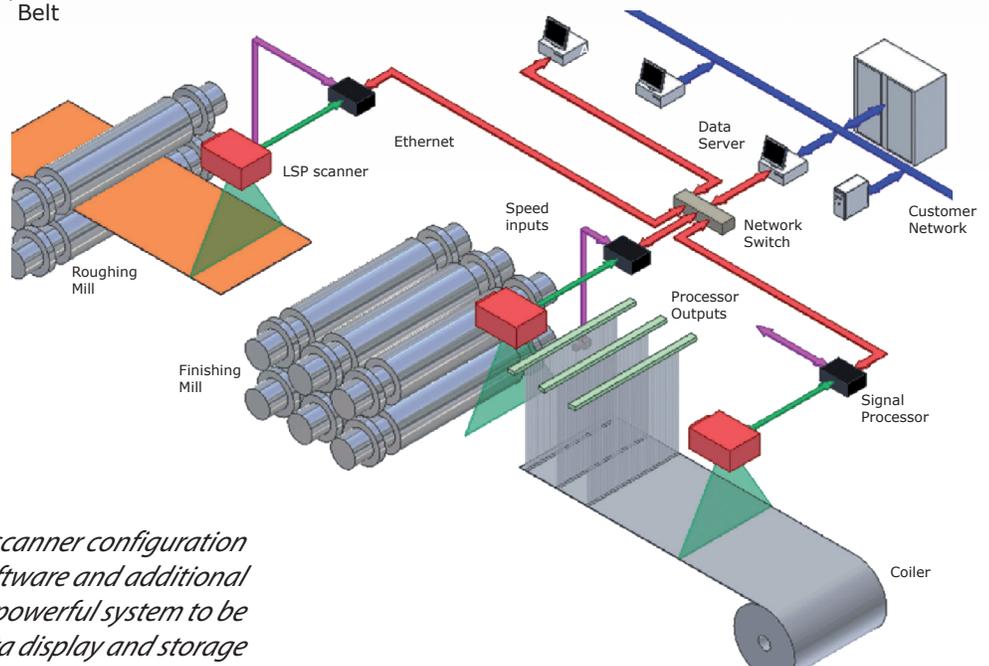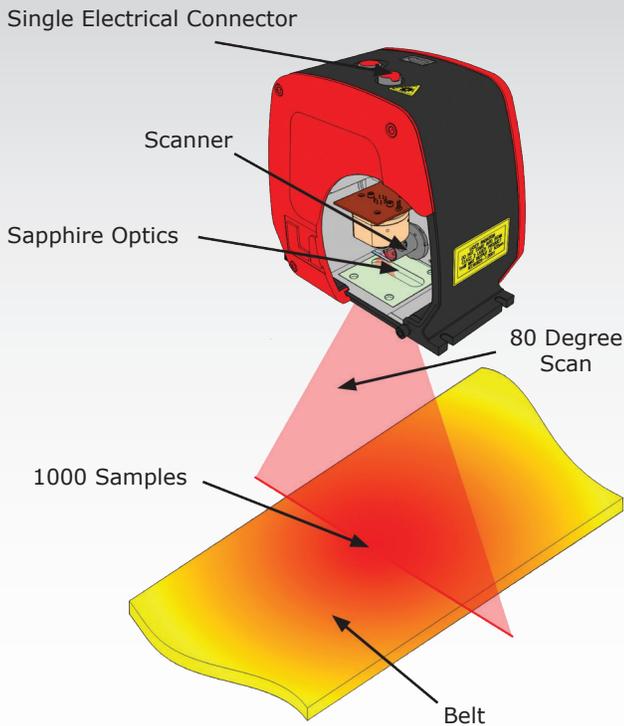# Software Feature Guide
Landscan WCA

Feature Guide

Landscan process imagers provide high resolution thermal images of industrial products. By knowing the exact temperature distribution over the whole product surface you are able to modify your heating or cooling controls to improve product quality. Landscan's precision optics and temperature sensing abilities are complimented by sophisticated and highly capable Landscan WCA software. WCA has the ability to display live and stored hermal images in various different configurations. Files can be easily stored in a database and subsequently archived.

Live and stored images can be viewed in multiple plant locations. Outputs for logging and process control are available in many formats.

WCA software can process and display data from up to 8 Landscan systems at the same time. WCA senses if the PC has multiple CPU's and will allocate different processing tasks to each CPU if that's the case. This is ideal for processes that require multiple scanning sensors as all of them can be simultaneously monitored on the same PC.

Incoming Landscan sensor data is transmitted over an industry standard Ethernet network. Systems are very easy to construct using standard network switches, bridges and cabling. Landscan data that is stored on the network can be freely accessed, replayed and analyzed by other users with network access to those drives and folders.


Single Electrical Connector

Scanner

Sapphire Optics

80 Degree Scan

1000 Samples

Belt

Ethernet

LSP scanner

Roughing Mill

Finishing Mill

Speed inputs

Data Server

Network Switch

Customer Network

Processor Outputs

Signal Processor

Coiler

Typical 3 scanner configuration
The use of Landscan software and additional equipment enables a powerful system to be built for a data display and storage
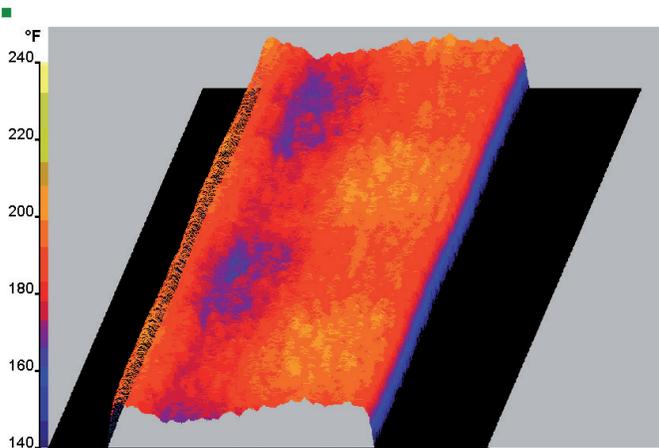
Displays

A selection of 23 different types of displays are available including temperature profiles, thermal maps, 3D temperature displays, product width and many more.
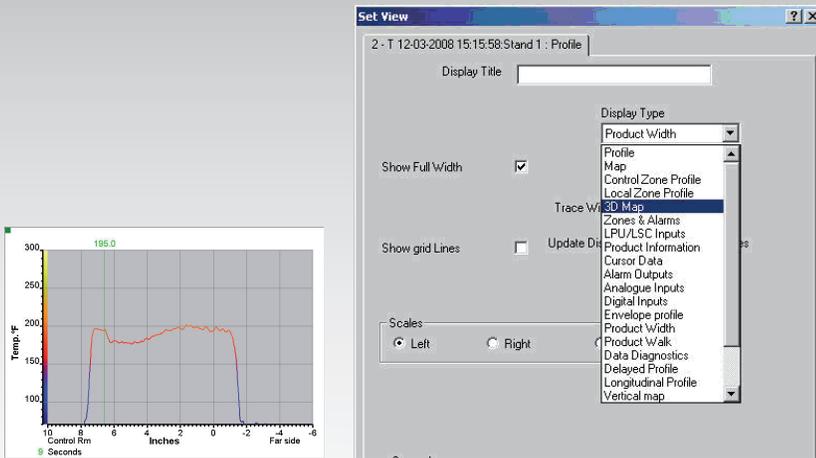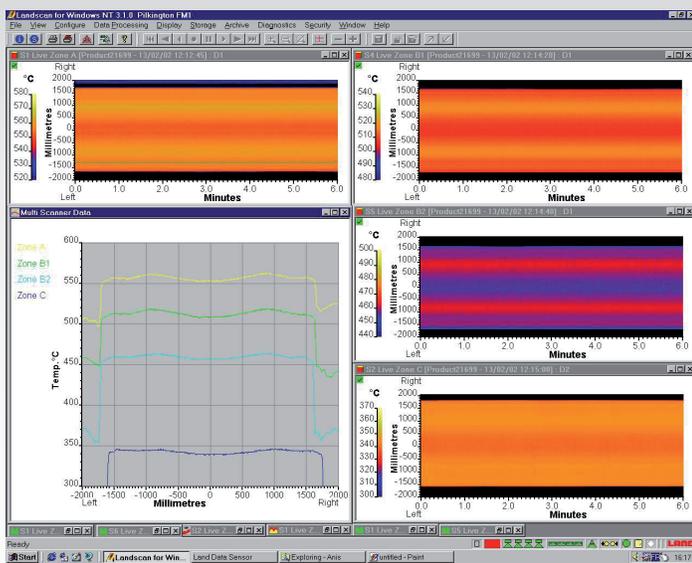

- A Temperature profile across the product
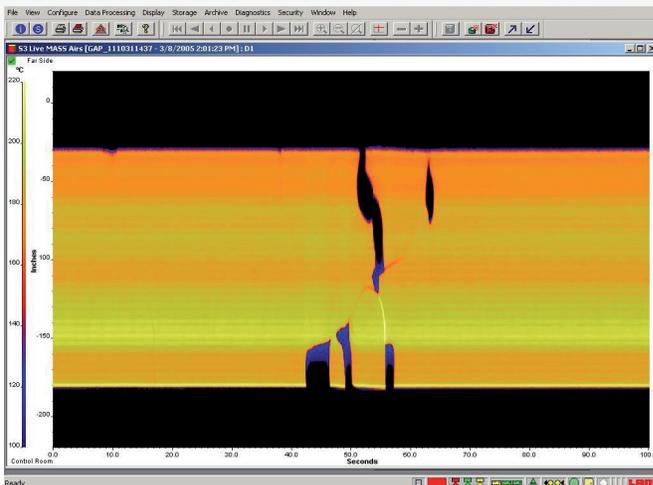
- A scrolling thermal map (image) of a passing product. This can scroll right to left, left to right, bottom to top or top to bottom. In this way the screens product movement is easy to relate to
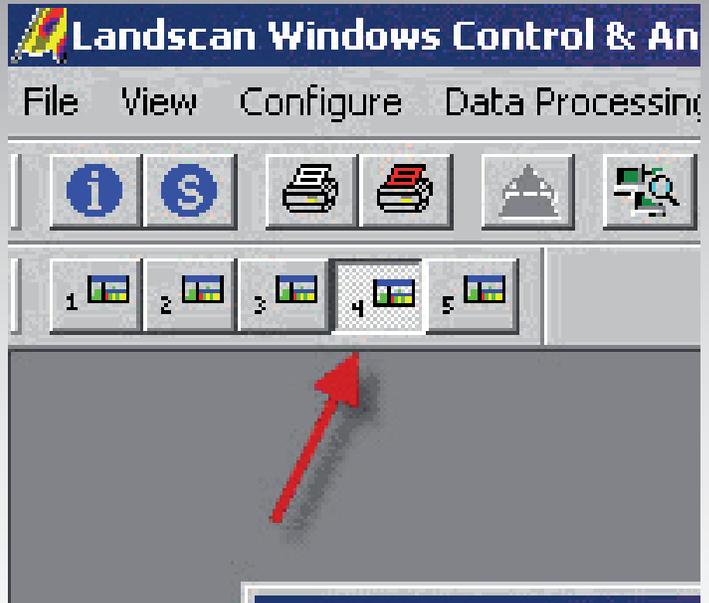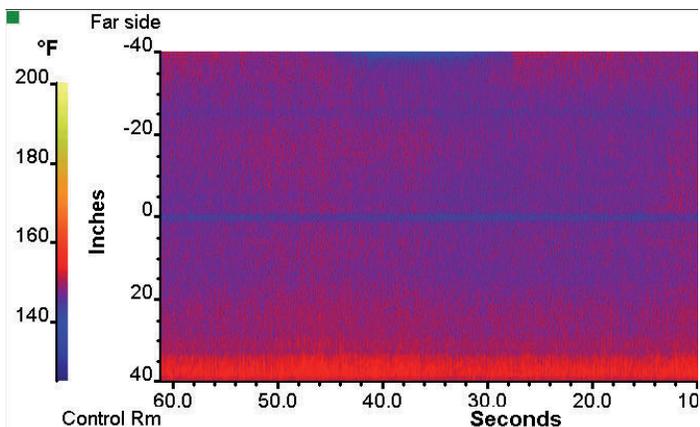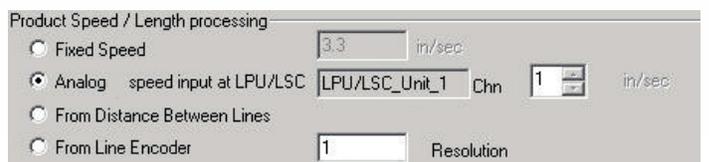

- A 3-D Thermal Map

Displays

Next is a WCA screen displaying four thermal maps from four Landscan sensors along with a multiple profile display from those same four sensors. This enables plant operators to compare displays from all sensors simultaneously without having to jump from one screen to another. ▼

▲ You can configure your displays then save them to a display screen icon – up to 5 of these icons are available to quickly change display views without having to enter a menu.
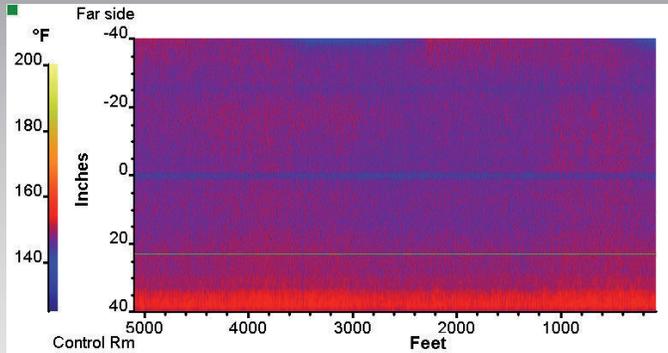
This is a typical thermal image display – notice the X-axis is scaled in seconds – This axis can be configured any length from less than a second upwards. ▼
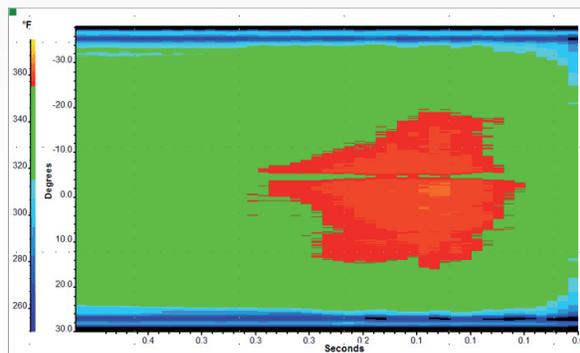

▲ If you have a process line speed measurement from either a pulse encoder or an analog transmitter this can be input to the WCA software.

- The X-axis will dynamically change with line speed to show units of distance like Feet or Inches
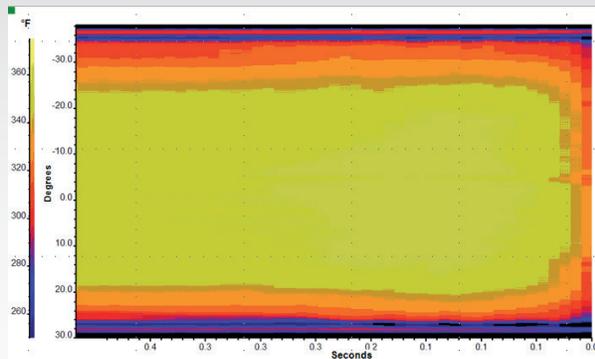

- Thermal maps are commonly viewed with a temperature range scale corresponding to a "heat" color palette like this one

- Another popular way to display this temperature distribution is to show it in relative terms. If your process has a set point and tolerance this can be input and then everything in tolerance will show in green (good) – This display is easy to interpret and you can quickly see if you're making good products or not.

  This is the same data as above but displayed with a set point of 335F and a tolerance of +/- 20F
  You can easily see what's good (Green) and where hot spots are (Red) and cold areas (Blue).
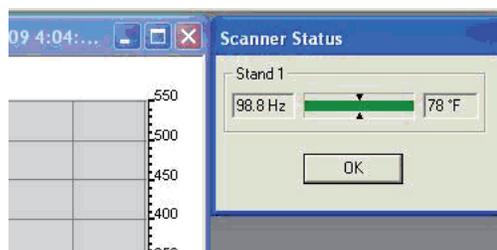
- Scanner sensor status is available as a display, confirming the scanner's ambient temperature and scan speed.

Database Files

WCA can identify each data file saved by date and time or accept digitally input names from other computers to allocate a particular product ID. Files can be saved to the local PC or to any mapped drive over a standard Ethernet network. Remote users can access saved files over the network using free display and analysis software. Files can be saved in native binary format and/or ASCII CSV formats. For those just wanting to see screens, image files can also be saved in bmp, jpg, pcx, gif, tif and targa formats.

Choose the database location and size limitOnce that limit is reached you select what happens to those database files automatically. You can also reduce the number of data points saved in files if you don't require everything.

◆ Landscan WCA software has excellent capabilities for replaying and analyzing saved data files, however, if you want to analyze data files outside of the Landscan WCA software you can select to save data files in ASCII CSV format as well. Then simply import that file into your favorite analysis software package.

In addition to this you can save screens or display windows as image files to use in presentations or emails. As you can see below there are many common image file formats to select from.

Database files are saved in a logical Year, Month and Day location. When you search for files to replay it's easy to find them. The database has built in advanced search features which help you find specific files, like ones containing the same label.

Because they're data files you can re-scale them to display different characteristics later. In this way specialists like quality managers or metallurgists can re-scale, view and analyze files differently from the way they were originally viewed by a process operator.
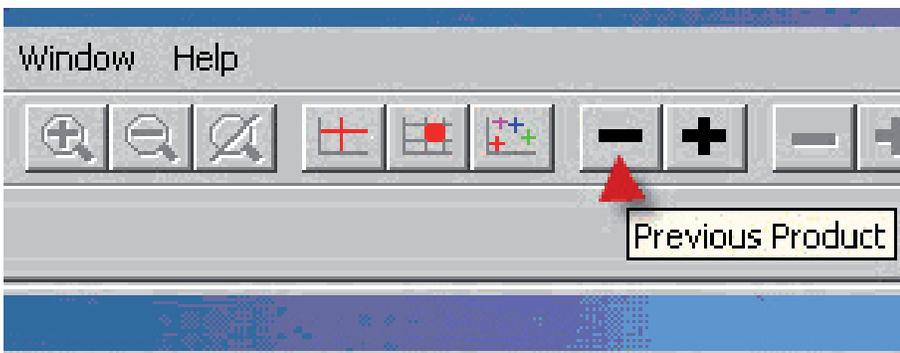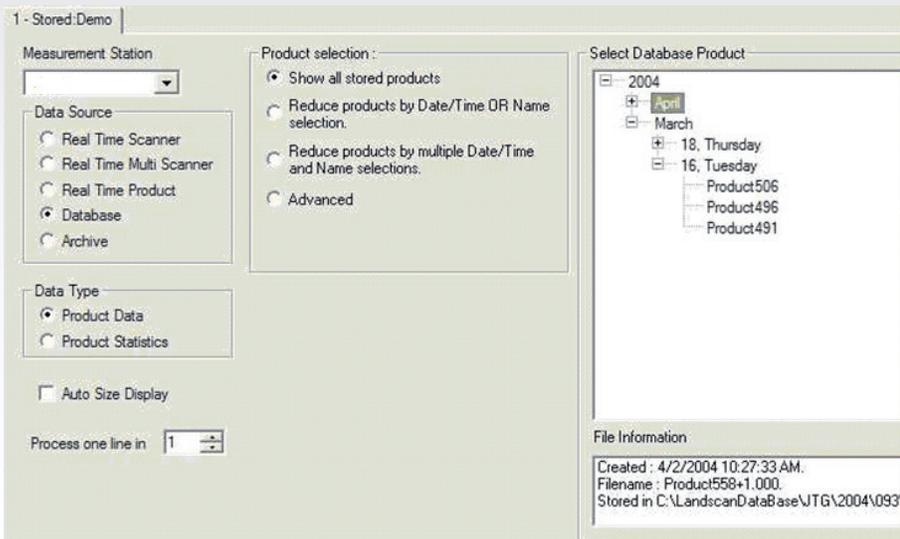

Once you're replaying and displaying a data based product you can easily scroll back through products using the quick previous - and next + file buttons.

Zone Processing

WCA software enables you to configure up to 14 Control Zones (lane outputs) across the width of the product. Each zone can have its location and width individually set. These lanes can represent the average, minimum or maximum of the temperatures within each lane.

In the example below 11 lanes are shown equally spaced, (up to 14 can be configured any size any location). These lanes can output values from a batch processor as 4-20mA or 0-10V analog, ASCII digital over serial or Ethernet. The software has ActiveX connectivity and an OPC server is available. Additionally the system can output 100, 200, 250, 500 or 1000 digital data points per scan line regardless of scan speed chosen. Even at 100 or 150 Hz scan speeds all 1000 data points are available. The lane locations can either be divided over the entire 80 degree scan angle or they can dynamically track the product edges. Contact alarms can be set for all lanes.
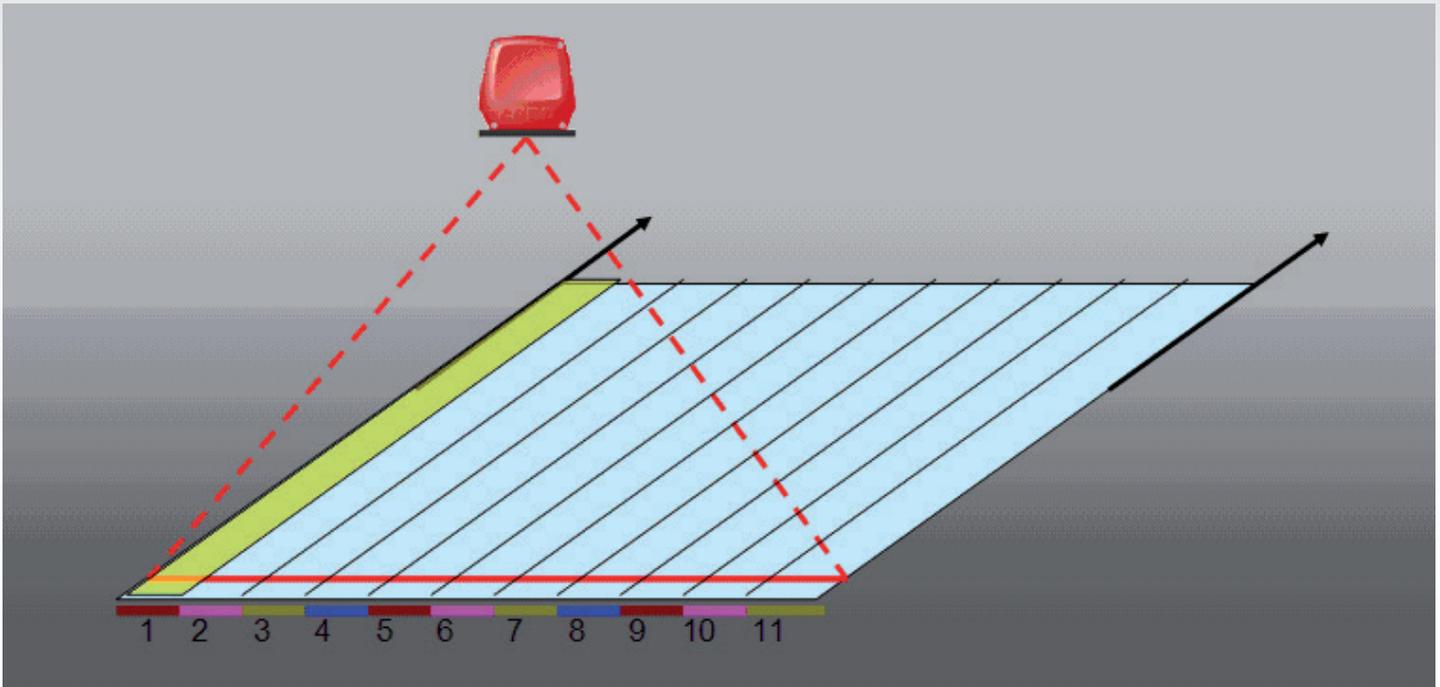
The chosen lane positions and sizes can be displayed above the product's thermal profile This way it's easy to check that the lanes are positioned correctly. ▶
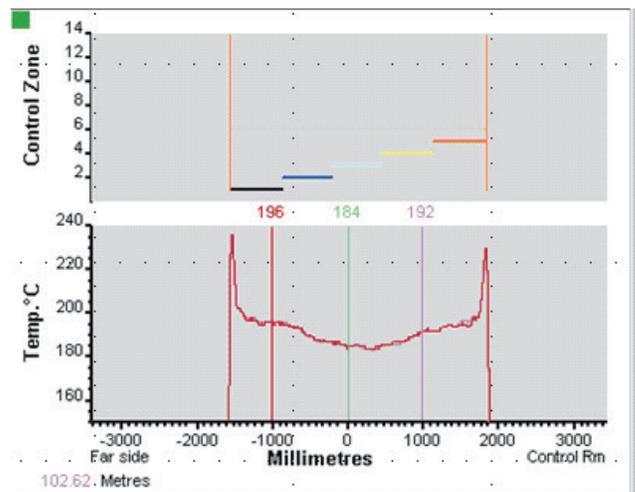
Auxilary Inputs

WCA can display and database additional inputs from other flow, level, pressure or temperature sensors. The software will range and scale each input and display it. When you database scanner data files, any of these auxiliary input signals are stored also. When you replay these files the auxiliary files replay with the same time base.

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In this way if a hot or cold spot is related to another measured parameter like flow or pressure you could see that parameter changing before the scanner senses the resulting process temperature change. In this way you have better knowledge of which event caused a temperature deviation.

*The dialog box shows a system with 8 analog inputs, 4 of which have been activated, the first input was configured for a line speed transmitter scaled 100 to 700 Feet per Minute for a 0-10Volt signal. The next 3 channels are for other process transmitter inputs.*

Display and Output Cell Data

If you are use the WCA software in conjunction with a Landscan Batch processor you can also configure cell matrix overlays on the thermal images. Cells can either be in a contiguous grid or alternatively as individually sized and placed cells. Values in each cell are available via a Landscan OPC server. Any OPC Client standard software can communicate with this and pull values from these OPC tags. High and Low alarms can be set for each cell and display as red up or down arrows in the cell. Cell names can be automatically assigned or individually labeled.
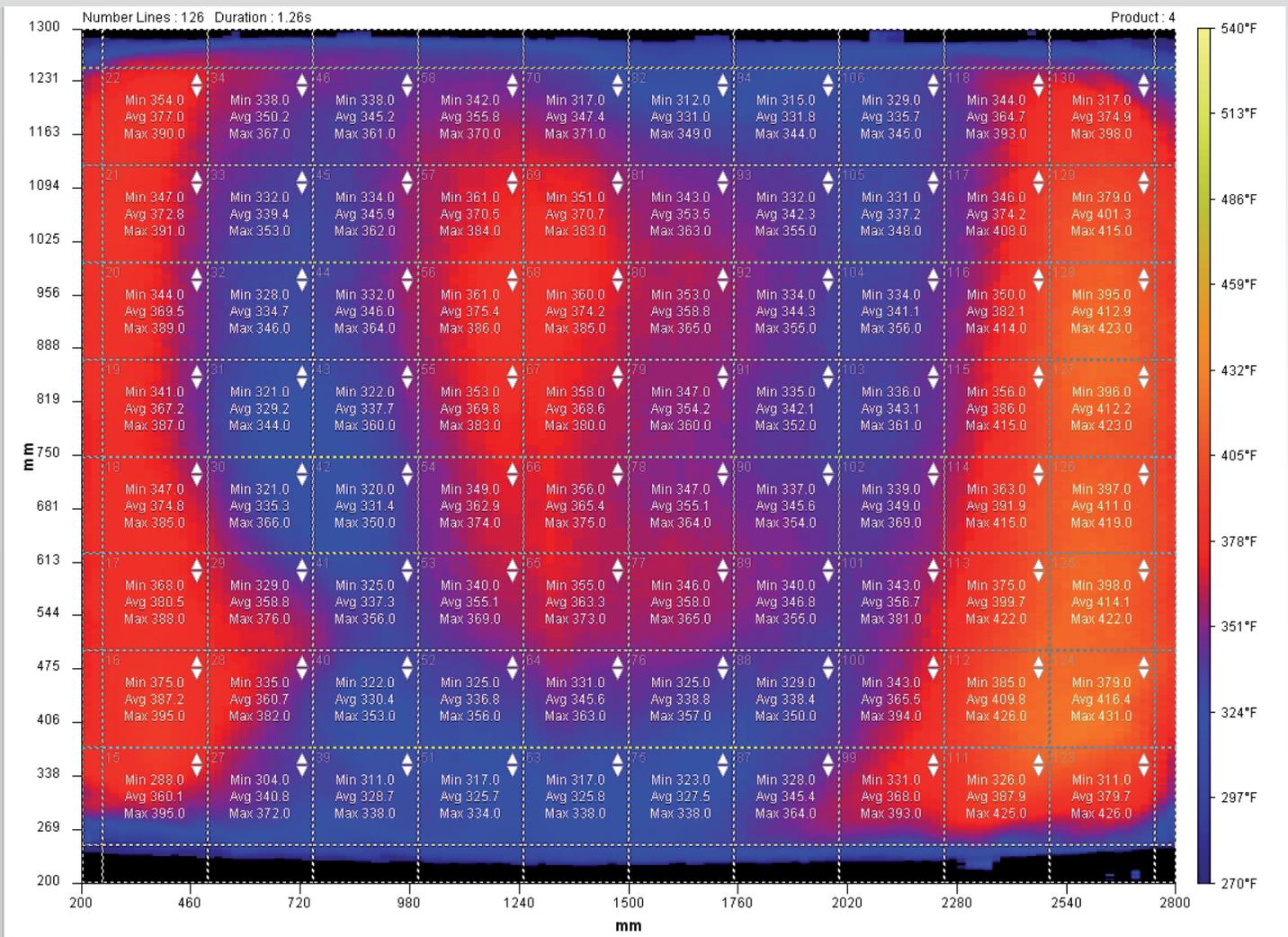
Combining Scanner Profiles

In some cases a product is so wide that it is impractical to position one Landscan sensor far enough away from it and still produce a fine detailed image. WCA software has the capability to combine multiple Landscan sensor inputs. WCA can then combine these profiles and "stitch" them together into one contiguous profile or thermal image. The resulting profile or thermal image of such a wide product has very fine temperature detail.

- *2 scanner profiles combined into one image*