



vision
without
limits

MINING

CANTY

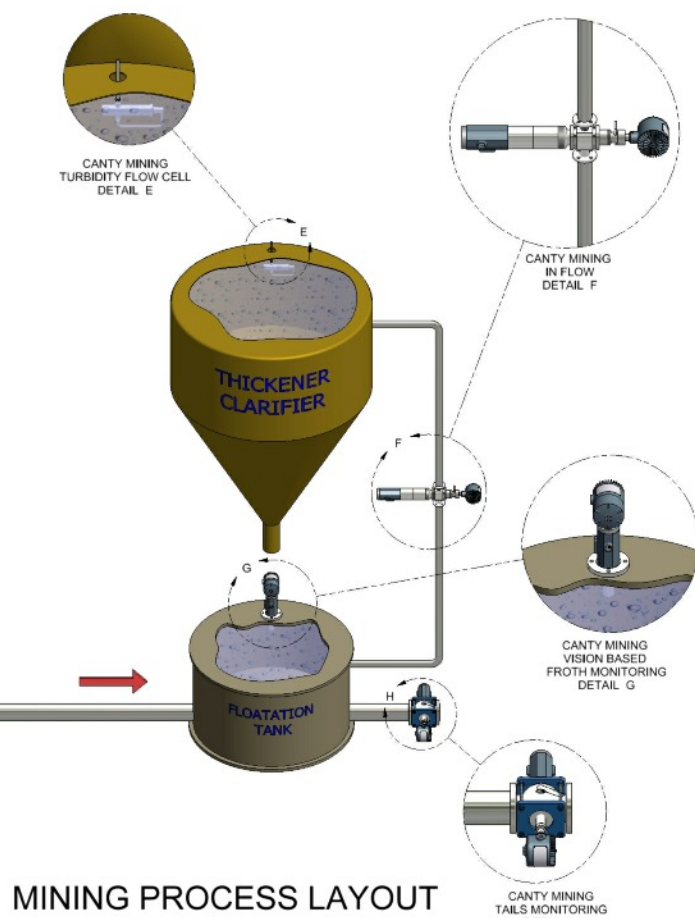
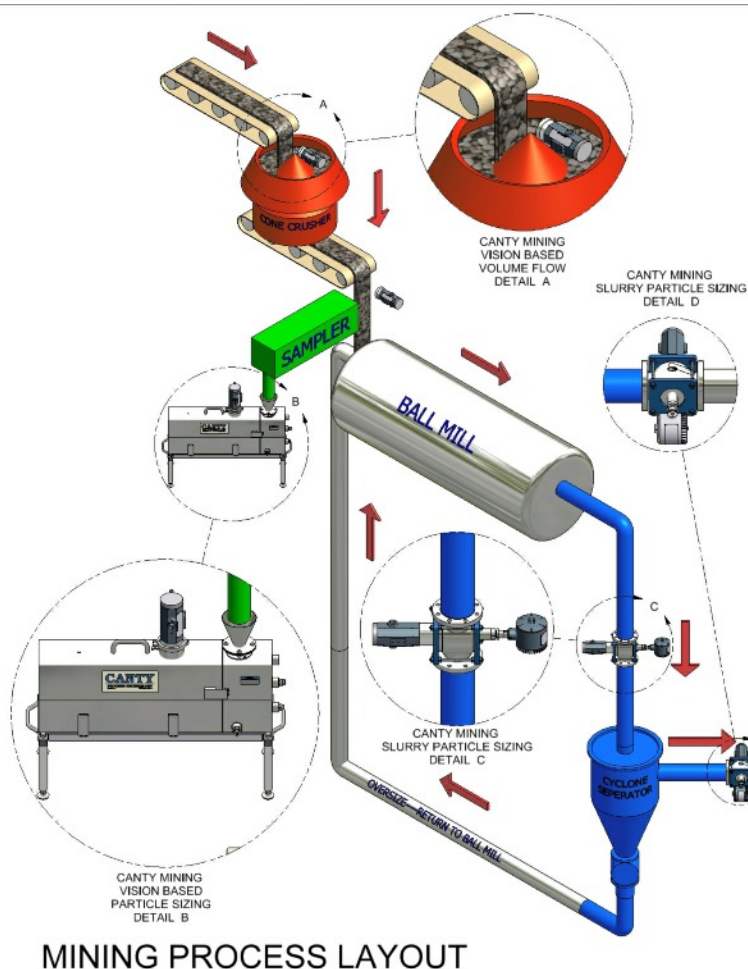
PROCESS TECHNOLOGY

BUFFALO

DUBLIN

THAILAND

Optimized Application



TD11201-100 REV1

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

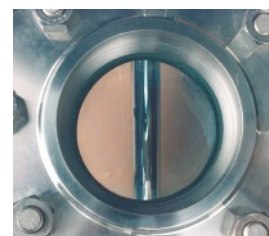
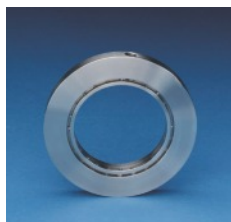
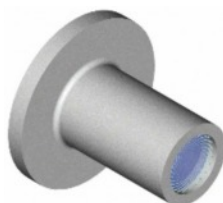
- Flanged
- Threaded
- Welded



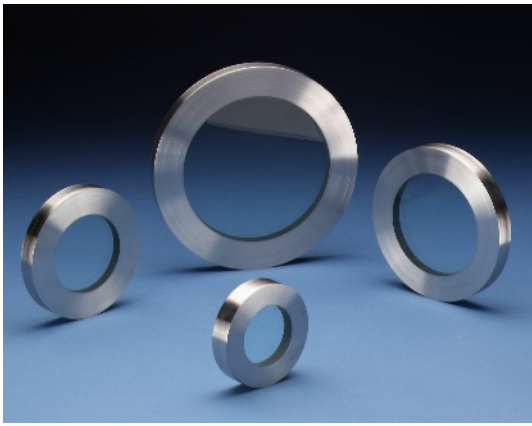
FUSED GLASS ADVANTAGE

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.

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 FuseView™

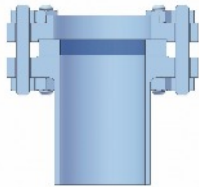


Our unique fused glass windows far exceed all conventional tempered glass windows in safety and performance. CANTY windows can be easily removed for cleaning and do not have to be discarded in the same way as traditional tempered glass windows.

How It Works

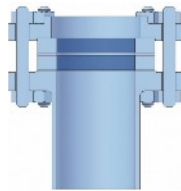
To manufacture a FuseView™ we heat the glass to it's molten point where it flows to the wall of the metal. At that point the glass fuses or bonds to the metal. Then we slowly cool the FuseView™ until the glass solidifies. The metal has a higher coefficient of expansion than the glass and the metal compresses 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.
- **Quartz/sapphire shield for caustic service is available**



FUSEVIEW™ HIGH TEMP

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

For More Information Click [Here](#)

CANTY Lights

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.

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



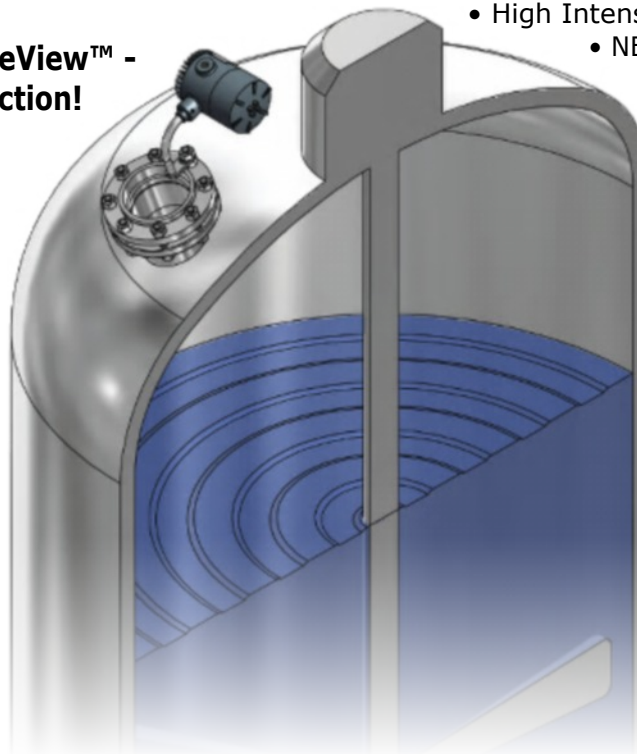
CANTY 12" bundle models mount directly to a sight glass with an optional bracket.

- 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



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

For More Information Click [Here](#)

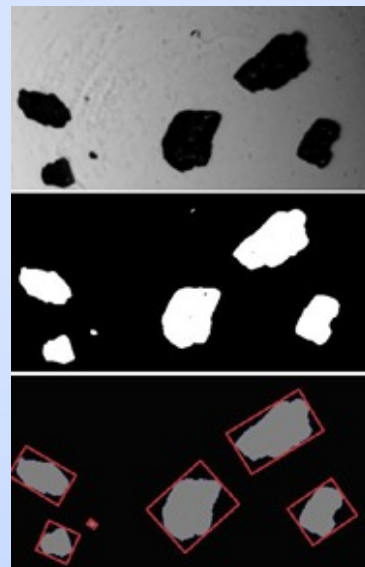
Lab Solid Particle Sizing

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.

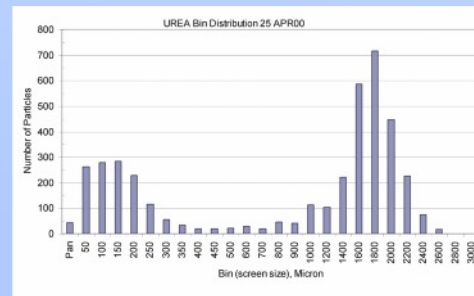
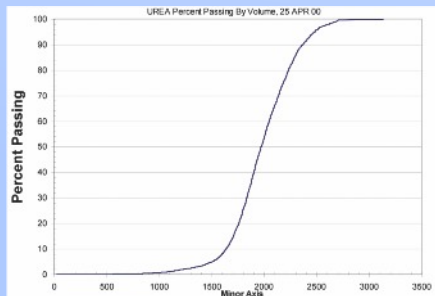
Within the measurement zone, the particles pass between a high intensity LED light source and camera, which captures high resolution images 2D images.

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

Meets ASTM Standards • Stone • Minerals • Frac Sand
Particle Size from 10µm to no upper limit*



Lab or Industrial (At-Line) Systems

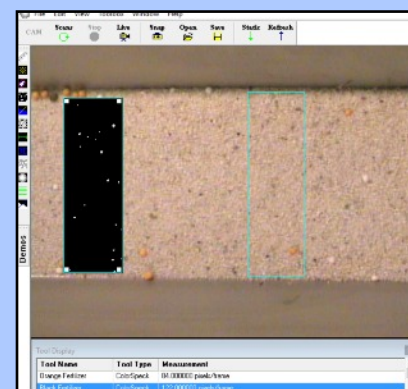


BLACK SPECK or **COLOR SPECK** detection is available as an add on to a particle size and shape analyser, or as a stand alone system. This uses a camera system with controlled front lighting system for accurate color representation within the captured images. Multiple measurement zones can be configured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

Contaminant Detection - Mixture Ratio Analysis



Color Particles Detected

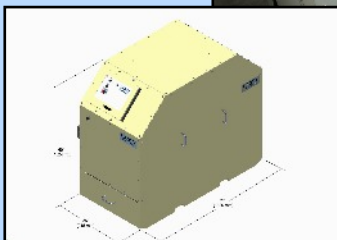
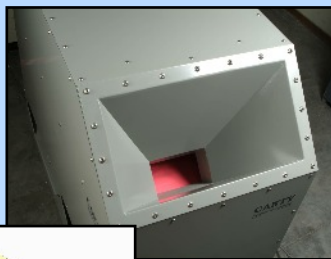


Black Particles Detected

Solid PSA Applications

RockSizer™

- 50 um – 6,000 um Particle size analysis range
- Lab & on-line use
- Determine particle size, shape and distribution
- Eliminate the need for sieve analysis.



Sand Analysis/Sieve Replacement



The CANTY SolidSizer™ is a vision-based sensor used with the CANTY VCM (Vector Control Module) image processor for dry sand size measurement in a laboratory environment or inline. The CautyVision™ Software accurately measures multiple aspects of the sand. The SolidSizer™ can correlate within 2% of a sieve with 99% repeatability.



Features:

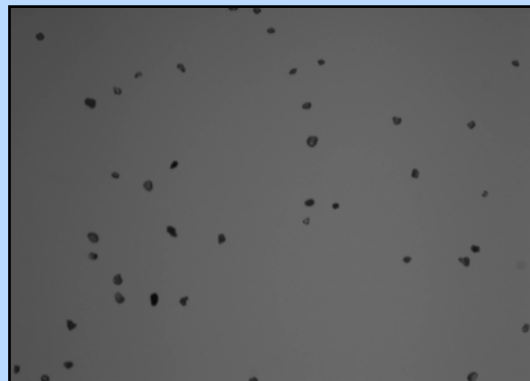
- Real time 2D particle size distribution analysis
- Particle shape analysis by aspect ratio, circularity, convexity, solidity, sphericity, etc
- Ability to correlate data to sieves
- Adaptable data output so that it matches current QC documents
- Data can be output via .csv or ODBC for local storage or uploading to LIMS systems
- System auto calibrates and auto focuses
- Front and back lighting available for color analysis
- Analysis in as short as 2 minutes

Benefits

- Virtually eliminates lab screening time
- Easily adaptable for different product sizes
- Eliminate the time, errors, and costs associated with sieves and lasers technologies
- Easy setup and calibration

Crusher

In order to monitor crusher performance, CANTY provides Industrial SolidSizer or 3D RockSizer image analysis systems, which determine if the mining aggregates outputted from the crusher are the correct size and shape. The systems can be run at line through the use of a sweep sampler, or offline as laboratory instruments.



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. All Ethernet camera systems come with CantyVision™ software for analysis of the process and allows for measurement of temperature, flame size, level, etc.

UltraTemp™ Insertion High Temperature Cameras

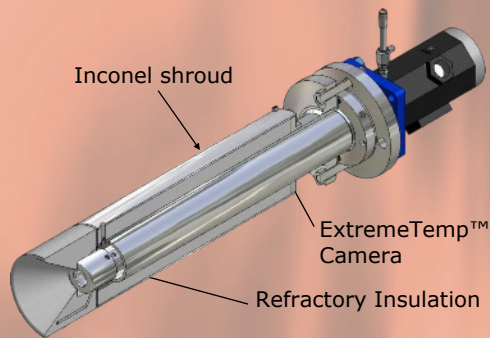


- No cooling air required. Air is used for cleaning only
- 2000°F [1090°C] or 2500°F [1370°C] models
- High temperature furnace package
- 12"-36" models available to insert thru refractory wall
- High quality quartz optics
- Disposable, protective quartz shield
- Auto electronic iris
- Non-blooming CCD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

ExtremeTemp™ Kiln Furnace Cameras

Designed for the extreme 3000°F [1650°C] max. temperature requirements of glass furnaces, the ExtremeTemp™ 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 - extreme temp 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

- 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



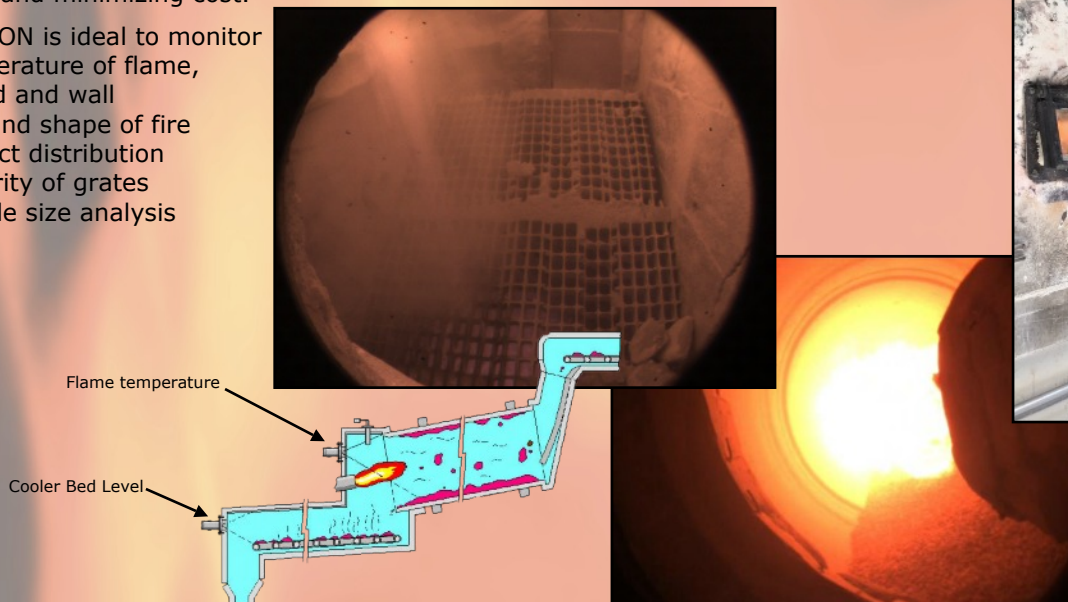
High Temperature Application- Rotary Kilns

Cement • Lime • Metakaolin • Titanium Dioxide • Alumina • Vermiculite • Iron Ore Pellets

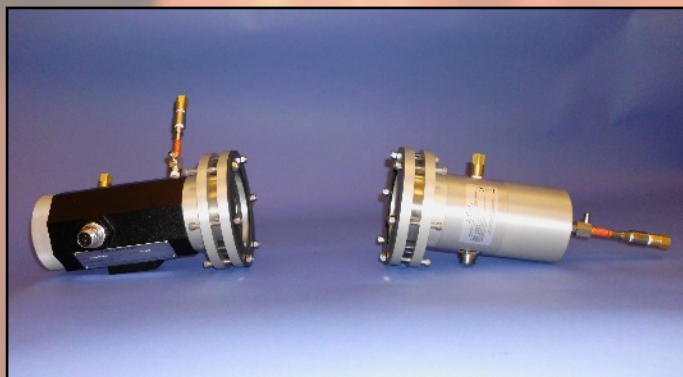
Fire used to cause the calcination of the material, along with the rotation of the kiln to distribute product evenly, affect the calcination process. Monitoring is key to optimum production and minimizing cost.

CANTYVISION is ideal to monitor

- Temperature of flame, bed and wall
- Size and shape of fire
- Product distribution
- Integrity of grates
- Particle size analysis



Smelter Furnace Smoke Detection System

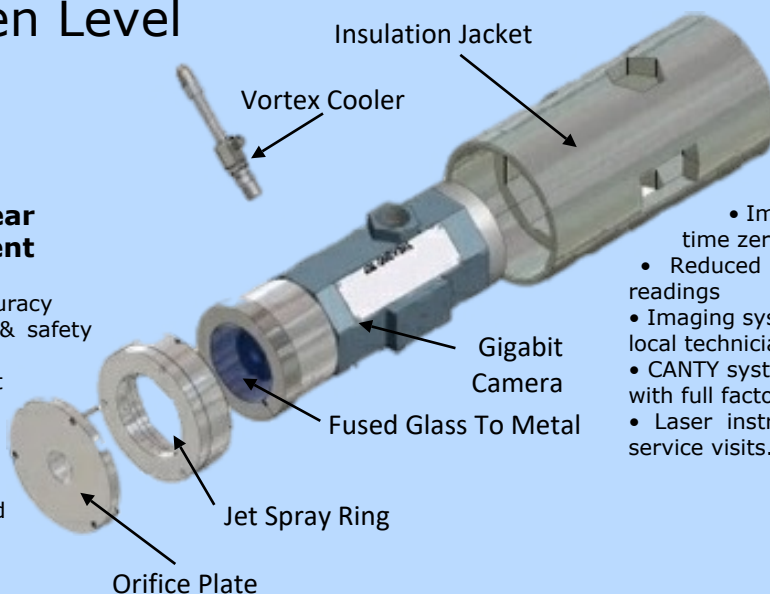


CANTY Opacity System for smelter furnace smoke detection uses a gigabit Ethernet camera with a back-mounted light source to detect the presence of smoke. The system includes jet spray rings to keep the system free of particulate and is easily mounted in systems of all sizes as well as retrofit applications. The camera continuously images the stack to look for any presence or increase in smoke and alarm thresholds can be set to send a digital signal or 4-20mA.

Smelter Molten Level

Imaging vs Nuclear Level Measurement

- Imaging has 10x greater accuracy
- Imaging avoids the health & safety issues
- Imaging avoids the cost issues associated with nuclear
- On-site dedicated nuclear specialist unneeded
- Imaging provides instantaneous or time-averaged



Imaging vs Laser Level Measurement

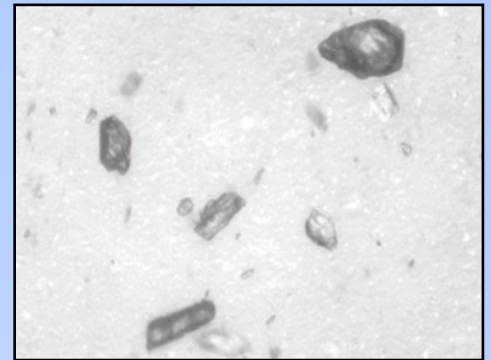
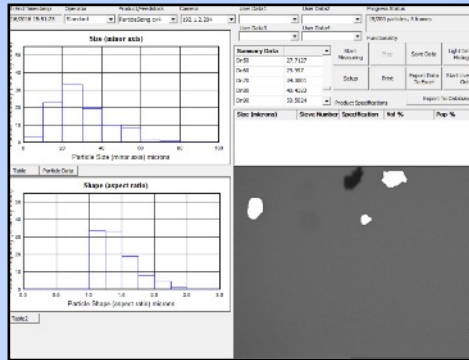
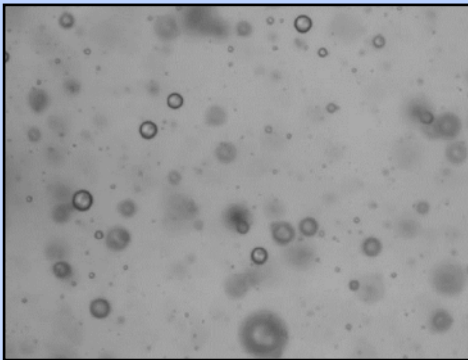
- Imaging is a direct measurement with one time zero drift calibration
- Reduced maintenance and reliable long-term readings
- Imaging systems are easy to support by in-plant or local technicians
- CANTY systems can be installed by plant personnel with full factory support
- Laser instruments typically require factory field service visits.



Slurry 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.



Turbidity

Turbidity analysis using a high resolution CCD/CMOS image sensor that detects turbidity changes in fluids by measuring the transmittance of light. Using advanced software algorithms the system automatically removes gas bubbles from the analysis resulting in highly accurate and repeatable data outputs. This system is designed for inline use with varying pressures, temperatures, and pipe diameters.

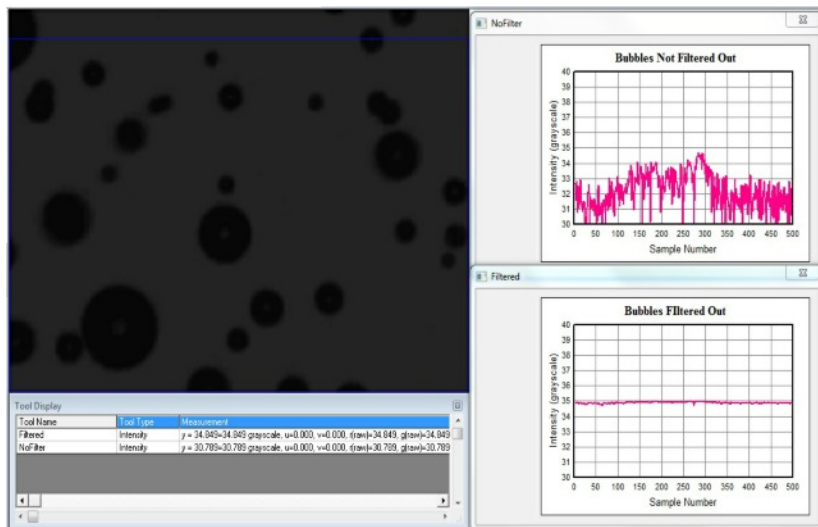
- Monitor for TOC and Particle Level
- Reduce Lab Time
- Monitor for TSS



Features

- Ethernet Connectivity
- Real Time Monitoring Of Process In Flow
- Solid One Piece Central Hub
- Supplied With Internal O-ring Seals
- Easily Installed Modular Unit
- Fused Glass Process Barriers
- Regulated Light Source Emits Cold Light To Prevent Product Bake-On
- OPC, 4-20mA Current Loop, EXCEL spreadsheet and Relay Outputs Are Available
- Single-use options Are Available
- Visual Verification
- In-line Analysis

Effect of Gas Bubbles



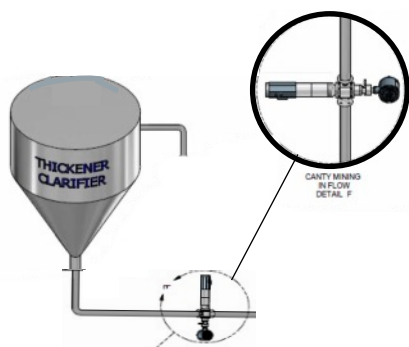
Turbidity (NTU)



Thickener/Clarifier

theCANTY Advantage

- No sample tubing, eliminating frozen tube problems
- Main turbulent stream analysis eliminates inaccuracy potential in Particle Size Analysis (PSA) due to build-up
- Real-time PSA provides feedback on acceptable polymer levels, reducing production cost and time

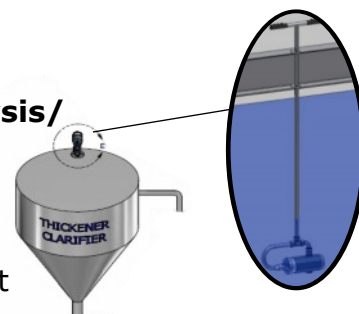


Canty INFLOW Analyzer

- Monitor aggregate size in thickened solution
- Ensures particle size uniformity
- Monitors polymer dosage

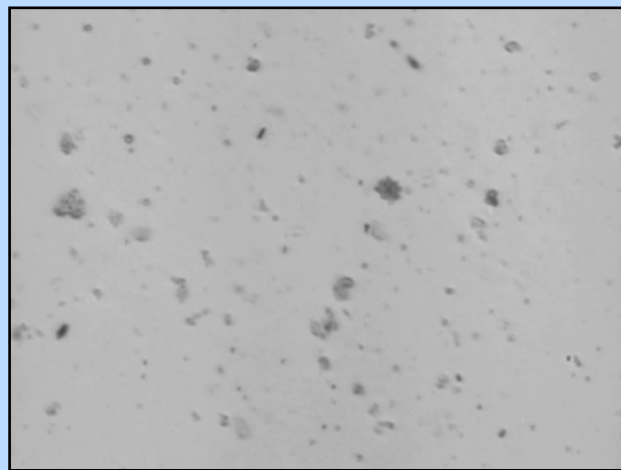
Canty Immersion Turbidity/ Color Analysis/ Percent Solids Analyzer

- Monitor percent solids
- Ensure product is not lost to waste
- Ensure environmental standards are met



Tailings Measurement

For monitoring of tailings outputted from the flotation tank, CANTY's at-line real time liquid particle image analysis systems provide true size, shape and concentration output providing the operators with the key characteristics of the tailings for optimum operational performance and disposal.. The Inflow is able to correlate to a sieve and output in the same format so the analysis remains the same but the data is real-time. This eliminates the need for sampling.



Flotation



Within the flotation tank, monitoring of the froth characteristics at the surface is highly critical in order to optimize yield of the mineral. CANTY provides a modular camera light combination unit to provide a remote continuous view and control by detection of froth bubble size, velocity and stability.

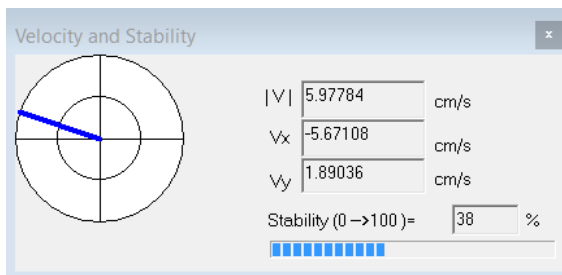


BUBBLE:

- Velocity
- Direction
- Size Distribution
- Stability

LEVEL:

- Liquid Level
- Froth/Bubble Level

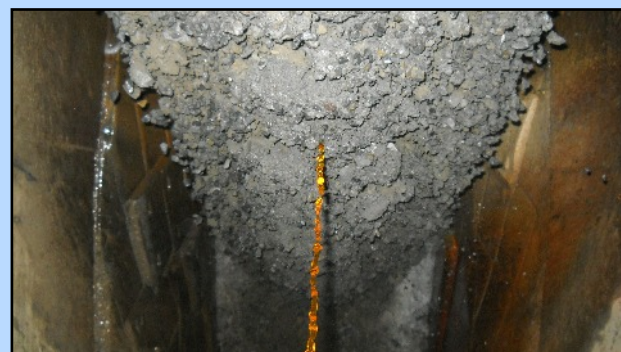


Spray Ring For Cleaning

The system uses a fused glass front cap which provides a hermetic glass to metal seal that is shatter proof and high impact. The glass is fused at 2000°F and then cooled which enables the metal ring to fuse and compress on the glass providing a reliable flush surface. The spray ring jets onto the fused glass flush surface cleaning the viewing surface to allow accurate continual reads. Water pressure of 40 - 80 PSI is typically used.

Chute Plug

Chute Plugging especially before the ball mill becomes a problem and can only be controlled by a camera to stop major upsets. Probes only stop the feed when it is too late and requires a ton of manual maintenance for eliminating the plug or the spill over. With a camera system and analysis the chute can be controlled and the process can be adjusted to help eliminate the need for manual labor being required for clean up or downtime due to plugging!

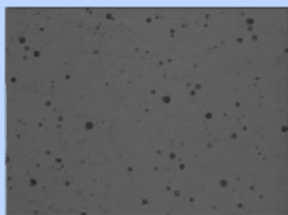




Available in a number on configurations - **direct online, side stream, or portable** - the InFlow™ can be used anywhere within a produced water plant to optimize each stage of separation, to ensure any separation equipment is running at maximum efficiency, and any environmental discharge limits are reached.

The performance of any separation equipment (hydrocyclone, CFU, IGF, membrane filters.....) is based on operating at the correct configuration for the inlet fluid condition. Similarly, the dosing volume / rate of production chemicals such as emulsion breakers or droplet coalescers, is based on understanding what is present within the fluid to be treated. The InFlow™ delivers this information, providing real time data for oil concentration & droplet size, and total suspended solids concentration and particle size.

IGF INLET



IGF OUTLET



FILTER OUTLET



SEPARATOR/FILTER OPTIMIZATION • CHEMICAL DOSING CONTROL • ENVIRONMENTAL REPORTING



**OIL / TSS
in WATER
ANALYSIS**

- Variable concentration range setting; 0-10ppm, 0-100ppm, 0-1,000ppm, 0-10,000ppm
- Options to 80,000ppm
- Particle sizing to 0.7µm
- Fused Glass Windows - Options to 600 BAR
- High Intensity LED Lighting
- Gigabit Ethernet Camera Technology

For More Information Click [Here](#)

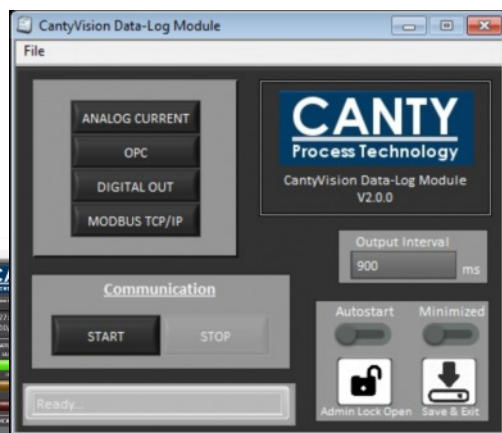
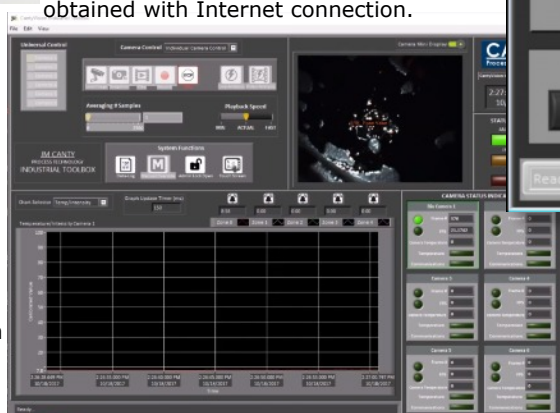
Vector Control Module



The Vector Control Module (VCM) is a small fanless solid state embedded processor that has CANTYVISION™ software pre-installed. It is designed to keep project costs low and eliminate the need for a computer. No additional analog output needed. The operator screen makes it simple for operators to see what is going on real time with visual verification.

The VCM has OPC or 4-20mA outputs to a PLC or DCS for complete control. Full administration controlled passwords and permissions are available. This compact design and cost effective system is easily setup and has a customizable screen. Access to technical support can be obtained with Internet connection.

- Supports up to six cameras
- OPC outputs
- Up to eight analog 4-20mA outputs
- Link to technical support (when Internet connected)
- Digital IO
- Four USB Ports
- Four serial ports
- CantyVision™ Software installed
- Full administrative control embedded operating system
- Fan-less solid state vision control system



For More Information Click [Here](#)

**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 THE COMPANIES WE HAVE WORKED WITH



ARCELORMITTAL
AUSTRALIAN ABRASIVE MINERALS
FREEPORT-MCMORAN
MISSISSIPPI SANDS
NEWMONT
SASOL MINING
SIERRA FRAC SAND
SIL SILICA
U.S. SILICA



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