



INDUSTRIAL IMAGING

Kiln Shell Scanners | Kiln Cameras | Cooler Cameras | Alarms and Data Trending



MORE THAN JUST AN IMAGE

Thermoteknix Systems Ltd is one of UK's most innovative thermal imaging companies with world-leading technologies pioneered since its inception in 1982.

Our products, used and trusted by thousands of customers around the world, thrive in extreme temperature settings and in the harshest of environments.

Our systems are used in cement production, glass, mining, power generation, pulp and paper manufacture, recycling and steel production.

At Thermoteknix, we manufacture a wide

range of solutions including rotary kiln shell scanners, high temperature, high definition thermal and visual cameras for continuous monitoring of high energy industrial processes with advanced data visualisation tools that record and analyse the process in real time.

Thermoteknix has been designing, manufacturing and delivering specialist thermal imaging and scanning solutions for more than 40 years.

We design, develop and manufactured all products in the UK. Our reputation is synonymous with reliability, quality, customer care and lifetime support.

Thermoteknix holds the prestigious Queen's Award for Enterprise: Innovation in recognition of its outstanding achievements in thermal imaging and customer satisfaction.



Certificate Number 10088
ISO 9001:2015

*Thermoteknix is an ISO 9001:
2015 accredited company.*



Thermoteknix is recognised for innovation and reliability in thermal imaging products specially developed for the toughest manufacturing and processing environments.

Centurion TK50



KILN SHELL SCANNING AND DATA MANAGEMENT

Centurion TK50 scans the length of the rotary kiln 30 times per second making hundreds of thousands of temperature measurements in real time, along and around the circumference of the kiln.

Centurion TK50 operates continuously, reliably, and accurately over a wide ambient temperature range. The sealed aluminium housing and sapphire window, kept clean by a continuous stream of filtered air is secured on a universally adjustable mounting to meet the most challenging site requirements.

CENTURION TK50 Kiln Shell Scanner

Infrared kiln shell scanning system designed for the most demanding environments.



Centurion TK50 kiln shell scanner

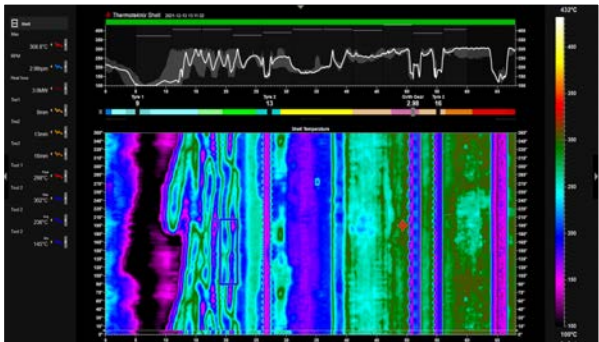
Infrared kiln shell scanning system designed for the toughest environments



The high-performance thermo-electrically cooled infrared detector includes state-of-the-art solid-state electronics and two built in reference black body references that ensure optimum sensitivity, temperature accuracy, and performance, detecting hot spots and changes in the coating before damage occurs to the refractory lining and kiln shell.

The Centurion TK50 works with Thermoteknix' powerful, market leading WinCem MultiView software, which delivers unparalleled high definition displays, coating/brick thickness displays, alarms, dynamic multi-region trending and many more features.

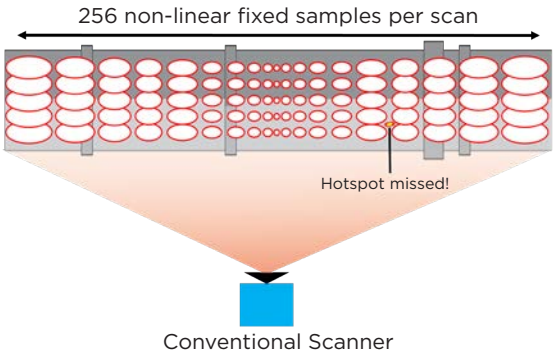
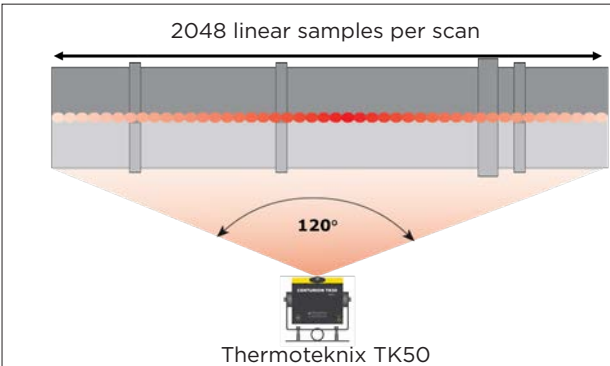
Scanning rate	30Hz
Linear samples per scan	2048
Focus	1m to Infinity
Scanning field of view	120°
Temperature range	60-700°C



Centurion TK50 works with powerful WinCem MultiView software

- High definition display
- Coating and brick thickness displays
- Dynamic, multi-region trending
- Timeline with rewind and record options
- Worst case temperature tracking
- Historical trend maps
- Tyre slip monitoring
- Automatic alarms and outputs
- Log every activity during a campaign
- Interactive 2D and animated 3D thermal display

More on page 12.



Centurion TK50 kiln shell scanner

Precise spot measurement, trending and alarms at every point on the kiln



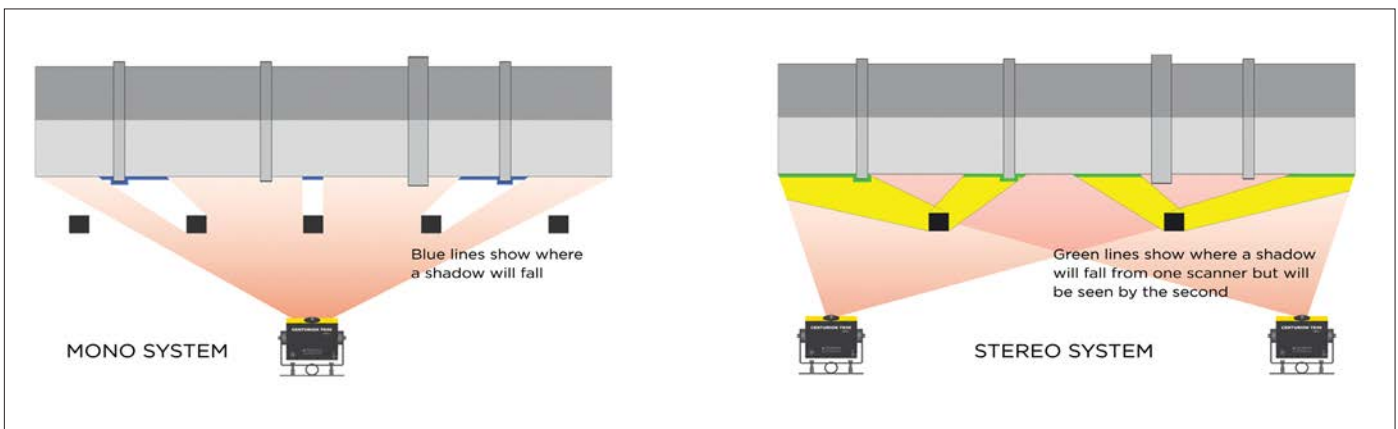
Thermoteknix patented PosiTrak[®] alignment technology allows key features of the kiln to be superimposed on the image and to maintain consistent, precise spot measurement at every point of the kiln.

PosiTrak[®] seamlessly synchronises multiple scanners and spot pyrometers on one system, thus enabling you to 'see' behind obstructions such as roof supports to provide a full clean view of the kiln. Positrack[®] makes the spot size equal down the length of the kiln ensuring each piece of refractory is covered and usually by 2 or 3 readings.

Tried and tested, rugged reliability and high performance

Key features:

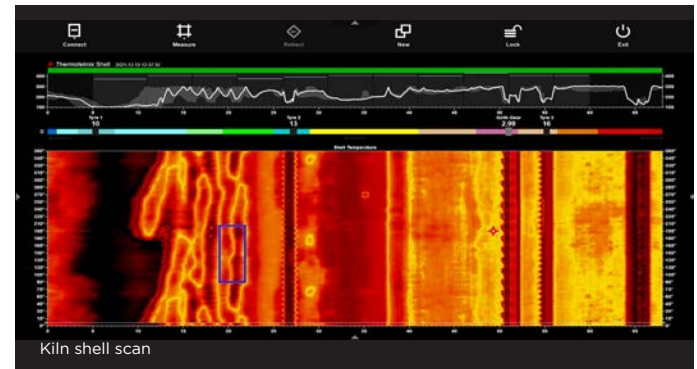
- Higher scan speed for high-speed kilns
- High definition for refractory detail
- High sensitivity to identify smaller temperature changes
- Wide dynamic range from light up to shut down
- 120° field of view
- Fibre optic communication
- Proven and long-term reliability
- Standard USB2 connectivity
- Flexible installation
- In-built diagnostics
- Support for multiple scanners and spot pyrometers



TK50 stereo system offers complete coverage of whole kiln

Centurion TK50 kiln shell scanner

See around obstacles to scan every brick in every ring of the kiln



Plants that have several roof supports or other obstructions between the scanner mounting and the kiln benefit from a stereo system with two TK50 scanner heads to 'see around' obstacles and seamlessly produce an image of the kiln shell.

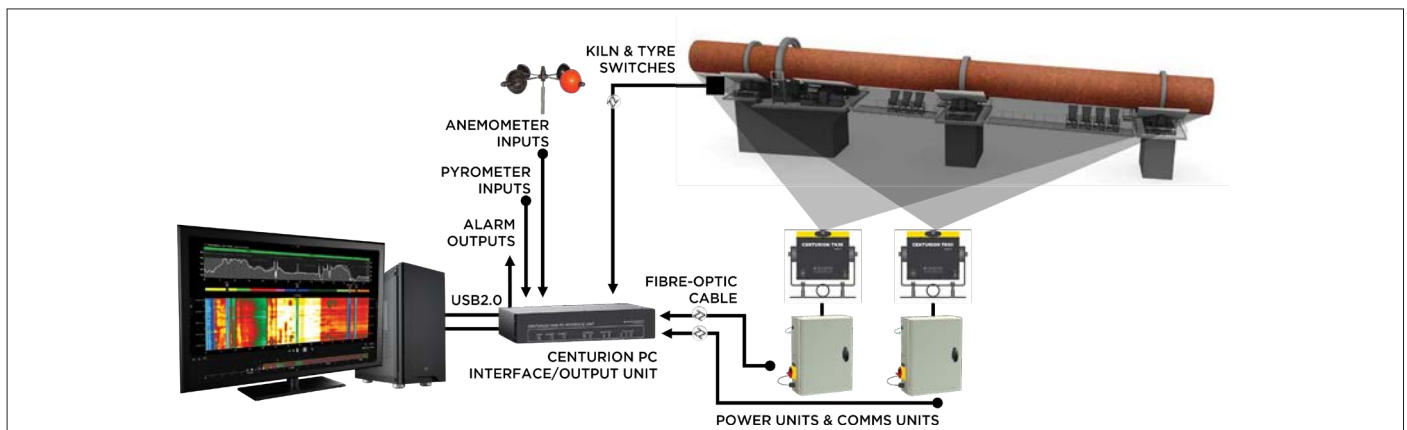
Particularly challenging sites can integrate three scanner heads to provide full kiln coverage. This is particularly useful for kilns that have a covered area around the kiln discharge end. Pyrometers can also be added to cover any final small areas that are important to the plant operator.

Systems can be networked allowing authorised users within the plant network to access real-time output from the system and carry out their own analysis without changing the control

room settings.

Centurion TK50 scans every brick in every ring of the fastest, most modern kilns, to ensure refractory integrity from light up to shut down. Coating and refractory performance are also continually checked throughout the campaign.

Via WinCem MultiView delivers advanced kiln shell refractory and coating calculations, in addition to analysing brick and coating thickness during day to day operation.



TK50 stereo system configuration with WinCem MultiView

ThermaScope HDT

RADIOMETRIC KILN AND COOLER CAMERAS

Our high-definition cameras enable you to observe the effect of control changes with a high degree of confidence

High frame rates enable process engineers to determine operational conditions quickly and reliably.

ThermaScope HDT kiln cameras work in conjunction with Thermoteknix real-time ThermaScope MultiView state-of-the-art software.

ThermaScope MultiView Software

ThermaScope HD cameras work with ThermaScope MultiView software to deliver unparalleled high definition display, recording and analysis tools. More on page 12.



ThermaScope HDT

High performance cameras for rotary kiln / high energy industrial applications



ThermaScope HDT digital temperature cameras provide high-quality, high resolution imaging and temperature measurement from inside the kiln or cooler.

Our cameras improve operational efficiency and facilitate the combustion control process while enabling safe compliance with pollution minimising protocols.

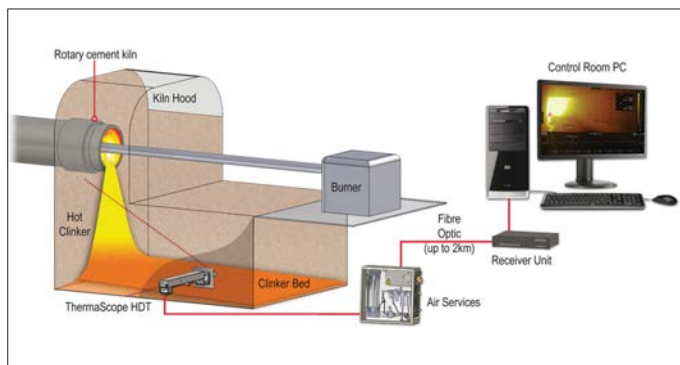
ThermaScope HDT kiln cameras work in conjunction with Thermoteknix MultiView, state-of-the-art software.

These high definition, high speed cameras provide superior quality imaging from inside the kiln and or cooler. Our cameras deliver exceptional detail and visualisation of your process in real-time. Fast frame rates enable process engineers to determine operating conditions quickly and reliably.

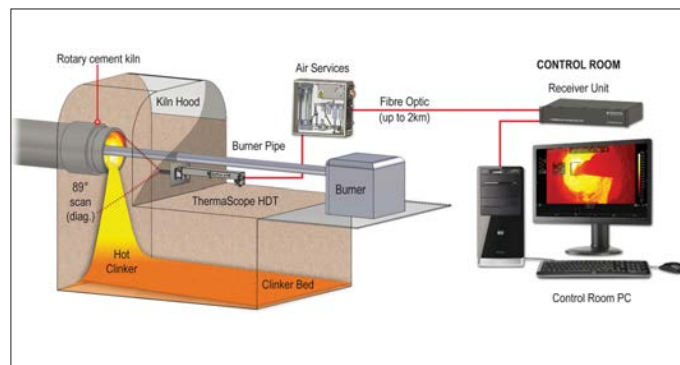
Every pixel in the image will provides an instantaneous temperature reading to give an unlimited number of measurement points. Different styles of tools can be placed on the image to provide a visual indication of the temperature in any part of the image against which alarms can be set as well as continuous data trending.

All Thermoteknix HD cameras are air cooled with automatic retraction and fail-safe protection to guard against any air supply failure or overheating, ensuring safe operation and long life.

Temperature range	600°C to 1800°C
CCD format	1280 x 960
Display	1280 x 720p (HD) progressive scan
Dynamic range	>115db
Operating range, ambient	-20°C to +70°C



ThermaScope HD setup on rotary kiln cooler



ThermaScope HD setup on kiln burning zone

ThermaScope HDC

ThermaScope[®] HD



HIGH DEFINITION COLOUR CAMERAS FOR KILN OR COOLER

Our cameras deliver exceptional detail and visualisation of your process in real time.

Fast frame rates enable process engineers to determine operational conditions quickly and reliably.

Our high-definition cameras enable you to observe the effect of control changes with a high degree of confidence.

Requiring just 300 litres per minute STP (11 cfm) of compressed air, our high definition cameras use a fraction of instrument air consumption compared to other cameras which results in lower running costs and a fast return on capital investment for the plant.

ThermaScope MultiView Software – Data Trending

Thermoteknix MultiView software records and stores real-time high frame rate image data from ThermaScope HD cameras. Record, play and rewind events or view what is happening live inside the kiln or cooler.



ThermaScope HDC

High performance cameras for rotary kiln / high energy industrial applications



ThermaScope HDC colour cameras provide high quality high speed imaging from inside the kiln or cooler.

Built to the same exacting standards as the HDT, the HDC can be mounted in a range of positions to view the burning zone or the cooler.

Cameras can be mounted forward facing to observe the flow of clinker from the kiln into the cooler and into the first part of the cooler. Cameras can also be mounted facing the cooler discharge to observe the transport of clinker through the cooler's length.

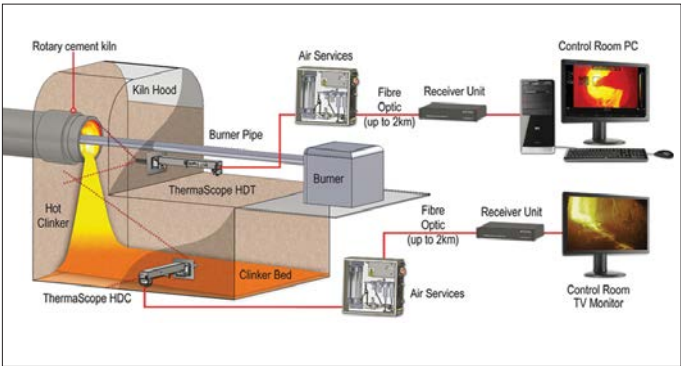
Identifying bed height, cooler hot spots or other faults and/or tracking events has never been easier. Plant engineers can see inside the process with greater clarity.



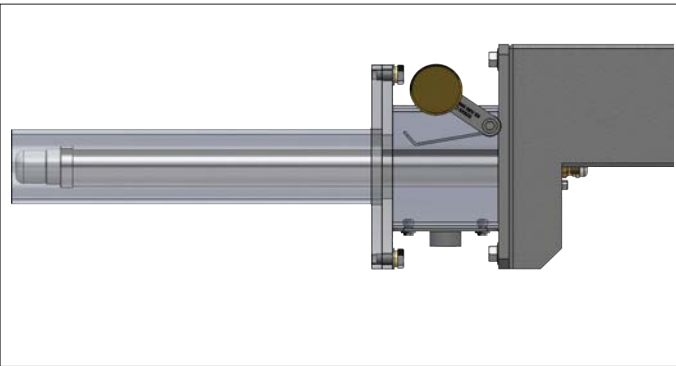
Traditionally the ThermaScope HDC produces an output direct to a standalone video monitor, however, when combined with the MultiView software this allows the video to be recorded on a PC and played back.

Viewing the process from the kiln shell scanner through to inside the burning zone and the cooler gives process engineers insight to combustion and process issues and effects, and enables them to identify issues and causes in more detail.

Temperature range	N/A, visual wavelength sensor
CCD format	1280 x 960
Display	1280 x 720p (HD) progressive scan
Dynamic range	>115db
Operating range, ambient	-20°C to +70°C



ThermaScope burning and cooling zone camera configuration



View of ThermaScope HD camera and housing

WinCem MultiView and ThermaScope MultiView

MITIGATE UNPLANNED DOWNTIME AND IMPROVE PLANT PERFORMANCE

Thermoteknix software delivers real-time imaging, alarms, recording and analysis tools for Centurion TK50 kiln shell scanners and ThermaScope HDT and HDC kiln and cooler cameras.

At your fingertips, all the information and data you need to make informed decisions from the control room. Our solutions also deliver networked display onto remote PCs outside the control room so that live and historical data can be viewed by key engineers and plant personnel.

Powerful software solutions

MultiView software accepts either one, two or three simultaneous high definition real time imaging data streams into one screen.



Main image - Thermoteknix software is a powerful tool for plant operators

 **Thermoteknix**

Superior Software Solutions

Unparalleled real-time imaging, recording and event analysis for kilns and coolers



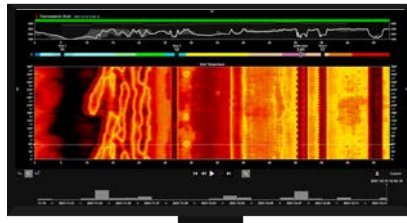
Centurion TK50



ThermaScope HDT

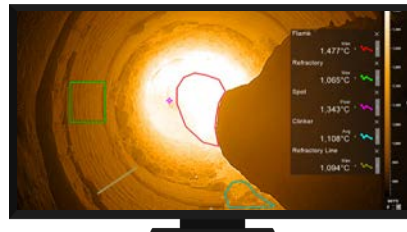


ThermaScope HDC



WinCem MultiView

High definition display, coating/brick thickness displays, dynamic multi-region trending, heat loss/thermodynamics package and many more features for alarm monitoring, data logging and process interfacing.



ThermaScope MultiView

Users can select spot, line or area tools on the kiln shell, and trend temperatures from historical or live data, to evaluate different kiln conditions and understand how to improve your kiln performance.

View ThermaScope HD kiln and cooler video on same monitor (picture in picture).

WinCem MultiView and ThermaScope MultiView software delivers an interactive timeline where the operator can playback and see simultaneous live data at the touch of a button.

Review kiln events at light up, fuel changes or as part of root cause analysis. Identify ring formation or coating loss early and reduce the risk of untimely shut-downs.

The ThermaScope MultiView interface delivers optimum temperature and visual clarity for immediate understanding of kiln or cooler conditions from the operator desktop or display panel.

Thermoteknix is committed to updating and adding functionality to its software. Upgrades are available to customers with existing Centurion and ThermaScope systems.

Key features

- Record, replay and analyse data and footage from ThermaScope HD cameras or Centurion TK50 kiln scanners
- View ThermaScope HD kiln and cooler video on the same monitor (picture in picture)
- Fully interactive timeline
- Powerful user event logging function
- Full OPC interfacing available
- Networked and remote access solutions available

MultiView Enterprise

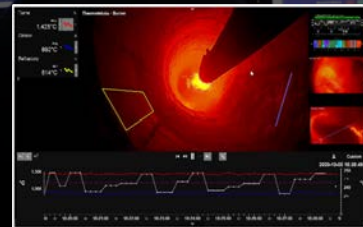
ULTIMATE CONTROL OF KILN AND COOLER ENVIRONMENTS

Thermoteknix MultiView Enterprise from Thermoteknix is the ultimate control room solution enabling operators to view and operate multiple temperature sensors from inside and outside the rotary kiln and cooler.

A simple intuitive user interface, along with a dynamic timeline, makes this system efficient and invaluable in optimising kiln performance, efficiency and safety.

FLEXIBLE CONFIGURATION

Operators can choose to view all data on one screen or multiple screens, to best suit the control room layout and preference.



MultiView Enterprise

One software platform to manage multiple sensors from outside and inside the rotary kiln and cooler



Data from Centurion T50 (centre) and ThermoScope HD cameras

Thermoteknix MultiView Enterprise delivers powerful software for control room operators and process engineers to view, collate and compare data from all sensors along the kiln and cooler process.

Operators can manage and analyse information from Centurion kiln shell scanners and ThermoScope HD cameras on one screen or multiple screens, depending on user or plant preference.

Record and play back events without disrupting new data being received and saved. Switch views between sensors, watch live feeds or rewind and view historical data.

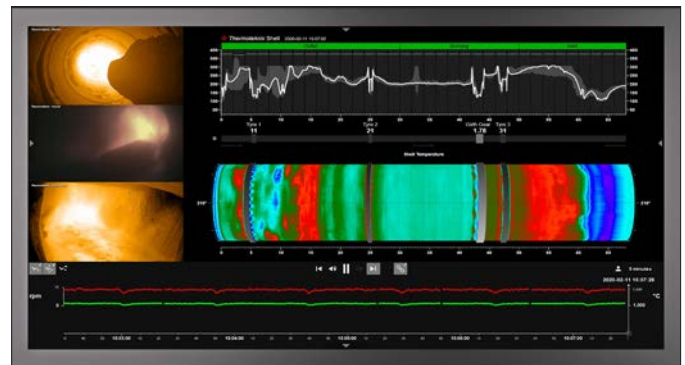
Key Features

- **Reduce refractory damage:** Early identification of developing refractory, fuel or feed problems.
- **Active alarm controls:** Eliminate sudden refractory failures. Prevent and limiting secondary damage to the kiln shell from light up to shut down.
- **Lower training burden:** Common controls used for all sensors and intuitive user interface.
- **Trend spotting:** Integrated historical data from all sensors on a single timeline make real time and historical review immediately available.
- **Real-time alarming:** Audible alerts, on-screen messages and emails on alarm sent to selected recipients.

Simple and intuitive controls enable accurate rewind, pause and replay on demand.

Temperature versus time trend graphs deliver new and historical user-defined measurement, dynamically displayed along a continuous timeline. Display computed brick and coating thickness, refractory production value and predict critical time to failure or optimum replacement. See what happened yesterday, compare it to what's happening today and be prepared for tomorrow!

Unique data overlay and monitoring of the kiln and cooler line improve operational efficiency and combustion control. And as plants explore alternative fuel streams to support 'going green' initiatives, MultiView Enterprise is key to mitigating the challenges associated in regulating processes.



A single timeline with visuals from multiple sensors

MultiView Enterprise

Unlimited tools and display options to track and monitor refractory and coating changes



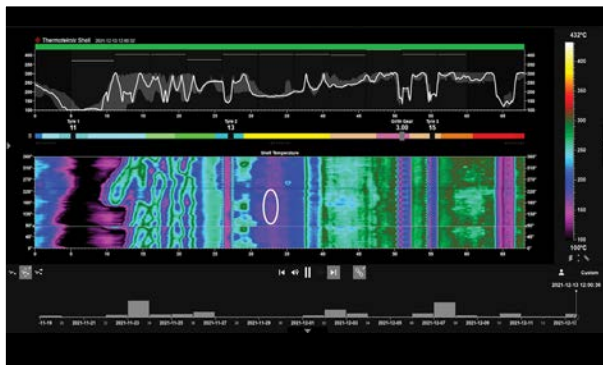
Unique Display Options

MultiView Enterprise supports multiple viewing layouts to accommodate all control room and operator preferences, including; Picture-in-Picture, Side-by-Side and Multi-Window allowing up to four sensors to be displayed on a single monitor or across multiple displays.



Unlimited Measurement Tools

Monitor and trend real time temperatures continuously with an unlimited number of measurement tools including spots, lines, polygons and elliptical areas of interest.



Multiple Event Logging

User events, such as kiln stops, process or fuel changes, fan controls, or electrical outages can be logged on the timeline together with operator on-screen notes for permanent reference.

MultiView Enterprise provides operators with multiple tools in a single view to better monitor plant processes

MultiView Enterprise

View events of yesterday, compare to events of today and be prepared for events of tomorrow

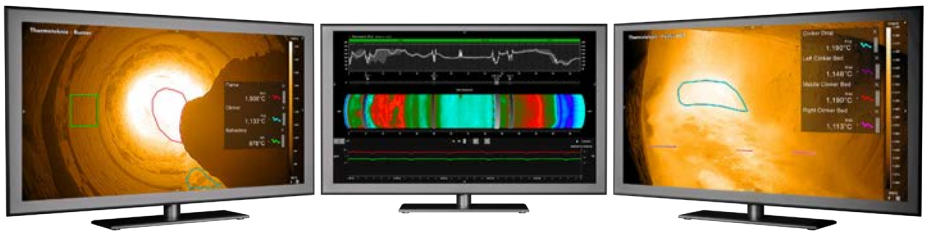
For the first time, plant operators have seamless access to live and historical data from all sensors on one timeline, in addition to real numbers, live video images and data trends.

Viewing an event all the way through the process from scanner through the burning zone to the cooler gives engineers a

unique insight to understand issues and identify causes in more detail.

Whether displaying each sensor on a separate monitor, or combining sensors on a single monitor, the timeline links sensors for simultaneous pause, rewind and playback.

Simultaneously monitor refractory and coating changes on a single timeline



Early identification of developing refractory, fuel or feed problems enable preventative control measures to reduce refractory damage

Active alarm controls limit sudden refractory failures preventing and limiting secondary damage to the kiln shell from light-up to shut down.

Centurion TK50 scans every brick in every ring of the fastest, modern kilns, to ensure refractory integrity from light

Coating and refractory performance are continually checked throughout the campaign.



Identifying bed height, cooler hot spots, red river or other faults and tracking events has never been so easy.



ThermaScope HDT



Centurion TK50



ThermaScope HDC

40 YEARS IN THE MAKING

Founded in 1982, Thermoteknix is renowned for consistent technical breakthroughs in infrared (IR) thermal imaging and thermal measurement based hardware, systems and software application products.

Thermoteknix celebrates 40 years of manufacturing outstanding quality products and providing unsurpassed service that delivers premium value to our customers across a diverse range of sectors and industries.

Milestones have included successfully delivering unique thermal imaging solutions for Formula 1 and IndyCar racing, the USA Aegis Anti-Ballistic Missile Defense Programme, and National Geographic ground-breaking wildlife documentaries for global television audiences.

Thermoteknix cameras installed on NASA's successful historic 2009 Lunar Crater Remote Observation and Sensing

Satellite (LCROSS) mission, beamed its images back to earth to confirm the presence of water on the Moon. A major milestone in mankind's exploration of the Universe.

Thermoteknix remains committed to developing innovative, cutting-edge solutions that our customers trust and rely on in some of the harshest environments found on earth and beyond.



IndyCar and Formula 1 racing



National Geographic documentaries



Nasa LCROSS mission

Product excellence across industries

Driven by customer satisfaction, technical innovation, quality and service



Industrial Imaging

Imaging systems for high temperature process environments

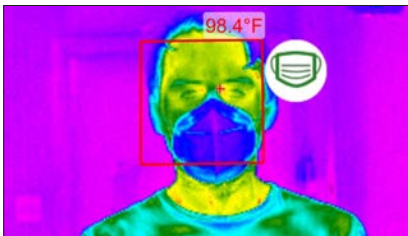
Thermoteknix temperature measurement, monitoring and control systems can be seen in more than 1,000 sites around the world. Thermoteknix continues to launch ground-breaking solutions and steer industry innovation.



Defence & Security

Compact, high quality products for military, security and policing

Thermoteknix thermal imaging and night vision solutions from Thermoteknix empower militaries, security and policing teams with intelligent sensing and threat detection technologies that enhance critical decision making, communication and situation awareness.



Temperature Screening

High-speed accurate skin temperature measurement

Thermoteknix temperature screening systems have helped hospitals, schools, airports, banks, food manufacturing plants and vital businesses around the world to safely maintain operations during the COVID-19 pandemic



OEM Camera Integration

Thermal imaging cores for third party integration

Thermoteknix infrared camera modules are incorporated into many types of vehicle, person worn devices, unmanned aerial vehicles (UAV), as well as targeting systems and automated ground systems.



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Performance range figures (where stated) are for guidance only.

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Thermoteknix pursue a program of continuous product development and enhancement, all specifications in this document are subject to change and not all features are present on all models. All systems are designed and manufactured in the UK.