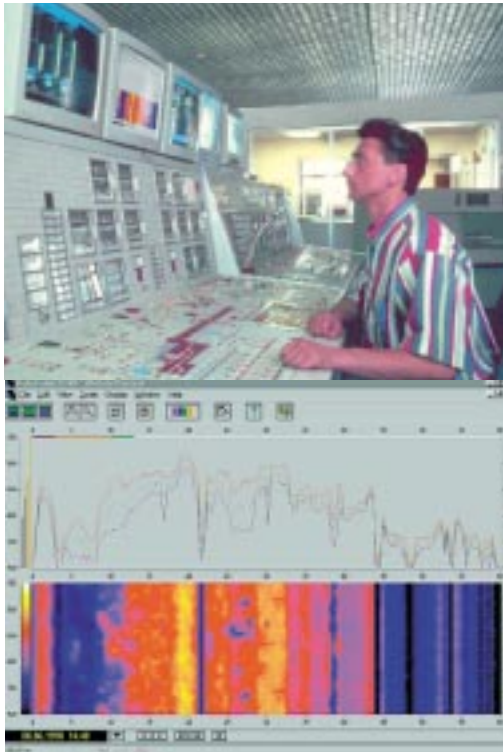


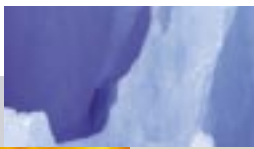
CS100



Process Imaging System for Kiln Shell Temperature Monitoring



The CS100 System provides real time kiln shell temperature analysis.



Kiln Shell Scanning System

Specifically designed for kiln monitoring, the CS100 System continuously monitors and automatically detects hot spots on kiln shells to prevent costly damage and unscheduled downtime.

Benefits

- Detect hotspots due to loss of refractory
- Detect abnormal operating conditions such as faulty flame position and shape
- Optimize and manage kiln maintenance
- Extend operational life of kiln and refractory
- Local service and support through a worldwide network

Features

- Map entire kiln surface
- "One brick" resolution hot spot detection
- Fail-Safe "hot spot" alarm outputs (PC independent)
- Refractory Management software
- Modular design allows for easy, quick installation and service
- Database history file archive
- Password Security Protection
- International language interface

Options

- Live Ring Migration
- Fan Control
- Fiber-optic Installation Kit

CS 100 provides best value performance in kiln refractory management and maintenance

Accurate kiln shell temperatures are necessary for optimizing a kiln's operating economy and maximizing campaign duration. Measuring kiln shell surface temperature is crucial for detecting and evaluating:

- Hot spot development from loss of refractory
- Refractory performance & insulation
- Fan cooling effects
- Flame position & shape
- Live Ring Migration



Rugged & Reliable for Continuous Kiln Shell Monitoring

The MP50 is the most widely used industrial infrared line scanner worldwide. Employing state-of-the-art optics, advanced microprocessor electronics, and a high-reliability motor, the model MP50HR combines signal processing, data storage and data communications into one integral unit.

To insure reliable operation in harsh kiln environments, the MP50HR line scanner is packaged in a rugged cast aluminum housing enclosed within a robust, stainless steel Environmental Enclosure with provision for air-purge and water-cooling.

The Environmental Enclosure includes an adjustable mounting bracket for aiming the scanner along the kiln axis, a mounting rail permitting fast scanner installation, quick-disconnect fittings for air purge and water cooling, and an easily replaced viewing window.

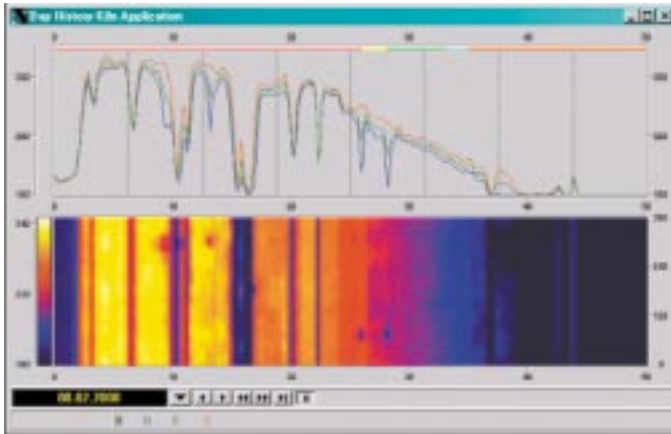


Line scanner in protective Environmental Enclosure is mounted on top of a tower.

DataTemp® CS100 Software

User-friendly DataTemp CS100 Windows® software provides easy configuration and startup

The CS100 System and DataTemp CS100 software runs on a standard PC running Windows NT4 from a standard serial COM port. A Windows software interface makes CS100 easy to configure and use, and requires little operator training.



Temperature profiles

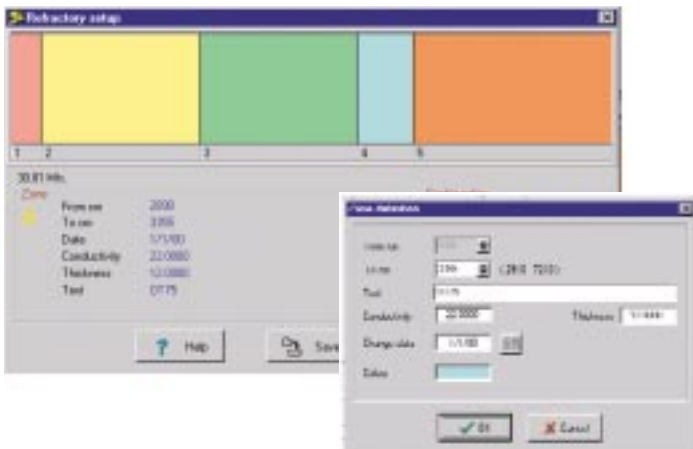
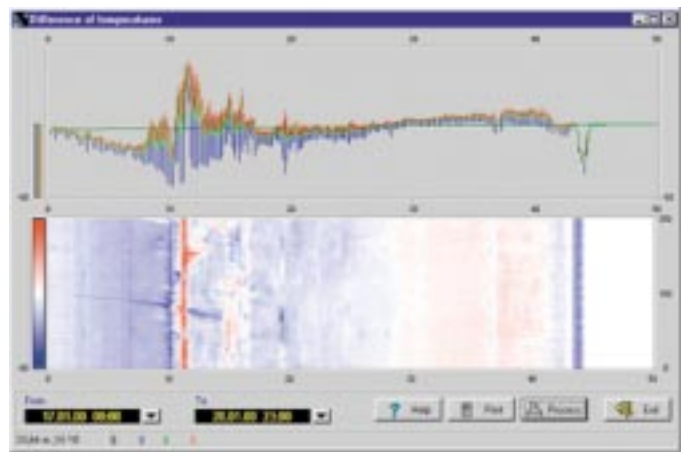
Maximum/minimum and average kiln temperature profiles are displayed with eight software configurable alarm zones.

Kiln shell thermal image

CS100 provides a color thermal image of the entire kiln shell surface for each kiln revolution. A zoom capability allows detailed examination of small temperature features. Temperature range, color palettes, and sector alarms are easily configured with user-friendly CS100 software.

Temperature trend analysis

Detect and analyze temperature trends by comparing historical and current thermal images side-by-side allowing their difference to be displayed. Image data storage frequency can be predefined. The CS100 database allows for easy paging through historical files to facilitate trend analysis.



Refractory management

Color-coded refractory sections are compared with up to twenty zones along the kiln surface to determine refractory durability, and effectiveness. Each zone includes a description of the refractory material physical data and date of last maintenance.

CS100 System Options

Live Ring Migration (LRM)

LRM software measures the difference in rotation time between the kiln shell and each tire (up to six). Time differences are converted to a radial slip distance for each tire. LRM includes trend and historical files, High/Low alarms and alarm logging. This option includes an additional CD and requires additional rotation sensors for each tire, an LRM Remote Control Unit, and an LRM Connection Unit.

Fan Control

To insure kiln shell lining durability and avoid kiln deformation during normal operation, adding cooling may be required. Fan Control software (included with DataTemp CS100)

allows up to 16 fans to be controlled in an ON/OFF manner. This option requires an additional Digital Output Module (16 channels), and RS485/RS232 Converter, and a 24VDC power supply.

Fiber-optic Installation Kit

The fiber-optic installation kit insures reliable RS485 communications in locations known to have severe electrical storms causing power spikes/surges/outages, or ground potential problems. The only difference in the fiber-optic installation compared to "all copper" is that two fiber-optic cables and two fiber-optic multiplexers replace copper wires. Otherwise, the fiber-optic installation is electrically the same.

CS100 System

Process Imager	CS100 Process Imager (2 for CS102) (includes all required cables and connectors)
Environmental	Rugged Stainless Steel enclosure (2 for CS102)
CS100 Interface	CS100 Interface Box (supports CS101/CS102) CS100 Connection Box
Position Indicator	High-temperature kiln rotation sensor
Software	DataTemp CS100
Documentation	CS100 Operators Manual; MP50 and DTMP Software manuals on CD-ROM
Startup Service	On-site startup commissioning/training

Specifications

Temperature range	100 to 650°C (212 to 1202°F)
Temperature resolution	1°C (2°F)
Accuracy	± 2 % of reading
Spot detection (50% of energy)	300 : 1 (3.3 mradians or 0.19 degrees)
Temperature samples/scan	1024 (compressed into 256 points for display)
Scan rate	36Hz
Scan motor	MTBF: 40,000 hours
Ambient operating temp.	-40 to 45°C (-40 to 113°F) (no direct sunlight)
Position indicator temp.	-25 to 230°C (-13 to 446°F)
Sector alarms	8 software, 3 hardware (PC independent)
Kiln rotation rate	0.5—5 rpm (standard); 0.067 rpm (special)
LRM option	Supports up to 6 tires
Fan Control option	Supports up to 16 independent fans

CS100 System

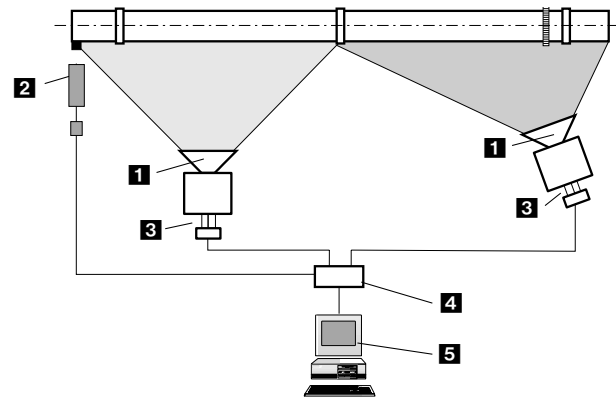
RAYTCS101	CS100 Measurement System
RAYTCS102	Dual-Scanner CS100 Measurement System
XXXTCS100FIK1	110V AC Fiber-optic installation kit
XXXTCS100FIK2	220V AC Fiber-optic installation kit
XXXTCSFC	Fan Control Hardware kit
XXXTCSLRM	Live Ring Migration (LRM) System

Easy Installation & Maintenance

The MP50 line scanner **1** is installed to view the desired portion of the kiln. The Position Indicator **2** is a high-temperature inductive sensor that synchronizes thermal imaging with kiln rotation. The Connection Box **3** provides for local cable/wire termination. The Interface Box **4** connects the scanner to the PC **5** and contains RS485/RS232 data conversion and the scanner(s) power supply. The scanner communicates to a PC via RS485 for distances up to 1000 meters.

CS100 System components are easy to install and are field-replaceable. When installing two line scanners, they may each mount at different angles so that each has a clear view of the kiln shell. CS100 software combines the data from each scanner providing a single thermal image for display and analysis.

The CS100 System installs in a standard PC (local operating system) without need to add expansion cards or open the computer.



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for up-to-the-minute features

Raytek Automation Products: Noncontact Temperature Measurement for Industrial ApplicationsSM

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