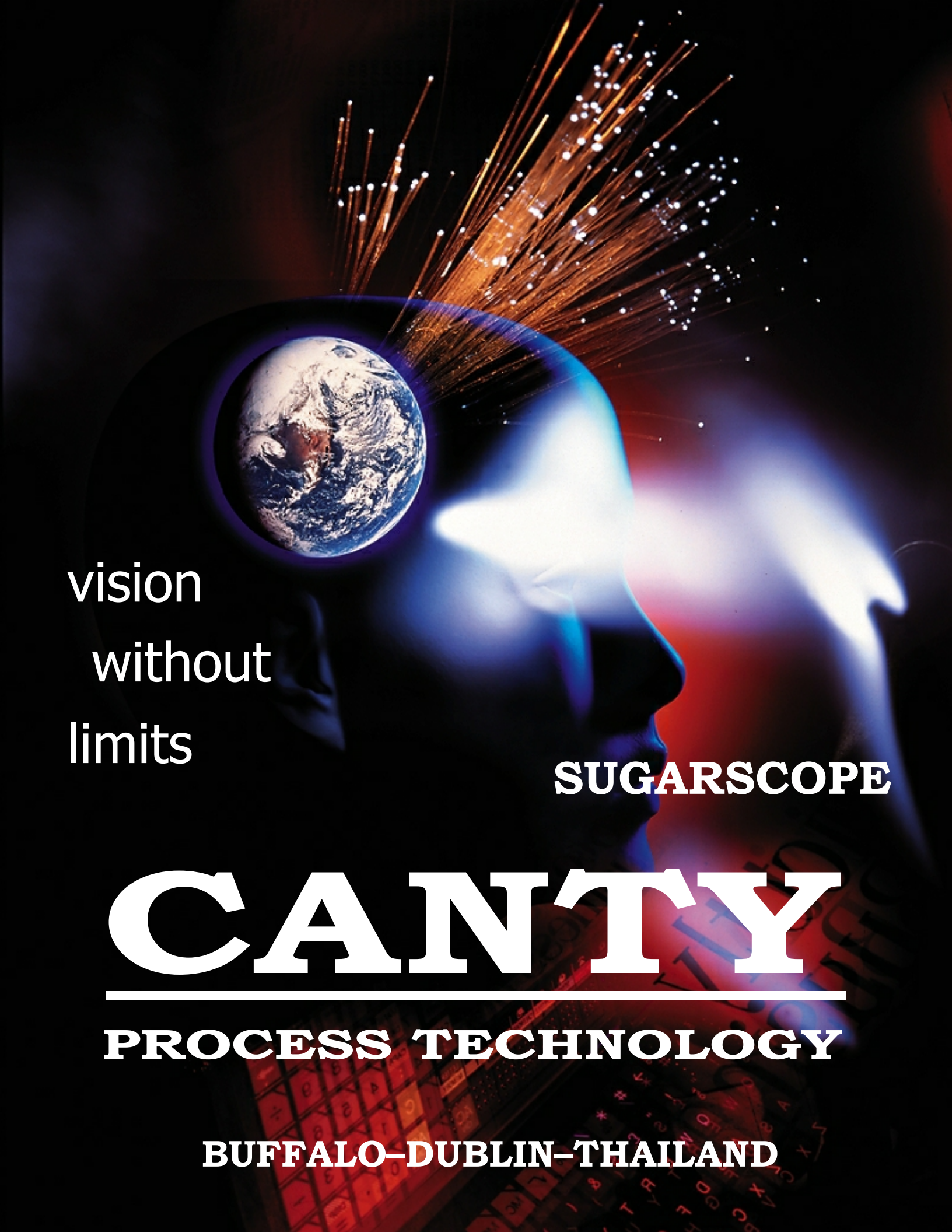
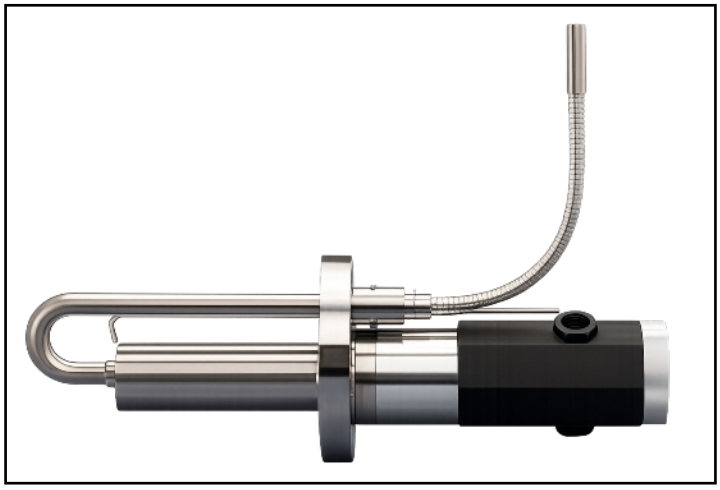

vision
without
limits
SUGARSCOPE
CANTY
PROCESS TECHNOLOGY
BUFFALO–DUBLIN–THAILAND

Sugar Crystallization



SUGARSCOPE™

The SugarScope™ combines the latest Gigabit Ethernet camera systems with CANTY's unique fused glass and lighting technologies to provide an unrivalled view, from initial nucleation right through to fully formed crystals.

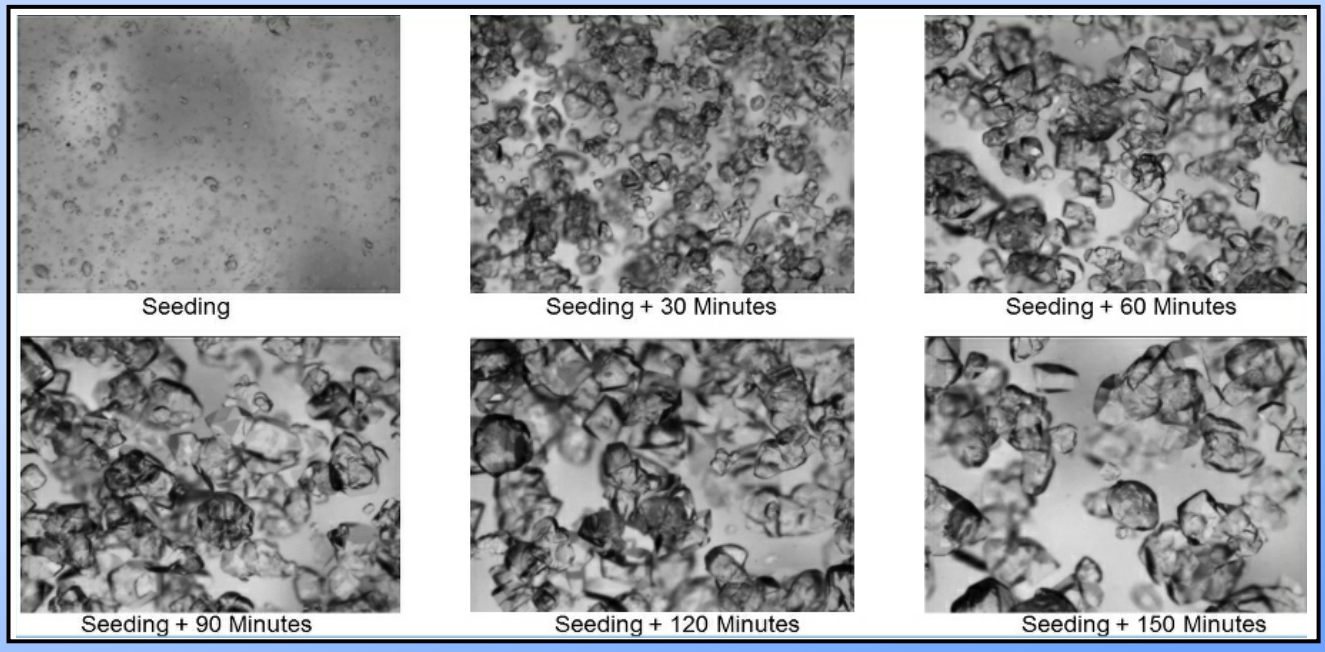
The insertion section ensures the view is representative of the overall process, rather than the vessel wall, where boundary layer effects can alter crystal behaviour and characteristics.

The CANTY SugarScope™ can be supplied with various optics to cover all sugar size ranges from fines through large grains, and allows for remote monitoring of the crystallization process, providing control room operators with a continuous, real time, microscopic view.

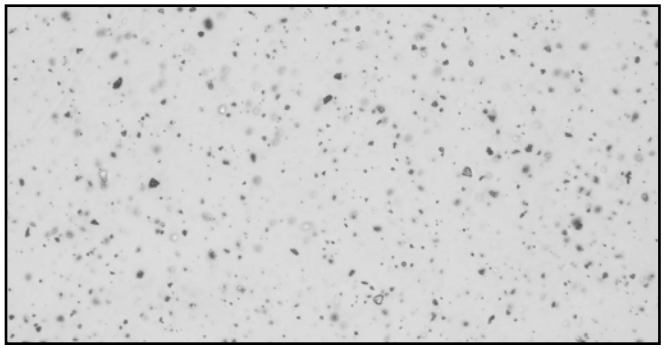
Having a continuous view available to the operators avoids the archaic method of manually viewing crystals on a glass slide at various points in the process, and therefore allows for early problem detection (eg. secondary seeding) and swift operator reaction.

CantyVision™ image analysis software allows for particle size and shape characterization during the initial stages of crystal growth, along with providing the Mean Aperture (MA), Coefficient of Variation (CV), and counts over time.

The SugarScope™ can be easily retrofitted to a vacuum pan, by utilizing one of the flange connections previously designated for a sight glass.



Crystallization Applications



SEEDING CONTROL FOR STANDARD GRAIN SUGAR

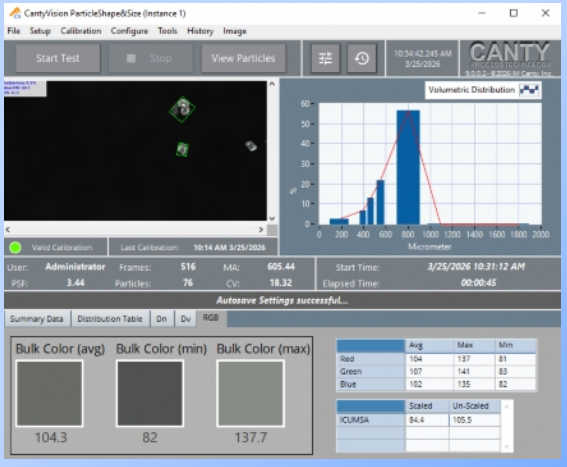
Using our high resolution camera you can reliably measure size consistently and accurately. Initial seeding is a crucial step, and accurate size data allows you to monitor it effectively so you can ensure your batch is optimal. During this phase you can monitor the seed count and also crystal growth.

Too small crystals, too many seeds;

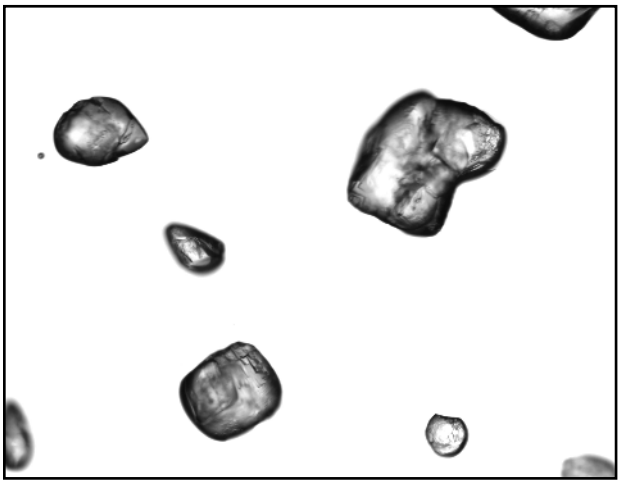
An increase in seed count indicates that the process is breaking into fines. These fines consume available syrup, which is the limiting factor in crystal growth. As a result, excessive fines reduce the amount of syrup available for larger crystal development, ultimately limiting overall batch growth and yield.

Too few seeds;

Agglomeration can cause large crystals to form in this crucial first step. These large crystals undergo secondary nucleation. There is super saturation of the fluid between the crystals and it can result in a mixture of large and small crystals that lock together during centrifugation, impacting the quality and yield of the product. Dirt or other contaminants can also become trapped between these crystals which will impact the ICUMSA rating of the final product.

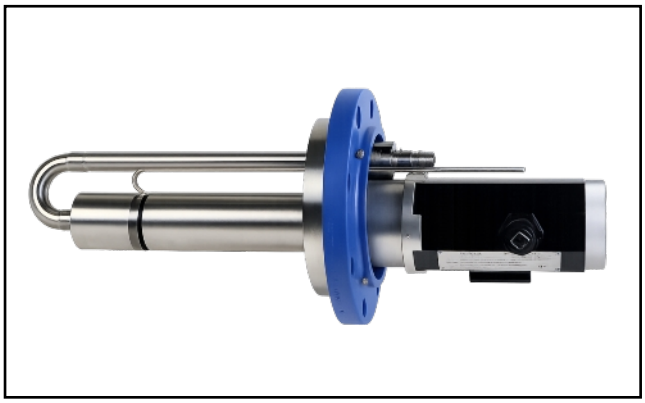


SEEDING



Large grain sugars, such as confectionary sugar, is produced by injecting small sugar crystals from an initial batch into the sugar pan where crystallization continues and the grains grow in size. Secondary nucleation between the crystals will occur, the batch is re-melted, re-grown, and the cycle repeats until the desired size is achieved.

During **REMELT** it is important to know crystal size and concentration to ensure that the crystals have completely melted back into solution. The SugarScope™ provides real-time data, allowing you to optimize this process.



The engineered optics on the Large Grain SugarScope™ provides measurements similar to our standard SugarScope™, providing MA, CV, count, and concentration for this larger size range. In conjunction with our proprietary AI powered software you can fully automate the growth during seeding while providing a view of the large granular crystals to the end of the process.

SugarScope™ Features

Real time and historical data outputs allow you to optimise your process to ensure:

- Consistent massecuite batch to batch. This can be seen in the MA and CV staying stable from run to run.
- Less re-melting required. In the event re-melting is required it is caught much earlier due to reliable size and concentration data down to xµm.
- Uniform crystal size leads to reduced centrifugal process time.
- Lower operating costs due to reduced steam and water consumption, enhanced process control, and automated feed rate optimization
- The software has the ability to perform live analysis, view historical data, and record videos of runs. This provides you with full traceability and peace of mind - it is not a black box providing data, can visually verify data by viewing videos of runs.
- AI powered algorithm can detect presence of contaminants in process fluid. Software also detects and identify gas bubbles, removing them from the data so they do not interfere with the results.

System Requirements:

To ensure seamless installation and operation of the CANTY imaging system, certain components must be provided by the customer, while key specialized items are supplied by CANTY. Customers are responsible for basic infrastructure, including power, network connectivity, and optional peripherals. CANTY supplies all system-specific power and connection cables required for the cameras and LED illumination, ensuring reliable performance and quick installation.

Customer Supplies
Power source (100-240VAC 50/60Hz or 24VDC)
Network connection (For cable distances below 100m): customer provided cat 6 network cable
Network connection (For cable distances over 100m): Cat 6 cable, fiber cable, and must order Canty media converter. (For more information, please see TA11950-1024
Monitor, keyboard, and mouse (optional; CANTY can provide)
Water supply to spray tube, with on/off control valve connection to control system

Canty Supplies
Sugarscope™ Analyzer with mounting flange
Nema4X/IP66 power supply and cabling • 5 pin camera cable • 4 pin LED cable • 3-conductor power input cable
Vector Control Module (VCM) • must be added to order as separate line item (not included in part number or price)

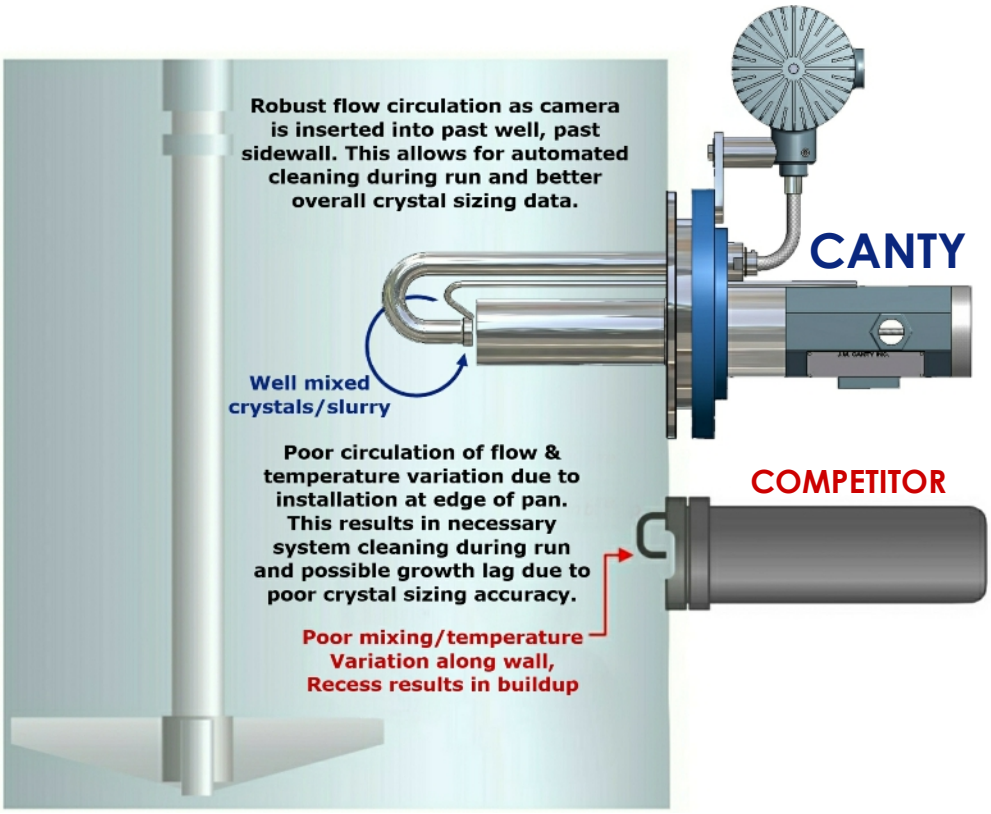
The CANTY Advantage

Fused Glass Process Barrier: CANTY's unique fusion glass to metal creates a hermetic seal with no recess for grains to accumulate and prevents fouling of the lens.

No flush water required during operation: Our fused glass process barrier means cleaning is not required during operation. We include a built-in cleaning system, for customer peace of mind; however, it is rarely-if ever-needed. Other sugar camera providers require frequent hot water washes, which means they are only analyzing for four out of every five minutes.

No moving parts: No moving parts reduces the risk of failure and minimizes or eliminates the need for maintenance. Other sugar cameras can cost up to $2,500/year in maintenance.

No air cooling: The CANTY SugarScope™ does not require an instrument air panel for cooling, which further reduces the cost of installation.



Long-life LED: CANTY LED lights are guaranteed for 5 years of continuous use, thanks to the synced strobe, which only flashes as the camera captures an image.

True process representation: The Sugarscope™ inserts into the sugar pan and process fluid, giving you results that represent the overall process. Other sugar camera providers take samples at the wall wher turbulence can trap crystals preventing you from getting a truly representative result. They require the use of a pump to re-circulate the fluid, which adds to cost and can affect the view of grains in the pocket.

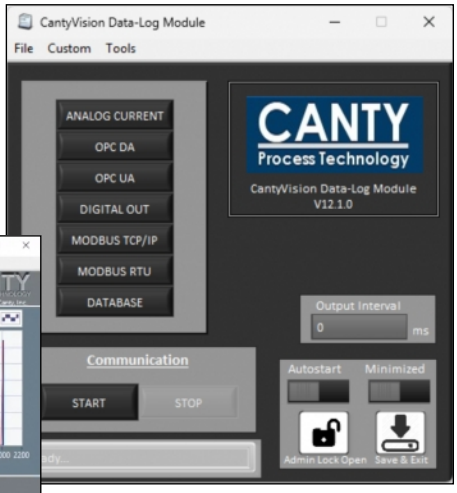
Consistent and accurate MA and CV readings: Our combination of high resolution cameras and LED strobe technology creates the highest quality images available. These images are then analyzed by our cutting edge AI powered software to provide accurate, reliable, and repeatable sizing and count results. Other sugar crystal cameras on the market are unreliable below 30 microns, meaning you cannot effectively monitor and control the crucial seeding.

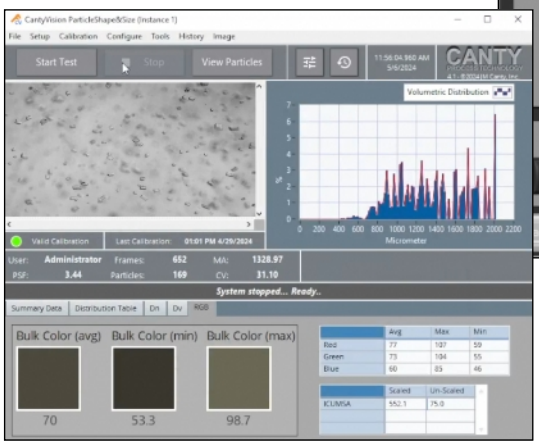
Vector Control Module (VCM)

The Vector Control Module (VCM) serves as image processors for any of CANTY's applications requiring analysis.

These units are built as a turnkey solution to ensure the most convenient and simple startup for a camera system. VCMs can power camera systems using power over Ethernet (POE) and come pre-loaded with application specific software to best serve your needs.

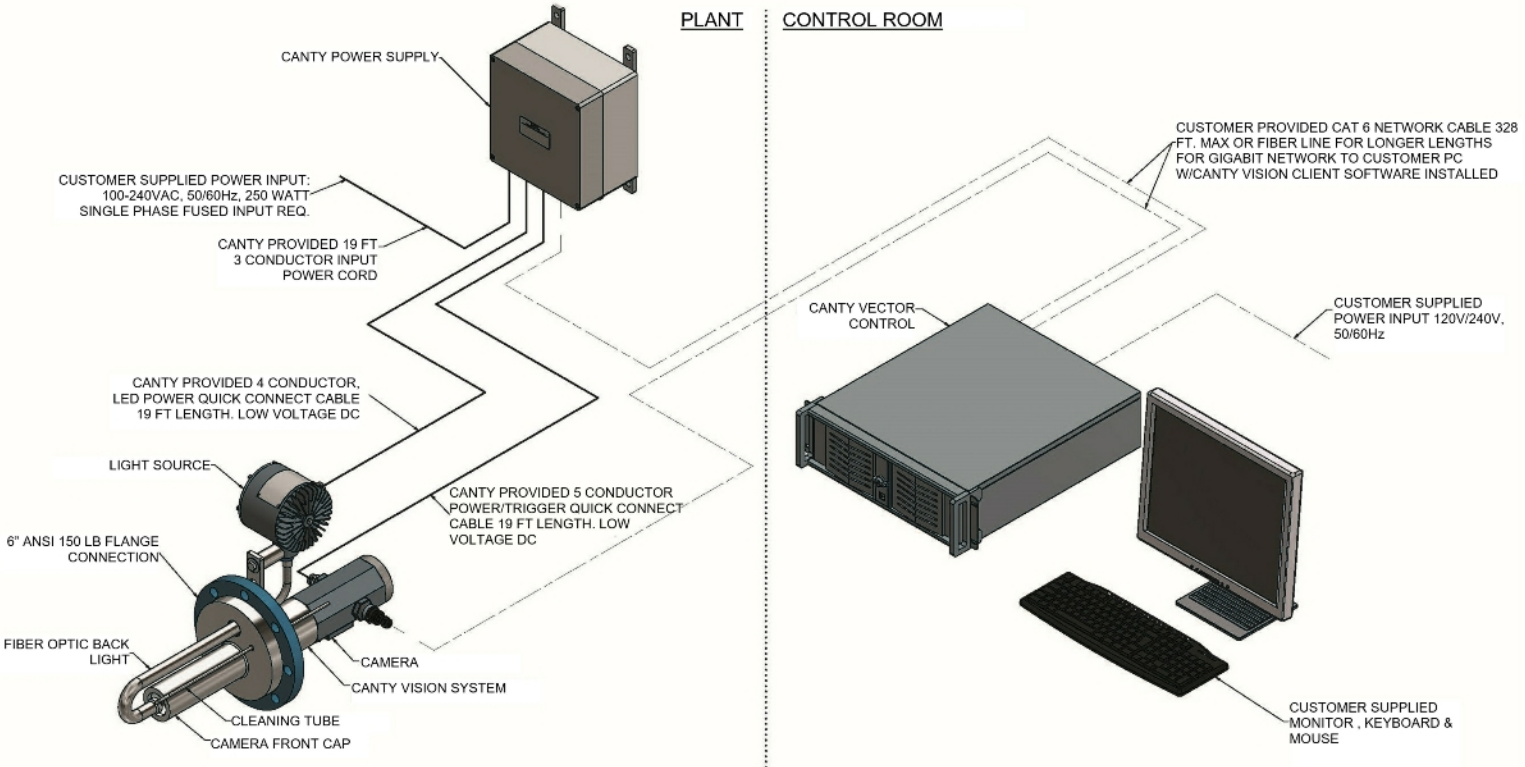
With three different families of models, CANTY provides a variety of VCMs to fit the needs of your installation.





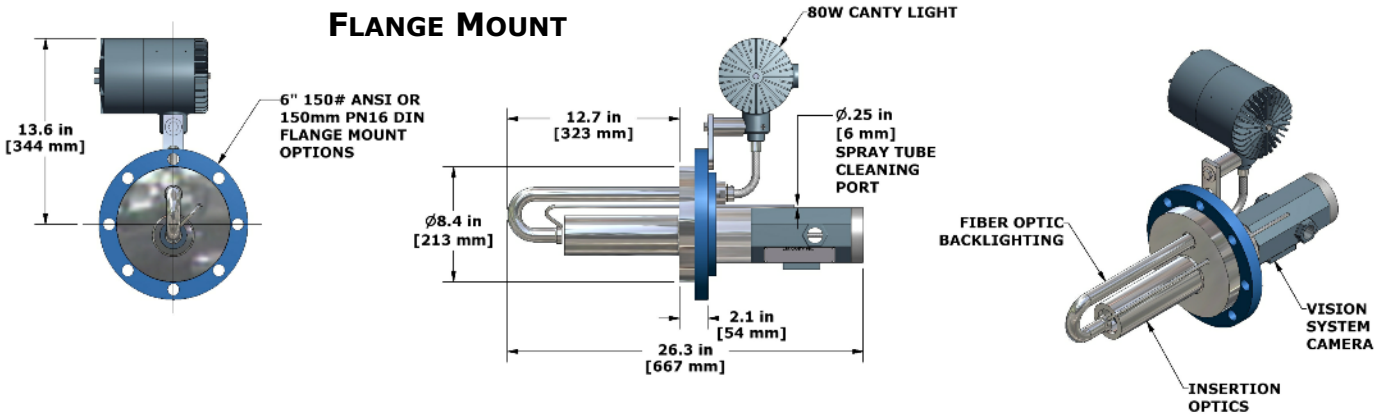
- Support up to six cameras
- Outputs including OPC UA,
- Modbus TCP/IP, Modbus TRU,
- Analog 4-20mA
- Link to technical support (with
- Internet connected)
- CantyVision™ Software pre-installed
- Embedded operating system
- Fan-less models available

Standard Equipment Layout*



*Layout reflects network cable distance under 100m.

TYPICAL DIMENSIONAL INFORMATION



Ordering Information

HOW TO ORDER: Select the appropriate symbols and build a part number as shown:

EXAMPLE: SUG - 6 E 5 A 1 V

CONNECTION TYPE	
6 -	**6" 150# ANSI**
7 -	150mm 16BAR DIN
8 -	

O-RING MATERIAL	
V -	**Viton®**
E -	EPDM
S -	Silicone
K -	Kalrez

INPUT POWER	
A -	**120 V AC / 60Hz**
B -	230 V AC / 50Hz
C -	24 V DC

OPTIC RANGE		DETECTABLE PARTICLE SIZE RANGE	IDEAL PARTICLE SIZE RANGE
E -	**Standard, Max Zoom**	**0.3µm - 325µm**	**2µm - 85µm**
K-	Standard, Middle Zoom	0.75µm - 870µm	3µm - 230µm
L -	Standard, Min Zoom	2µm - 2165µm	7.5µm - 570µm
H -	Standard, High Resolution	2µm - 3,550µm	7µm - 940µm
J -	Large Grain	7µm - 13,475µm	28µm - 3,550µm

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

AMERICAN CRYSTAL SUGAR
ASR GROUP
DOMINO SUGAR
TATE & LYLE
REDPATH SUGAR
FLORIDA CRYSTALS
AMALGAMATED SUGAR
SUGAR AUSTRALIA
C & H SUGAR

APPLICATIONS:

TURBIDITY
SUGAR COLOR - ICUMSA
CRYSTALLIZATION
CENTRIFUGE
COLOR LINE/EDGE DETECTION
FILL LEVEL & CAKE DETECTION
PARTICLE SIZE
BLACK SPECK DETECTION

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