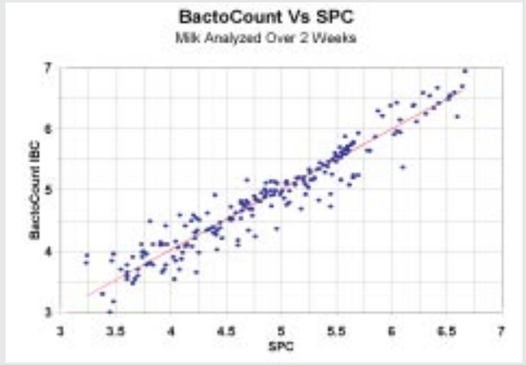
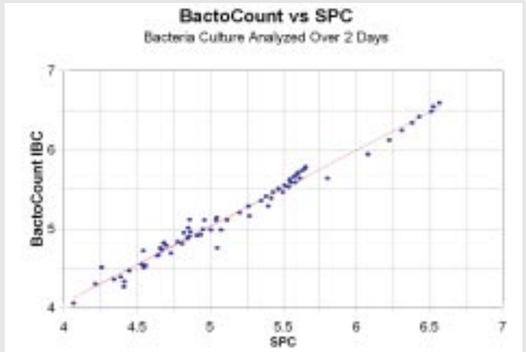
Regression Analysis & Specifications



Comparison of the BactoCount IBC and the Standard Plate Count methods for the enumeration of bacteria in raw milk. 209 cold milk samples were simultaneously analyzed over 2 weeks on the BactoCount IBC and by the reference method. The results are expressed in log unit.

Calibration Statistical Results

Constant	0.0810
Std Error of Y Est.....	0.2522
R Squared.....	0.9187
No. of Observations....	209
Degrees of Freedom...	207
X Coefficient(s).....	0.9864
Std Err of Coef.....	0.0204



Comparison of the BactoCount IBC and the Standard Plate Count methods for the enumeration of bacteria in raw milk. 69 cold milk samples were spiked with a single culture of bacteria and simultaneously analyzed on the BactoCount IBC and by the reference method. The results are expressed in log unit.

Calibration Statistical Results

Constant	0.2006
Std Error of Y Est.....	0.0907
R Squared.....	0.9773
No. of Observations....	69
Degrees of Freedom...	67
X Coefficient(s).....	0.9660
Std Err of Coef.....	0.0180

Service and Support

Delivering a superior level of customer support has always been a top priority at Bentley Instruments. We understand the importance of making sure your laboratory is producing results, 24 hours a day, seven days a week.

From onsite training and installation to long term technical support, our experienced staff of engineers is there to help you maintain the highest level of productivity.

BENTLEY INSTRUMENTS

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Bactocount IBC Specifications*

Measurement Range:		2000 to 10+ million individual bacteria/ml
Repeatability:		Sr < 0.06 (log)
Accuracy:		Sy,x < 0.25 (log)
Speed:		50 samples / hour - Model A 100 samples / hour - Model B 150 samples/ hour - Model C
Carryover:		< 1%
Work Factor:		< 100
Power Supply:		115/220 VAC
Dimensions:	Width:	152.4 cm
	Depth:	61.0 cm
	Height:	121.9 cm
	Weight:	115.0 kg
Fluid Use:	Milk intake:	< 4.0 ml
	Milk volume incubated:	1.0 ml/test
	Sample temperature:	4 - 42°C
	Type of Samples:	milk of typical composition

* Specifications are subject to change.

Bentley IBC
Bactocount

Rapid & Accurate Enumeration of Individual Bacteria in Raw Milk

The BactoCount IBC is a fully automated instrument that uses flow cytometry (FCM) for the rapid enumeration of individual bacteria in raw milk.

The high processing speed of this model makes it the ideal solution for mid to large size laboratories that need an easy to maintain, exceptionally fast bacteria counting system.

- **Capable of analyzing 50 - 150 samples per hour**
- **Use of a standard computer offers flexible data output options**
- **Fully automatic autosampler analysis**
- **Low maintenance design**

BENTLEY INSTRUMENTS

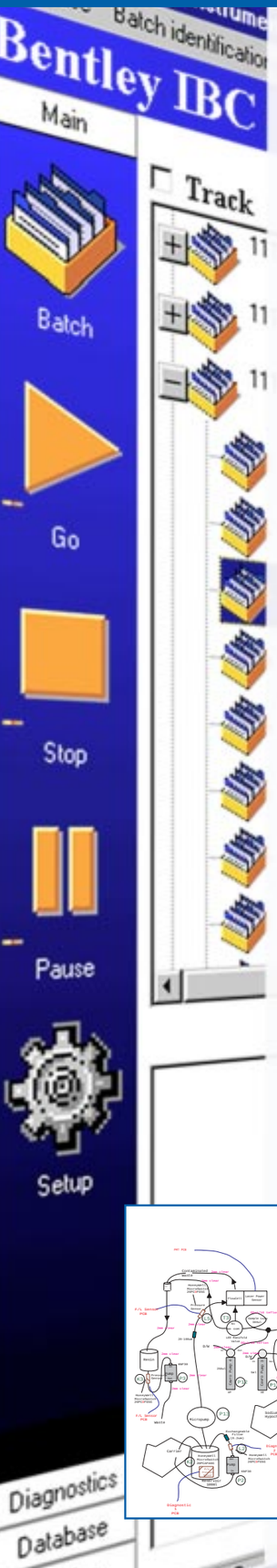
Analytical Instruments For The Dairy Industry

Technical Overview & Principle of Operation

The BactoCount IBC is a fully automated instrument that uses a proprietary process based on flow cytometry (FCM) for the rapid enumeration of individual bacteria in raw milk.

- The milk is sampled and dispensed in a carousel heated at 50° C.
- An incubation reagent made up with a clarification buffer, a proteolytic enzyme, and a fluorescent marker are then added in order to lyse the somatic cells, solubilize the fat globules and proteins, permeabilize the bacteria and stain their DNA.
- The fluorescence marker intercalates rapidly and selectively into all the bacteria double-stranded nucleic acid.
- The mixture is then sonicated during the incubation with two ultrasonic probes to help the chemical breakdown of the interfering particles, disrupt the remaining bacteria colonies to improve the detection of individual bacteria and reduce the background fluorescence.
- After the incubation period a portion of the incubation mixture is transferred to the flow cytometer where the bacteria are aligned and exposed to an intense laser beam and fluoresce.
- The fluorescence signal is collected by the optics, filtered, and detected with a photomultiplier.
- The fluorescence pulses intensity and height are recorded and used as gating parameters.
- The sorted pulses are then translated into individual bacteria count after instrument calibration.

Bactocount IBC: Accurate Enumeration of Individual Bacteria in Milk



The BactoCount IBC consists of 6 main modules:

Computer

A powerful external computer allows the IBC to run, and monitors the instrument at all times. Diagnostic features have been integrated in the software to warn the operator if the instrument is not behaving normally. All the analysis and histogram data is saved in a database and can be recalled at anytime.

Autosampler

The BactoCount uses a standard autosampler with a 20-vial rack. A stirrer mechanism, designed with the least possible carryover, stirs the sample before testing. The autosampler is equipped with a wash station to back flush the pipette with a cleaning solution after each sample.

Incubator

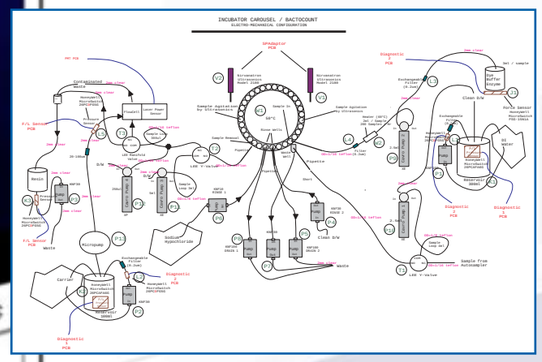
The incubator consists of a carousel equipped with 33 wells and thermostated at 50°C . The milk and incubation reagent are dispensed in the wells and subjected to mechanical, chemical and heat treatment. During the incubation, the interfering components are removed and the bacteria DNA is labeled with a fluorescent marker.

Counter

The counting assembly includes a powerful solid state laser, a flow cell, a microscope, a narrow band filter, and a highly sensitive photomultiplier. The laser excites the fluorescent marker intercalated into the bacteria DNA and the fluorescence pulses are collected with the optics, filtered with the narrow band filter, and detected with the photomultiplier. The intensity and width of the fluorescence pulses are recorded and used as gating parameters. The sorted pulses are then translated into individual bacteria count after instrument calibration. The counting assembly is compact, completely closed and thermostated at 30 °C to provide a high stability.

Filtration Station

The dye contained in the incubation reagent, although at a low concentration, is automatically and effectively filtrated from the waste with a cartridge containing a polymer with adsorptive properties for the dye.



Diagnostics

Designed as an internet appliance instrument, the instrument supports a long line of diagnostics variables. Providing lab managers with a level of insight into the operation of the instrument not previously available.

Equipped with the proper internet connection, the instrument can even send an e-mail to a remote monitor, i.e. managers home e-mail, cell phones ect, or simply call home to the manufacturer.

Typical peak, width and scatter distributions obtained with the BactoCount method of the predominant bacteria species used for the assessment of the hygienic quality of raw milk.