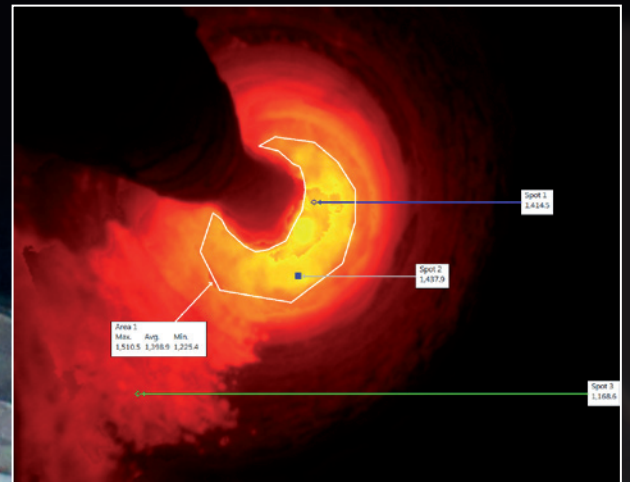


# ThermaScope® HDT

HD Temperature Imaging Kiln Cameras



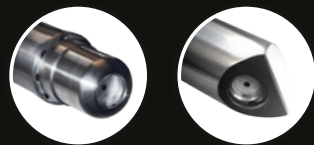
**Thermoteknix**  
Systems Ltd



## ThermaScope® HDT Infrared Kiln Cameras

High definition, high speed ThermaScope HDT temperature imaging cameras provide high quality imagery from inside the kiln or cooler. Based on Thermoteknix' proprietary miniature infrared camera module with high resolution progressive scan technology, the camera provides real time radiometric imaging with accurate temperature measurement.

Minimal maintenance, the all digital system transmits digital image and temperature data from the heart of the clinker-making process to the control room. Greater confidence throughout the combustion and manufacturing process.



Straight Head 90° Head

- Thermoteknix High Definition 1280x960 CCD infrared camera micro-module
- High speed 60 frames per second progressive scan HD imaging
- 20 bit wide dynamic range covering flame, clinker and internal walls
- Solid-state micro-electronics with multiple inbuilt sensors
- All digital imaging and signal transmission up to 2 km
- 40mm small diameter tube containing direct view camera
- Super efficient combined air cooling and window air purge
- Choice of direct and side viewing heads
- Fail-safe operation

## ThermaScope® HDT Infrared Kiln Camera Functions

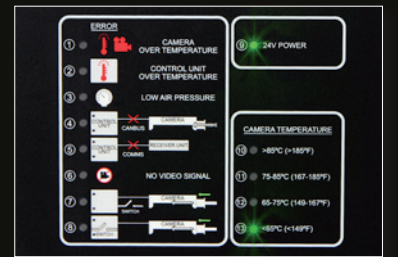
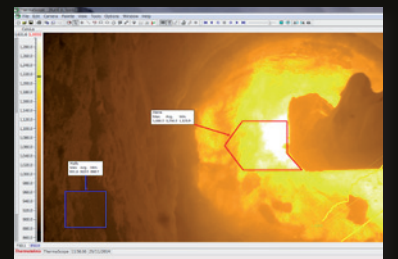
Thermoteknix HDT is a digital IR CCD camera which fits into a 40 mm kiln opening through a free wall sleeve with self-closure mechanism. Custom electronics combine the temperature measuring and imaging CCD signal with digital system sensors for error-free transfer by fibre-optic to the control room up to 2 km away. High definition real time video with unique full scale imaging at 60 Hz monitors fuel flow, operating conditions and changes in fuel quality. These key factors ensure the efficient and safe operation of a kiln and the ability to accurately monitor the combustion process. Direct external outputs enable interfacing and automated control.

## ThermaScope® HDT Software

ThermaScope HDT easy-to-use software displays images and temperatures directly on screen with real time measurement of unlimited spots or areas within the field of view. Individual or group alarms provide immediate status information. Thermal profiles, image storage, differential temperatures, live and historic data trending, highlights and much more. Analog or digital outputs (industry standard OPC) allow easy connection and data transfer to DCS or Expert systems without the need for custom interfaces or third party interfaces.

## ThermaScope® HDT Ultra Efficient Air Cooling

Requiring just 200 litres of instrument quality air per minute ThermaScope HDT uses a fraction of air consumption of competitors' kiln cameras. This is typically an \$8,000/year saving and up to \$40,000 savings in just 5 years.



ThermaScope HDT - Kiln

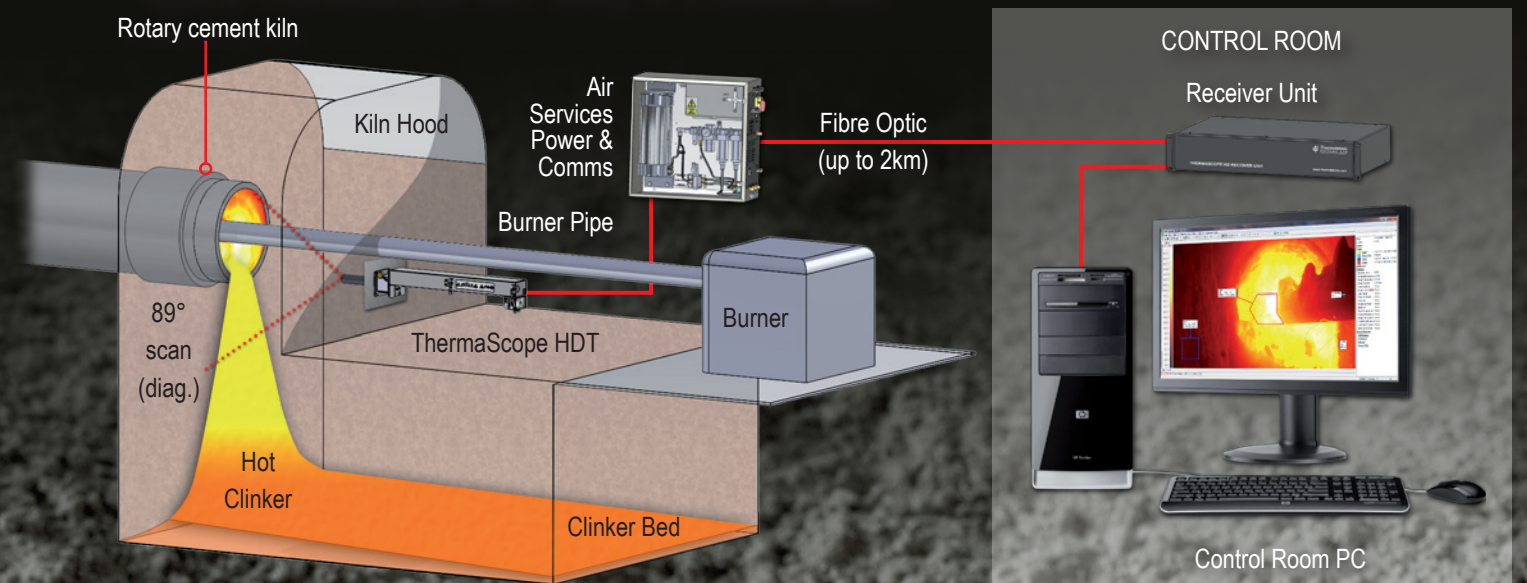


ThermaScope HDT - Cooler Zone

## ThermaScope® HDT Infrared Camera

- Low volume air consumption for year on year cost savings
- Flicker-free radiometric imaging with onscreen status indicators
- Wide depth of field for maximum kiln and cooler detail
- Fail-safe camera retraction in case of power or services disruption
- Linear rail insertion mechanism for trouble-free long term use
- Stainless steel protective cover for Health and Safety
- Direct view system with no alignment error
- Solid-state long term reliability
- Unmatched ease-of-use and on-site serviceability

## Typical ThermaScope HDT setup in a cement kiln:





# ThermaScope® HDT

## ThermaScope HDT High Temperature Kiln Cameras

### PERFORMANCE – CAMERA

Resolution	1280 x 720 (HD) Progressive Scan
Dynamic range	>115db
Response	5.48 V/lux-sec
Temp Range	700-1,800°C
Frame Rate	60Hz
Spectral response	to 1.05µm
Aperture Control	Automatic

### PERFORMANCE – LENS

Fixed focus	0.2m - infinity
Aperture	f/2.4

### FIELD OF VIEW (FOV)

Diagonal: 89° Horizontal: 81° Vertical: 51.5°

### OPTIONAL ACCESSORIES

4-20mA analogue output  
OPC (Microsoft OLE for process control) interface  
Remote support facility  
Fallback carriage arrester mechanism

### ENVIRONMENTAL DETAILS

Operating Temperature Range	Standard -20°C to +70°C BS EN 60068-2-1/2
Size Camera Unit	226mm x 300mm x 1200mm (WxHxD)
Weight	16.5kg

### STANDARD SYSTEM

Thermoteknix proprietary ThermaScope HDT infrared camera  
Air cooled 316 stainless steel housing  
Auto fail-safe pneumatic camera mechanism  
Wall sleeve with auto-closure mechanism  
Single Control Unit for comms and services  
Full LED alarm indication  
Air hoses, communication cables  
ThermaScope Software CD & Manuals/LCD monitor

### SIGNAL PROCESSING

Proprietary Image Optimisation

### AIR SYSTEM

Air Flow	200l/min instrument quality, clean dry air
Air Pressure	3 bar minimum (regulator provided)
Air Monitoring	Pressure switch and reservoir supplied (for retraction)

### INTERFACING

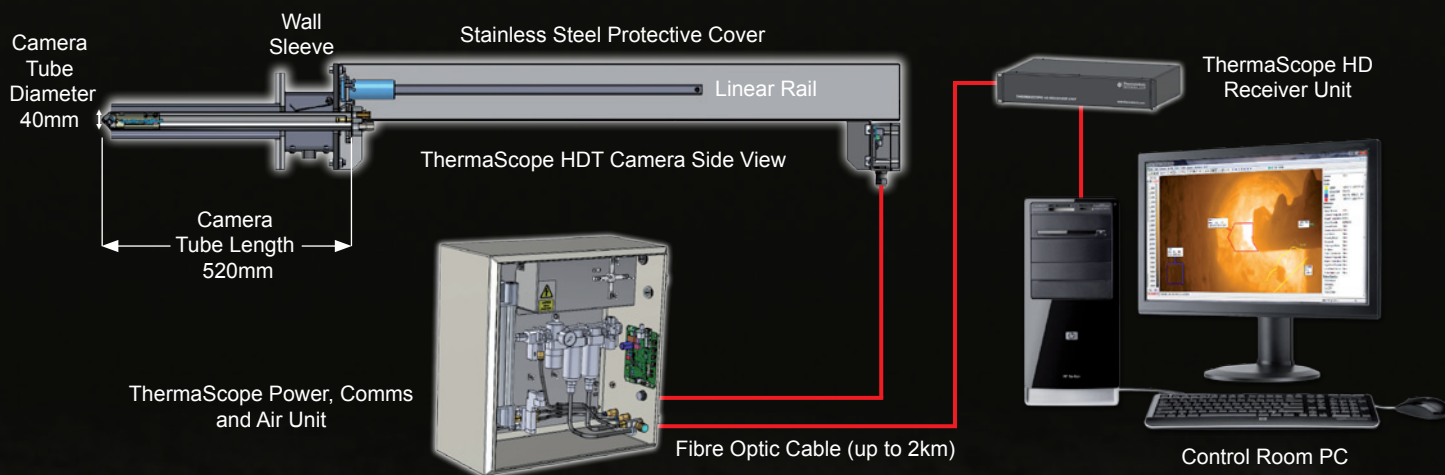
PC - Windows 7 onwards

### COMMUNICATIONS

Single mode fibre optic cable kit 9/125µm with LC terminations to 2km

### EMBEDDED SOFTWARE

ThermaScope HDT comes with dedicated ThermaScope software.  
For full software specification, please enquire.



### Also available: ThermaScope® HDC Kiln & Cooler Cameras

ThermaScope HDC imaging camera provides high quality images direct to a TV monitor in the control room allowing plant engineers to observe the flame, burner, clinker in the kiln or cooler.



All trademarks acknowledged. ThermaScope® is a registered trademark of Thermoteknix Systems Ltd. Thermoteknix Systems Ltd pursues a policy of ongoing product development and specifications are subject to change. ThermaScope® is designed and manufactured in the UK.



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