



vision
without
limits

Cell Analysis

CANTY

PROCESS TECHNOLOGY

BUFFALO

DUBLIN

THAILAND

HOW IT WORKS

JM Canty International Ltd. is a world leader in the manufacture and supply of vision based process instrumentation. This includes vessel sight glasses & lighting, process vessel and high temperature cameras, and vision based particle sizing equipment, for a wide variety of industries, primarily pharmaceutical, chemical, biotechnological and oil & gas.



Vision Without Limits

Canty specializes in vision based equipment. The unique analytical systems for cell analysis and foam control use integrated fused glass technology and a customized software suite to achieve unparalleled process monitoring.



Sanitary Design

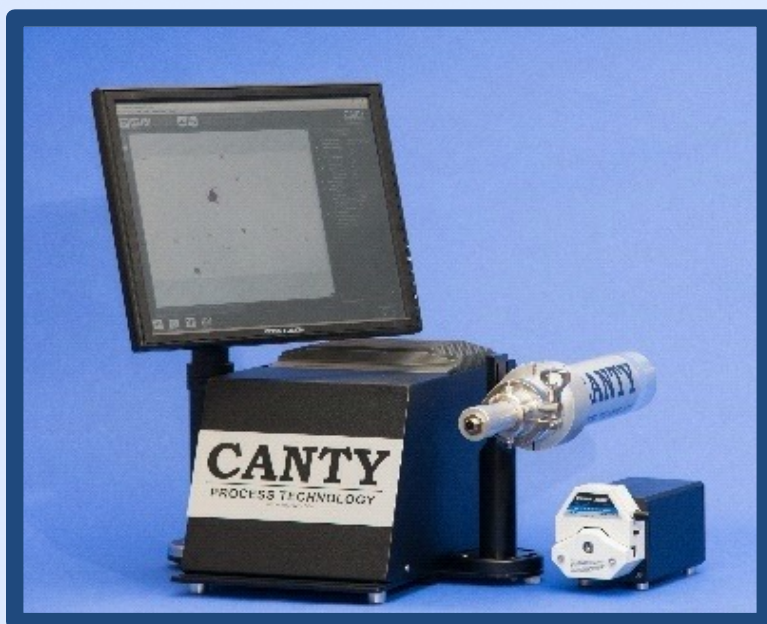
All models feature nickel plated aluminum construction and are NEMA 4x Weatherproof rated. The S.U.BioCam™ features a strobe LED light source and high speed Ethernet camera mounted on a pole supported externally from the single use bag. The design includes a bracket with a ball and socket for ease of mounting on a single use bag.

CANTY CELL ANALYSIS

Integration of Canty's optical process analytics into cell culture systems has led to novel developments in **label free** cell viability analysis. These breakthroughs have facilitated the design of a unique vision based system for detailed insights into the health of cell suspension cultures.

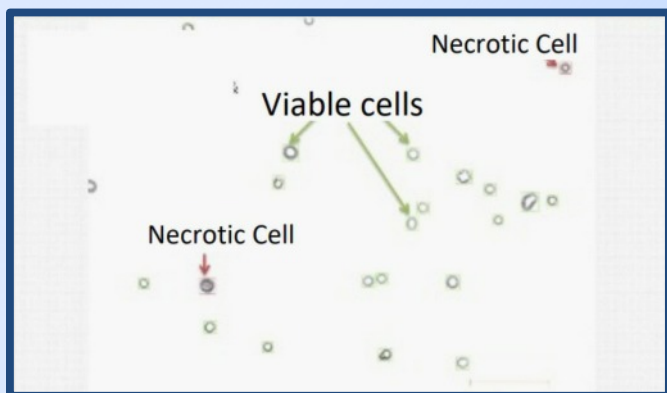
MiniCell

The Canty MiniCell is uniquely designed to allow for the analysis of minimal sample volumes without the need for additive reagents. The system facilitates detailed viability and morphology outputs with no need for process additives.



- Label-Free
- Cell Count, Viability & Morphology
- Superior Data to Trypan Blue
- Visual Monitoring
- No Staining Reagents
- Real-Time Viability
- Autosampling
- Built in LED

CantyVision Software

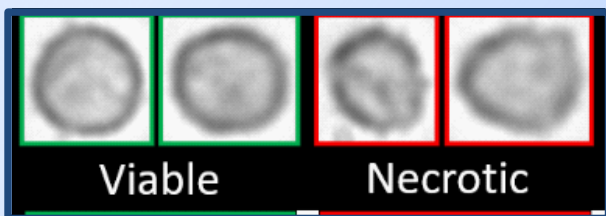
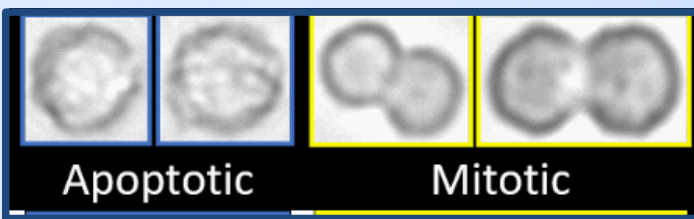


The CantyVision cell analysis suite uses machine learning to distinguish between viable and necrotic cells. Outputs are comparable with trypan blue exclusion assays, allowing live monitoring of culture health with no additive reagents.



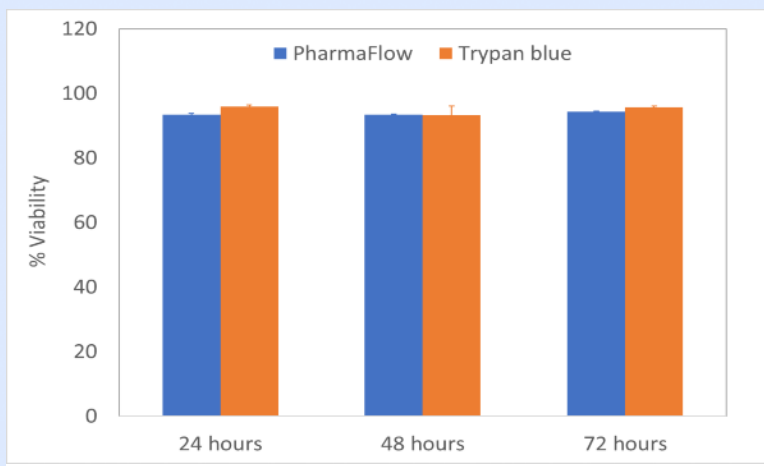
Cell Classification & On-Line Sampling

The CantyVision Intelligent Analysis software suite uses integrated machine learning to distinguish between multiple cell morphologies during real time analysis. This determination facilitates detailed process analytics on multiple cell cycle stages including mitosis, apoptosis and necrosis. Detailed outputs go further than viability for an in depth knowledge of the bioprocess.



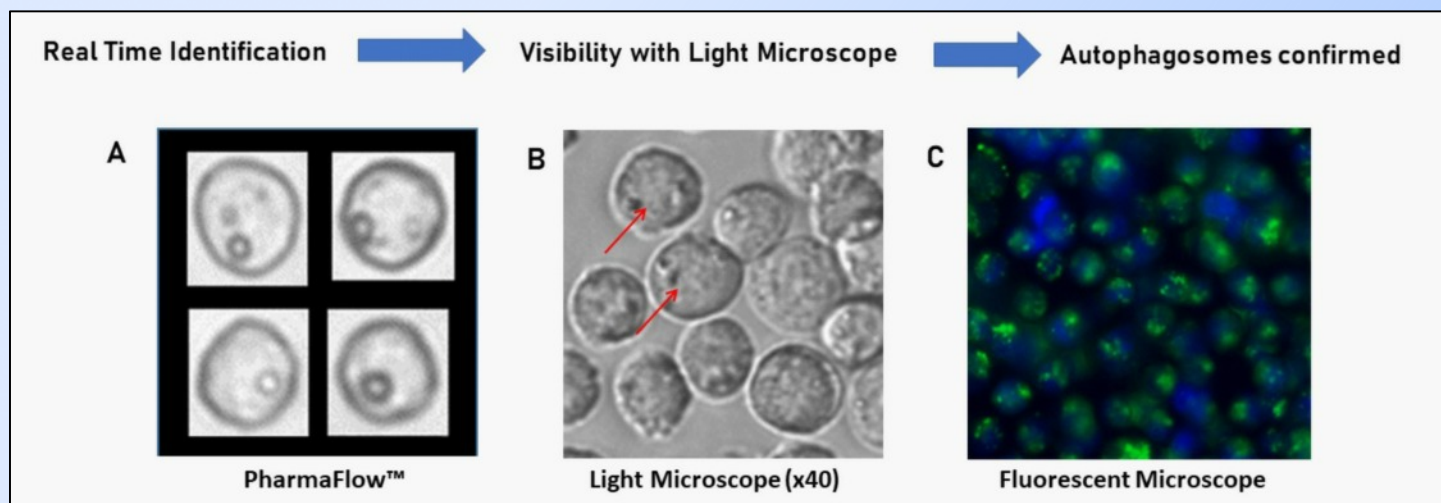
Canty partnered with the National Institute for Bioprocessing Research and Training (NIBRT) of Ireland to demonstrate the systems efficacy in comparison to traditional exclusion dye assays for cell viability in CHO cell lines.

Canty vs Trypan Blue



Periodic samples were taken over the course of CHO-EG2 cell cultures and analyzed using both an automated trypan blue based cell counter and the Canty PharmaFlow™. Total cell density, percentage viability and viable cell density results demonstrated the comparability of the Canty technique to traditional trypan blue assays.

Morphological Changes



As culture health declined "holes" indicative of **vacuole formation** were detected by the Canty system from day 4 and are likely related to the induction of cellular **autophagy**. The system could thus signal a time point for process intervention at earlier indicators of culture decline than membrane degradation

CANTY FOAM CONTROL

The latest innovations in foam control automation employ Canty's world leading vision based hardware and software developments to develop a unique instrument for optimizing bioprocesses and removing operator error.

Biocam

The CANTY BioCam™ is a process camera engineered and designed for sanitary applications. The BioCam™ combines the latest in LED lighting with Ethernet camera technology in a streamlined package.



- Foam Detection
- Fermenter Control
- Visual Verification
- SU Options
- Built in LED
- Compact Design



Foam Control

The system provides continuous, real time view from the beginning to the end of the process. CantyVision Intelligent Analysis (CVIA) software avoids manually viewing foam in the vessel goes one step further, facilitating detailed foam readouts for the duration of the process.

How It Works

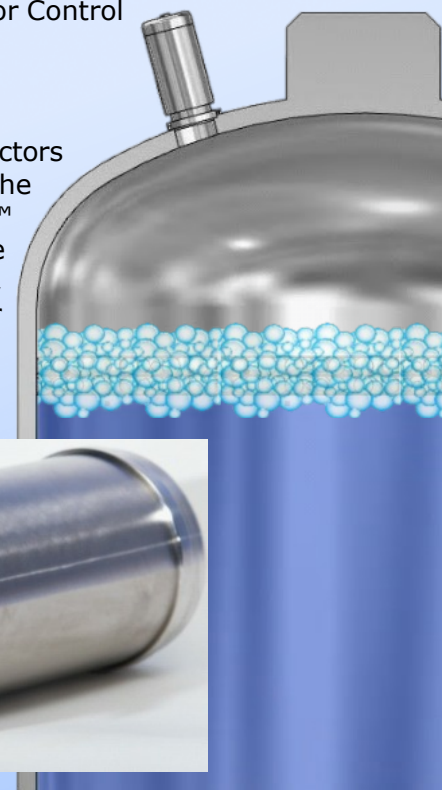
The CANTY BioCam™ is a process camera engineered and designed for sanitary applications. The BioCam™ combines the latest in LED lighting with Ethernet camera technology in a streamlined package. The camera utilizes built-in strobe LED light that has been optimized to run efficiently as to not obstruct photosensitive processes. The all-in-one design is both compact and sanitary and unlike its predecessors requires no additional external power supply for operation. A built in heater eliminates condensation from forming on the glass and provides for a clear image at all times. Coupled with the Cauty Vector Control Module, the BioCam™ can be used for full control via OPC or 4-20mA.

Foam Detection

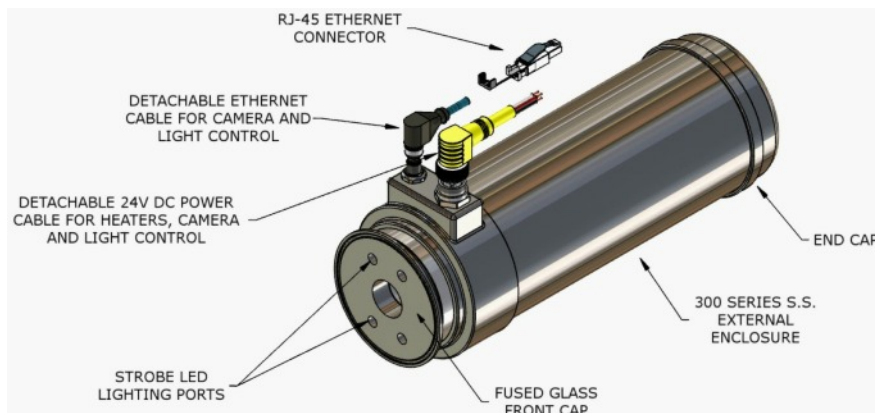
The CANTY BioCam™ is uniquely qualified to view inside your fermentors and bioreactors and provides a continual control signal allowing the user to meter in antifoam. The BioCam™ is an Ethernet based imaging system which connects to the CANTY VCM™ image processor that determines the percentage of foam on the surface of the liquid. The foam control function allows for significant savings of antifoam, improves process performance in cell culture growth and eliminates the need for additional antifoam fluids in purification.

Features

- Built in LED light source - maintenance free
- Compact all-in-one design
- Sanitary 316L S.S. Housing
- No external power supplies required
- Available in 24V DC, 120V AC, 240V AC
- Strobed light allows for optimized illumination without interfering with photosensitive processes
- Built in heater to prevent fog and condensation
- System outputs via OPC or 4-20mA to a DCS or PLC for complete, closed-loop control
- Ideal system for foam detection - Cauty Vector Control Module can output and control the addition of antifoam
- Single use models also available



CONDENSATION-FREE



Bioreactors and fermentors often pose visibility challenges due to steam generation from the heat of the process. CANTY's innovative heated fused sight glass addresses this issue by maintaining a temperature that closely aligns with the process temperature, preventing condensation and ensuring clear visibility through the sight glass.



Key Components

- Compact and sanitary
- No additional external power supply needed for operation
- LED lighting with built in strobe doesn't obstruct photosensitive processes
- Ethernet camera technology
- Continuously clear image
- Internal heater prevents condensation

the **CANTY** Advantage

- BioCam's cost effective one nozzle design
- Combined light and camera for accurate foam detection
- Easily calibrated
- Saves space

**CANTY'S GOAL IS TO PROVIDE EQUIPMENT TO ENHANCE PROCESS CONTROL
AND YIELD. WE ACCOMPLISH THIS BY DESIGNING, MANUFACTURING, AND
SERVICING THE FINEST EQUIPMENT IN THE WORLD.**

Some of Our Valued Customers:

ABBOTT LABORATORIES
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AMGEN
ASTRAZENECA
BAXTER INTERNATIONAL
BAYER
BIOGEN
BRISTOL-MYERS SQUIBB
CELGENE
COVIDIEN
ELI LILLY & CO.
GILEAD SCIENCES

GLAXOSMITHKLINE
HUMAN GENOME
JOHNSON & JOHNSON
MALLINCKRODT
MEDIMMUNE
MERCK & CO.
NOVARTIS
NOVO NORDISK
PFIZER
REGENERON PHARMACEUTICALS
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SANOFI
SHIRE PHARMACEUTICALS
TEVA PHARMACEUTICALS

AND YOU!!!



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