FurnaceSpection

- Rugged IP66, air or water cooled, protective enclosure
- Accurate 640 x 480 focal-plane array thermal imaging camera with sensitivity of 0.06 °C
- Ethernet interface for long distance reliable communication
- Boroscope optics filtered at 0.85 μm wavelength to view through combustion gas and flames
- Auto retraction for SD systems
- Class 1 Div 2 compliant
- Advanced software with simultaneous acquisition from multiple cameras, advanced analysis tools, support for OPC, Modbus (Serial and Ethernet), analog and digital IOs, web service, and archiving
- Complete system integration with installation support

This thermal imaging system is designed and developed for continuous temperature measurement inside high temperature furnaces in refining, metals, and glass production. FurnaceSpection’s proven technology provides critical insight for failure prevention and asset management.

The FurnaceSpection™ imager provides users with a real-time tool for quickly and accurately identifying process abnormalities before they develop into problems that can lead to unplanned outages. This radiometrically calibrated imager accurately measures the temperature of product, refractory, and heat transfer surfaces inside natural gas fired furnaces. In addition to both standard (SD) and mobile (MB) versions, we can customize a solution to meet your application needs.

For petrochemical reformers, this is a critical tool to ensure tubes perform optimally for their longest possible life cycle. At a cost of several thousands of dollars per tube and a re-tubing costs in the millions, a significant amount of capital can be lost if tube failure goes unnoticed or tubes are retired too early or too late.

In metal annealing applications, FurnaceSpection cameras have allowed users to reduce cycle times while at the same time improving quality and process repeatability.

FurnaceSpection helps operators monitor and control process temperature uniformity through streaming images and powerful software for analysis and historical trending. Digital and Analog outputs are available to broadcast images of the plant’s local network.

LumaSense has been developing industrial grade thermal imaging solutions for more than 20 years, and have deployed custom systems around the globe to monitor critical processes and assets in power generation, refineries, steel, paper, and glass plants. Our products are supported by experienced field service and application engineering team.
Technical Data

IR Camera
- Wavelength: 0.85 μm
- Resolution: 640 x 480
- Detector Type: Silicon based
- Acquisition Speed: 60 fps (60 Hz)
- Protective Housing: IP66
- Measurement Range: 600 to 1800°C or 800 to 2200°C (WC)
- Ambient Environment: Up to 140 °F (60 °C)
- Camera Weight: 23 lbs

Lens
- Construction: Stainless steel with air cooling with lens
  air purge and water cooling (SD)
- Field of View: 55° H x 41° V or 72° H x 54° V
- Focus: Manual
- Protection: Sapphire window tip with air purge shield
- Diameter: Air cooled: 1.65” (42 mm)
  Water cooled: 1.65” (42 mm)

Facility Connection Requirements
- Power: 110-240 VAC, two 15 Amp Lines to support six cameras
- Electrical Cabinets: All cabinets/panels are NEMA 4 / IP65
- Air Supply: 15 cfm at 100 psi at the camera
  20 cfm at 20 psi for the lens

Automatic Retraction Device and Mounting (for SD units)
- Controls: Automated retraction if air or power is disrupted
- Air Filters: Two stage filter system
- Air Regulators: Included with filter
- Mounting: Weld or bolt on mounting plates
- Weld-on thru Hole: 2.5” (64 mm)
- Furnace Pressure: Negative, Balanced or Positive Pressure

Networking
- Number of Cameras: Up to 20 with a single controller (at 1 fps)
- Camera Connection: 1000 Base T Ethernet
- Field Switch Cabinet: NEMA 4 / IP65 enclosure with Ethernet Switch
- Connection to Control Room: Multi-mode or single mode fiber

FurnaceSpection Control Room Server/Software
- Key Features: Simultaneous acquisition from multiple systems, automated image analysis, support for multiple regions of interest, auto archiving, OPC support, analog/digital IO support, and web server
- Server: Single server controls up to 20 cameras (at 1 fps)

Part Numbers

FurnaceSpection SD

<table>
<thead>
<tr>
<th>Cooling Type</th>
<th>Air Cooled</th>
<th>Water Cooled</th>
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<tbody>
<tr>
<td>Temperature Range</td>
<td>600 to 1800°C</td>
<td>600 to 1800°C</td>
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<tr>
<td>Lens Length</td>
<td>18” (46 cm)</td>
<td>24” (61 cm)</td>
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<td>Standard 55° FOV</td>
<td>912-0009-01</td>
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<td>Wide 75° FOV</td>
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<td>012-0071-03</td>
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FurnaceSpection MB (Air Cooled Only)
- 012-0021-01 | FurnaceSpection-MB system with 18” (46 cm) straight lens, standard 50° FOV, 600 to 1800°C
- 012-0027-01 | FurnaceSpection-MB system with 24” (61 cm) straight lens, standard 50° FOV, 600 to 1800°C
- 912-0055-01 | Accessory Kit (Air Filtration, Hoses & Laptop)

Custom solutions are also available, please contact us for more information.

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FurnaceSpection-Datasheet-EN - Rev. 03/12/19