

LAND



HotSPOTIR
Detect Hot Spots Quickly and Accurately

Prevent Conveyor Belt Damage

An **AMETEK**® Company





Rapid detection of conveyor hot spots

THE PROCESS

Conveyors are used extensively for transporting many kinds of bulk materials. Conveyor systems have proven to be reliable and cost effective, therefore being used in multiple areas.

THE PROBLEM

Many materials that are transported on conveyors contain hot inclusions. These hot objects can damage belts or cause belt or material fires. Traditional temperature measurement methods are unable to detect small hot spots on a moving conveyor.



THE CHALLENGE

A method of detecting these developing hot spots and sending an alarm to the process operators would prevent costly shutdowns. Traditional methods such as visual inspection and single point pyrometers do not have the speed nor the resolution to meet the application demands.

Disadvantages of Traditional Methods

- ☐ Visual Inspection
 - Subjective
 - Detection cannot be observed remotely
 - Does not provide continuous measurement
- ☐ Single spot measurements
 - Poor resolution
 - Slow response
 - May require multiple systems or mechanical structures

Problem Materials on Conveyors:

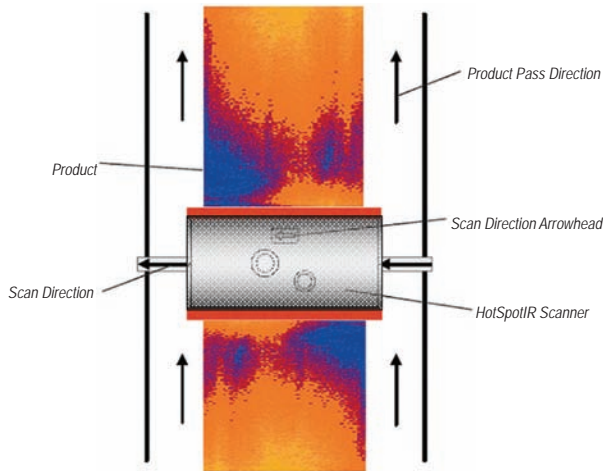
- | | |
|-----------------------------------|--|
| <input type="radio"/> Coke | <input type="radio"/> Wood Chips |
| <input type="radio"/> Coal | <input type="radio"/> Grains |
| <input type="radio"/> DRI Pellets | <input type="radio"/> Other Bulk Materials |

Main components of the HotSpotIR: high-speed scanner and processor



THE SOLUTION

The HotSpotIR High-speed Scanning System is used to detect these emerging hot spots. The HotSpotIR samples 100,000 high resolution temperature points every second. The hottest point measured is updated every 0.01 seconds. The system covers a measuring range of 68 °F to 482 °F (20 °C to 250 °C).



The HotSpotIR is easy to install, a quick release mounting bracket allows quick fitting and maintenance. The mounting bracket is keyed so that the exact same alignment is achieved when returning it to the mounting. A single, quick release cable connects the sensor to the alarm processor.

The HotSpotIR processor provides high speed alarm contacts that are sent to the control room for operator attention.

Key Features

- Simple reliable alarm
- Measurement from 68 °F to 482 °F (70 °C to 250 °C)
- Fast scan speed of 100 Hz
- Quick measurement response - less than 10ms
- Compact size - ideally suited to restricted access locations
- Laser alignment to allow for easy set-up
- Durable sapphire window
- Wide scan angle of 80°
- Single cable connection between scanner head and processor
- Simple, reliable alarm processing without the need for software
- Options of Hot Zone locating
- Options of thermal imaging and data collection

Designed for industrial environments

The HotSpotIR head is extremely compact and has a minimized depth and base 'footprint' for installation in restricted spaces. A durable sapphire window provides reliable protection for the system optics.

The HotSpotIR is small enough to be positioned under a belt just after the material has been transferred. It will measure the entire belt surface and alarm if any areas are above a safe temperature. Alarms can be used to trigger water sprays or suppression systems.

Alternatively, the HotSpotIR can be positioned above the conveyor to monitor the material to determine hot spots. This can prevent hot items from being loaded, transported and causing fires later.

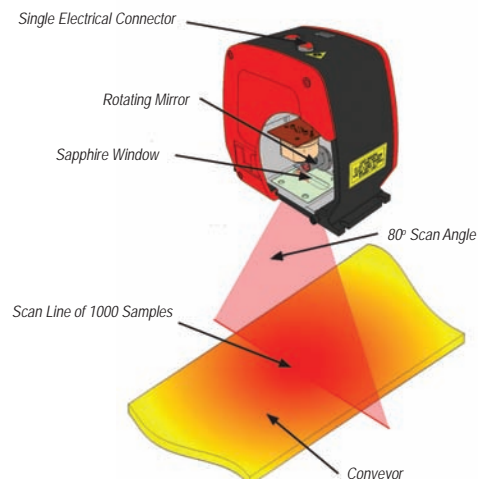
Direct control system integration

Temperature measurements generated by the high-speed scanner are sent to a dedicated processor. The processor produces an alarm output set by the user to their desired value.

Key Benefits

- Decrease costly belt repairs
- Reduce down-time
- Continuous monitoring alarm condition indication
- Prevent dangerous situations

How The Scanner Works



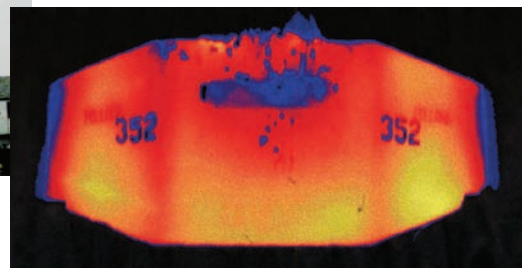
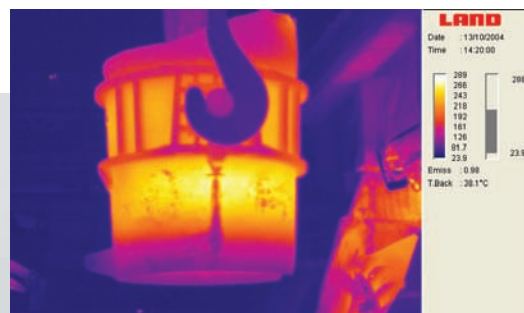
Specifications

HotSpotIR Scanning Head

Model	LSP 60	LSP 61	LSP 62
Measurement range:	20 to 250 °C/68 to 482 °F	50 to 400 °C/122 to 752 °F	100 to 600 °C/212 to 1112 °F
Speed of response:	≤ 10µs	≤ 5 µs	≤ 5 µs
Scan angle:	80° (software adjustable to 40°)		
Repeatability:	± 0.5 °C/ 0.9 °F		
Emissivity:	0.20 to 1.00		
Focus/Field of View:	Fixed Focus Target Distance: >1200mm/47.2 in., Field of View 100:1		
Ambient Temperature:	5 to 60 °C/41 to 140 °F (specified) 5 to 70 °C/41 to 158 °F (operating)		
Dimensions (w x h x d):	206 x 209 x 100 mm / 8.1 x 8.2 x 3.9 inches		
Alignment:	Class 2, max. output 1.0 mW at 635 nm, IEC60825-1:2001		
Environmental Sealing:	IP65		
EMC:	EN 61320:1999 Class A (immunity and emission); IEC 1010 (safety)		

Other HotSpotIR Applications

- Storage of Materials
 - Coal
 - Chemicals
 - Powders
- Transport of Materials
 - Railcars
- Non-Woven Materials
 - Process Control
- Refractory
 - Boilers
 - Process Heaters
 - Rotary Kilns
 - Torpedo Cars



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Non-Contact Temperature Measurement Solutions

An AMETEK Company



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Applies to the USA