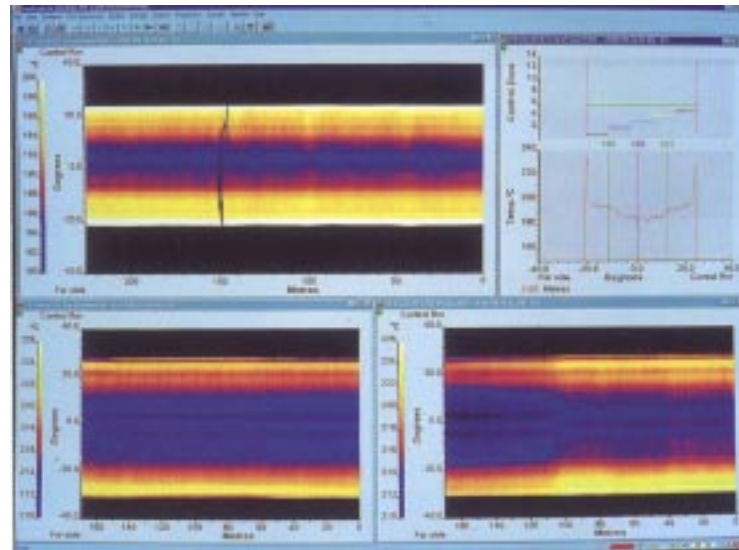


Typical Landscan NT screens - showing a combination of profile, 3-D and thermal maps, and data table.



**PRODUCT ASSURANCE**

When you specify **LAND** products you are assured of receiving a completely pretested, calibrated working product. Each instrument is carefully checked to ensure complete compliance with specification and is fully guaranteed. **LAND** was the first manufacturer of infrared instruments to successfully obtain ISO 9001 Quality Management System Approval for both design and manufacture of non contact infrared temperature measuring equipment.

The quality management system of Land Instruments International Ltd. is approved to BS EN ISO 9001. Stockholding of the Minolta/Land Cyclops range of portable thermometers is covered by BS EN ISO 9002. Calibration Certificates are available from our UKAS Accredited Calibration Laboratory No. 0034.

**CE** LANDSCAN complies with current European directives relating to electromagnetic compatibility and safety (EMC directive 89/336/EEC; Low voltage directive 73/23/EEC).

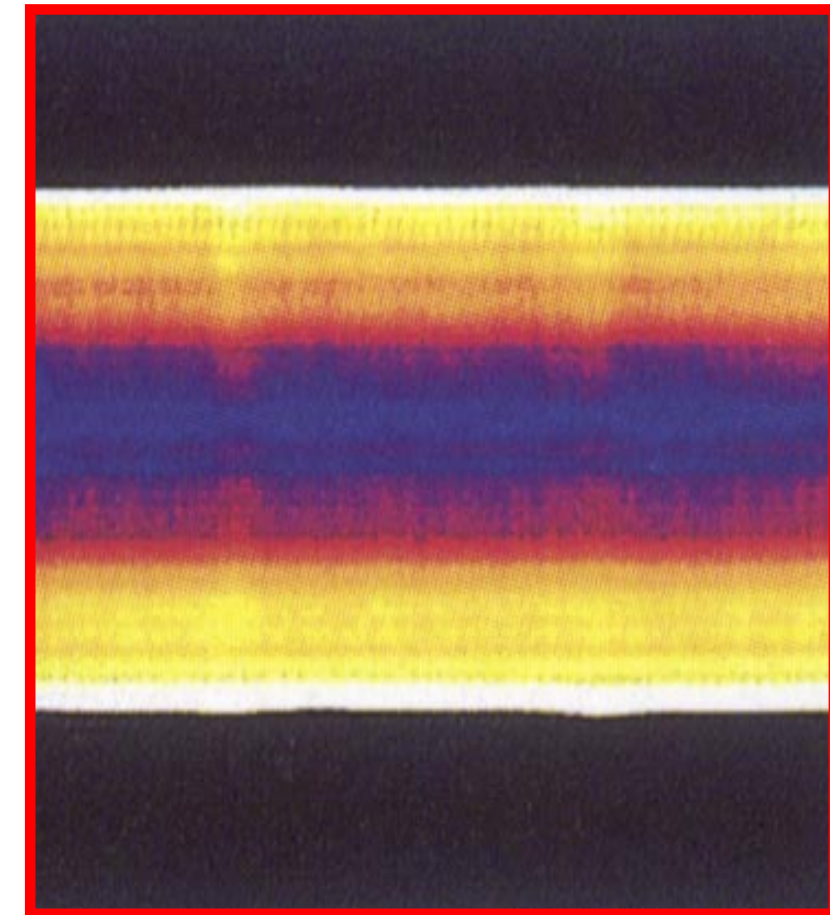


**APPLICATIONS**  
**LANDSCAN** is increasingly being used to solve temperature measurement problems in a wide variety of industries and applications, some of which are listed below:

- **Hot strip and hot plate mill**  
Rougher, edge heaters, coil box, finishing stands, gauging cold correction, coiler
- **Beam, billet and sections mill**  
Rail head, beam roughing and finishing, gauging cold correction
- **Rod/wire mill**  
Pre-coiler, cooling conveyer
- **Continuous, thin strip and aluminium casting**  
Spray chamber, rougher and induction heater exit, crop shear
- **Reheat furnace**  
Furnace exit
- **Welding**  
Turbine shaft and induction pipe welding
- **Galvanizing**  
Snout, furnace, top roll
- **Galvanneal**  
Entry dip, top roll
- **Continuous annealing lines**  
Cooling and heating
- **Glass**  
Float, forming and toughening
- **Paper**  
Web and roll
- **Research and development**

For further information or free advice on your specific temperature measurement problems, contact your nearest **LAND** office.

# LAND



# LANDSCAN

## INFRARED LINESCANNING IN THE FLOAT GLASS INDUSTRY



# LAND

instruments international

Infrared Temperature Measurement

Land Instruments International • Dronfield S18 1DJ • England • Tel: (01246) 417691 • Fax: (01246) 410585  
 Email: [infrared.sales@landinst.com](mailto:infrared.sales@landinst.com) • Internet: [www.landinst.com](http://www.landinst.com)  
 Land Instruments International • 10 Friends Lane • Newtown, PA 18940-1804 • U.S.A. • Tel: (215) 504-8000  
 Fax: (215) 504-0879 • Email: [irsales@landinstruments.net](mailto:irsales@landinstruments.net) • Internet: [www.landinstruments.net](http://www.landinstruments.net)

**France**  
 Land Instruments Sarl  
 Tel: (1) 34 62 05 45 • Fax: (1) 30 56 51 12  
 Email: [commercial@landinst.fr](mailto:commercial@landinst.fr)

**Japan**  
 Land KK  
 Tel: 06 6330 5153 • Fax: 06 6330 5338  
 Email: [ikeland@silver.ocn.ne.jp](mailto:ikeland@silver.ocn.ne.jp)

**Germany**  
 Land Instruments GmbH  
 Tel: 02171/7673-0 • Fax: 02171/7673-9  
 Email: [infrarot@landinst.de](mailto:infrarot@landinst.de)

**Spain**  
 Land Instruments International  
 Tel: 91 630 0791 • Fax: 91 630 2918  
 Email: [land-infrared@landinst.es](mailto:land-infrared@landinst.es)

**Italy**  
 Land Instruments Srl  
 Tel: 02/99040423 • Fax: 02/99040418  
 Email: [infrared@landinst.it](mailto:infrared@landinst.it)

**Mexico**  
 Land Instruments International  
 Tel: 52 55 9171 1466 • Fax: 52 55 9171 1477  
 Email: [ventas@landinstruments.net](mailto:ventas@landinstruments.net)



**Float glass plants around the world are already realising the benefits of installing a multi-sensor infrared linescanning system using Landscan for Windows NT®.**

# LANDSCAN

## INFRARED LINESCANNING SYSTEMS

### FLOAT GLASS - ANNEALING LEHR

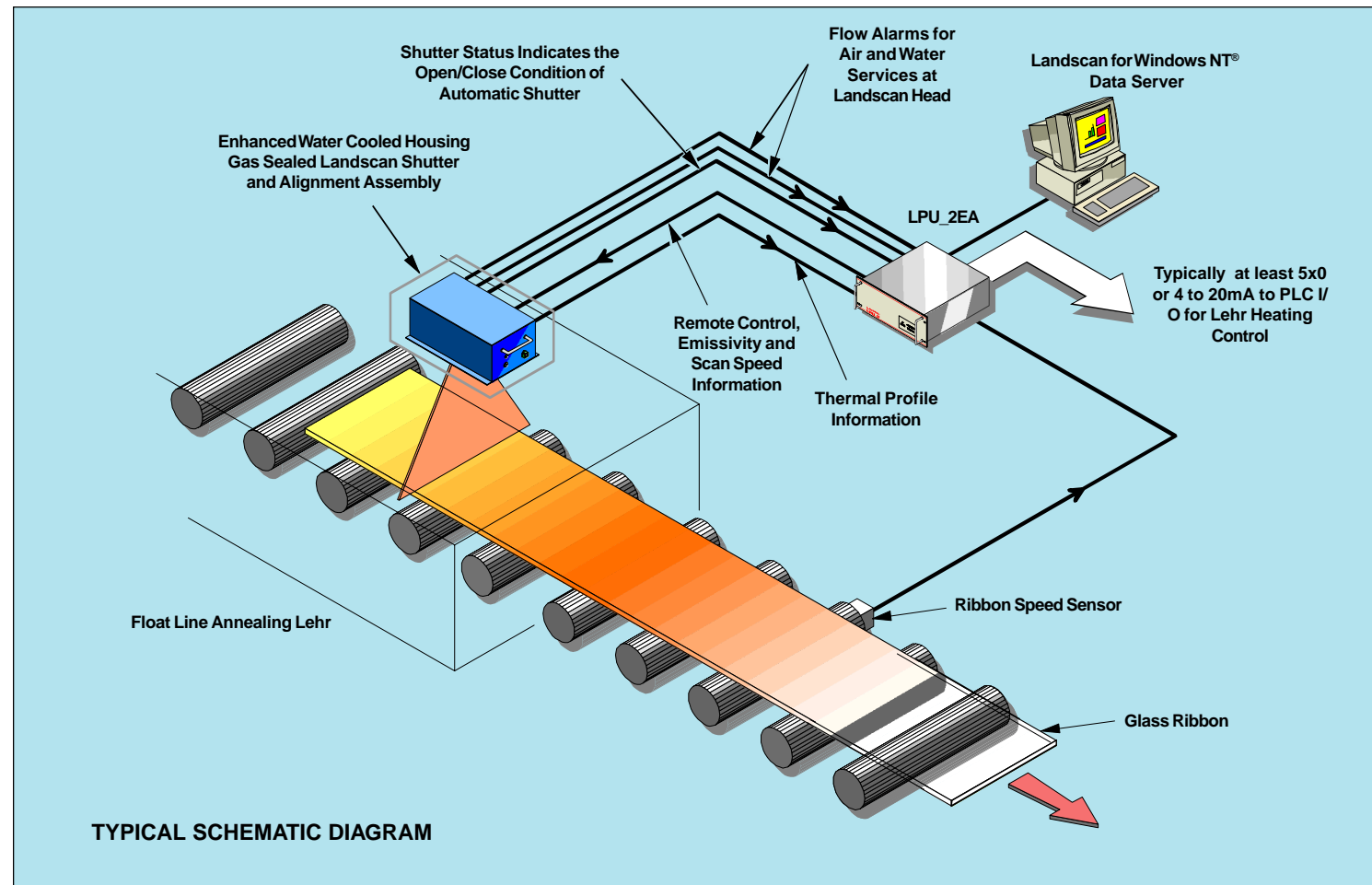
#### BENEFITS AND FEATURES

- Significant yield enhancements from production facilities characterised by thick ribbon or by regular changes in ribbon profile (thickness, width or both) and where the Landscan system is integrated with the lehr heating control model. Typically, capital expenditure on the system can be seen to pay back well within the first year of operation.
- Thermally and dimensionally accurate displays; including thermal profile, width and centre-line sidewalk give process operators information of unprecedented quality, resolution and accuracy.
- Database - customer information, trending and QA.
- Process development - edges - separate zone model.
- Reliable ribbon break detection via zone model with operator alert by pop-up dialog messages.

Typical installations comprise three Landscan heads - one at the exit of each zone. The system can accept further inputs from sensor heads at the Lehr Gap and RET locations as required.

Land has developed dedicated mountings to allow reliable installation of Landscan sensor heads in the hostile environment on top of the lehr.

A sighting shroud/standoff is individually designed and fabricated in partnership with the customer for each plant installation.



#### LEHR MOUNTING ASSEMBLY

The Landscan Lehr Mounting/Sighting Assembly is mounted on top of a sighting shroud/stand off and comprises the following:

- Rugged housing with water cooled walls and an extended water cooled and air purged baseplate.
- A combined gas sealed sighting and automatic shutter assembly.
- Services panel.

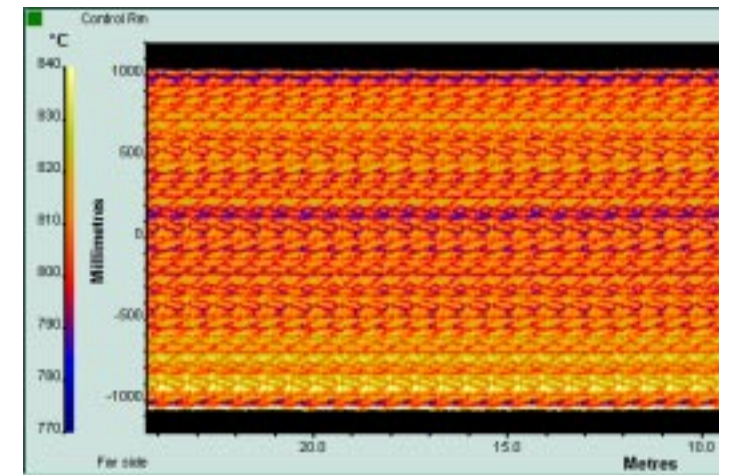
Hot lehr gases are kept away from the sensor head's sapphire sighting window by a powerful air/gas purge. In the event of an air supply failure, a differential pressure transducer triggers a solenoid valve on the Services Panel to vent, closing the shutter and protecting the sensor head.



Each sensor head is capable of producing a well resolved, accurate temperature profile across the ribbon many times per second.

These signals are routed to an LPU\_2 Ethernet (LPU\_2E) signal processor which digitises each scan line, and converts it to TCP/IP Ethernet message format for transmission to the data server. Each LPU\_2E can also provide a zone model for process control comprising up to 14 zones; each individually adjustable for size, location across the ribbon, statistical calculation applied and whether the zone is to track any ribbon lateral wander or remain fixed to the process.

Typical lehrs have 5 or 7 heating sectors across the width of the lehr and normal practice is to configure that number of LPU zones, fixed to the process, with dimensions consistent with the area of influence of each heating sector.



Typical linescan on patterned glass

Each zone has a dedicated 0 or 4 to 20mA analog output and which can be connected to the lehr control system I/O.

Alternatively, if the control software runs on a Windows NT platform, a direct live link between the Landscan Data Server software and the control software using ActiveX components can be utilised.

Full digital scan lines, zone calculations, alarm status, edge positions and centre-line wander can then be transferred to the control software at the full scan rate.

Specifying a LPU\_2E with the optional Auxiliary Input Pack allows connection to a ribbon speed sensor.

This information allows accurate dynamic calibration of the length axis of product data files and thermal map data displays.

Additionally, it enables the best use of the Lehr Cooling Rate Calculation function (refer to Landscan Application Bulletin LSABII for full details).

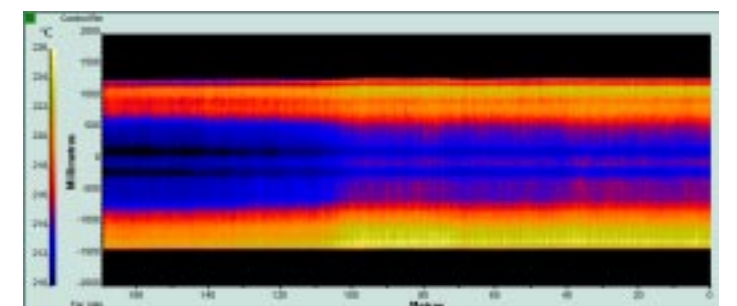


Image above shows a thermal map of a typical float glass ribbon.

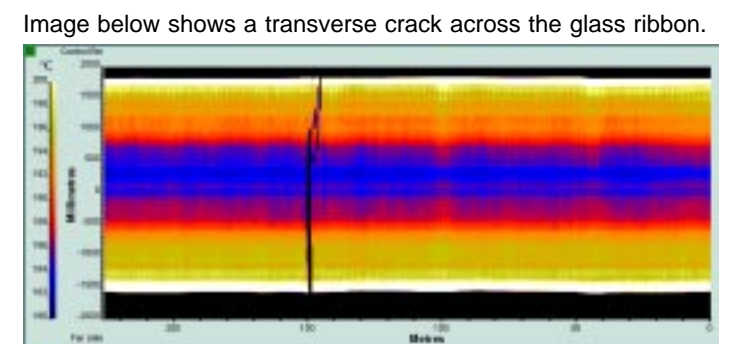


Image below shows a transverse crack across the glass ribbon.