

The Next Generation of Milk Analysis



BENTLEY
INSTRUMENTS

NEXGEN SERIES

DairySpec FT

FAT • PROTEIN • LACTOSE • SOLIDS • AND MORE



"As the only company in the world focused 100% on dairy instrumentation, we understand the challenges of this industry and the need for constant innovation."

BENT LYDER
Founder and President
Bentley Instruments

INTRODUCING THE NEWEST IN THE NEXGEN SERIES

The Bentley DairySpec FT — A highly accurate, extremely dependable instrument designed for the analysis of fluid dairy products.

The Bentley NexGen Series is designed for a wide range of dairy laboratories and processing facilities that need a highly accurate instrument for the analysis of dairy components, including fat, protein and lactose. Engineered in accordance with Bentley Instruments' rigorous design principles and quality management systems, the DairySpec FT provides precise and accurate measurements, and exceptional reliability.

TECHNOLOGY EXECUTIVE SUMMARY

Bentley Instruments' DairySpec FT component analyzer uses an industrial Fourier Transform Spectrometer (or FTIR) that captures the complete infrared absorption spectrum of the milk sample for component analysis. Collecting the complete spectrum allows the calibration to be based on all spectral characteristics of each particular component. The infrared spectrum is permanently stored so that at any time in the future other calibrations may be retroactively applied to your data.

THE STANDARD OF BENTLEY INSTRUMENTS

For over 25 years, Bentley Instruments has been a leader in the development of highly accurate, robust milk analysis equipment. Founded in 1983, Bentley Instruments has earned a reputation for developing innovative dairy analysis solutions that are both highly reliable and accurate. We provide the highest level of service, from web-enabled instrument monitoring and diagnostics analysis to onsite and telephone support. We understand the workflow demands of a modern dairy processing facility and do whatever it takes to keep your operation moving, no matter where in the world your laboratory is located.

The new DairySpec FT provides the most precise and accurate measurements for milk product analysis. This easy-to-use, highly-reliable instrument is engineered for facilities that need a robust instrument.



DAIRYSPEC FT FEATURES

- Ergonomic touch screen display monitor simplifies operator interface.
- Powerful Windows-based software integrates simultaneous control, data collection, analysis, archiving, and report generation.
- Interferometer is laser-referenced and contained within a hermetically-sealed and temperature-regulated optical deck.
- Internal heated reservoir provides for auto-rinse and auto-zero functions.
- Proven optical deck provides highly accurate analysis of energy absorption over the entire mid-infrared spectrum.
- Integrated sample heater allows for cold product analysis.
- Laser-drilled pipette filters sample at inlet.
- Front panel LEDs provide immediate visual feedback for operators on overall instrument status and operation.



Network-based design enables complete connectivity and remote access.



Convenient counter-height sample input.

BENTLEY DAIRYSPEC FT TECHNOLOGY

The DairySpec FT incorporates the latest technology for milk analysis.

With the Bentley DairySpec FT, control is integrated into a single Windows-based software program. The simple and intuitive touch screen user interface is designed for easy operator use. The software's sophisticated data export and reporting functions and network access capability allow lab supervisors to monitor instrument status and analyze results remotely.

Extensive diagnostics are collected on the DairySpec FT so the user can be assured that the instrument was performing optimally when the sample data was taken. And because a full set of diagnostic readings is stored with each sample run, an audit trail exists to validate the state of the instrument during data collection. Examples of the diagnostics include a variety of critical temperatures, the pump's characteristic pressure curve, humidity level and air pressure within the FTS optical deck, and the presence of shock or vibration on the instrument. Bentley Instruments' service staff can also log onto the instrument remotely to further aid in troubleshooting.

A wide variety of data output options are available, including USB, serial, parallel, and through network connections, which can be easily configured to be compatible with existing systems.

APPLICATIONS

Primary applications include the measurement of fat, protein, lactose, solids and other components on a wide range of fluid milk products.

The system is engineered for dairy plants and laboratories that require a highly reliable and accurate instrument for performing individual tests on a variety of milk products. The mid-infrared Bentley DairySpec FT is designed with speed, accuracy and reliability in mind, and the **interferometer** is a hardened industrial module that still retains its roots in a research grade spectrometer. The DairySpec FT has been developed "future-proof" for organizations needing an instrument that can measure additional metrics to meet the more detailed milk analysis requirements demanded by consumers and government regulators.

REMOTE DIAGNOSTIC CAPABILITIES

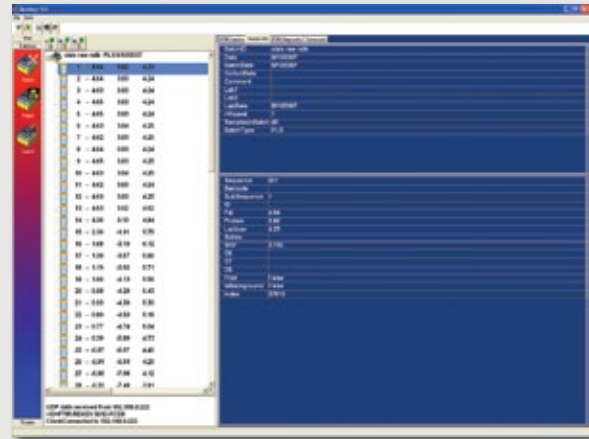
The web-enabled diagnostic features of the NexGen Series allow Bentley Instruments to access your machine from any location. This enables your laboratory personnel and Bentley Instruments to collaborate and analyze all system functionality, no matter where the instrument is located.

REAL TIME MILK QUALITY ANALYSIS AND REPORTING

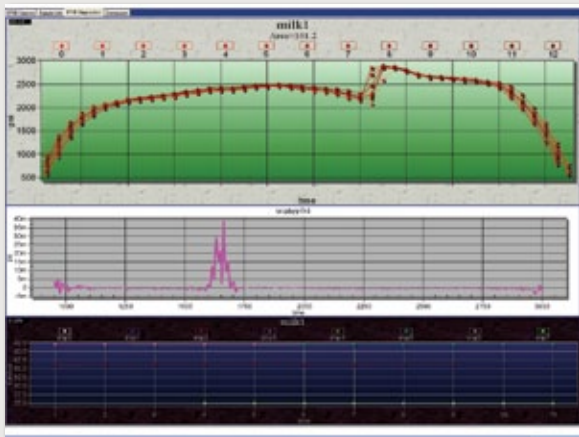
The DairySpec FT presents results and diagnostic information in a clear, concise manner. Customized analysis reports can be generated for routine output.



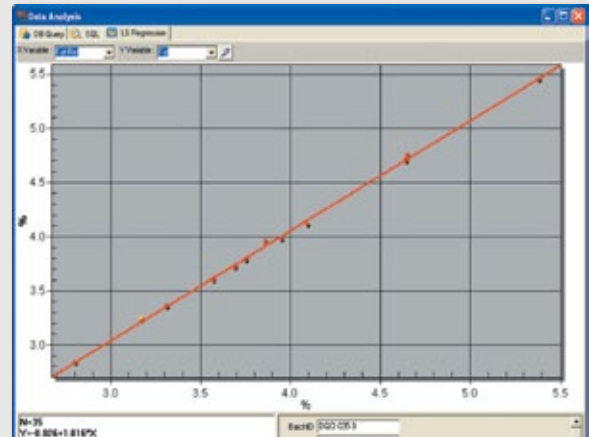
The raw data for milk component measurement is the complete FTIR absorbance spectrum as shown here. Sophisticated multivariate calibration algorithms are used to extract the compositional information. The spectrum is permanently archived for future reference, and the user can export the spectra for further analysis.



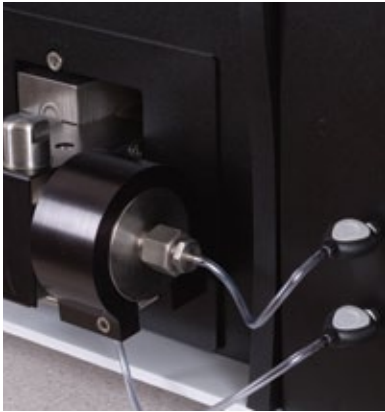
This report shows a summary of the details of a particular sample, including the batch and sample identifiers, as well as the measured component values.



Real time diagnostic information is provided for each sample. Here the infrared spectrum and the pump pressure characteristic plots are shown. Tab selection at the top of the screen allows the operator to easily switch between various views.



Accuracy is verified using this plot showing a regression analysis of the measured vs. the reference values for a set of calibration samples.



Robust pumping system allows for raw, finished and high viscosity product analysis.



Hermetically sealed spectrometer eliminates frequent desiccant regeneration.

BENTLEY DAIRYSPEC FT DESCRIPTION

“Future-proof” Bentley DairySpec FT offers complete milk analysis for today and tomorrow.

“Future-proof” Bentley DairySpec FT offers complete milk analysis today with the capability to incorporate novel component calibrations tomorrow.

At the heart of the Bentley DairySpec FT is a Fourier Transform Spectrometer (or FTIR) that captures the complete infrared absorption spectrum of the milk sample. Collecting the complete spectrum allows the calibration to be based on multiple spectral characteristics of each particular component. The spectrum is permanently stored so that at any time in the future, other calibrations could be retroactively applied to your data. The user is provided full access to the complete spectrum; it can be viewed in the software or the data points can be exported for use with external programs. With this access, the user can accommodate measurements of new components as they become important in the future. Novel calibration development can be undertaken independently by the user or in conjunction with Bentley Instruments.

The optical deck of the DairySpec FT is housed in a hermetically sealed enclosure, ensuring enhanced temperature stability and environmental robustness. The air in the sealed deck is pumped out, leaving the deck under vacuum. The combination of the hermetic seal and the removal of air greatly reduces the humidity, virtually eliminating the task of frequent desiccant regeneration. The DairySpec FT has temperature-regulated fluid reservoirs, providing regular and automatic zero (or background) scans for the instrument, as well as automatically rinsing and cleaning the cell, pipette and lines after running milk samples.

Like all the Bentley Infrared Milk Analyzers, the DairySpec FT exceeds the IDF 141C:2000 Standard and ICAR requirements for Milk Component Measurement and uses AOAC approved methodology.

BENTLEY DAIRYSPEC FT TECHNICAL SPECIFICATIONS

| | |
|--|---------------------------------------|
| Sample Temperature | 4°–42°C |
| Start Up/Shut Down | Less than 10 minutes |
| Measurement Range (Fat, Protein, Lactose, Solids) | 0-50% |
| Milk Type | Cow, goat, sheep, buffalo raw milk |
| Accuracy* (Cv) | Cv < 1% for all components |
| Repeatability* (Cv) | Cv < 0.5% for all components |
| Carry-Over | < 1.0% |
| Sample Condition | Fresh or preserved |
| Electrical | 110/220V; 50/60Hz |
| Dimensions (DxWxH) | 24" x 26" x 15.5" (61 x 66 x 39.4 cm) |
| Weight | 100 lbs. (45.4 kg) |

** Specifications subject to change without any prior notice.*



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