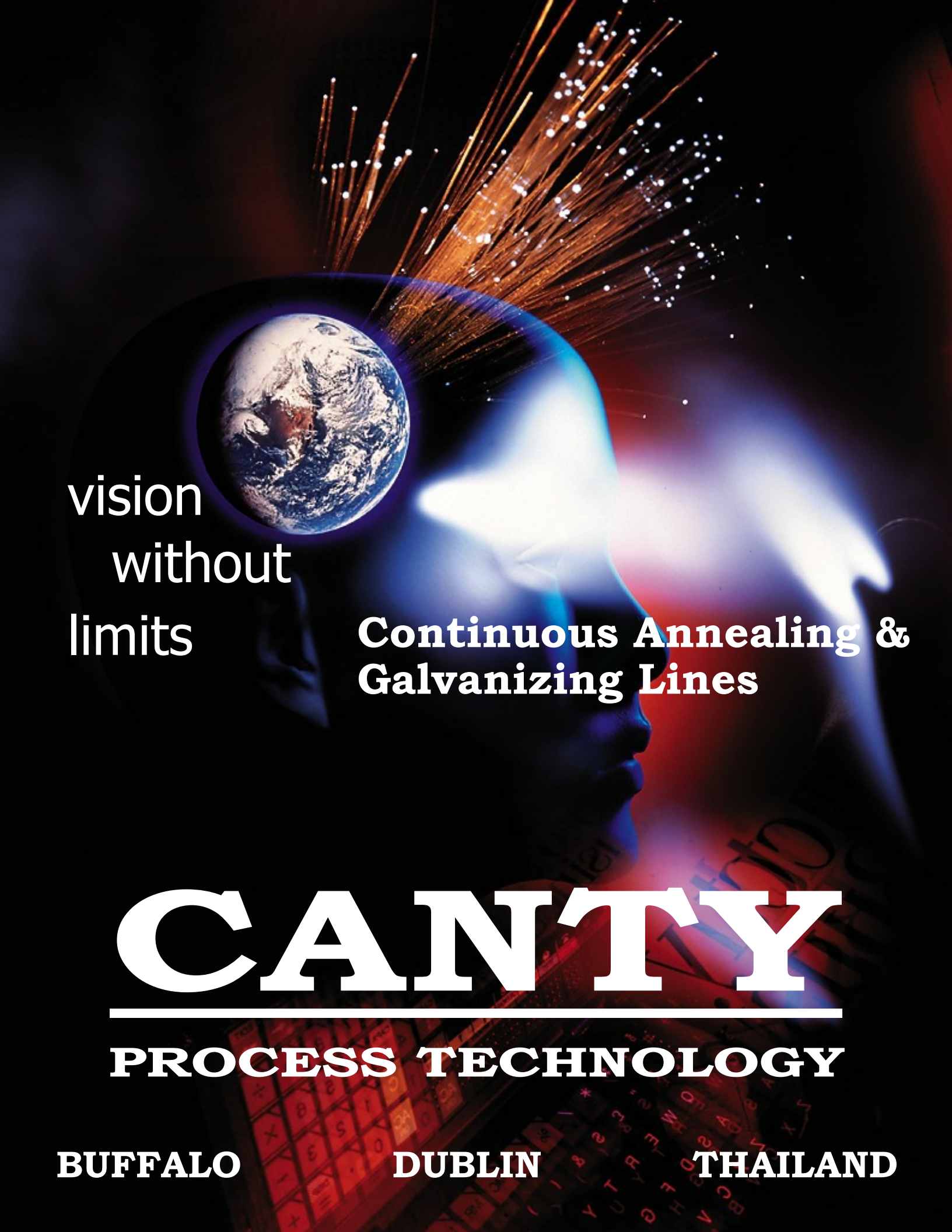


Continuous Annealing & Galvanizing Lines

CANTY

PROCESS TECHNOLOGY

BUFFALO **DUBLIN** **THAILAND**

Continuous Galvanizing Line (CGL)

Galvanizing is the immersing of clean, oxide-free metal into molten zinc in order to form a zinc coating that is metallurgically bonded to the ribbons surface in an effort to increase its resistance to corrosion. The zinc coating protects the surface by

- Shielding the base metal from the atmosphere
- Providing a protection layer
- Even if the surface becomes scratched and the base metal is exposed, the zinc is slowly consumed while the iron or steel remains protected from corrosion.

Continuous Annealing Line (CAL)

Annealing is a process for heat-treating metal strip, that modifies the metal's microstructure. The process involves a series of controlled heating and cooling stages within a furnace, followed by additional treatments like skin-passing and passivation. The process refines grain size, which

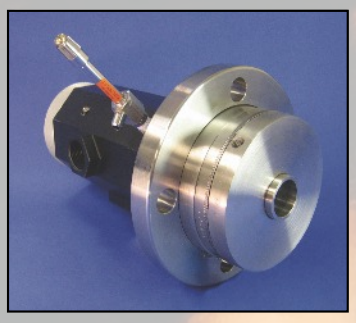
- Reducing hardness
- Enhancing ductility
- Eliminates internal stresses leading to better formability and performance

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.

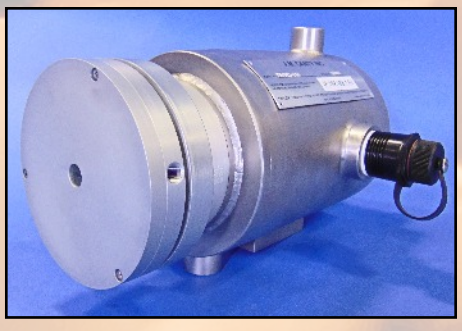
UltraTemp™ Insertion High Temperature Cameras

- Air is used for cleaning
- Can purge with any gas
- 2000ºF [1090ºC] or 2500ºF [1370ºC] 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
- CCD temperature readout to prevent overheating



UltraTemp™ Flush Mount High Temperature Cameras

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

CANTY high temperature lights offer a compact, cost-effective solution for illuminating pressurized or isolated areas, featuring a patented design that enables an intense light beam to penetrate process boundaries and diffuse into bright, even illumination. Comprising a high-output LED array, light pipe for fiber-optic guidance, and a driver, this system ensures maximum light transmission with enhanced safety, thanks to our high-pressure, high-temperature fused glass seal. Various coupling options are available.

- Air is used for cooling of LED
- Can purge with any gas
- High temperature furnace package
- Up to 24” models available to insert thru refractory wall
- High quality quartz optics
- Remote mount electronics
- Light output control

Vector Control Module (VCM)

CantyVision software is hosted on a Vector Control Module (VCM), ordered separately. VCMs are dedicated image processors that analyze the video provided by Canty cameras and convert the information into outputs. A single VCM can support up to 6 cameras for analysis, model dependent. The operator screen makes for simple, accurate, real time visual verification. The VCM has OPC or 4-20mA outputs to a PLC or DCS for complete control. The VCM comes with the ability to have full administration controlled passwords and permissions. This cost effective system has a compact design with a customizable screen and an easy setup. The VCM can connect wirelessly to the internet, allowing remote desktop support that can be accessed by the CANTY support team to assist with setup, questions, analysis, etc. For additional information on what VCM is right for you, refer to document **TA12100-1012**.

The **CANTY** *Advantage*

The Canty ULTRATEMP™ camera and High Temperature LED lighting offer a unique and unrivaled view into the furnace during processes such as annealing, galvanizing and surface treatment ends. Controlled via the VCM, this lighting is especially useful for start-up or cooler furnace sections where the flame's brightness is inadequate. Unlike competitive solutions, the CANTY High Temperature light is designed for up to 50,000 working hours and without burn up shortly after start-up.

Coupled with the VCM, the CANTY camera and lighting system has the ability to seamlessly integrate into the plant IoT (Internet of Things/Industry 4.0) system. Measurements such as strip temperature, strip centering on the rollers and detection of surface imperfections can be achieved and continuously supplied to the plant DCS system via OPC UA, TCP/IP Modbus, 4-20mA or Profibus.

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 emmisivity.
- VIS (Visible spectrum) between .4 - .7 micron allows a wide range of materials to be measured without recalibration or adjustment to emmisivity.

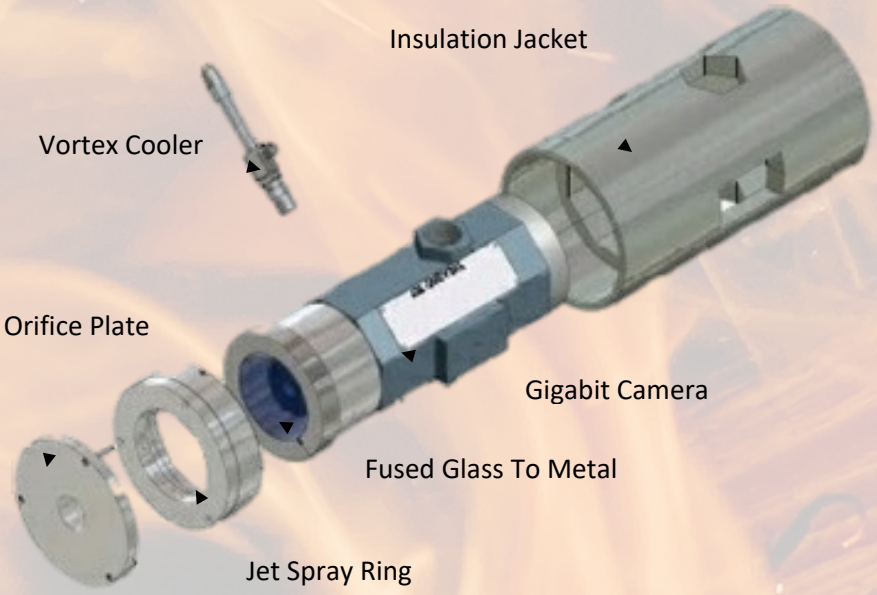
With the use of VIS, NIR and IR wavelengths, the proper ThermalVision™ camera can be selected to provide the most accurate temperature measurement range available. CantyVision™ software provides a SMART temperature measurement in addition to molten level tracking, object position and temperature measurement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

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

Actual VIS ThermalVision™ Camera measuring rod Temperatures 750ºF [400ºC] - 2865ºF [1575ºC]

Spectrum	Temperature Range
VIS	750ºF [400ºC] - 3630ºF [2000ºC]
NIR	570ºF [300ºC] - 1830ºF [1000ºC]
IR	32ºF [0ºC] - 750ºF [400ºC]

*For reference only

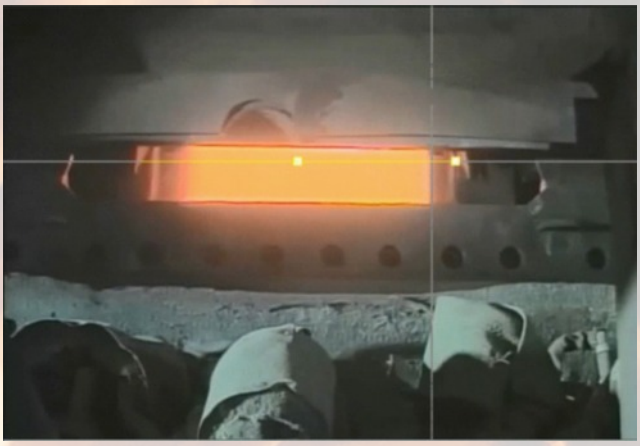


The HighTemp™ surveillance camera used for these applications features fused glass barrier with a water or air cooled jacket for protection of the electronics.

A positive gas (air/nitrogen) flow over the lens through the cameras spray tube ensures the view remains clear at all times, while this is not always needed for every application it is recommended to keep the lens clean in these environments.

The high resolution Gigabit Ethernet camera captures the images from the process, and transmits them in the real time to the control room where the Vector Control Module analyzes the image to detect stones and digitally outputs alarms.

Applications



Width and Centering

CANTY cameras can detect the width of rolled or plate steel and transmit this data directly to the control system, while also informing the system if the strip is centered or offset to either side.

Temperature Control

A CANTY high temperature surveillance camera is mounted to view the metal and give real time temperature control of the steel before it is cooled and rolled. In the visual range, cameras don't have the problem with emissivity that IR instruments do. Additionally, the patented spray ring allows for a clear view that is not effected by dirt and dust buildup, which can give erroneous readings. Visual verification of the steel is provided to the operator as well as a 4-20mA or OPC output to a PLC or DCS for complete automated control.

Strip Edge & Tear Control

CANTY cameras can identify smooth vs wavy edges, with wavy edges potentially causing downstream problems that can be prevented through prompt corrective actions. Additionally, CANTY cameras can spot holes and tears in the strip, triggering CANTY software alerts for operators to take corrective measures before incurring expensive downtime.

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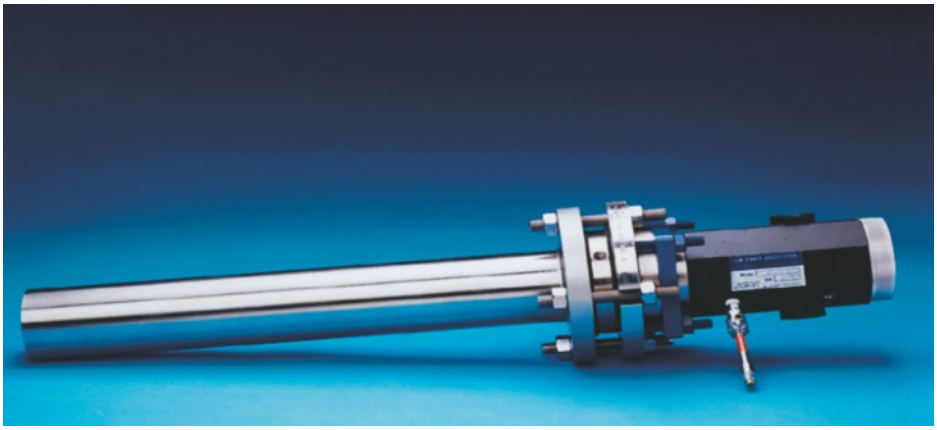
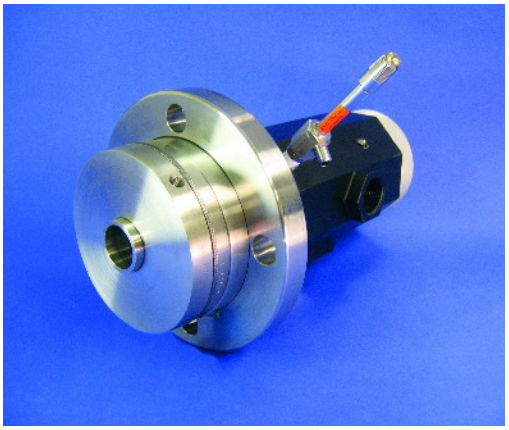
ULTRATEMP™ HIGH TEMPERATURE CAMERAS





UNMATCHED PERFORMANCE

Canty ULTRATEMP™ Cameras are ideal for demanding applications involving visual inspection or verification in extreme temperature environments. They are equipped with computer designed optics for a crystal-clear picture. All cameras feature state of the art camera technology. A digital electronic auto-iris provides an exceptional image of your application without the problems associated with manual apertures. High temperature lenses are designed to survive in process without cooling air.

SAFETY IS MAIN CONCERN

Canty ULTRATEMP™ Camera Systems feature a fused glass seal standard 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.

NO LENS AIR PURGING REQUIRED

Unlike other manufacturers, Canty does not require air to keep the lenses cool. Loss of air will not destroy our camera system! A positive air flow is used for maintenance purposes only to keep dust and soot from accumulating on the lens. As a result, many applications will not require any air purge, which can save thousands of dollars per year!

APPLICATIONS

- Furnaces
- Power Boilers
- Incinerators
- Kilns
- Melting Chambers

FEATURES

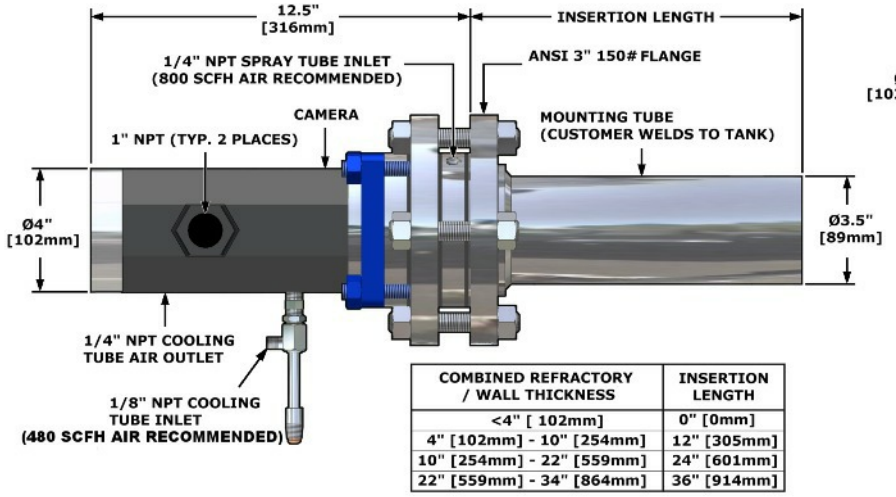
- Requires less cooling air then any other high temperature camera on the market!
- Disposable quartz protective shield
- High temperature furnace lens up to 2500°F
- Auto electronic iris
- High quality quartz optics
- Fused glass seal separates electronics from process
- Insertion lens available up to 36" long
- Non-blooming CCD cameras

SPECIFICATIONS

Video Formats:	Ethernet outputs
Video Output:	Ethernet output to PC available
Cable:	Ethernet cameras require CAT6 or better cabling.
Power Req.:	User supplies 120V AC, 60 Hz or 230V AC, 50 Hz power /24V DC or POE.
Ratings:	Available in NEMA TYPE 1, NEMA TYPE 4, IP20, IP66
Mounting:	3" 150# ANSI or 80 mm DIN flange for flush mount units. Insertion units require a Ø3.5" hole that the wall mount tube will insert into and be welded to.

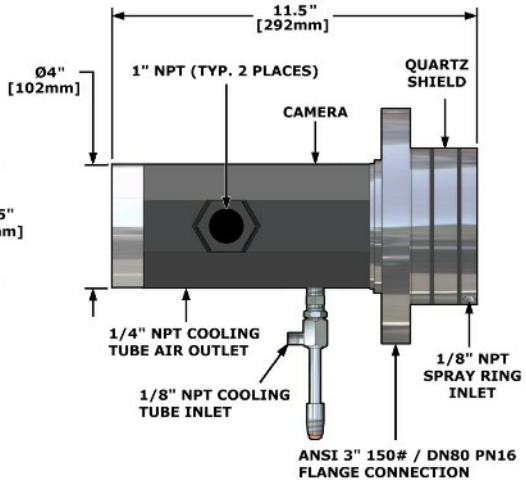
DIMENSIONAL INFORMATION

Insertion sizes 12” and Larger



COMBINED REFRACTORY / WALL THICKNESS	INSERTION LENGTH
<4" [102mm]	0" [0mm]
4" [102mm] - 10" [254mm]	12" [305mm]
10" [254mm] - 22" [559mm]	24" [601mm]
22" [559mm] - 34" [864mm]	36" [914mm]

Non Insertion Models



- For 0” Insertion models, customer must provide a 3”, 150# ANSI (U.S.) or DN80 PN16 (Europe) flange connection to mount camera.
- For all other insertion lengths, customer must provide a 3.5” [89 mm] diameter mounting hole to weld Canty supplied mounting tube to furnace.
- Layout drawings and additional insertion lengths available. Consult factory.

Ordering Information

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

EXAMPLE: **VSH DE 6 7 D E - S - 3FL150S - 24INS**

VIDEO OUTPUT FORMAT	
VSH -	**North American Standard**
VEH -	European Standard

CAMERA OPTION	
DE-	**Ethernet camera**
CE*-	Ceramic Ethernet Camera
DR-	Color Neutral Ethernet camera

Note: *CE not available with 0INS option

*CE option not pictured

TEMPERATURE RATING	
5-	Furnace operating 2000°F Temp at lens 1300°F (No insertion)
7 -	**Furnace operating 2500°F Temp at lens 1600°F (Insertion models)**

Note: For higher temperature requirements, see the EXTREMETEMP™ model: TA10889-1.

LENS VIEW ANGLES INSERTION MODELS	
B-	30°(H) X 22°(V)
C-	45°(H) X 34°(V)
D-	**65°(H) X 49°(V)**
LENS VIEW ANGLES NON-INSERTION MODELS	
E-	7°(H) X 5°(V)
F-	22°(H) X 16°(V)
G-	41°(H) X 31°(V)
H-	69° (H) X 53° (V)

INSERTION LENGTHS	
0INS-	Flush Mount - No Insertion
12INS-	12” [305mm] Insertion
24INS-	**24” [610mm] Insertion**
36INS-	36” [914mm] Insertion

MOUNTING CONNECTION	
3FL150S-	**3” 150# ANSI Flange Mount**
80FL16S-	80mm 16 Bar DIN Flange (option for flush mount only)

CAMERA POWER SUPPLY OPTIONS	
5-	Power supply in WP NEMA 4X enclosure (120V AC input)
6-	Power supply in IP66 enclosure (230V AC input)
9-	24V DC, No Power Supply Required
E-	**POE, No Power Supply Required**

NOTE: Accessory Kit part number: V401-KIT available to aid in installation contains 100-1000 SCFH and 60-600 SCFH Flowmeters along with a 0.5 micron oil/vapor removal filter.

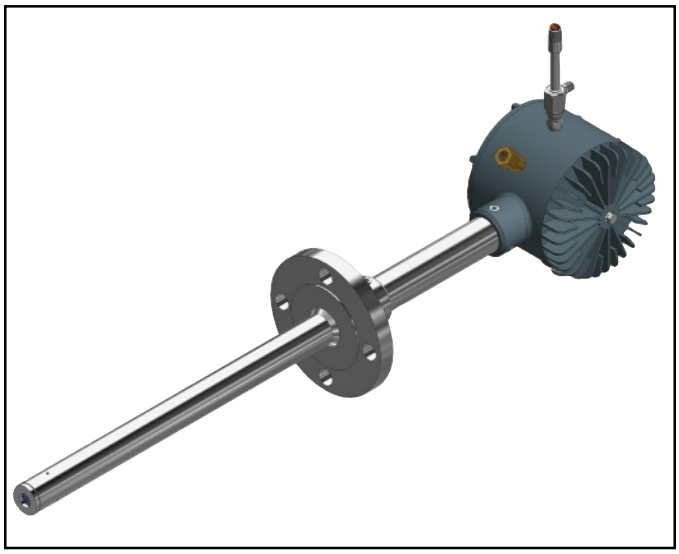
All registered trademarks are the property of their respective owners.

CANTY

5+ YEAR LIFE
HIGH INTENSITY UNIFORM WHITE LIGHT OUTPUT, MAINTENANCE FREE!

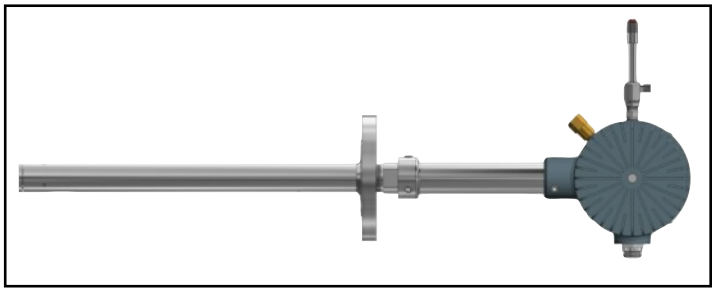
PROCESS TECHNOLOGY

HYL 80 SERIES LED HIGH TEMPERATURE LIGHTING SYSTEMS



SPECIFICATIONS

- Light Pipe Mounting: Flanged
- Light Source
  - Rating: WP, IP 66, EXP and FP available
  - Power Reg:16-20W
- Typ. Max Specification
  - 80W: 25 ft [7.6m] dia. X 70 ft [21.3m] dp.
- Power Supply
  - Options: 24V - 230V input options available



HOW IT WORKS

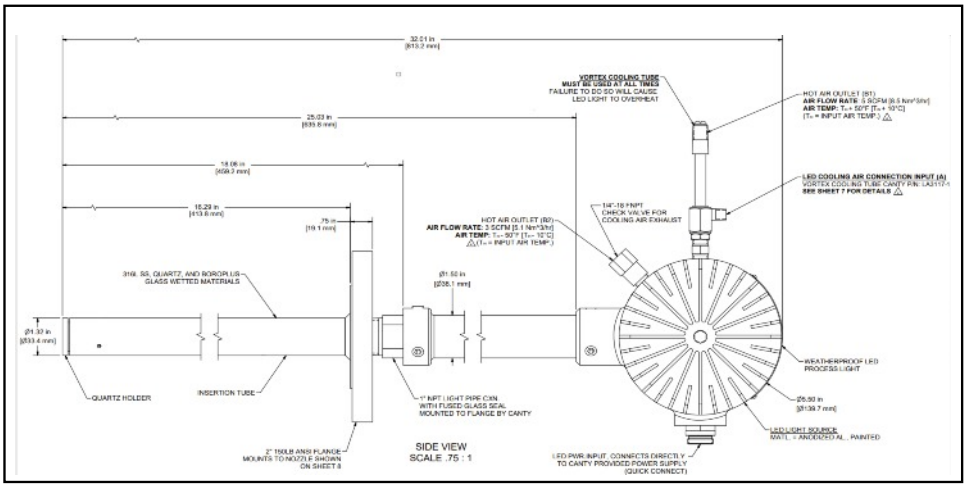
The HYL 80 LED lights are designed to illuminate pressurized, irradiated or isolated areas. The HYL lighting package provides a compact, cost effective lighting system. Our patented design allows for an intense beam of light to cross the pressure/process boundary. Once across, the beam is diffused to provide a conical light output of bright, even illumination.

UNIQUE DESIGN

Our patented design consists of three main components: light source, light pipe and driver. A high output, long-life LED array delivers the maximum amount of light into the vessel. Light is guided fiber-optically through the light pipe into the process or pressure area. All Canty light pipes feature our high pressure, high temperature fused glass seal for maximum safety. A variety of

FEATURES

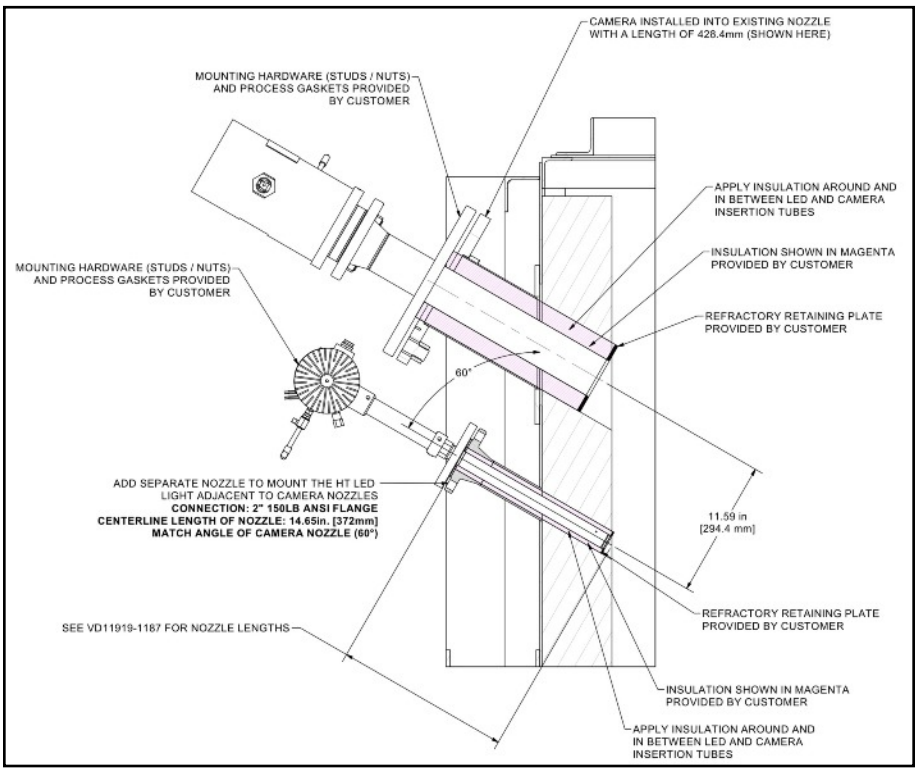
- NEMA 4, IP 66 ratings available.
- Brighter than former 80W Halogen lights
- Low power consumption, 16-20W
- Maintenance-free, high output LED.
- All wiring and maintenance external.



Typical Dimensions based on 16" Refractory Thickness

JM Canty Inc | Buffalo, NY USA | Ph: 1 (716) 625 4227
JM Canty Intl Ltd | Dublin, Ireland | Ph: + 353 (01) 882 9621

TYPICAL INSTALLATION



Ordering Information

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

EXAMPLE: **HTL-EFLS83SG-LED**

SWITCHES	
	Weather Proof Light Options
	24V DC Models:
L -	NEMA 4X / IP66 enclosure with dimmer. 24V DC input
	120V / 230V Models:
M -	NEMA 4X / IP66 enclosure with dimmer 120V/230V AC input

WETTED MATERIALS	
S	SS*
D -	Hastelloy® C276 or equal
M	Monel**
*	Canty Reserves the right to upgrade to Hastelloy® C-family of alloys or equal at their own cost.
**	Not available on all models

INSERTION LENGTH*		
A - 10″	F - 15″	L - 20″
B - 11″	G - 16″	M - 21″
C - 12″	H - 17″	N - 22″
D - 13″	J - 18″	P - 23″
E - 14″	K - 19″	Q - 24″
*Please ensure to account for total length if mounting on a diagonal		

NON WETTED MATERIAL	
B -	Carbon Steel 150#ANSI
S-	Stainless Steel 150#ANSI

MOUNTING CONNECTION	
3 -	2″ Flanged, 150# /DN50 PN10
	Many Additional Sizes Available. Consult Factory.

Notes :
1) Some options are not available on all models.
2) Vessel lighting diameter, depth specifications provided are a general guideline.
3) All Explosion Proof lights are rated for use in Class I, Div. 1, Groups B, C and D, Class II, Div. 1, Groups E, F & G as well as NEMA 4 locations. Power supply rating vary with model.
4) All ATEX Flame Proof lights are approved for use in EExd II C T6 and IP 66 locations.
5) Explosion proof power supply enclosures are rated use in Class I, Div. 1, Groups C and D, Class II, Div. 1, Groups E, F & G locations. ATEX Flame proof switch is EEx edm IIC T6.

WP = Weather Proof
EXP = Explosion Proof
FP = Flame Proof
IP = Ingress Protection

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:

AK STEEL
ALCOA
ALLIED ALUMINUM
ARCELORMITTAL DOFASCO
DREVER
FREEPORT MCMORAN
GERDAU
HESTEEL
HYUNDAI STEEL
KENNECOTT
NEWMONT
NORTH AMERICAN STAINLESS
NUCOR STEEL
RIO TINTO
U.S. STEEL
VALE

AND YOU!!!

Applications:

Contents

MOLTEN LEVEL
SLAG MEASUREMENT
STEEL MILL
WIDTH & CENTERING
TEMPERATURE CONTROL
STRIP EDGE & TEAR CONTROL
REBAR LENGTH
REBAR COBBLE DETECTION
SMELTING FURNACE
TUNDISH TEMPERATURE
BILLET LENGTH
BILLET ALIGNMENT
CRUCIBLE CAMERA
POUR CAMERA

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