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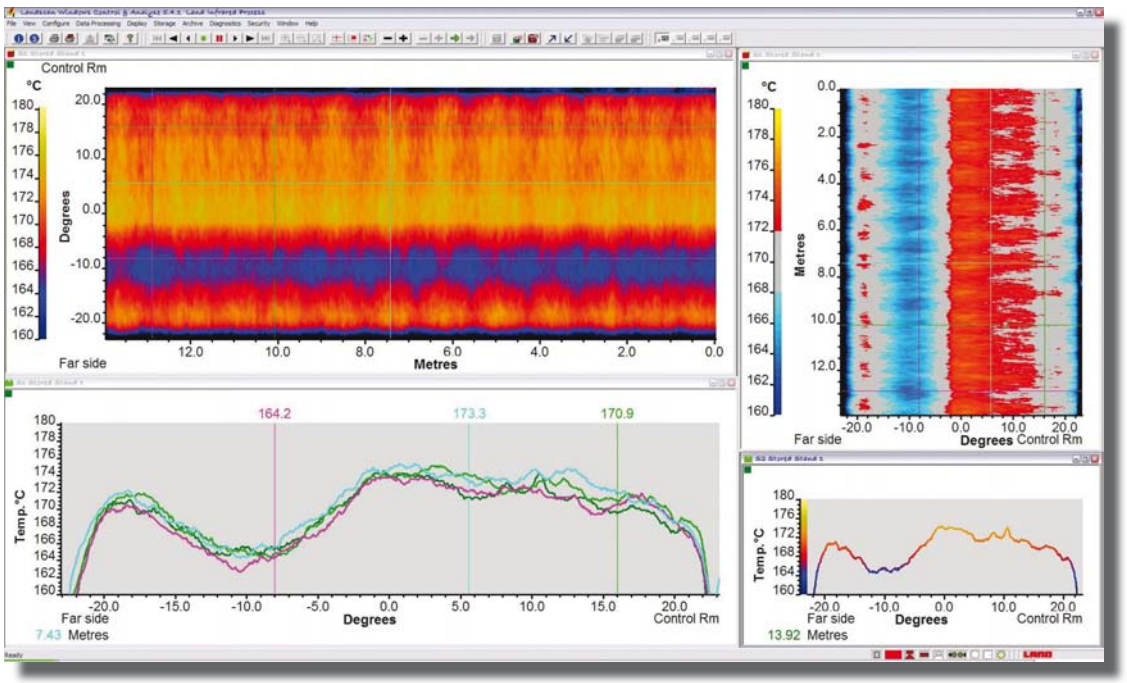


LANDSCAN

Process thermal images and temperature profiles

for continuous process monitoring and quality control

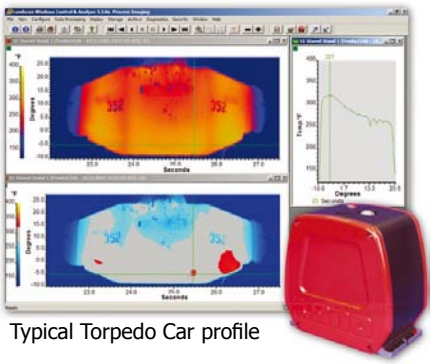
LSP Series Infrared Linescanners

An AMETEK® Company

LANDSCAN

Process thermal images and temperature profiles

for continuous process monitoring and quality control



Typical Torpedo Car profile

The compact LSP infrared linescanners provide affordable, highly accurate process imaging and temperature measurement in a wide range of applications from 20 to 1400 °C / 68 to 2552 °F.

There is a choice of two LANDSCAN Control processors to provide an interface between the LANDSCAN Head and either a customer process control system or a LAND Data Server running the LANDSCAN Windows Control & Analyse software

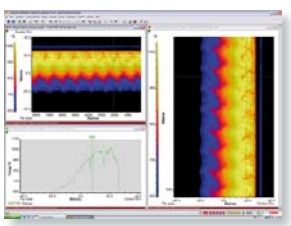
Key Benefits

- Improved product quality
- Closer control of heating and manufacturing processes
- Straightforward plant integration
- Detection of product defects and heating problems - full surface edge-to-edge measurement
- Reduced set-up time and scrap rates
- Automated quality control monitoring

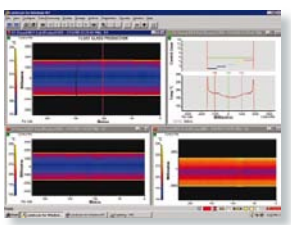
Key Features

- Temperature measurement from 20 to 1400 °C / 68 to 2552 °F
- Choice of 5 scanner heads for specific applications
- Adjustable scan speed to suit process requirements - 10 up to 100 Hz
- Fast measurement response - less than 10 µs in most applications
- Compact size - ideally suited to restricted access locations

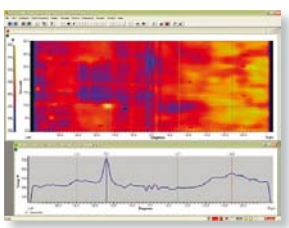
- Laser alignment to ensure accurate profiling
- Durable sapphire window on all low temperature models
- Wide scan angle up to 80°
- Variable focus on the LSP10, LSP20 and LSP21 models
- Single cable connection between scanner head and processor
- Choice of signal processing units



Typical Steel Concast profile



Typical Glass Floatline profile



Typical Cement Kiln profile

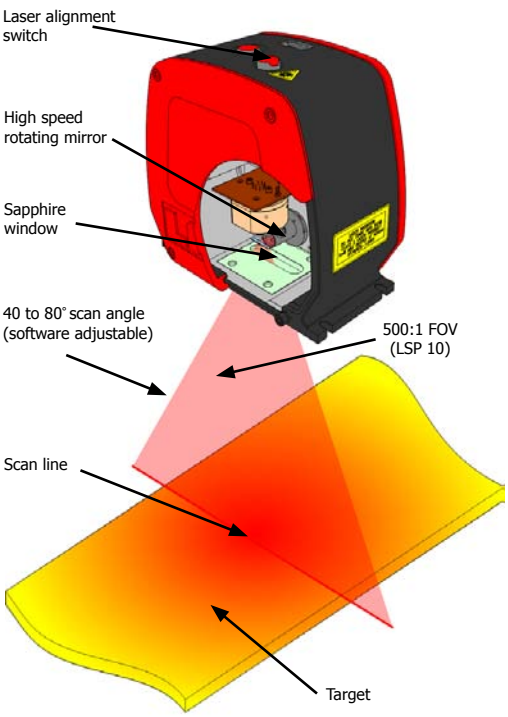
Typical LSP installation

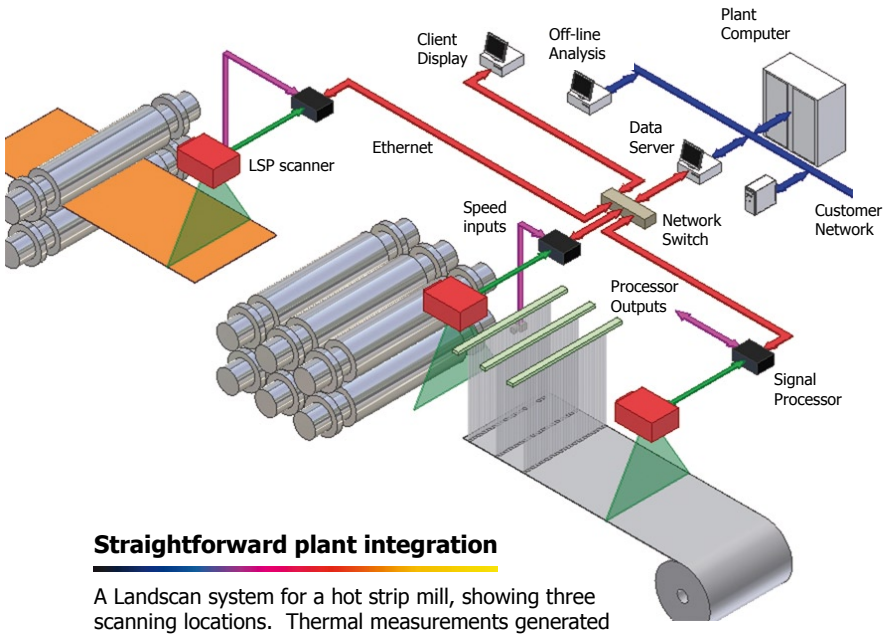
Industry	Application	Typical Temperature Measurement Range	Recommended Scanner
Cement	Rotary Kilns	20 to 250 °C / 68 to 482 °F 50 to 400 °C / 122 to 752 °F 100 to 600 °C / 212 to 1112 °F	LSP 60 LSP 61 LSP 62
Conveyors	Cement, Asphalt, Coke	20 to 250 °C / 68 to 482 °F 50 to 400 °C / 122 to 752 °F 100 to 600 °C / 212 to 1112 °F	LSP 60 LSP 61 LSP 62
Glass	Float, Automotive, Holloware, Forming, Toughening/tempering, Annealing	150 to 750 °C / 302 to 1382 °F 500 to 1100 °C / 932 to 2012 °F	LSP5FL & LSP50 LSP 52
Iron & Steel	Hot Strip and Plate Mills, Beam, Billet and Sections, Rod and Wire, Continuous casting, Annealing, Galvanising and Galvanneal, R&D	600 to 1400 °C / 1112 to 2552 °F 200 to 850 °C / 392 to 1562 °F 300 to 1000 °C / 572 to 1832 °F	LSP 10 LSP 20 LSP 21
Iron & Steel	Torpedo cars, Ladle safety	50 to 400 °C / 122 to 752 °F 100 to 600 °C / 212 to 1112 °F	LSP 61 LSP 62
Plastics	PVC, Polycarbonates, Polypropylene, Polyethylene, PET, Cellulose acetate and Polystyrene, Thermoforming	50 to 350 °C / 122 to 662 °F	LSP 71
Others	Paper, Non-wovens, Cold Rolling, Coating Processes, Building Products	20 to 600 °C / 68 to 1112 °F	LSP 60, 61 & 62

Designed for industrial environments

The LSP series head is extremely compact and has a minimized depth and base 'footprint' for installation in restricted spaces.
A built-in laser targeting system aids alignment on to the target. A scan speed of 100 Hz can tackle even the fastest moving products; enabling high resolution, temperature profile information to be produced.

LSP Scanner - Key components





Straightforward plant integration

A Landscan system for a hot strip mill, showing three scanning locations. Thermal measurements generated by the scanner are sent to a dedicated processor.
The processor can produce a number of control outputs in accordance with a customer-configured model for real-time process control applications. All thermal measurement data is sent to a data server via an Ethernet link.
Connection to the customer network enables the plant computer to control data storage and the data server to archive older data. Off-line analysis terminals enable access to stored data for quality assurance.

Signal Processing and Analysis Software

The scanner head connects directly to a processor (choice of 2), via a single cable. Two control processors are available providing both serial and Ethernet outputs of temperature data. These processors can interface directly to a local process control system or a LAND data server running Landscan Windows Control and Analyse (WCA) software. The Landscan Windows Control and Analyse (WCA) software provides detailed temperature measurement information, analysis tools and product storage for further investigation and quality control purposes.

Specifications

All LSP Models

Parameter

Scan angle:	80° (software adjustable to 40°)
Scan speed:	Adjustable, 10 to 100 Hz (in 10 Hz steps)
System accuracy:	±2 °C / 4 °F all models (±3 °C / 5.4 °F LSP 52 and LSP 62 only)
Repeatability:	±0.5 °C/ 0.9 °F
Emissivity:	0.20 to 1.00
Focus/Field of View:	**LSP 5FL, 50, 52, 60, 61, 62 & 71** Fixed focus Target distance: <1200 mm/47.2 in, target size 12 mm/0.5 in Target distance: >1200 mm/47.2 in, Field of View 100:1 **LSP 10, 20 & 21** Variable focus from 1 m / 39 in to infinity; Field of View: LSP 10 and 21, 500:1 (Minimum spot size 2 mm / 0.08 in at 1 m / 39 in) Field of View: LSP 20, 300:1 (Minimum spot size 3.3 mm / 0.13 in at 1 m / 39 in) Note: Field of View figures are static to 95 % radiance
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)

LSP 10, LSP 20 and LSP 21

Parameter	LSP10	LSP 20	LSP 21
Measurement range:	**600 to 1400 °C/1112 to 2552 °F**	**200 to 850 °C/392 to 1562 °F**	**300 to 1000 °C/572 to 1832 °F**
Spectral response:	1 µm	2.4 µm	1.9 µm
Speed of response:	≤1 µs	≤1 µs	≤1 µs
Drift with ambient temp:	≤1° indicated / 10° ambient	≤1° indicated / 10° ambient	≤1° indicated / 10° ambient

LSP 5FL, LSP 50 and LSP 52 - for Glass applications

Parameter	LSP 5FL	LSP 50	LSP 52
Measurement range:	**150 to 750 °C/302 to 1382 °F**	**150 to 750 °C/302 to 1382 °F**	**500 to 1100 °C/932 to 2012 °F**
Spectral response:	5 µm	5 µm	5 µm
Speed of response:	<7 µs	<7 µs	<7 µs
Drift with ambient temp:	≤2° indicated / 10° ambient	≤2° indicated / 10° ambient	≤3° indicated / 10° ambient

LSP 60, LSP 61 and LSP 62

Parameter	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**
Spectral response:	3 to 5 µm	3 to 5 µm	3 to 4.2 µm
Speed of response:	≤10 µs	≤5 µs	≤5 µs
Drift with ambient temp:	≤1° indicated / 10° ambient	≤1° indicated / 10° ambient	≤2° indicated / 10° ambient

LSP 71 - for Plastics applications

Type	LSP 71
Measurement range:	**50 to 350 °C/122 to 662 °F**
Spectral response:	3.4 µm
Speed of response:	≤10 µs
Drift with ambient temp:	≤1° indicated / 10° ambient

Temperature Profiles in specific applications

Further, more detailed information exists for the following specific applications:

- Ladle Safety
- Continuous Strip Processing
- Hot Mill
- Float Glass
- Automotive Glass
- Plastics Thermo-forming

LAND
Infrared Temperature Measurement

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