Coal Pile Fire Monitoring System
Land Instruments International

• Over 60 years experience
• Specialists in…
  – Infrared Temperature Measurement
  – Combustion Efficiency & Environmental Emissions Monitoring

• Joined AMETEK Group June 2006
  – Global manufacturer of electronic instruments and electromechanical devices
  – Annualized sales of more than $2.1 billion.
  – Approximately 10,000 employees
  – Over 70 manufacturing facilities and 70 sales and service operations worldwide
  – Consists of two operating groups:
    • Electronic Instruments - manufacturer of advanced monitoring, testing, calibrating, and
display instruments for the process, aerospace, power and industrial markets.
    • Electromechanical – a differentiated supplier of electrical interconnects, technical
motors and systems, and electric motors for floor care and other specialty applications.
Land Application Solutions

• Solutions for a diverse range of applications:
  – Steel
  – Glass
  – Power Generation
  – Aluminium
  – Mineral Processing
  – Utility and Aircraft Gas Turbines
  – Electronics
  – a wide range of other industries.
Example Application Solutions

Ladle Refractory Monitoring
- Increased site safety
  - Reduce break-outs
- Reduced Maintenance
  - Increase lining life
  - Increased cost savings
- Monitor process conditions
- Reliable alarm independent of operator

Torpedo Car Monitoring
- Increased Plant Safety
  - Avoidance of a breakout and its consequences
- Easy to Use Fully Automated Solution
- Historical Database
  - Analysis of long-term trends
Why Monitor Coal Piles?

• Storing coal in large piles has the inherent risk of spontaneous combustion

• The current drive to find alternative sources of coal means that more volatile types are now being used more frequently

• An early warning system is the most reliable solution for fire prevention
Why Monitor Coal Piles?

• Improves operator safety
  • Monitoring the coal surface for hot spots and alerting the operator to take action before the situation becomes critical

• Reduces risk of damage to plant
  • Early hotspot detection alerts the operator to a problem before it becomes a hazard. Simple alarms initiate preventative action before the fire takes hold
Existing Monitoring Techniques

Visual Inspection
- Requires operator
  - Takes them away from their main function
  - Compromises operator safety
  - Heavily dependant on operator experience
- Difficult to determine early stages of hotspots
- No automatic data logging or archiving facility

Portable Thermal Imaging
- Requires operator
  - Takes them away from their main function
  - Compromises operator safety
  - Requires operator interpretation of results
- Manual archiving required
The Solution

- SIMPLE CROSS PLATFORM COMMUNICATION
- WITH PLANT CONTROL SYSTEMS
  - TCP/IP
  - OPC
  - ALARM OUTPUTS
  - ANALOGUE SIGNALS

- PC LOCATION: MULTI-CAMERA DISPLAY & CONTROL
- FULLY AUTOMATIC OPERATION
- ETHERNET (MAX 100M) OR FIBRE OPTIC (MAX 2KM)
  - WIRELESS OPTIONAL

- FTI-800-E
  - RANGE: 20 TO 120°C
  - -4 TO 250°F
  - FoV: 16° X 12° or 32° X 24°
  - DETECTOR: 320 X 240

- AMBIENT TEMP: 10 TO 45°C
- 50 TO 110°F
- upto 85°C/ 185°F with water cooling
- SEALING: IP65
- NEMA 4
The Solution

• Fixed Thermal Imager
  – Temperature Range: -20 to 120 °C / -4 to 250 °F
  – Accuracy: ± 1.5 °C / ± 3 °F
  – Lens Field of View: 16° x 12° or 32° x 24°

• Imager Housing and Pan & Tilt
  – Operation up to 85 °C / 185 °F
  – Built in automatic heaters

• Analysis Software (LIPS)
  – On-line thermal analysis system
  – Automatic storage of images and thermal video in the event of an alarm with automated file management functions
  – Extensive image processing
The Solution

High resolution thermal imaging camera mounted on scanning mechanism can view complete coal Pile. Alarm outputs can be configured to indicate detection of “hot spot”
Flexible System Architecture

- Single Camera
- Or Multiple Cameras

Uses Standard Ethernet Infrastructure

- Single User
- Or Multiple User
Operator View

Simple Identification of Potential Problem Areas
Features & Benefits

• Early hotspot detection using a thermal imager in all environments
• Fully-automated continuous monitoring of remote storage areas
• Simple alarm to initiate preventative action
  – Variable levels for warnings and alarm
  – Alert operators to critical conditions
• Clear display and alarm outputs when hot spots are detected
  – Used to trigger preventative action by plant personnel
  – Success of user intervention can be immediately assessed
• Designed specifically for industrial environments
  – delivering the ultimate in reliability and measurement availability
• Data Exchange
  – All processed data can be requested by a process control system for easy integration
    • TCP/IP protocol (cross platform)
    • Optional OPC server
    • Analogue signals
    • Alarm outputs
Designed For Your Plant

• Every plant has different needs and legal requirements from a monitoring system:
  – Each system is designed and implemented to meet these requirements
    • Experienced team of application engineers
    • Regional team of commissioning / service engineers for on-site support

  – Contact LAND today to discuss how the Coal Pile Fire Monitoring System could be configured to your requirements.

...intelligent imaging
Additional Systems

The coal pile monitoring system is part of LAND’s range of Coal Fire Systems, designed to monitor for the conditions in which serious fire and explosions can occur.

- Mill Fire Detector: CO monitor for early detection and advance warning of mill fires
- HotSpot IR: scanning temperature measurement for detection of hotspots on a conveyor
Land Expertise

• Over 60 Years supply to industrial environments
  – Key Customers Include
    • Mittal Steel
    • Duke Power
    • CORUS
    • Masinloc Power, Philippines
    • EON
    • Many Others

• Provider of industrial measurement solutions
  – Not just cameras
  – Integrated into your plant control system
  – Designed to Survive

...intelligent imaging
Questions???

It's QUESTION TIME!!