

vision
without
limits

CHEMICAL INDUSTRY

CANTY

PROCESS TECHNOLOGY

BUFFALO

DUBLIN

THAILAND

CANTY LIGHTS

LED Process Lighting



OPTIMUM VIEWING

CANTY HYL lighting systems are designed to illuminate for optimal viewing. Our patented design transmits an intense beam of LED light into a process or pressure vessel.

Bundles mount direct to FuseView™ -
No light loss due to reflection!



CANTY 12" bundle models mount directly to a sight glass with an optional bracket.

- View and illuminate through one nozzle
- Maximum LED illumination
- Cool light output - there is no product bake-on



Flexible fiber optics allow for mounting in any convenient location!

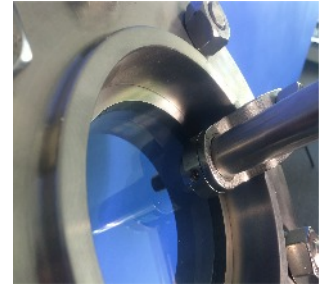
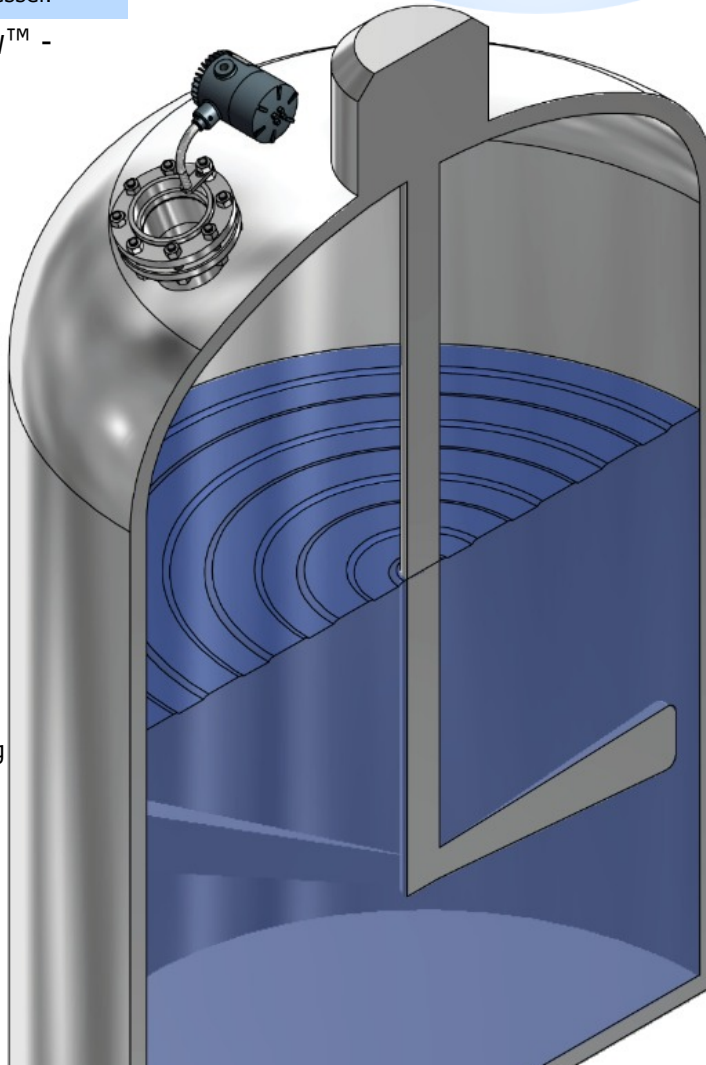
CANTY 24" and longer bundle models mount remote from the sight glass with an optional bracket for increased accessibility.

- High Intensity LED Lighting
- NEMA 4, IP66, Explosion proof, Flame proof models
- Fused glass seal provides a safe, reliable, hermetic seal between electronics and the process area.

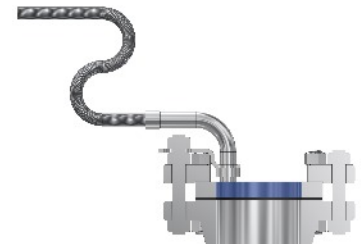
LED FIBER OPTIC BUNDLE LIGHTING

CANTY provides a combined LED light and sight glass to optimize viewing and minimize total package cost. Illuminate through an existing sight glass or a newly installed FuseView™

THE INDUSTRIES
BRIGHTEST FIBER OPTIC
AND DIRECT MOUNT LED!



Unique bracket maintains bundle contact to eliminate reflection!



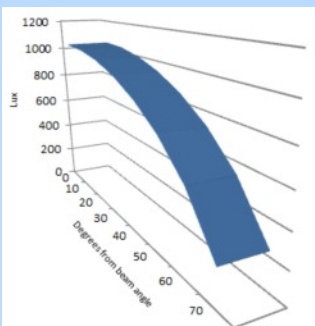
- Minimal bend radius - 2.5"
- Minimal area of sight glass is consumed by fiber optics.
- Industries largest view - FuseView™

Consult factory to easily upgrade your existing halogen lights to LED!

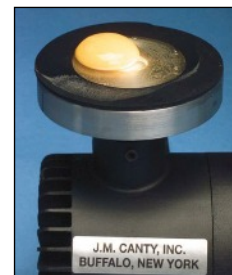
CANTY lights feature a unique, high output LED array and reflector assembly that focuses the light from the bulb into the process vessel or tank. An optional UV filter is used to protect product from harmful wavelengths, providing only cool light into the process and eliminating sight glass bake-on.

ADVANTAGES OF THE CANTY UNIQUE LED ARRAY

- Redundancy - LED array with numerous diodes
- Highly efficient. Maximum lumens with minimal power draw.
- More lumens per square inch than standard LED bulbs.
- More uniform, dispersed compared to a single emitter to allow for optimal illumination.
- Solid-state lighting for rugged industrial applications.
- Uniform consistent white light.



1 HOUR BAKE-ON TEST



CANTY COLD LIGHT



COMPETITOR'S LIGHT
NOTE: EGG IS BAKED ON

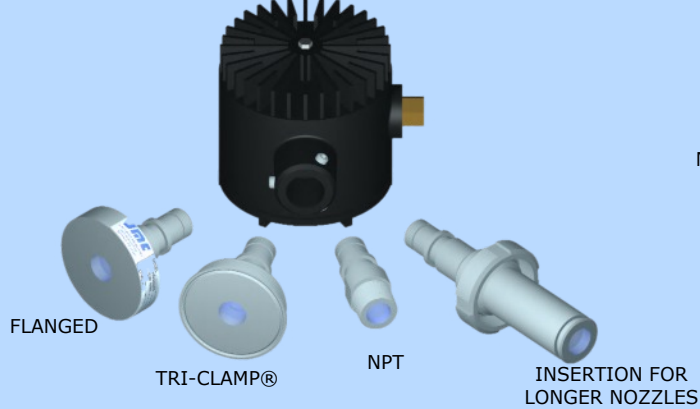
CANTY IS MEASURED AND MEETS THE NEW DIRECTIVE WHICH LIMITS THE AMOUNT OF RADIATION TO AVOID PROBLEMS IN THE FIELD.



FLANGE, NPT, TRI-CLAMP®, NA-CONNECT®

No Sight Glass Required, Direct Mount To Tank Connection

MOUNTING OPTIONS



- 316L SS, Hastelloy® C276, Hastelloy® C-22®, glass wetted material options
- ANSI and DIN mounting options
- Pressure ratings to 10,000 PSI [690 bar] available



Nickel-plated LED light housing

APPLICATIONS

- Process vessels
- Solid material hoppers
- Spray dryers
- Sterilizers
- Filters
- Crystallizers
- Centrifuges



PureView™ Sanitary LED Light and Sight Glass

SANITARY LED LIGHTING

APPLICATIONS

- Biotech Applications
- Fermentors
- Food Applications
- Sterile Process Applications
- Sanitary Areas

FEATURES

- Meets ASME/BPE Standards
- 316L and Hastelloy® Materials
- NEMA 4X / IP66
- Cold light, high output LED
- Fused glass - Safe Light
- CIP/SIP Process Compatible

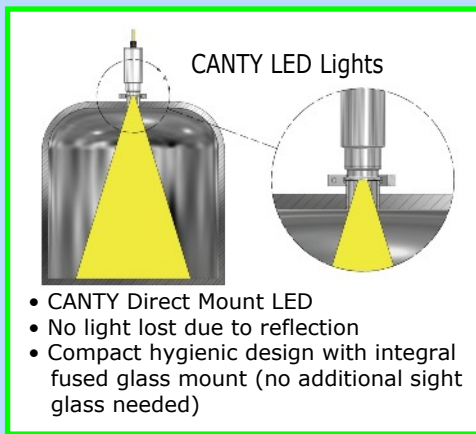


HYL 52 LED Lighting System

The CANTY PureView™ is a sanitary / hygienic fiber optic LED light and fused sight glass combination. The PureView™ combines the maximum viewing area through a CANTY FuseView™ sanitary sight glass with a CANTY high output LED light, providing the best view possible while minimizing space and connections.

All CANTY LED lights feature a hermetic, fused glass, high pressure / temperature seal to completely seal the light from the process. The 316L SS or Hastelloy® design and variety of mounting connections make CANTY Lights ideal for any application.

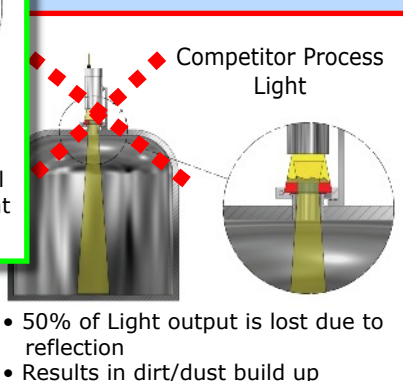
DIRECTIVE LIGHT



- CANTY Direct Mount LED
- No light lost due to reflection
- Compact hygienic design with integral fused glass mount (no additional sight glass needed)

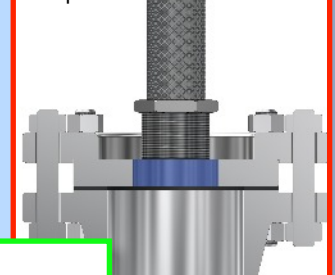
The CANTY Advantage

REFLECTIVE LIGHT

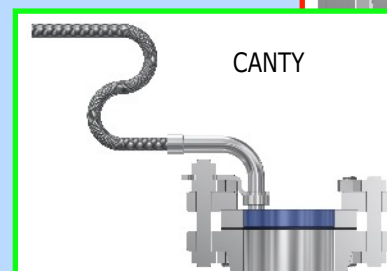


- 50% of Light output is lost due to reflection
- Results in dirt/dust build up

Competitor



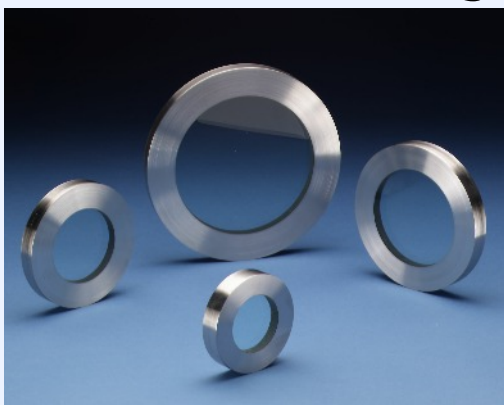
CANTY



- Limited bend radius
- No View
- Bulky fiber optics and mounting

- Minimal bend radius - 2.5"
- Minimal area of sight glass is consumed by fiber optics.
- Industries largest view - FuseView™

FuseView™ Sight Glasses



Maximize Your Process View!

Canty Fuseview™ sight glasses have been engineered to meet all of your process and safety needs. By fusing glass and metal together to form a one piece construction, we can offer the largest view area of any glass-metal sight glass, for any given process connection.

Our unique fused glass windows far exceed all conventional tempered glass windows in safety and performance. CANTY windows can be easily removed for cleaning and do not have to be discarded in the same way as traditional tempered glass windows.

How It Works

To manufacture a FuseView™ we heat the glass to it's molten point where it flows to the wall of the metal. At that point the glass fuses or bonds to the metal. Then we slowly cool the FuseView™ until the glass solidifies. The metal has a higher coefficient of expansion than the glass and the metal compresses on the glass. This squeezing prestresses the glass and puts it under radial compression. Glass is strong in compression but not under tension or shear. When the FuseView™ is pressurized the glass bends and relieves the compression and avoids tension. This is the same as is done with concrete - it is prestressed in compression in order to take bending.

FUSEVIEW™ ANSI/DIN

- Ideal for new or retrofit applications.
- Available in ANSI/DIN as well as almost any custom size.
- The largest viewing area of any fused sight glass on the market today.
- **Quartz/sapphire shield for caustic service is available as an option**

FUSEVIEW™ HIGH TEMP

- Include dual FuseView™ sight glasses for extreme high temperature applications.
- Dual sight glass package insulates the inner FuseView™ sight glass against extreme thermal shock.

GLASS WETTED FUSEVIEW™

- Designed for glass-lined reactors and vessels where only glass is allowed in contact with the product.
- The large diameter fused glass seal allows the gasket to seal on the glass only.
- Perfect for glass wetted, C2000 and exotic material reactors.

CANTY Sight Flows



All CANTY sight flows come standard with FuseView™ sight glasses to provide the safest sight flow in the industry. Our sight flows have been designed to meet strict ASME code requirements and all units are hydro-tested to 150% of the maximum rated pressure.



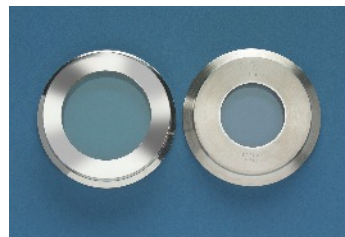
MODELS

- Flanged
- Threaded
- Welded
- Tri-Clamp®
- Teflon® Lined

FUSED GLASS ADVANTAGE

All CANTY sight flows feature FuseView™ sight glasses to ensure safety. By fusing glass to metal, a high pressure, high safety and high impact hermetic seal is formed.

The CANTY Advantage



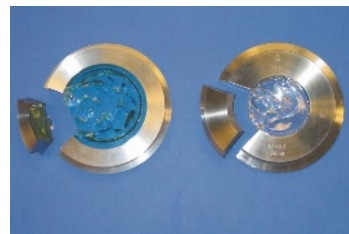
CANTY

- Full 3.0" [76 mm] view (4" Tri-Clamp®)
- Hastelloy® C, Hastelloy® C276 and Hastelloy® C-22®

Metal Glass

- 2.17" [55mm] view (4" Tri-Clamp®)
- DIN 1.4462 = Duplex SS NOT 316L SS

CANTY provides the largest view possible!



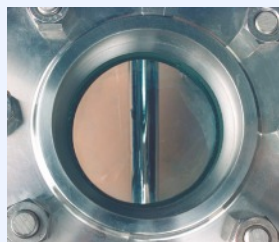
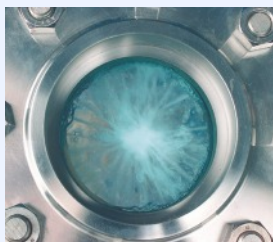
CANTY

- CANTY model is hermetically fused. Note - glass is still fused to the ring after cutting.

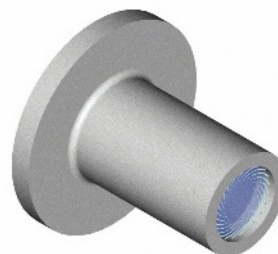
Metal Glass

- Not actually fused! Metal section breaks away cleanly.

(Comparable models shown cut with band saw)



A **Jet Spray Ring** can be used in combination with any low viscosity fluid that is compatible with the process, to generate a high energy vortex action on the surface of the sight glass to remove any fouling, and ensure a clear view at all times.



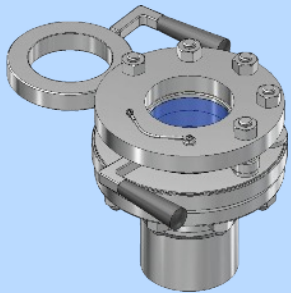
CANTY QuickPort™ Closures



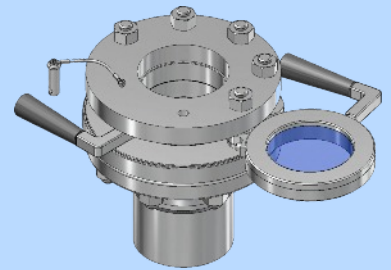
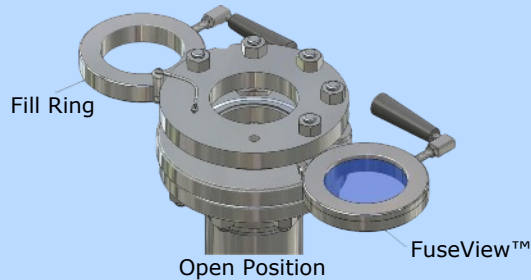
The CANTY QuickPort™ is a patented, safe, quick opening closure for process vessels. Originally used in the offshore diving industry as a transfer lock on decompression chambers, QuickPorts™ are used with no additional interlock by the tank to be pressurized or evacuated. A pressure differential holds the door securely in place and no bolting is involved. Meets ASME code section VIII for quick opening closures. Optional positive interlocks for hazardous or lethal service are available.



The QuickPort™ features a hinged door or window that opens laterally to provide full port access. The closure consists of a pad and a retaining flange held apart by spacers, a floating seal ring, and a door in the form of a FuseView™ sight glass. As the door is pivoted into the closure, the spring loaded seal ring is deflected back to allow the door to fit tightly between the flanges. The spring force creates an air tight seal on the door face, and allows the tank to be pressurized or evacuated.



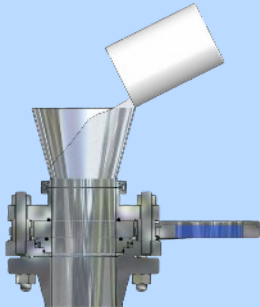
Closed position = Complete Containment



Fill ring = Prevents Spillage

QuickPort™ APPLICATIONS

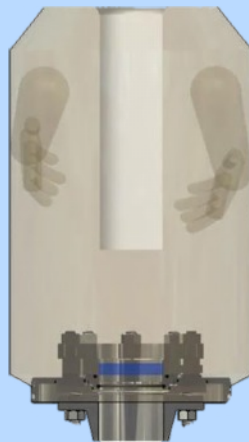
- Powder charging
- Sampling
- Pilot Plant Vessels



Funnel = Clamp-on or Drop In

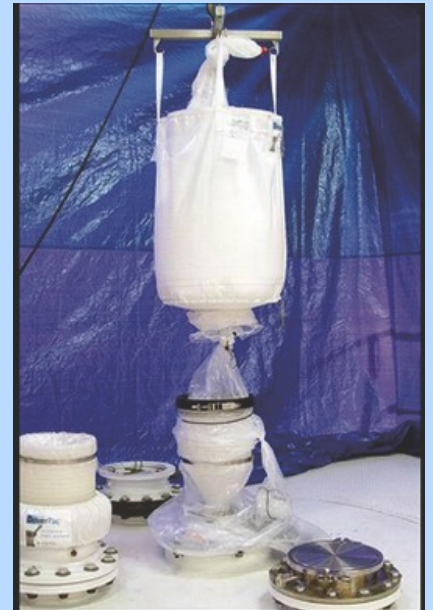


Vessel Charging with DEC PTS System

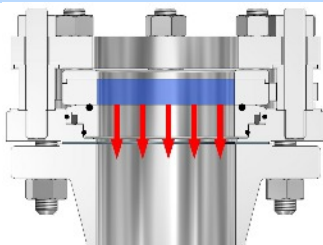


QuickPort™ HAZOP OPTIONS

- Air Cylinder Locking Pin
- Spring Loaded Locking Pin
- Interlock Available for Hazardous Operations - not needed for pressure safety
- Limit Switch



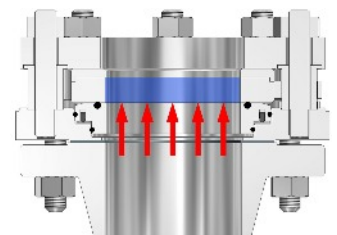
Vessel Charging and Sampling with Dover Pac®



Seal Under Vacuum

HOW IT WORKS

The zero leak design has been proven through a combination of air/liquid submergence testing. This cycles the QuickPort™ through external pressure, no pressure and ultra high internal pressure leak testing where a constant o-ring seal is maintained.



Seal Under Positive Pressure

Process Vessel Cameras

CANTY's process vessel cameras with integral light source allow for high quality remote viewing of a process vessel from the operator control room.

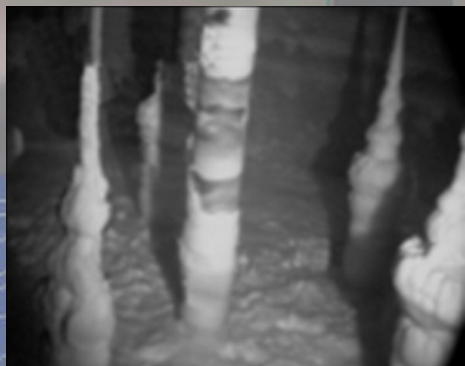
- Integral fiber optic guided lighting ensures uniform illumination in the viewing area.
- System hard-mounts directly to the process vessel, so it does not have any reflection issues.



Eyes in the Process • Visual Verification • Integral Lighting



Non-contact Level Control



Epoxy Resins



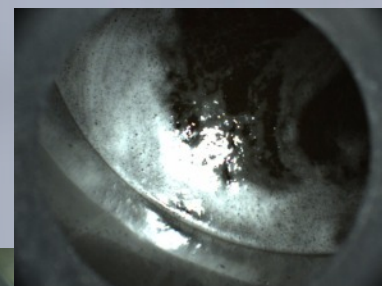
Empty / Low Level

CANTY Camera & Light Vision Systems are a patented design to view and illuminate the inside of a pressure or process vessel through a single connection. There is no need for multiple ports! CANTY can supply an integrally mounted camera and light (optional) in flanged, sanitary or NPT threaded process connections. CANTY fused glass technology provides a safe, high pressure, hermetic fused glass barrier between the process and the camera electronics.

The key to CANTY Camera & Light Vision Systems is the CANTY LED Light. CANTY uses fiber optic light guides to focus cool, effective light into a process or pressure vessel. Cool light eliminates product bake-on, adding no heat to the process. Fiber optic light guides deliver the maximum amount of light into the tank. The resulting live, remote image from a CANTY Camera & Light Vision System is unparalleled!

Foam Detection

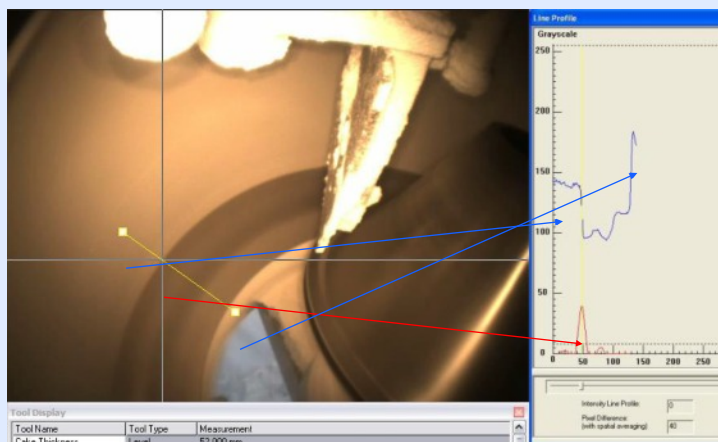
- NON-CONTACT Foam control
- Plastics & Resins
- Percent Foam
- Verify empty



CantyVision™ image processing software can be used to measure and detect various process parameters on both batch and continuous centrifuge systems.



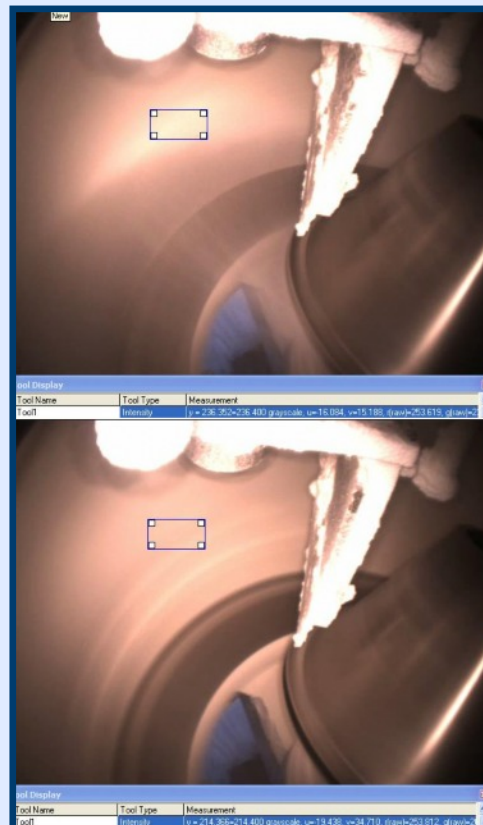
The CantyVision™ Level / Edge Tool, can be configured to track any edge based on the difference in color or grayscale of 2 materials / components. In a batch centrifuge, this edge is the intersection between the product cake, and the centrifuge base plate. This edge tracking is a direct measurement of the cake thickness.



In a continuous centrifuge, the same Level / Edge Tool can be configured to track the position of the color line. This allows the operator to adjust the feed conditions to maintain a constant color line position, and avoid washing above the color line, which is inefficient due to spacing on screen and subsequent liquid carry over.

If there is overstanding liquid present on the surface of the cake during washing, it indicates less than optimal filtration, which could be due to too high a wash fluid feed rate, or possibly fine particles plugging the filter mesh (indicative of a problem with crystallization).

This overstanding liquid is detected by CantyVision™, as when liquid is present, there is a higher than normal intensity reading due to the reflection of the imaging system's light source from the surface. In addition to detecting the initial presence of overstanding liquid, a subsequent drop in intensity reading indicates that all wash fluid has eventually been filtered through. This can be used to control the introduction of additional wash cycles, or to determine when the washing process is complete and the product can be discharged.



Filter Dryer Optimization

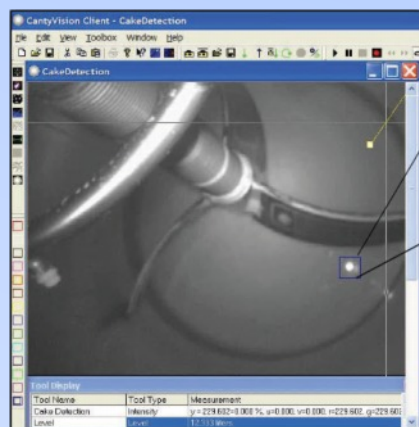
The latest in imaging camera technology, combined with high intensity LED lighting, is mounted to your filter dryer vessel to provide an unrivalled remote view from the control room into your process.

A jet spray ring system is incorporated to ensure the camera view through the fused glass process barrier is clean at all times, ensuring a continuous clear view of your process.

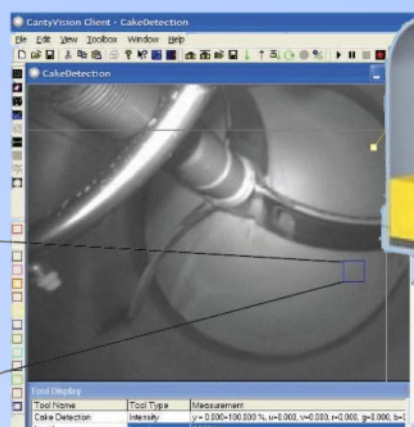
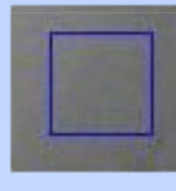
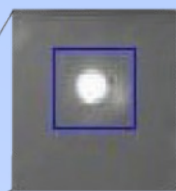
Using an intensity measurement algorithm, CantyVision™ imaging software can be configured to determine the exact filtration end point, and send a signal to the DCS via OPC or 4-20mA.

The liquid surface reflects a bright spot created by the vision system's integral light source. The wet cake surface does not, and so the exact transition point at which the cake emerges is determined.

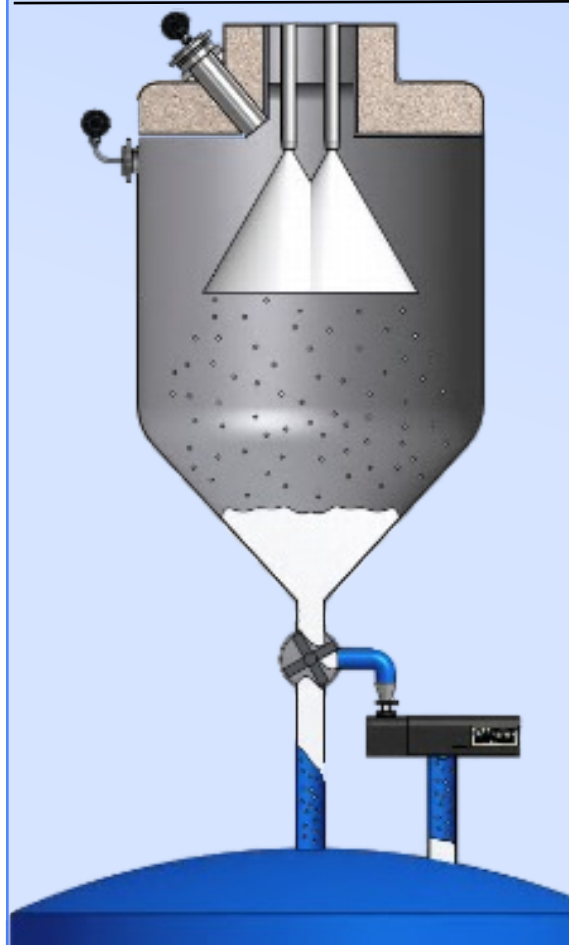
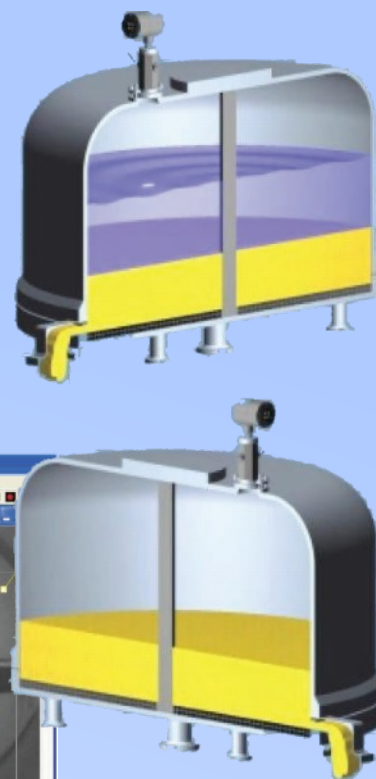
This avoids the possibility of a cracked cake surface due to drying out of the product, and also allows for a more efficient washing regime, which in turn increases throughput by reducing the number of washing cycles required.



LIQUID SURFACE



CAKE SURFACE



Spray Dryer Monitoring

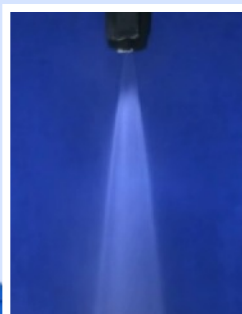
CANTY Spray Dryer Monitoring Systems are vision based, industrial camera / light combinations used to view spray nozzle patterns in real time. This allows operators to see changes in the profile of the spray pattern, and detect clogging before it becomes a problem. Operators can easily view for product build-up before there is a chance for fire.

This Vision System can be automated by the Canty Vector™ Image Processor to measure the size and shape of the spray pattern profile. Alarms can then be sent to the control system if nozzles clog or the spray pattern changes.

The CANTY SolidSizer™ and Vector™ System can be used simultaneously with the spray nozzle monitoring system to determine the final product size. Particles ranging from .002" to .24" (50 micron - 6mm) are analyzed using 2 dimension imaging software for true size and shape information.

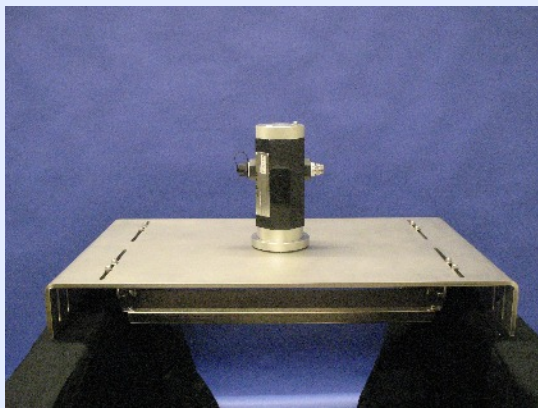
Results can be sent to the control system, allowing pressure adjustments to be made automatically.

A full particle size distribution can be obtained or just critical measuring points. All results can be saved to a file for a historical record.



- Fiber Optic "Cold" Light Means No Product Bake-On
- Fused Glass Interface
- Multiplexing Video Inputs
- World Wide Approvals to FM, CSA, and ATEX
- Single Nozzle Viewing / Illuminating
- Remote Dimmer
- Spray Rings Available For Cleaning
- Multiple Outputs Such As 4-20mA, Or TCP/IP Interfaces Can Be Used

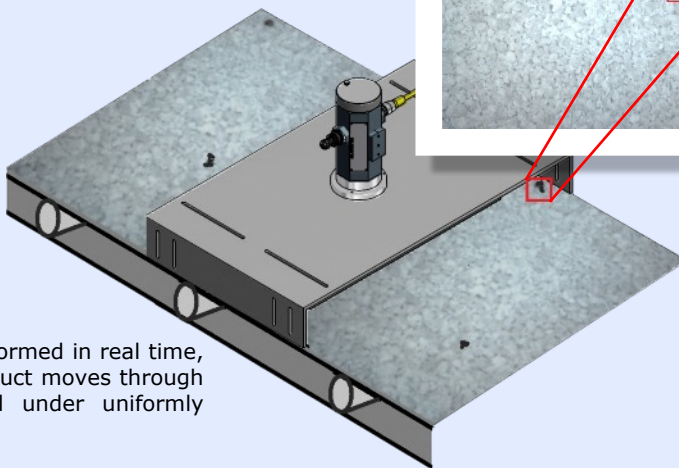
Black Speck / Crumb Rubber



Off specification (discolored) crumb rubber detection is performed in real time, directly on the product conveyor. As the crumb rubber product moves through the shrouded measurement zone, images are captured under uniformly controlled lighting conditions.

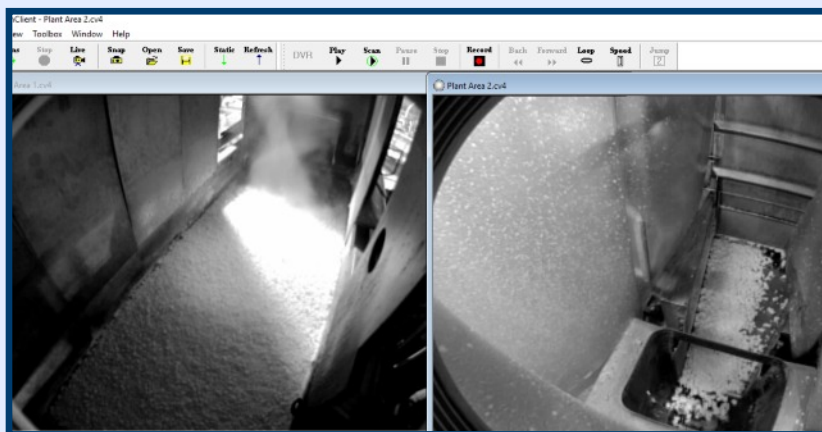
CantyVision™ software then analyses these images in order to detect and record any crumbs / particles that do not fit within the user defined acceptable color range.

For defect detection, see the CANTY SolidSizer™.



Plant Surveillance

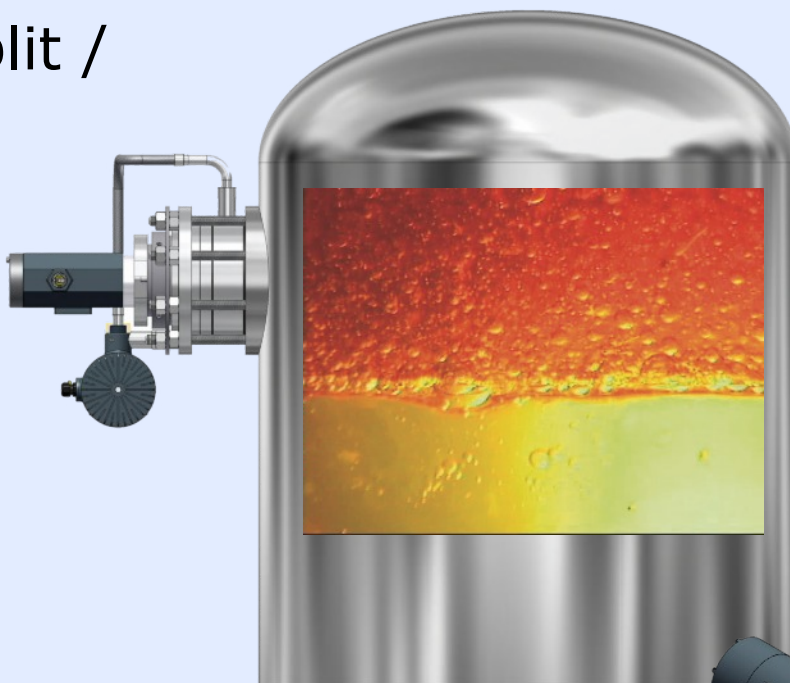
Industrial plant surveillance is made simple through the use of TCP/IP communication, allowing for view and control of multiple camera systems from a single PC running CantyVision™ software. Remote PTZ options allow for complete area surveillance



Phase Split / Interface

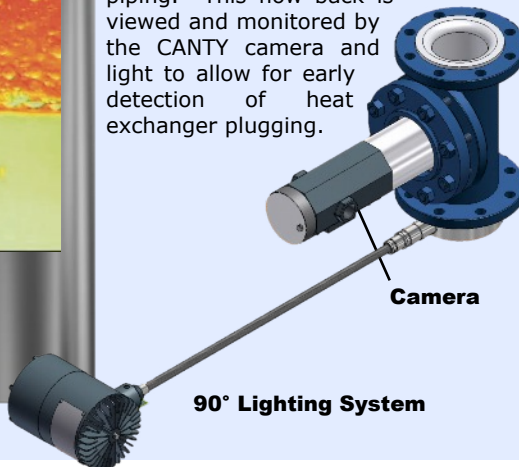
Mounted in the outlet line of a vessel, an imaging system using a unique fiber optically guided 90° lighting arrangement is used to detect the phase change during a batch liquid - liquid separation process.

Image analysis software can identify the aqueous, organic, and emulsion phases, with connection to the DCS allowing for complete automation of the system. Eliminate false alarms!



Reflux Control

Reflux of resin/polymer is a common process where the resin is heated to a temperature where the resin and solvent begin to vaporize and flow out the top of the reactor through a heat exchanger. The heat exchanger condenses the resin causing a minor flow back through the piping. This flow back is viewed and monitored by the CANTY camera and light to allow for early detection of heat exchanger plugging.



High Temperature Cameras

CANTY High Temperature Cameras are ideal for demanding applications involving visual inspection or verification in extreme temperature environments. CANTY High Temperature Camera Systems feature a fused glass seal standard equipment with every model. This unique seal provides an impenetrable safety barrier to protect the camera electronics from the harsh process environment and preventing hazardous vapors from escaping into your plant.

UltraTemp™ Insertion High Temperature Cameras

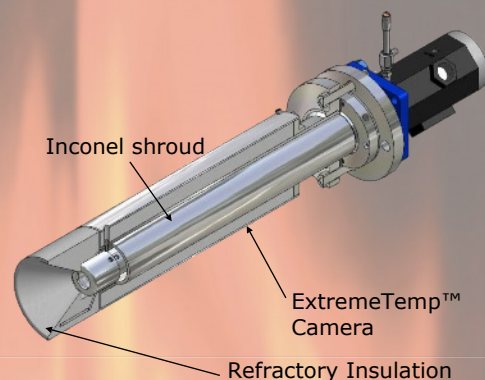


- No cooling air required. Air is used for cleaning only
- 2000°F [1090°C] or 2500°F [1370°C] models
- High temperature furnace package
- 12"-36" models available to insert thru refractory wall
- High quality quartz optics
- Disposable, protective quartz shield
- Auto electronic iris
- Non-blooming CCD camera

ExtremeTemp™ Glass Furnace Cameras

Designed for the extreme 3000°F [1650°C] max. temperature requirements of glass furnaces, the ExtremeTemp™ Glass Furnace Camera combines the a CANTY UltraTemp™ Camera with an Inconel sleeved high temperature refractory jacket. The assembly is inserted thru an opening in the fire brick, providing a remote view into the furnace.

- 3000°F [1650°C] max. Rating - ExtremeTemp™ furnace lens
- High quality quartz optics
- Auto electronic iris
- Disposable, protective quartz shield
- Non-blooming CCD or Ethernet cameras
- Cooling air required



UltraTemp™ Flush Mount High Temperature Cameras

- Ideal for applications where combined refractory and nozzle length are <4" [102mm]
- 2000°F [1090°C] process temperature / 1300°F [700°C] at lens
- 3" 150# ANSI or 80 mm 16 bar DIN flange mounting options
- Includes protective quartz shield and spray ring assembly



HighTemp™ Surveillance Cameras

- View and measure glass level, width
- Optional mounting stands available
- High accuracy
- Remotely mounted - direct line of sight
- Ambient temperatures to 200° F
- Ethernet connectivity
- Includes HT insulation, glare filters
- Optional mounting stands available



Water Cooled Camera Jacket

- Ideal for applications where instrument air is unavailable
- Effectively cools camera housing and acts as an insulatory barrier against ambient heat
- Highly efficient and minimizes cooling costs



CANTY ThermalVision™ System Applications

CANTY provides continuous temperature measurement by using multiband wavelength imaging pyrometry. With the advancement of CCD technology, multiband measurement has several advantages over 2 color (2 wavelength) pyrometers:

- Product temperature measurement is integrated over a broader range of wavelengths, which minimizes variance in emissivity.
- VIS (Visible spectrum) between .4 - .7 micron allows a wide range of materials to be measured without recalibration or adjustment to emissivity.

With the use of VIS, NIR and IR wavelengths, the proper ThermalVision™ camera can be selected to provide the most accurate temperature measurement range available. CautyVision™ software provides a SMART temperature measurement in addition to molten level tracking, object position and temperature measurement specific to an object or process.

Calibration is performed to ASTM standard, providing for accuracy and repeatability of +/- 1°C.

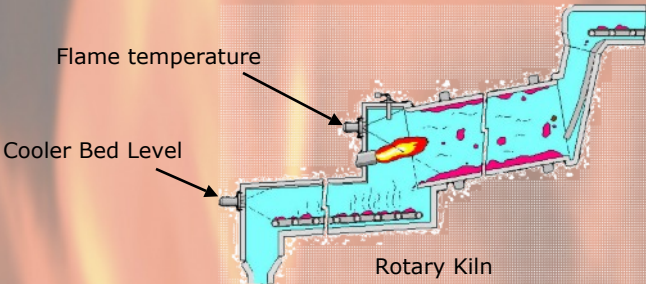


Actual VIS ThermalVision™ Camera measuring rod
Temperatures 750°F [400°C] - 2865°F [1575°C]

Spectrum	Temperature Range
VIS	750°F [400°C] - 3630°F [2000°C]
NIR	570°F [300°C] - 1830°F [1000°C]
IR	32°F [0°C] - 750°F [400°C]

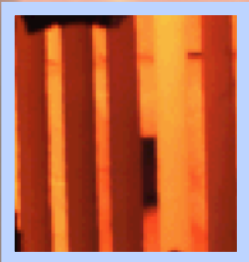
*For reference only

Thermal Oxidizers & Incinerators



Rotary Kiln

Ethylene Cracking Furnace

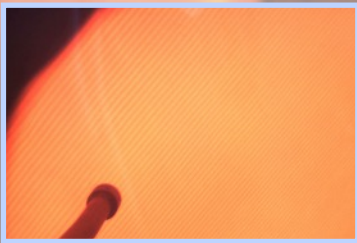


- Temperature Control
- Visual Verification
- One Camera for Multiple Tube Monitoring

Given that a cracking furnace typically accounts for 30-50% of the total Ethylene plant energy costs, it makes sense to invest in optimising its performance and avoiding down time. A CANTY UltraTemp™ camera system can be mounted to the Ethylene cracking furnace to not only provide a remote visual of the furnace internals, but also to provide critical process measurements such as tube temperature and tube distortion. Performing temperature measurement in the visual spectrum limits the effect of surface emissivity on the accuracy of the measurement, which is often an issue for other types of temperature measurement devices (eg, IR pyrometer). Tube distortion due to temperature can also be simultaneously monitored, which again can be an early warning sign for a larger tube issue. Multiple tubes within the field of view can be monitored with a single camera, with separate temperature measurement and positional zones set up on each, and individual control signals sent to the DCS. Depending on where the camera(s) is mounted within the furnace, a view of the burners can also be provided. This allows for individual optimisation of each burner, and assists in avoiding issues such as flame detachment, smoking burners, or flame impingement onto the furnace tubes, which can lead to overheating.

Ammonium Nitrate AN-NA

Maintaining the temperature of the platinum gauze is key to running an effective Nitric Acid production. To start the reaction an igniter is used on the catalyst gauze and feeding in the gas mixture, reaction begins to take place at the point of contact between igniter and the gauze. This is typically the most dangerous part of the process as an operator has to be at the unit looking through a sight glass. If something where to go wrong the unit could explode while operators are looking in to see if there is a uniform burn. The CANTY camera is able to monitor the uniformity of the burn and output a 4-20mA or OPC signal to your PLC or DCS for complete control. This eliminates the dangers of someone having to be looking at the gauze during startup. Also, while the process is running the CANTY camera will analyze the temperature of the gauze to make sure it is at the correct limits. Reaction typically takes place at 600°C and the CANTY camera can monitor the temperature of the gauze with outputs so the operator can have complete and accurate control.



- Uniform burn monitoring
- Temperature control
- Safety - remote viewing

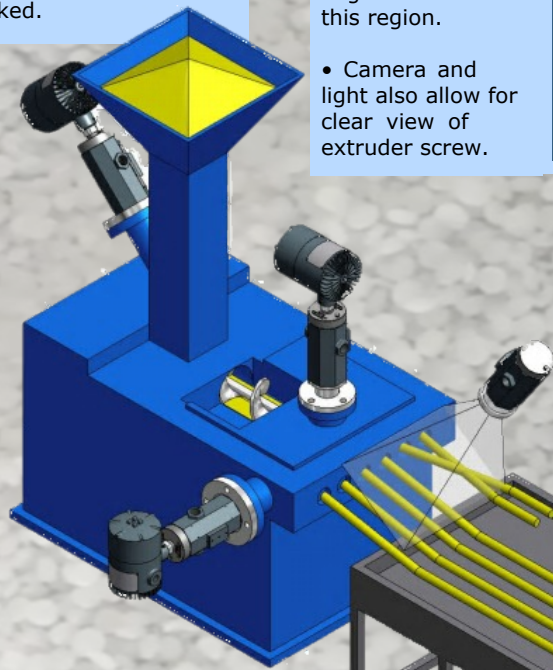
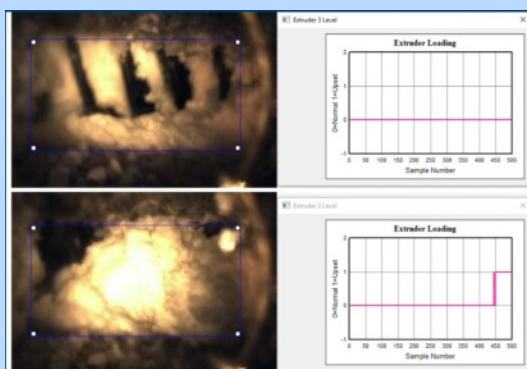
Extruder Process Control

HOPPER / FEEDER LEVEL

- CANTY camera/light combination monitors the entrance of the extruder barrel.
- Monitors extruder screw loading.
- Ensures that the chute does not become blocked.

VENT CAMERA

- Camera and light monitors extruder vent to see and control when polymer begins to block this region.
- Camera and light also allow for clear view of extruder screw.



STRAND MONITOR CAMERA

- Tracks position of each strand and alarms on balling or breakage.
- Real-time monitoring of strands done remotely from the central control room.
- Closed loop control via OPC or 4-20Ma output.

FILM WIDTH & HOLE DETECTION

PELLET ANALYSIS



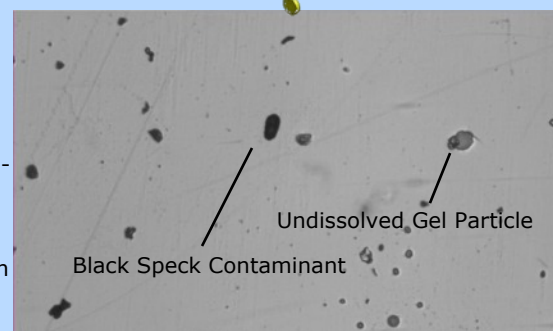
EXTRUDER MELT CAMERA

- The CANTY InFlow™ analyzer monitors extruder melt by combining a microscopic camera and high intensity LED light source connected to the central flow cell mounted directly on the extruder barrel.
- Integrated fused glass technology allows for imaging at high process temperatures and pressures.
- The system is used to detect contaminants and air bubbles in real time.



PARTICLE SIZING

- Final product quality control to detect undissolved gel particles and black speck contaminants.
- CANTY's range of vision based particle analysis systems provide real-time true size and shape characterization.
- Analysis can be done at line through use of a sweep sampler, or offline through use of a laboratory instrument.



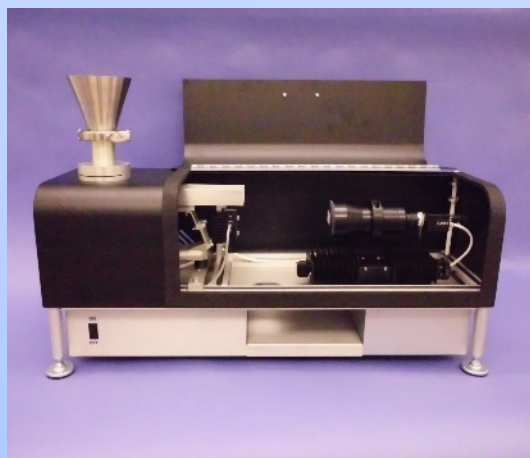
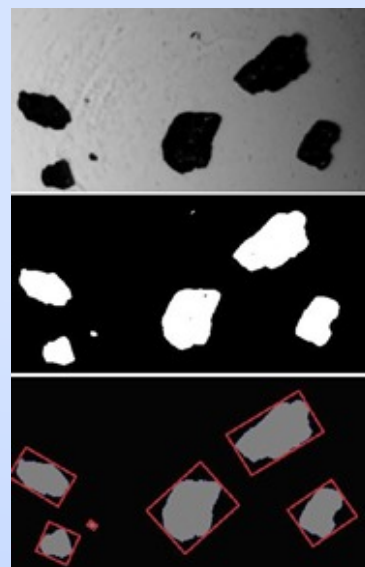
Solids Particle Sizing

Size and shape analysis of dry particles or pellets, is performed by the range of Cauty Solid Sizer equipment. The product to be analysed is fed into the system hopper, where the built in material handling system separates the particles into one even layer, and transports them into the analyser's measurement zone.

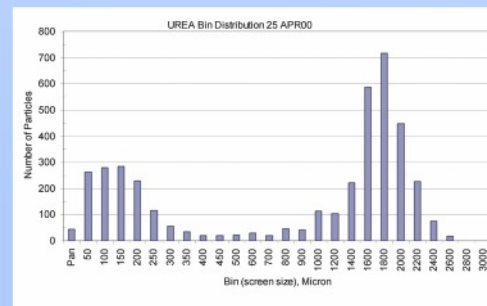
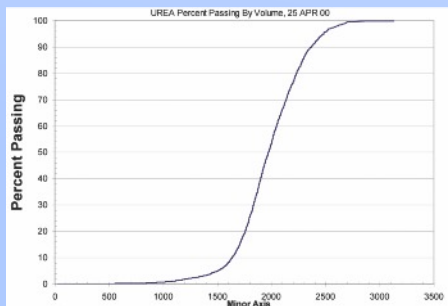
Within the measurement zone, the particles pass between a high intensity LED light source and camera, which captures high resolution images 2D images.

These images are then binarised, and by analysing the number and position of the image pixels, a full particle **SIZE** and **SHAPE** distribution.

Meets ASTM Standards • Polymer Beads / Pellets • Chemical Powders
Particle Size from 10µm to no upper limit*

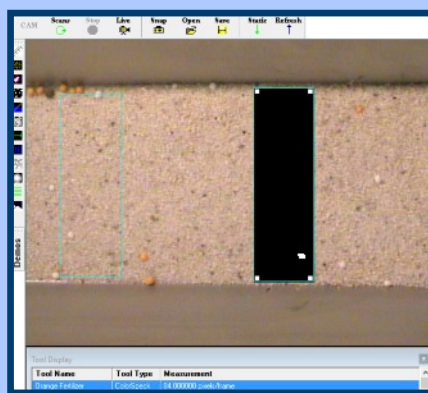


Lab or Industrial (At-Line) Systems

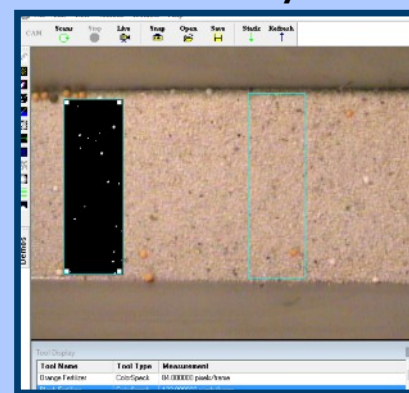


BLACK SPECK or **COLOR SPECK** detection is available as an add on to a particle size and shape analyser, or as a stand alone system. This uses a camera system with controlled front lighting system for accurate color representation within the captured images. Multiple measurement zones can be configured to allow for detection of particles of different colors within the same product.

Contaminant Detection - Mixture Ratio Analysis



Color Particles Detected



Black Particles Detected

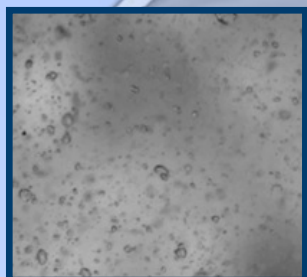
Crystallization

Full Crystal Growth

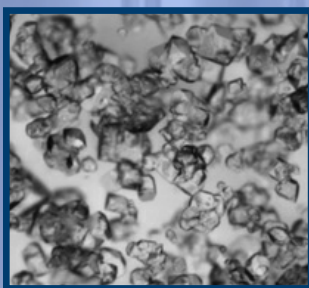
Control of Crystallization is one of the most important factors effecting product yield and quality. Image based particle size and concentration uses high speed imaging sensors with a resolution down to .7 micron to capture the particulate in real-time.

CrystalScope™ Advantages:

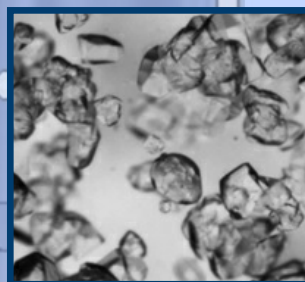
- Real-time crystal size analysis
- Crystal distribution by major, minor diameter, area, perimeter, aspect ratio, circularity.
- Crystal size & shape
- Crystal count
- Density of crystals
- Detection of seeding problems
- Automated temperature & vacuum controls during crystal growth



Seeding - Sizing from 0.7µm



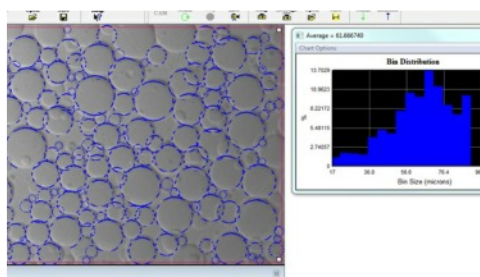
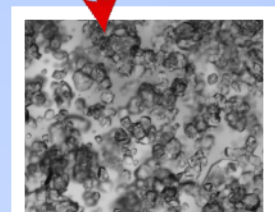
Crystals Growing



Full Crystal Growth



The CrystalScope™ (above) mounts to the head of the vessel, and features an insertion length based on the depth of the reactor. Light is guided via fiber optic to the tip of the insertion probe, where a microscopic camera is positioned to capture images of the crystals from the nucleation stage, through to growth completion.



EPS / Bead Production

A vessel mount system can be used for real time image capture during the production of polymer beads. The captured images are analysed by CautyVision™ software, to provide a complete bead size distribution through the complete process, allowing for greater control over final product size. Applications include pentane injection and end bead size. Also see Solid Particle Sizing for dry bead sizing.

Glass Reactor Microscope

The Glass Reactor Microscope - GRM (right) allows for full visualization of smaller lab scale crystallization processes. It features a unique optical flat section for representative image capture. The reactor itself is jacketed reactor to allow for controlled heating & cooling, while the lid includes several spare ports for additional instrumentation that may be used during any tests or experiments.

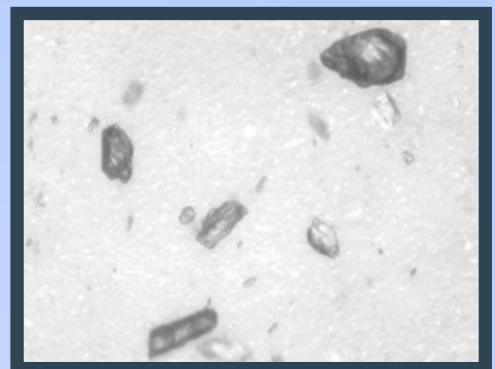
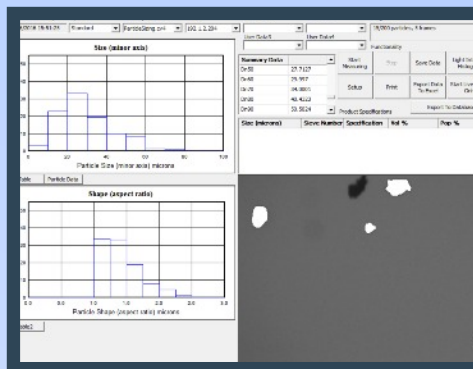
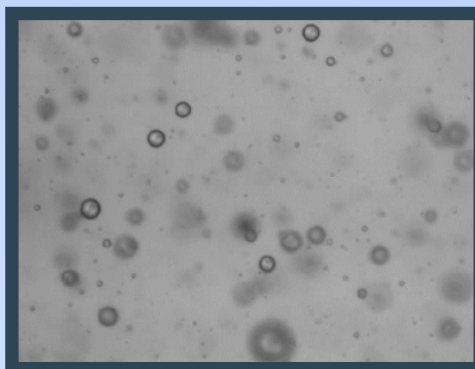


Liquids Particle Sizing



The liquid slurry to be analysed passes through the analyzer flow cell, which incorporates a microscopic camera, and high intensity back lighting system. High resolution 2D images are captured and sent to CantyVision™ software for realtime analysis. Each particle is measured under a range of size and shape parameters including major axis, minor axis, area, perimeter, aspect ratio circularity and equivalent circular diameter, to provide a truly comprehensive particle characterisation. The imaging principle allows for visual verification of any results, and aids the user in developing a greater understanding of their process or product.

Particle Size from 0.7µm to no upper limit* • Particle Shape • Particle Concentration



Various options are available for pipeline (in-line or at-line), vessel and off-line (lab) measurement, all of which include fused glass technology allowing for use on **HIGH PRESSURE & HIGH TEMPERATURE** applications.



Automatic Dilution

The CANTY Automatic Dilution System uses a 0- 1/2" variable insertion measurement gap. This insertion is made possible by the Fuseview™ sight glass, which allows the optical fused pieces to be located in the center of the fluid stream, which is unique to the CANTY system. The fused glass seal contains no gaskets, ledges, or steps allowing the highest velocity, representative sample and keeps the sensor clean, even in the harshest of environments. The fused glass seal location keeps the sensor in line with the process temperature to avoid product build up due to thermal change. The image processor can be configured with multiple zone sensing on the image of the fluid. The results from the zones can be compared to base line values for reliability and alarm on detection of a problem.



**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.**

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