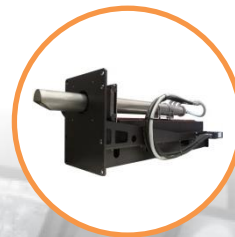


HIGH TEMPERATURE CAMERA SYSTEMS

Telea Tecnovision has developed a wide range of high temperature products designed for industrial environments.

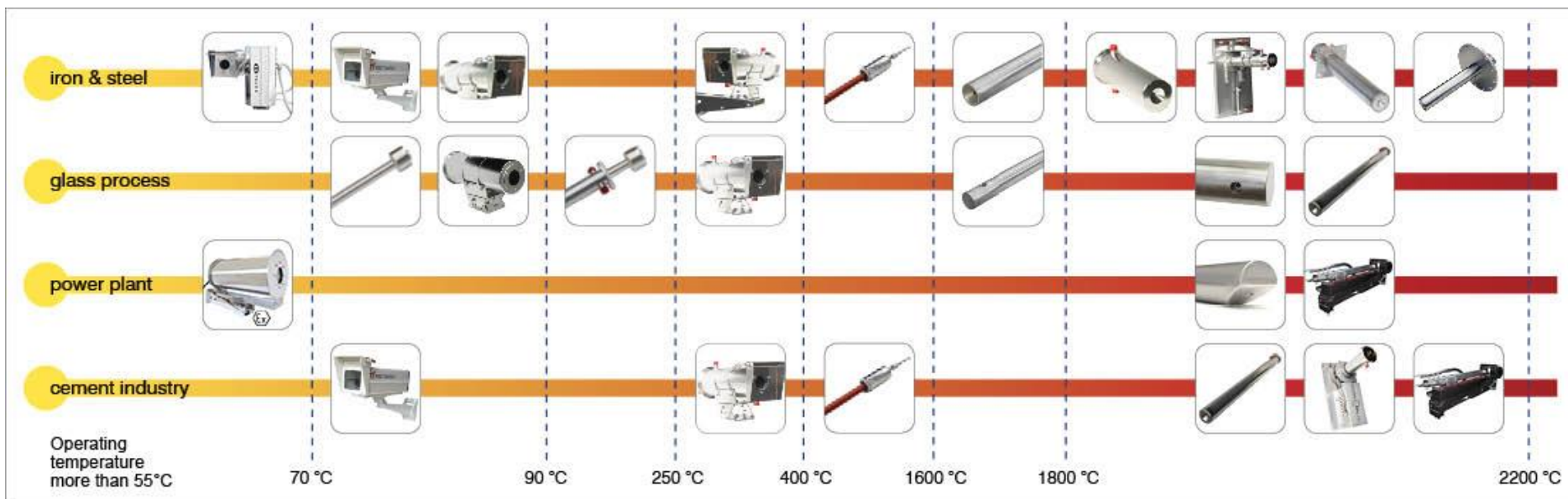
air^{tec} | acqua^{tec} | cam^{tec} | sonda^{tec} | in^{tec} | ou^{tec} | cab^{tec}





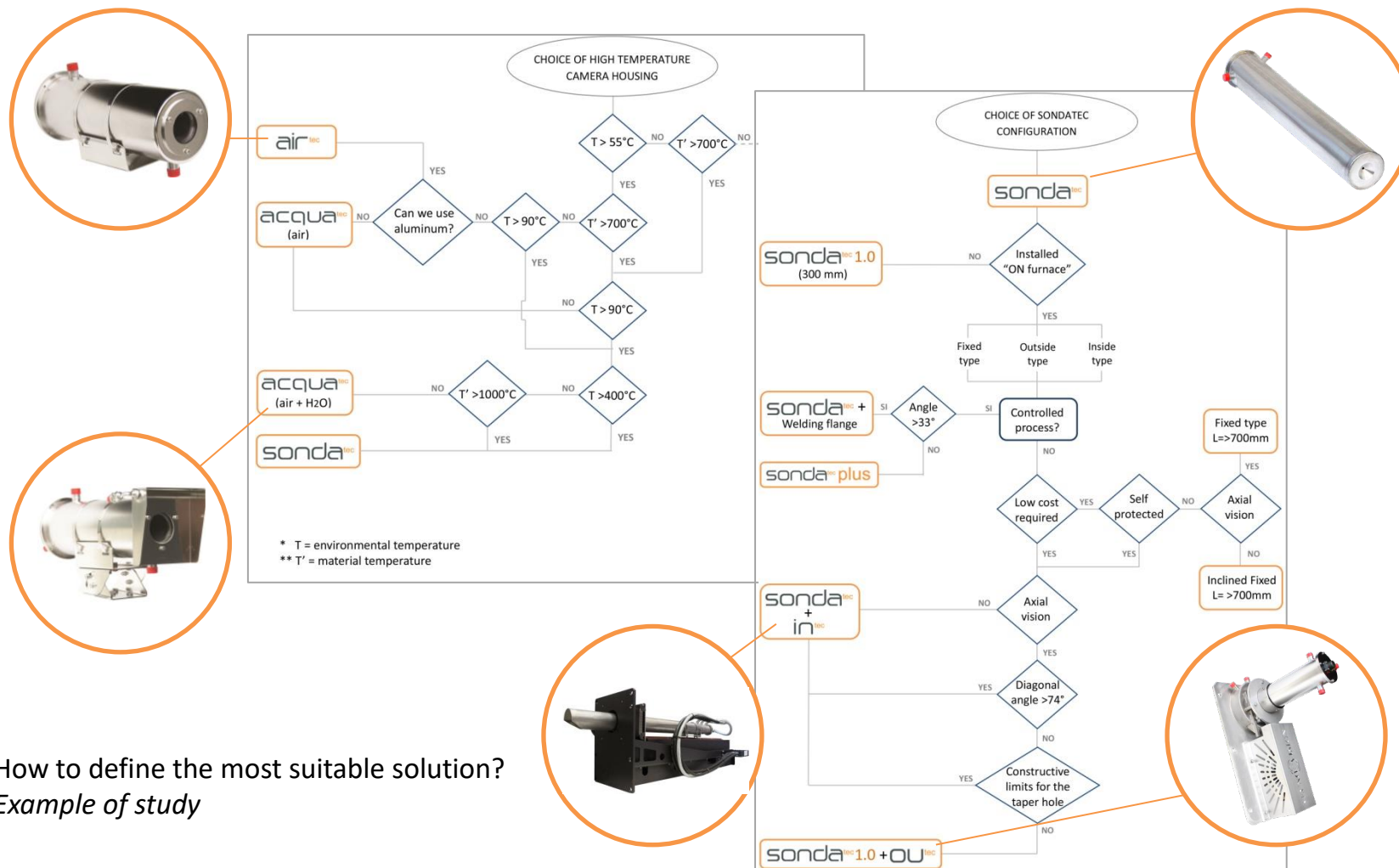
HIGH TEMPERATURE CAMERA SYSTEMS

Dedicated solutions for each sector of application have been designed, satisfying the temperature, dust and criticality requirements of each environment.





CHOICE OF CAMERA HOUSING



How to define the most suitable solution?
Example of study



HIGH TEMPERATURE CAMERA SYSTEMS

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C

- Cameras for high temperature video systems - IP type - CAMTEC
- Cameras for high temperature video systems - Analog type – CAMTEC
- High temperature vision systems - SONDATEC



► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 1600°C

- Portable high temperature vision systems - SONDATEC 'S'



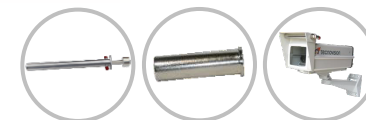
► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 400°C

- Air & water cooled pressurized camera housing - ACQUATEC



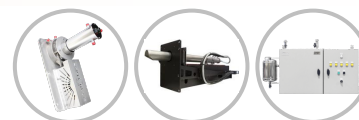
► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 250°C / 90°C

- Air cooled pressurized camera housing - SONDATEC 'L'
- Air cooled pressurized camera housing - SONDATEC 'H' & AIRTEC



► PROTECTION DEVICES & CONTROL CABINETS

- Protection devices fixed type - OUTEC
- Protection devices with retractable system - INTEC
- Control cabinet - CABTEC





HIGH TEMPERATURE CAMERA SYSTEMS

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C

cam^{tec}



+

sonda^{tec}



+

kit^{tec}



BASIC SYSTEM
COMPONENTS CONFIGURATION

ADDITIONAL PROTECTION DEVICES
& CONTROL CABINET

*Depending on the application may be not required

+

ou^{tec}



or

in^{tec}



+

cab^{tec}



► PROTECTION DEVICES & CONTROL CABINETS



CAMTEC: BASIC SYSTEM COMPONENTS CONFIGURATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **camtec**

Industrial high temperature camera designed for use with Sondatec housings.



camtec

- Technology:
IP BASED ← or → **ANALOG**
- Temperature sensor:
Pt100 ← or → **4-20mA**
- Type of view:
Axial ← or → **Inclined (elbow) vision 90° or 120°**

VARIFOCA
LENS

FIXED FOCUS
LENS

25°

33°

53°

74°

96°

diagonal

53°

85° diagonal





CAMTEC: IP VERSION 21X series

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **camtec**

FULL
HD

16:9

WEB
CTRL

PoE

H.265+
H.264
MJPEG



Powered by SONY Starvis with Exmor R module



ADVANTAGES:

- Native network camera based;
- Full HD CMOS image sensor with resolution up to 1920x1080 pixels;
- IR-CUT filter;
- Multi-streaming and multi-encoding;
- Setting, operation and control through browser and camera's web server;





CAMTEC: IP VERSION 21X series

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **camtec**

Technical Specifications		
SENSOR	Sensor type	1/2.8" Sony Starvis IMX291 progressive CMOS
	Resolution	Full HD 1920x1080
	Day/Night	Movable IR-cut filter
	Minimum Illumination	0,001Lux/F1.2
LENS	Type	Manual (CS mount)
	Focal lens	Various (see the table below)
	Video compression	H.265+; H.265; H.264; M-JPEG;
	Streaming	Multiple
	Processor	Multimedia video processor, FPGA
	Memory	128GB max
	Alarm management	FTP, E-mail, Browser, CMS
	Protocols	IPv4/IPv6, 802.1x, HTTPS, HTTP, TCP/IP, UDP, RTP, RTCP, UPNP, RTSP, SMTP, NTP, DHCP, DNS, PPPOE, DDNS, FTP, ONVIF 2.42, SDK
	Settings	AOIs, Privacy Masks, Text Overlay, Electronic PTZ via AOI (API), Anti-Flicker, 180° Image rotation, Electronic Shutter, White Balance, BLC, Exposure area, Automatic Gain, 3D-DNR, >80dB WDR
	Connectors	Through MIL Std connector: 10/100 Base-T Ethernet; power supply, temperature sensor signal;
POWER	Power Supply	12-24VDC / 24VAC or PoE IEEE802.3af Class 2 (for CAM21X----P version only)
	Power Consumption	<5 W





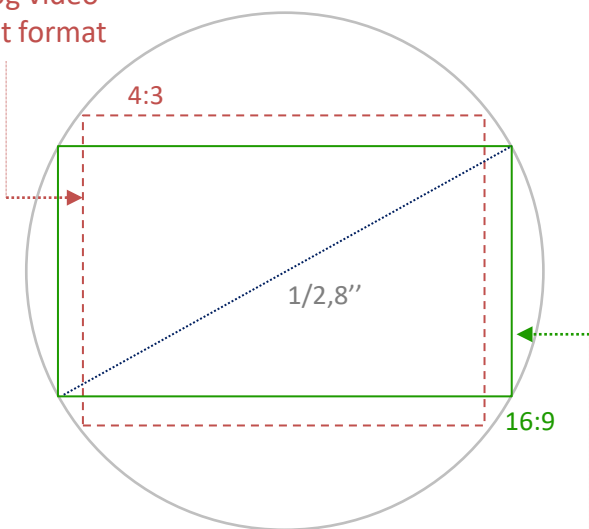
COMPARISON OLD ANALOG CAMERA / NEW IP CAMERA

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C

camtec

ANGLE OF VIEW: WHAT CHANGES?

Analog video
output format



Original format sensor
of new IP camera

OLD ANALOG

ANGLE OF VIEW TABLE WITH OLD ANALOG CAMTEC CAMERA, 4:3 ratio

DIAGONAL ANGLE	LENS TYPE	VERTICAL ANGLE	HORIZONTAL ANGLE
94°	2,8 mm	66°	81°
78°	3,6 mm	53°	67°
74°	4 mm	48°	61°
53°	6 mm	33°	44°
33°	10 mm	20°	27°
18°	18 mm	11°	15°
6°	50 mm	4°	5°

NEW IP CAMTEC

ANGLE OF VIEW TABLE WITH IP CAMTEC CAMERA: 1/2,8'' Sensor, 16:9 ratio

DIAGONAL ANGLE	LENS TYPE	VERTICAL ANGLE	HORIZONTAL ANGLE
94°	2,8 mm	53°	89°
78°	3,6 mm	44°	74°
74°	4 mm	39°	69°
53°	6 mm	28°	47°
33°	10 mm	18°	31°
18°	18 mm	8°	15°
6°	50 mm	3°	6°

LENS TYPE	RESOLUTION	VERTICAL ANGLE	HORIZONTAL ANGLE
3,3 mm inclined	1920 x 1080 px	46°	72°
3,3 mm axial	1920 x 1080 px	45°	73°

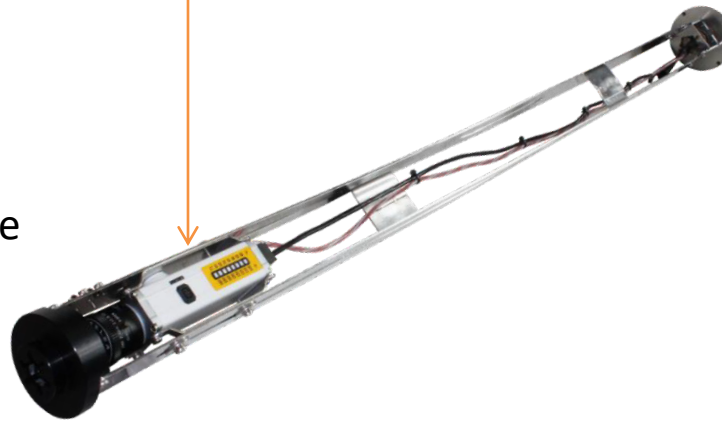


CAMTEC: MAIN FEATURES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **camtec**

- Camera sensor with special feature for high contrasts and strong radiation

- Easy fit all in one device



- MIL Std. multipolar connector



- Optical lens with aperture <3mm diameter

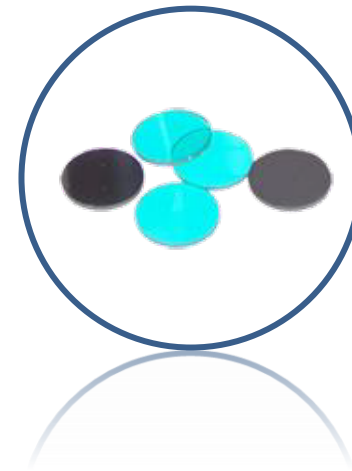




CAMTEC: ACCESSORIES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **camtec**

Optical infrared glass filters, NG9, BG12, BG18
For high light level application i.e
(glass furnace, VOD)



High temperature sapphire glass lens protection
For very dust environments
(melth shop)





SONDATEC: MAIN FEATURES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C sonda^{tec}

Industrial housing SONDATEC for camera CAMTEC for working up to 2200°C, cooled by water and compressed air.



- Water cooling circuit made with three jackets



- Housing made with different types of Stainless Steel



- Air pressurized for protection and lens cleaning

- Employment of industrial parts





SONDATEC: COMPARISON VERSION 1.0 and 2.0

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **sonda^{tec}**



1.0

Vs



2.0

STRENGTHS

- The most robust of the range;
- Ideal for very dusty environments;
- Ideal for environments with a strong presence of liquid metal projections;

- Very effective cooling circuit (triple jacket);
- Ideal for INTEC on-board applications;
- Available with axial, 60° or 45° inclined view;
- Wide availability of lengths (700mm to 400mm);

DISADVANTAGES

- Bulky dimensions for wall applications (no INTEC);
- Weight;
- Max length 700mm;
- Available only with axial view;

- Not suitable for environments with strong presence of liquid metal or dust projection (protective glass not applicable);

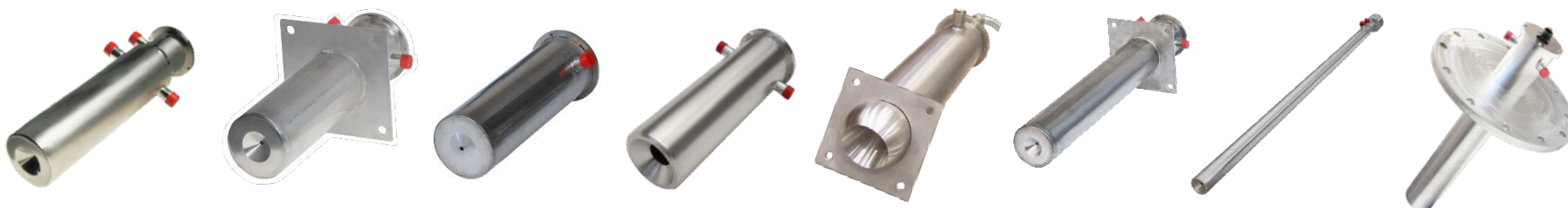




SONDATEC: DIFFERENT MODELS AVAILABLE

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **sonda^{tec}**

Different type of Sondatec housings are available depending on the application to be controlled:



- Different type of diameters available;
- Different lengths available (from 300 up to 4000mm);
- Air and water cooled (special version only air cooled available too);
- Special versions with welded or adjustable flange for coupling to the furnace wall;
- Axial or inclined view;
- Different type of frontal flanges;





STEEL FEATURES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **sonda**^{tec}

S/C	Costs	Oxygen corrosion	Acid corrosion	High temperature
AISI304				
AISI310				
AISI316				
HASTELLOY C276				

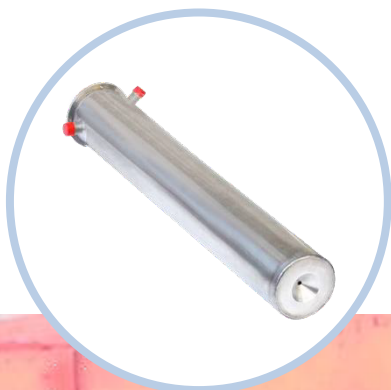




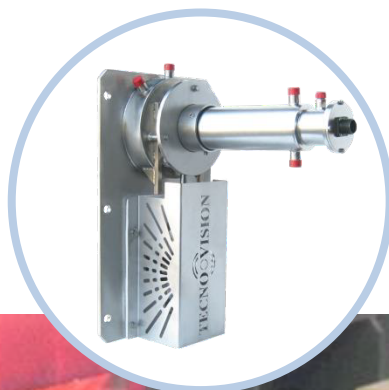
ON FURNACE / BOILER APPLICATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **sonda^{tec}**

FIXED INSIDE TYPE



EXTERNAL WALL MOUNTED



INSIDE TYPE WITH
RETRACTION DEVICE



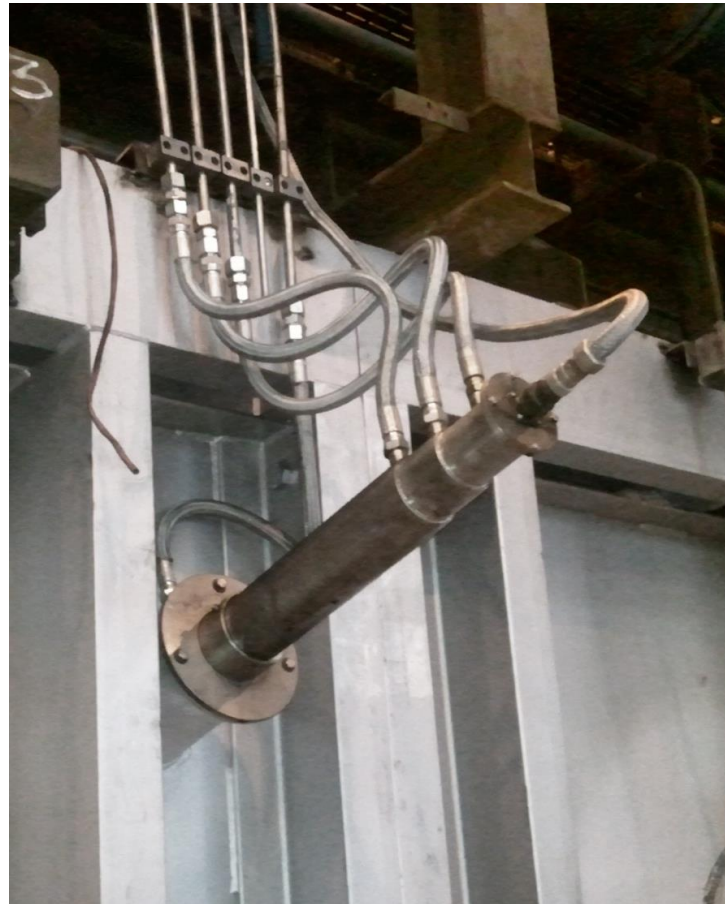
www.telea.com



EXAMPLE OF INSTALLATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **sonda^{tec}**

FIXED INSIDE TYPE

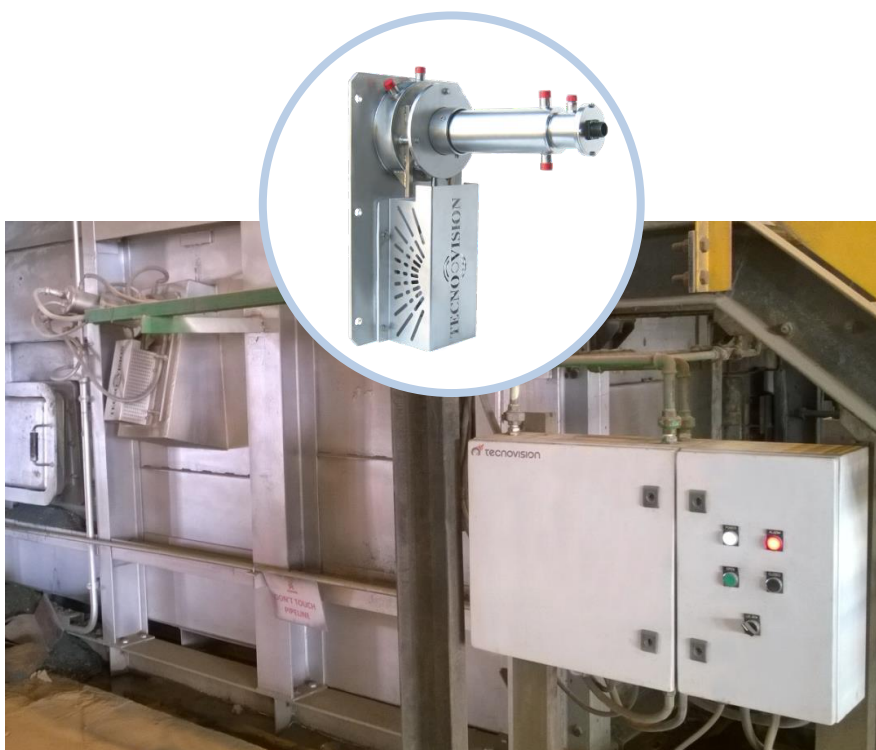




EXAMPLES OF INSTALLATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **sonda^{tec}**

EXTERNAL WALL MOUNTED

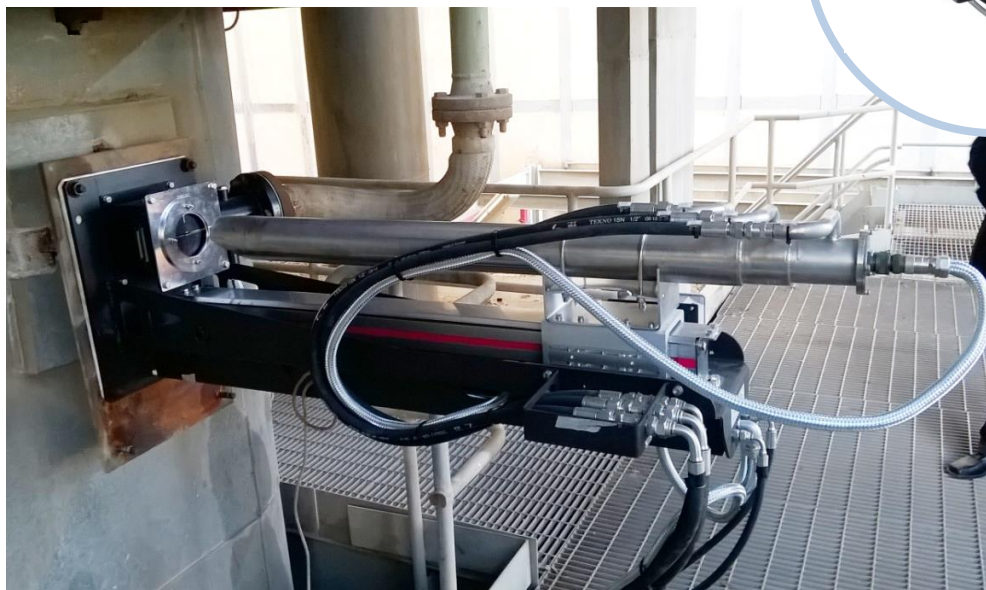




EXAMPLE OF INSTALLATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **sonda^{tec}**

INSIDE TYPE WITH RETRACTION DEVICE





ADVANTAGES & DISADVANTAGES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C **sonda^{tec}**

	 FIXED INSIDE TYPE	 EXTERNAL WALL MOUNTED	 INSIDE TYPE WITH RETRACTION DEVICE
LOW COST	X		
SELF PROTECTED		X	X
AXIAL HOLE REQUIRED	X		X
WIDE ANGLE OF VIEW AVAILABLE	X		X
MORE EXPENSIVE			X
NOT PROTECTED	X		
CONICAL HOLE REQUIRED		X	

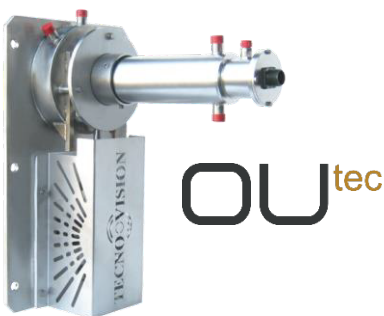


ADVANCED COMPONENTS

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C

PROTECTION DEVICES & CONTROL CABINETS

Telea has developed a range of additional protection devices to be used with CAMTEC & SONDATEC products:



Fixing and protection device to be installed on furnace wall, complete with [gate]shutter and high temperature pneumatic cylinder.



Advancement/withdrawal system with pneumatic actuator provided with self supporting framework with rails and porthole plate to fixing to furnace/boiler wall.

- Mounting:
STRAIGHT ← or → **UPSIDE-DOWN**
- Type of vision:
AXIAL ← or → **INCLINED**



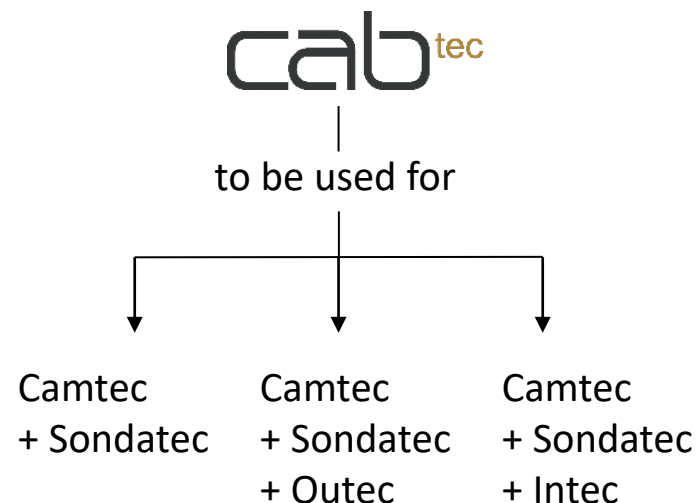


ADVANCED COMPONENTS

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 2200°C

PROTECTION DEVICES & CONTROL CABINETS

Wide range of control cabinets designed for the control and protection of SONDATEC / OUTEC / INTEC range of products. The internal, programmable digital controller provides all the required hydraulic, pneumatic and electrical controls via a series of sensors and instrumentation.





CODES TABLE OF CONTROL CABINETS

cabtec

		PRESSURE REGULATOR WITH GAGE	DUAL PRESSURE REGULATOR WITH TWO GAGES	TWO STAGES AIR FILTER	AIR / N2 FLOW METER WITH FLOW REGULATOR	PRESSURE AIR SWITCH	2 WAY ELECTROVALVE	5 WAY ELECTROVALVE	H2O FLOW SWITCH (ON/OFF)	H2O FLOW SWITCH WITH VISIBLE LEVEL (ON/OFF)	H2O FLOW METER (WITHOUT DISPLAY)	H2O FLOW METER (WITH DISPLAY)	H2O THERMOSTAT	H2O TEMPERATURE SENSOR (PT100 / PT1000)	H2O TEMPERATURE SENSOR (4-20 mA)	CABINET HEATER	CAMERA TEMPERATURE SENSOR MANAGEMENT	INTEC OBLO' TEMPERATURE SENSOR MANAGEMENT	DIGITAL LOGIC MODULE WITH DISPLAY / ETHERNET	2 IN ANALOGUE EXPANSION MODULE	FURTHER 2 IN ANALOGUE EXPANSION MODULE	ADDITIONAL INPUT / RELAY MODULE	OSD MODULE	CAMERA MAIN UNIT	RJ45 SOCKETS FOR ETHERNET CABLE	PREDISPOSED FOR SWITCH #060X	USB SERVER	SW FOR MODBUS COMMUNICATION	TRANSDUCER FOR PT100
OUTEC	CAB11X100L	X	X			X	X		X				X						X	X									
	CAB11X101A	X	X			X	X			X				X			X		X	X									
	CAB11X101AP	X	X			X	X			X				X			X		X	X						X			
	CAB11X101AR	X	X			X	X			X				X			X		X	X						X	X		
	CAB11X101AM	X	X			X	X			X				X			X		X	X						X	X		X
	CAB11X101B	X	X			X	X			X				X			X		X	X		X	X						
	CAB11X101C	X	X			X	X				X			X			X		X	X		X	X						
	CAB11X101D	X	X			X	X				X			X			X		X	X		X	X						
	CAB11X101DP	X	X			X	X			X				X			X		X	X		X	X						
	CAB11X101DR	X	X			X	X			X				X			X		X	X		X	X			X	X		
	CAB11X102E	X	X			X	X		X					X					X	X		X	X						
	CAB11X103E	X	X			X	X		X						X														
	CAB11X104F	X	X			X	4					4		4			X		2	X								4	
	CAB11X105F	X	X			2	2					2		2			2		X	X	X	X							
	CAB11X122AR	X	X			2	2				2			2			2		X	X						X	X		
INTEC	CAB11X200L	X	X			X		X		X			X						X										
	CAB11X202A	X	X			X		X		X				X			X		X	X									
	CAB11X202AP	X	X			X		X		X				X			X		X	X	X					X			
	CAB11X202PP	X	X			X		X						X			X		X	X	X					X			
	CAB11X202B	X	X			X		X		X				X			X		X	X	X	X	X	X					
	CAB11X202D	X	X			X		X				X		X		X	X	X	X	X	X	X	X						
	CAB11X202E													X			X		X	X		X							
	CAB11X202G	X	X			X		X		X				X		X	X	X	X	X	X	X							
	CAB11X202P	X	X			X		X		X				X		X	X	X	X	X	X	X							
	CAB11X203A	X	X			X		X		X				X		X	X	X	X	X	X	X							
	CAB11X203D	X	X			X		X		X				X		X	X	X	X	X	X	X	X						
	CAB11X203L	X	X			X		X		X				X			X		X	X	X	X	X						
	CAB11X222AR	X	X			2	2	2								X		X	X	X						X			
SONDATEC	CAB11X300B																X		X			X	X						
	CAB11X302B	X		X		X	X							X			X		X	X		X	X						
	CAB11X303E	X							X						X														
	CAB11X304B	X		X		X						X		X			X		X	X		X	X						
	CAB11X304E		X	X		2						X			X					X	X		X	X					
	CAB11X305F										2			2			X		2	X	X								
	CAB11X306A	X		X		X					X			X			X		X	X									
	CAB11X306AP	X		X		X					X			X			X		X	X						X			
	CAB11X306B	X		X		X					X			X			X		X	X		X	X						
	CAB11X306EP	X		X		X						X																	
	CAB11X307A	X		X	X						X			X			X		X	X									
	CAB11X307BP	X			2						2			2			X		X	X	X					X			
	CAB11X310E	X			X						X				X														
	CAB11X320E				X						X				X														
	CAB11X370EP	2				2		X																		1			1
	CAB11X388H	2		2		2		X									2		X	X									
	CAB11X382G		X	X		2					2			2			X		X	X	X								
PORTABLE SOLUTION	CAB11X400A	X		X		X				X				X			X		X	X					X				
	CAB11X401A	X		X		X				X				X			X		X	X					2				

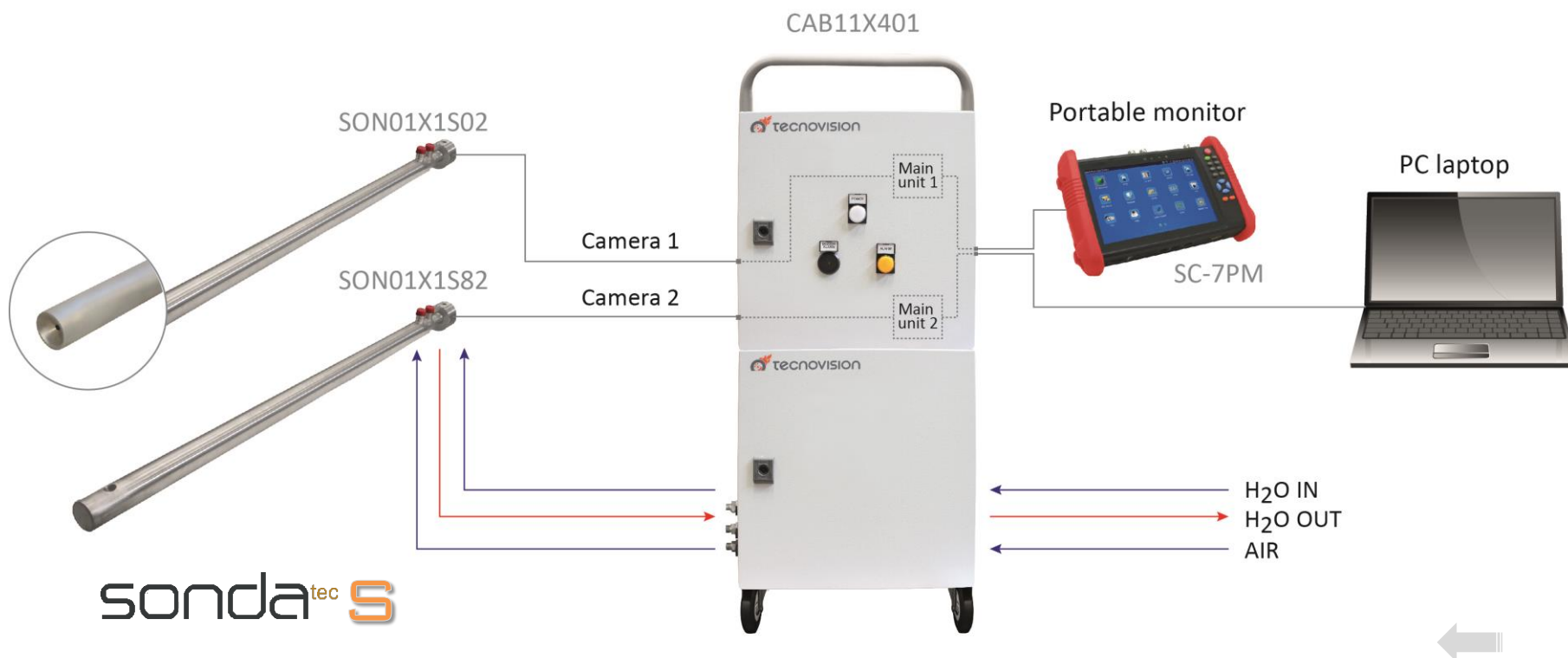




PORTABLE SOLUTION: "S" SERIES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 1800°C / 1600°C

Telea Tecnovision has developed a portable system ideal for mobile inspection in high temperature environments.





“S” SERIES: BASIC SYSTEM COMPONENTS CONFIGURATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 1800°C / 1600°C





"S" SERIES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 1800°C / 1600°C

- HD ready 1280x720p up to Full HD

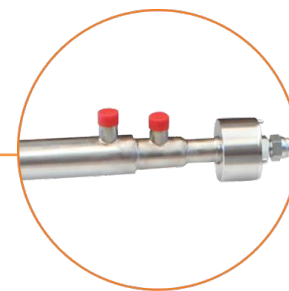
cam^{tec} S



- 6mm air pressurized aperture

sonda^{tec} S

- Suitable for temperature up to +1800°C



- Water cooling circuit made with three jackets

- Housing made of SS316L



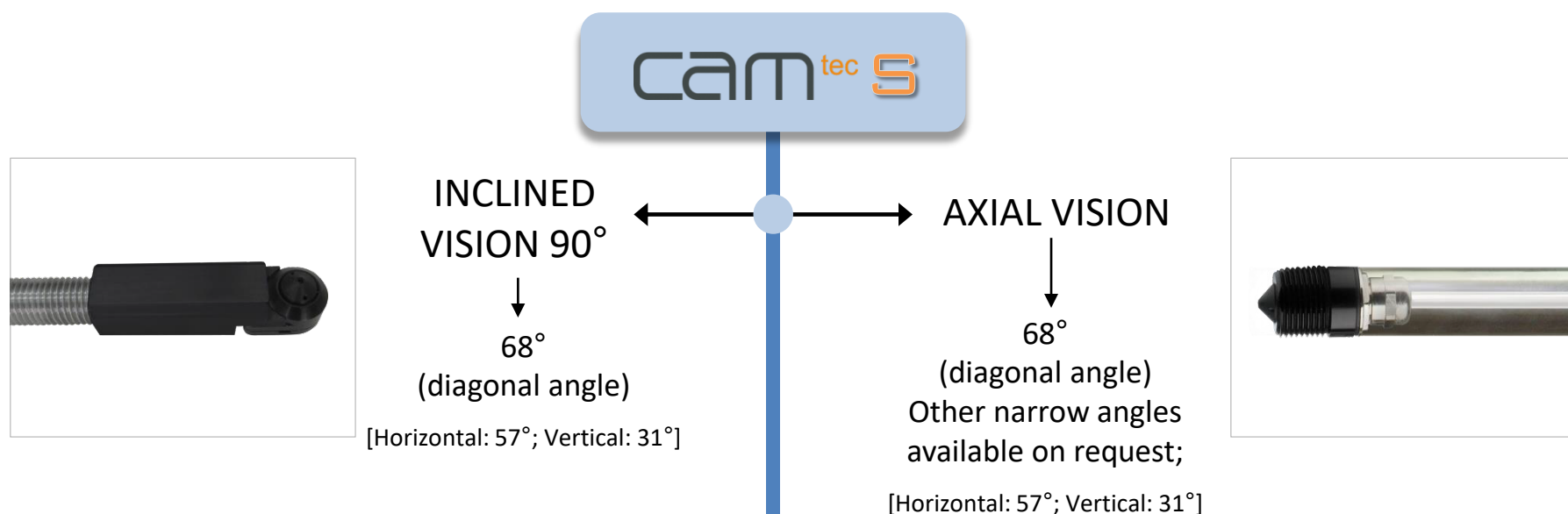
- Easy fit all in one camera device





CAMTEC: "S" SERIES CONFIGURATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 1800°C / 1600°C



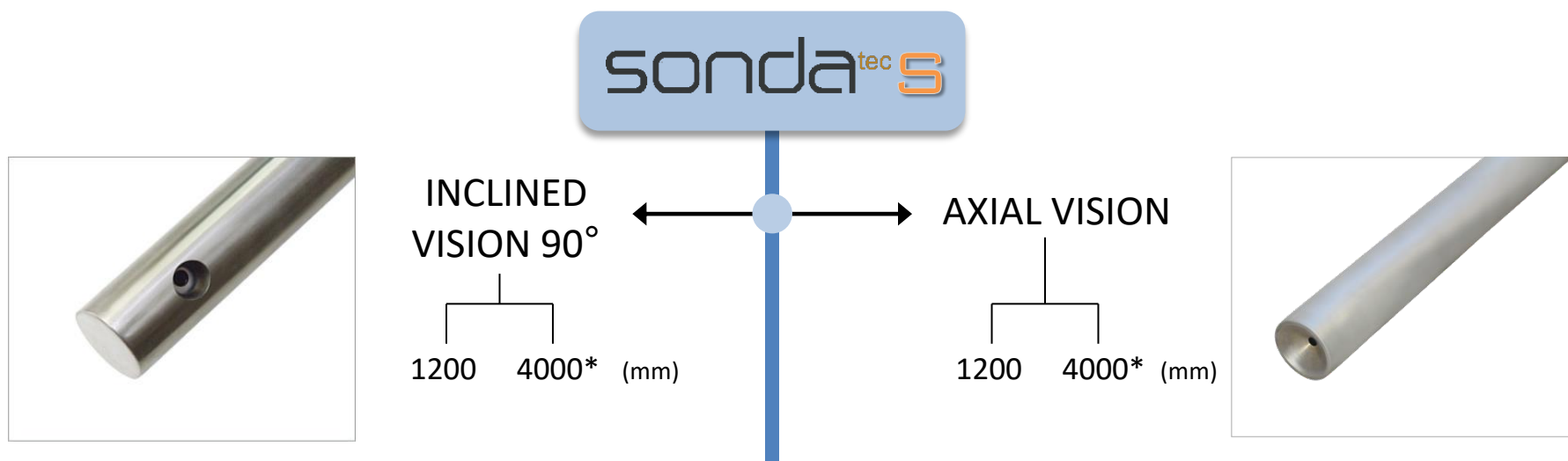
- HD resolution IP camera
- Length = 1200mm (Other on request)
 - Temperature Sensor (PT100)
- Requires main control unit supplied in separate JBX or Cabinet (CABTEC)





SONDATEC: “S” SERIES CONFIGURATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 1800°C / 1600°C



- Diameter = 45mm
- Air & Water cooling system
- Light weight

“S” series has been developed for all applications that require a small entrance diameter.
Thanks to this feature it is also ideal for mobile inspections.

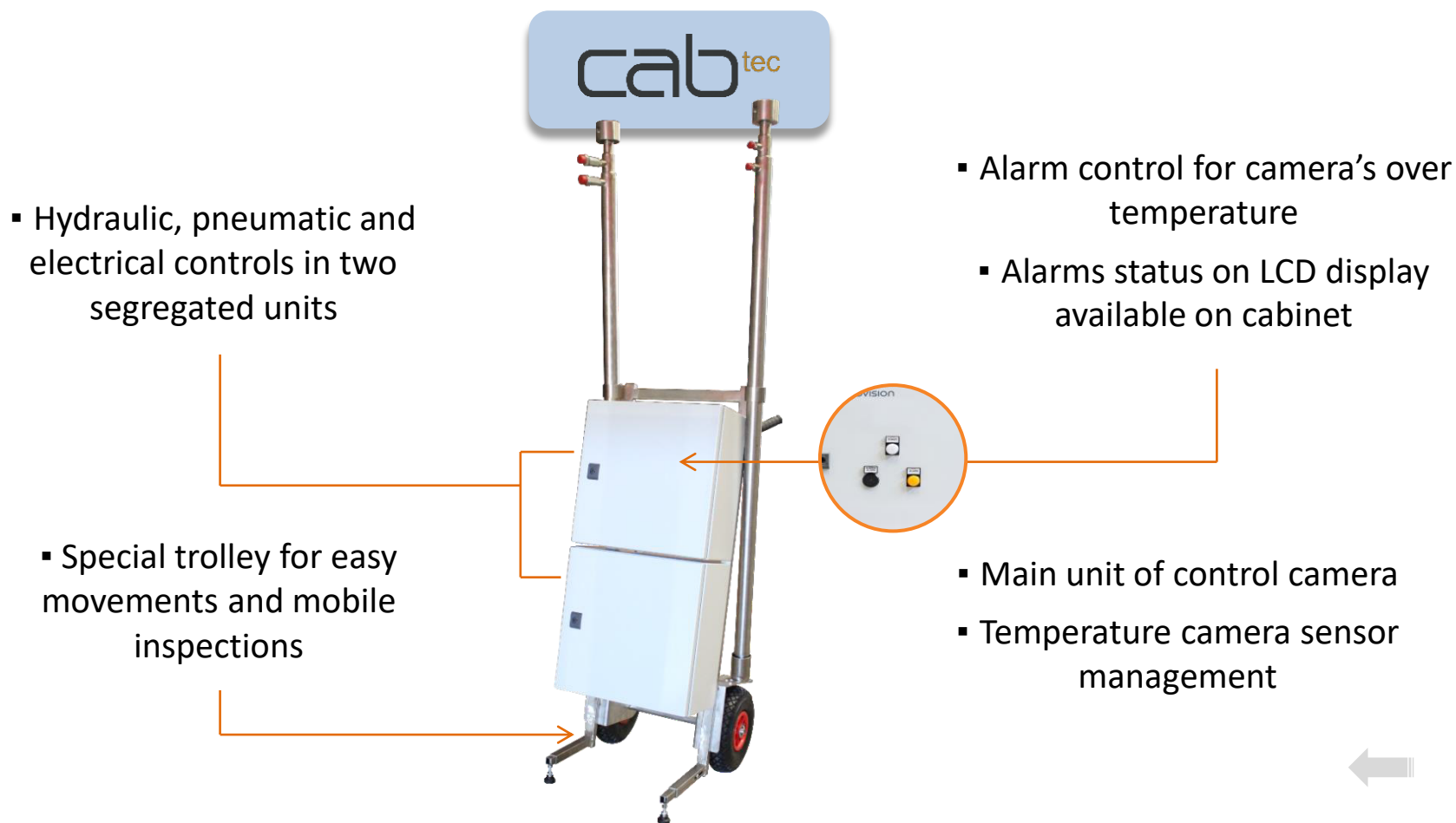
*Other lengths available on request.





CABTEC: “S” SERIES CONFIGURATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 1800°C / 1600°C





ACQUATEC: MAIN FEATURES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 400°C

acqua^{tec}



- Air or Air & Water cooled pressurized housing
- Useful for Analogue or IP camera, Infrared camera and various instrumentation
- Able to work with temperature up to 400°C





ACQUATEC: BASIC SYSTEM COMPONENTS CONFIGURATION

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 400°C



1.0

acqua^{tec}



2.0

- OPERATING TEMPERATURE UP TO:

90° — | — 400°

- COOLING:

AIR + H2O | ONLY AIR | ONLY H2O | NO COOLING

MOVABLE GLASS

AIR BARRIER

IP43

IP66

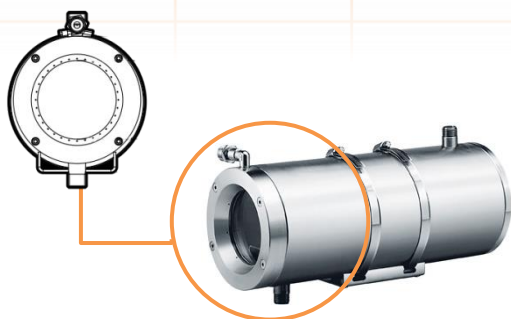




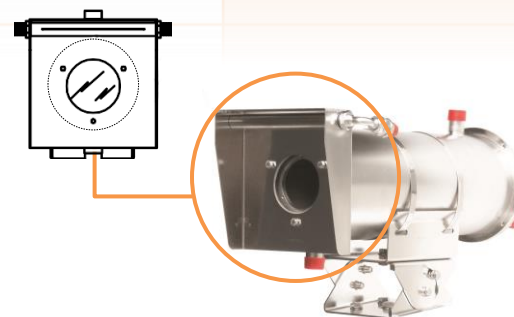
ACQUATEC: BENCHMARK

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 400°C

Compare products	Competitors			
	Videotec	Tecnosystem	Global proof	TELEA TECNOVISION
External Ø	164 mm	168 mm	168 mm	129 mm
Window Ø	95 mm	97 mm	97 mm	55 mm
Air pressurized	No	No	No	Yes
Window Cleaning	Holes	Holes	Holes	Knife Air



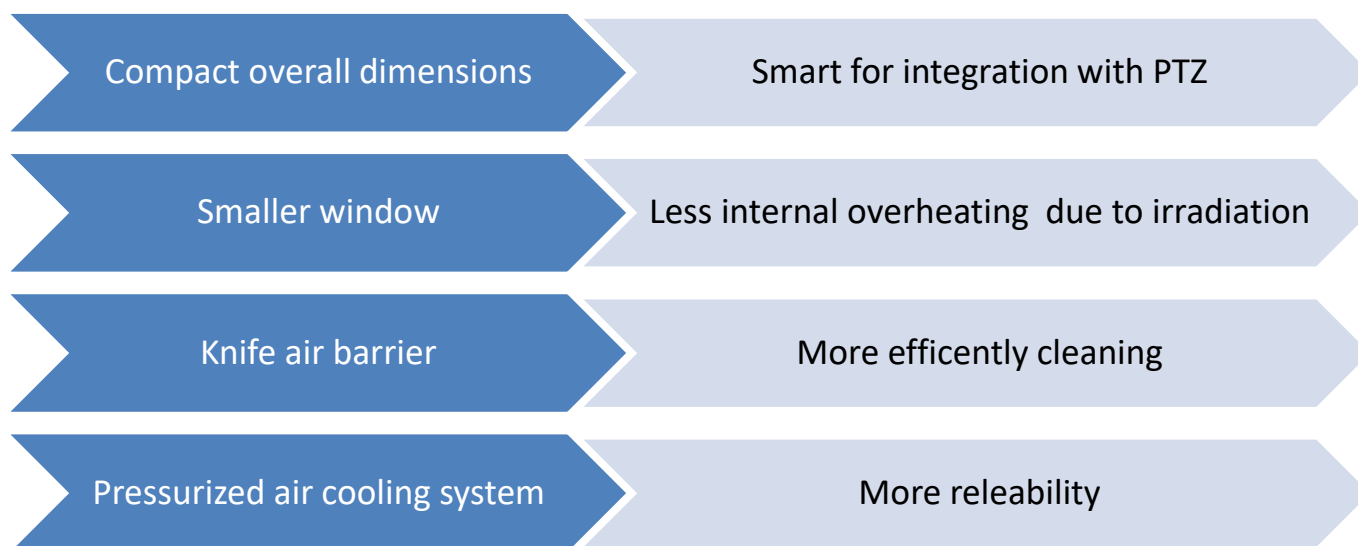
Example of similar product





ACQUATEC: ADVANTAGES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 400°C





SPECIAL VERSIONS

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 400°C

In order to meet the different needs of various industrial processes, customized solutions have been designed:



- Compact version available;
- Different type of frontal windows with different diameters (Transparent glass, Zinc-Selenium, Germanium);
- Special versions with pneumatic damper for window protection;

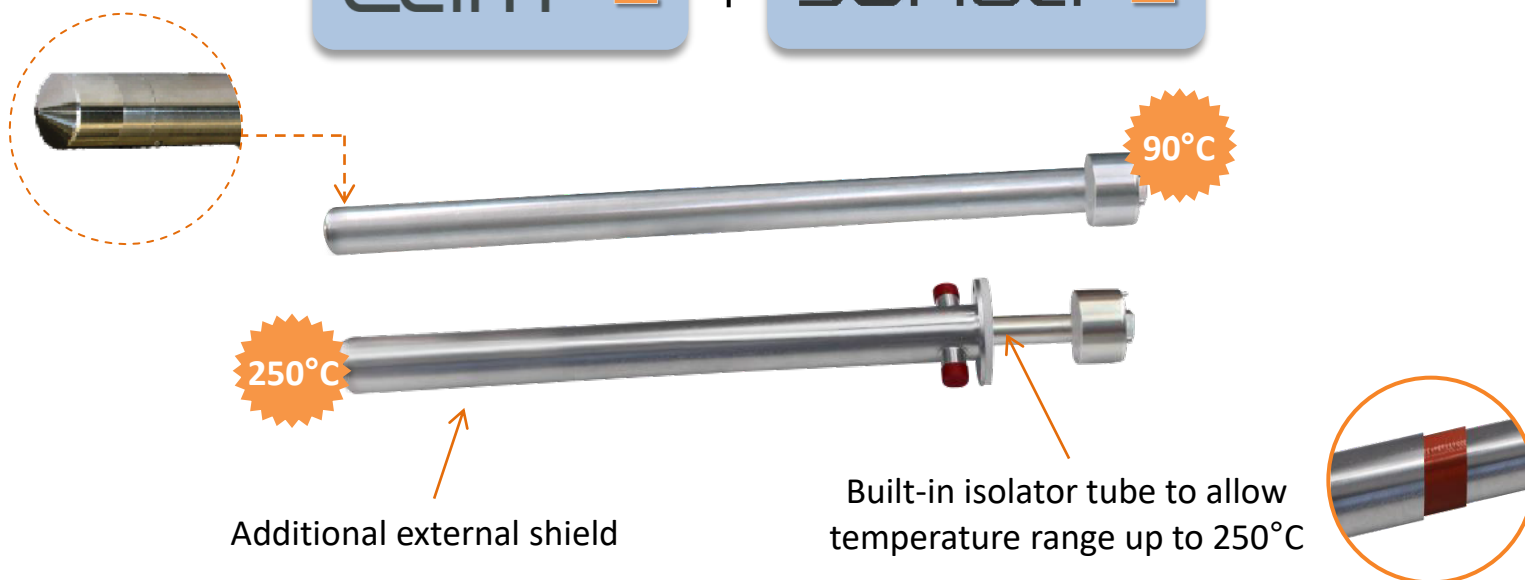




ONLY AIR COOLED SOLUTION: “L” SERIES – Light solution

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 250°C / 90°C

cam^{tec} L + sonda^{tec} L



- «Light» version: cheaper solution suitable for mobile inspection
- Low diameter
- Two versions available: up to +90°C or +250°C
- Axial vision





AIRTEC: MAIN FEATURES

► HIGH TEMPERATURE CAMERA SYSTEMS UP TO 90°C

air^{tec}



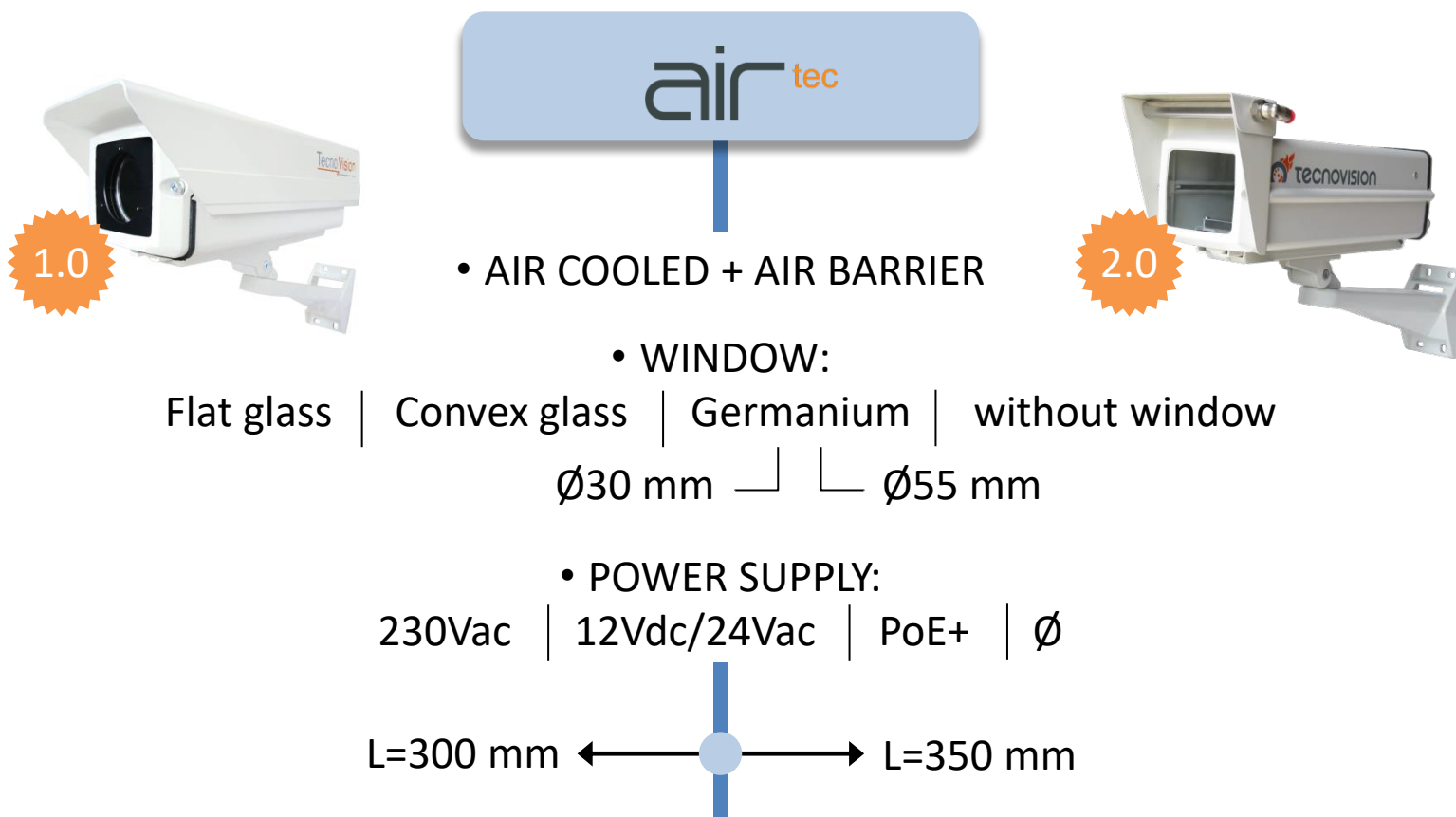
- Air cooled pressurized housing
- Useful for Analogue camera, IP camera, Infrared camera
- Able to work with temperature up to 90°C





AIRTEC: BASIC SYSTEM COMPONENTS CONFIGURATION

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