledge and understanding of the physical and chemical attributes of food products, the process measurement and control requirements, and the many analytical methods used in quality assurance systems.

Assuring and Controlling Quality

During the further processing of meat products there is a need to monitor and control the fat and also the protein, moisture and collagen content to insure consistent quality and to meet product specifications. This applies in particular to the manufacture of burger patties, supermarket ground meat portions and bulk sausage production.

The InfraLab e-Series Meat Analyzer

has been developed specifically to replace laboratory methods during processing of:

▶ Beef
▶ Pork
▶ Lamb
▶ Poultry

and other meat products, requiring no special skills in routine use. It enables operators to analyze samples rapidly to insure that the fat, moisture, protein or collagen content meets specified values.

During its extensive development program, InfraLab has been independently tested in world-class laboratories to prove the veracity of results against accredited methods.

Performance, convenience, ease of use, and NDC's global customer support infrastructure, have made InfraLab the analyzer of choice for meat processors worldwide.

Validating to the Laboratory

The InfraLab, while delivered precalibrated, uses NIR (near infrared) measurement technology, and therefore like other secondary correlative techniques, requires local validation against appropriate AOAC or ISO chemical analysis methods, such as:

Laboratory Reference Methods		
Measurement	**AOAC**	**ISO**
Crude Fat	960.39 or 991.26	1444
Total Fat	-	1443
Moisture	950.46B	1442
Protein	992.15	937
Collagen (hydroxyproline)	990.26	3496

The convenient transfer of measurements in-house to the InfraLab enables rapid local analyses which agree statistically with the accredited laboratory method.

Long-term stability and accuracy - proven through independent testing

$y = 0.9995x + 0.044$
$R^2 = 0.9984$
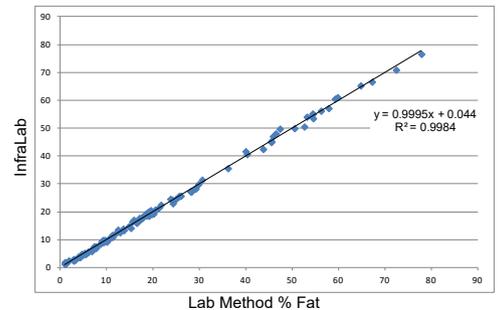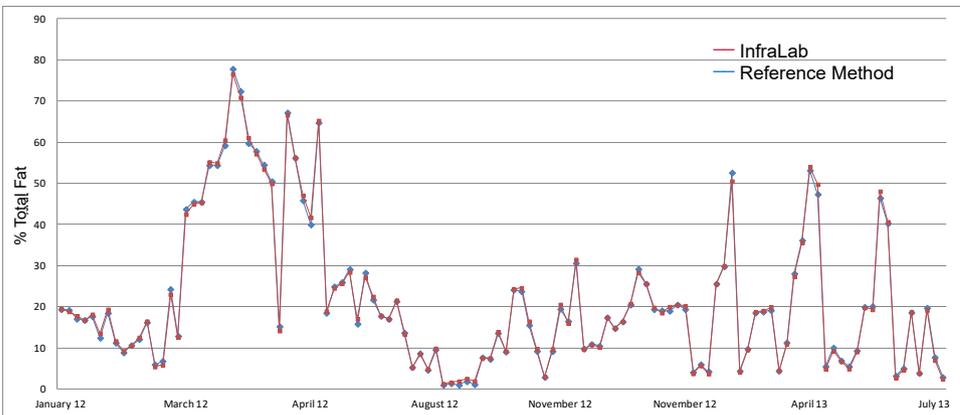
The graphs compare a single InfraLab's measurements of total fat to external lab data (wet chemistry) over a period of 18 months. From April 13 onwards, the external lab changed to using NMR.

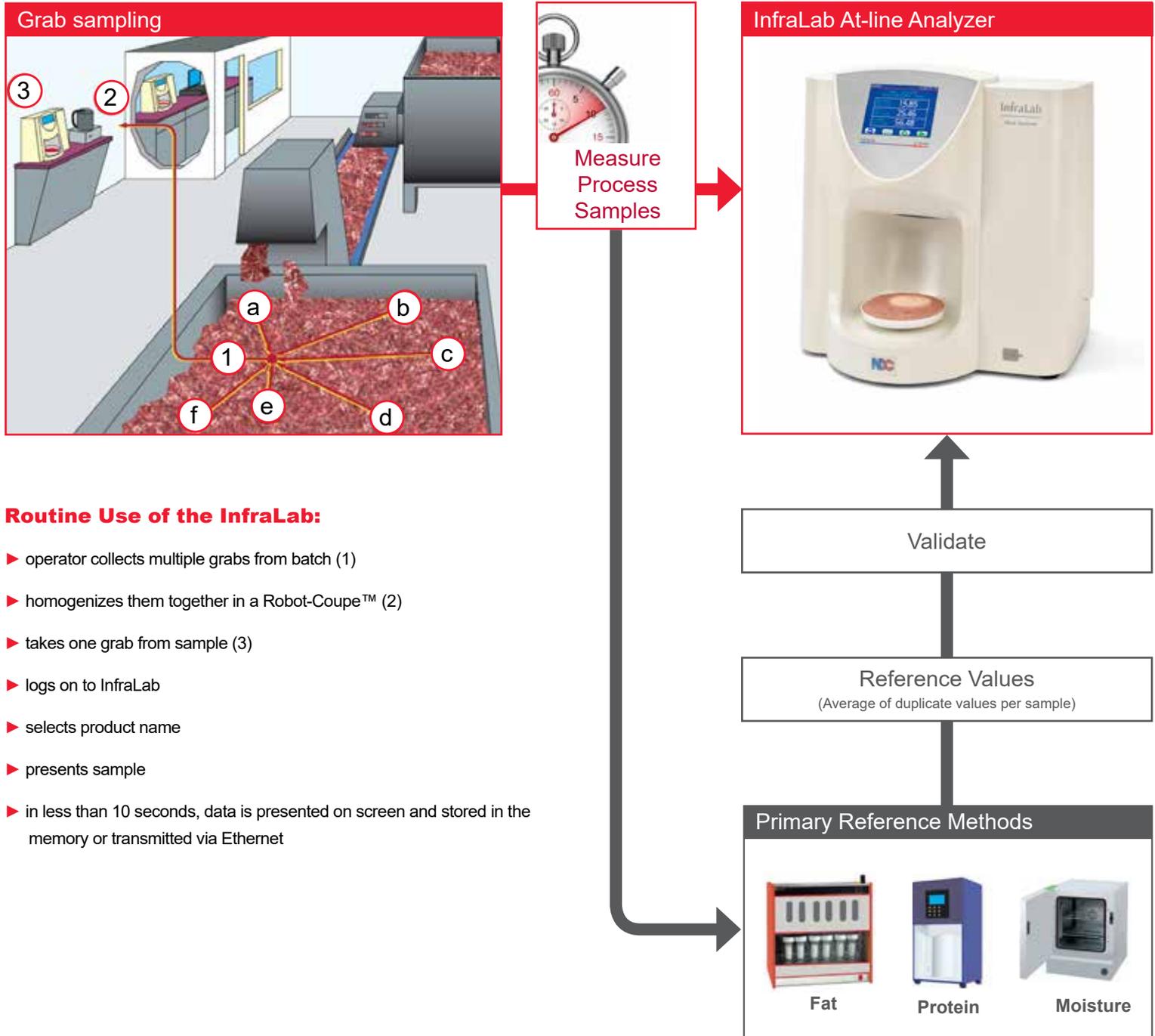The InfraLab is designed for ultimate long-term stability and automatically monitors and manages its opto-electronic performance, using an internal reference standard. InfraLab has been developed specifically for the process environment, remaining completely uninfluenced by both product and production environment changes area such as ambient temperature, relative humidity and factory lighting.

Achieving consistent product quality...
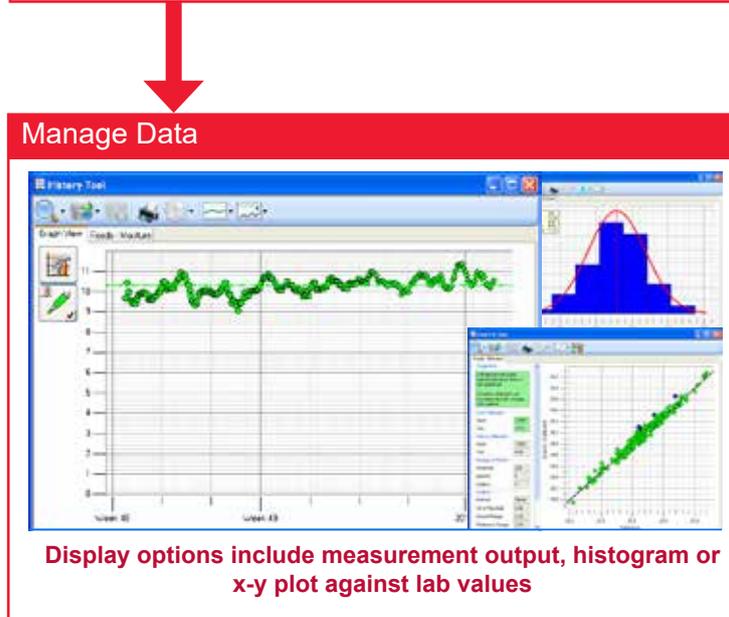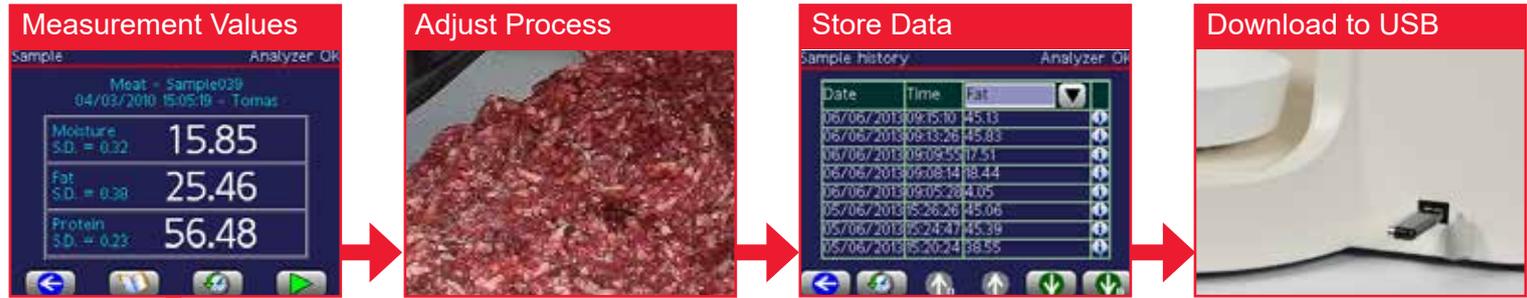
InfraLab: the at-line replacement for lab methods

Robust, accurate, easy-to-use, InfraLab delivers results fast, saving time and testing costs...

Grab sampling

InfraLab At-line Analyzer

Measure Process Samples

Routine Use of the InfraLab:

► operator collects multiple grabs from batch (1)

► homogenizes them together in a Robot-Coupe™ (2)

► takes one grab from sample (3)

► logs on to InfraLab

► selects product name

► presents sample

► in less than 10 seconds, data is presented on screen and stored in the memory or transmitted via Ethernet

Validate

Reference Values
(Average of duplicate values per sample)

Primary Reference Methods

Fat   **Protein**   **Moisture**

through improved process visibility...

Making Light Work

With complete access to data

InfraLab can be used as a standalone device,
linked to a PC or networked to management systems....

Measurement Values	Adjust Process	Store Data	Download to USB

Transmit Data

Ethernet

PC running "InfraLab Manager" software

Manage Data

Display options include measurement output, histogram or x-y plot against lab values

InfraLab Manager Software

Infrared Manager Software is the ultimate "data ownership" package giving total control of instrument performance and providing complete access to all data, including measurement and calibration values, without the need for a service tie-in contract.

It features useful tools to display and manage measurement data from one or more InfraLab analyzers, including:

► Data display - presents data on your PC just as the operator sees it in the production area or lab

► History tool - displays historical data by time, user, product or constituent

► Line-fit tool - enables measurements to be accurately adjusted to agree with the reference method

► Network access - connect to one or more analyzers on your factor network to access data and more

Making Light Work

Technical Overview

With its user-friendly design, the fully featured InfraLab meets the most exacting requirements...

Measurements					
Constituent		Fat	Protein*	Moisture	Collagen*
Range		2 to 60%	9 to 23%	30 to 75%	1 to 8%
Meat Type	Beef	■	■	■	■
	Pork	■	■	■	■
	Poultry	■	■	■	■
	Lamb	■	■	■	■

* InfraLab is also able to measure the collagen to protein ratio

InfraLab Meat Analyzer Key Features:
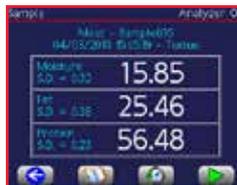
► Measurement time of less than 10 seconds

► Easy-to-use quarter VGA color touchscreen with multilingual interface

► Ergonomic hygienic design with no enclosed sample compartment

► User pass code protection with configurable permission levels for up to 200 users

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

► Automatic integral window contamination monitor

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

► Internal memory capacity for up to 200 product definitions and 10,000 sample files

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

► "InfraLab Manager" PC Software for data management and enhanced functionality

► Rugged, unbreakable sample bowl

Bar Code Reader (option)

Reference Standard (option)

1/4 VGA Color Display

USB Memory Stick

InfraLab Technical Specifications:

Weight and Dimensions:
Weight: 12 kg (26.5 lbs)
Size: 490 mm (19.3 in) high x 470 mm (18.5 in) wide x 348 mm (13.7 in) deep

Measurements:
Single Component: Fat only
Multi-component: Fat, Protein & Moisture (Collagen or Collagen/protein ratio optional). For other applications, please consult our Applications Technical Support Group.

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

Sample Preparation:
Samples must be homogenized in a Robot-Coupe™ or similar prior to measurement. See separate guidelines for details.

Sample Bowl Size:
145 mm/5.7 in diameter bowl, with a depth of 13 mm/0.5 in

Sample Presentation:
Homogenized samples are simply pressed into the bowl, while insuring that the whole of the bottom of the sample bowl is 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 for memory stick, one rear for barcode reader); 1 x Ethernet Port; 1 x IEC Mains Socket

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

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

For applications in other foods industries, visit www.ndc.com/food.

www.ndc.com/meat

Making Light Work

Company overview

Combining industry-best performance and reliability with a global support structure

NDC Technologies, headquartered in Irwindale, California, designs, develops and produces a wide range of process measurement and control instrumentation for a broad scope of manufacturing industries.

NDC has manufacturing facilities in California, Dayton, Ohio and Maldon, UK, with centers of excellence at each of these locations including Loncin, Belgium. In addition, there are direct sales and support facilities in China, Japan, France, Germany and Italy. There is also a highly trained network of Sales and Service distribution channels in more than 60 countries around the world.

NDC Technologies is structured to serve its key industry segments with two distinct business units:

► Food, Bulk and Packaging

In packaging, NDC provides basis weight, thickness, coat weight and moisture measurement and control systems for a diverse array of applications in the converting and film extrusion industries and also provides solutions for customers in nonwovens and calendering.

For the food and bulk industries, NDC delivers both on-line and at-process analyzers for the measurement of key constituents such as moisture, fat, oil and protein. NDC's broad spectrum of measurement solutions are used in the food, chemicals, minerals building materials, pharmaceutical and tobacco industries.

► Cable, Metals and Tubing

In the steel and aluminium industries, NDC offers advanced solutions for the measurement of thickness, width, flatness, edge shape, coatings, and length and speed of sheet and long casted products.

NDC serves the wire, cable, fiber optic, pipe and tube industries with a broad portfolio of on-line and off-line measurement and control solutions for the dimensional monitoring of diameter, ovality, wall thickness, eccentricity, length and speed, and other parameters.

NDC Technologies is represented in over 60 countries worldwide. **www.ndc.com**

NDC Americas
Tel: +1 937 233 9935
Email: info@ndc.com

NDC United Kingdom
Tel: +44 1621 852244
Email: enquiries@ndc.com

NDC Belgium
Tel: +32 4 239 90 10
Email: sales@ndcinfrared.be

NDC China
Tel: +86 21 6113 3609
Email: info@ndcinfrared.com.cn

NDC Japan
Tel: +81 3 3255 8157
Email: ndcjapan@ndc.com

NDC Germany
Tel: 08001123194
Email: info@ndcinfrared.com

NDC Italy
Tel: +39 0331 454 207
Email: ndcitaly@ndc.com

NDC Singapore
Tel: +65 91994120
Email: apacsales@ndc.com

NDC India
Tel: +91 9650752420
Email: ndcindia@ndc.com

Document #: FB&T-BROC-Meat-EN-2018NOV26
Date of Issue: November 2018
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