

PYROLINE 128WBS

Infrared Imaging and Profiling System for Gypsum Applications

Requirements and solution:

It is of high importance to homogeneously keep the temperature and moisture distribution uniform on the gypsum plate during the hardening process. Varying conditions would lead to tears or even complete cracks in the plates. Because it is not humanly possible to fully realize minute differences in temperature and moisture distribution, the use of special sensor-devices and measuring processes are necessary to exactly define the problem areas.

The use of non-contact infrared measurement allows a quick recording and evaluation of surface temperatures to eliminate potential problems in the hardening process of the gypsum plates.

The Infrared Imaging and Profiling System for Gypsum Applications consists of the following components:

PYROLINE 128 Infrared Line Camera

The PYROLINE 128 is an industrial uncooled line camera with 128 sensor elements and a frame rate of up to 256 Hz for industrial temperature measurement.



An Industrial IP65 housing combined with air purging and water cooling ensures permanent use in harsh environments. The fiber optic data transmission realizes real-time data transfer over long distances. Temperature differences of $< 0.5\text{ }^{\circ}\text{C}$ are detected and may be used for online process control.

Main Console Cabinet

The main console cabinet contains a PC with a 15" TFT Touch Screen LCD for data recording and storage. It also contains all the necessary components for power supply, digital I/O, and field wiring terminals.

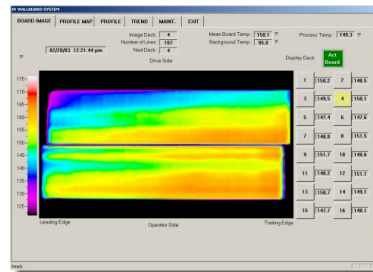
Remote I/O Box

The remote I/O Box is used for field wiring the gate signals at the dryer output section.

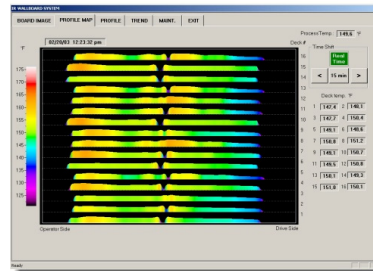


Application Specific Software IR-WBS

The application specific software allows the operator to view the infrared images online, store all the necessary information and compare temperature profiles from different dryers or temperature trends to the history. Digital inputs are used to sort the image data by the corresponding dryer deck number. The software also allows password protection in different user levels and a user interface optimized for the touch screen LCD to ensure secure continuous operation in an industrial environment.



Two-dimensional IR image of wallboards as they pass the PYROLINE 128 Line Camera



Mean temperature profile of boards from all dryer decks (shown for 16 decks)



Process temperature over time (shown for 2 hour intervals)

Characteristics of the solution:

- Complete system of line camera, control PC, I/O components and software
- Quick measuring rates up to 256 Hz
- 128 measuring points with parallel data output
- Software-supported documentation of profiles, alarms and faults
- Display of board images, profiles, and trends
- Permanent use in harsh environments

Technical Data

PYROLINE 128L IR Line Camera Specifications

Sensor	Uncooled pyroelectric linear array
Spectral range	8 μm to 14 μm
Measurement range	0 °C to 80 °C or 50 °C to 550 °C (other on request)
Optics Field of view Measurement distance Spatial resolution	56° × 0,5° 50 cm to infinity 9 mrad
Measurement uncertainty	2 K (measured temperature < 100 °C) or 1 K + 1 % of measured value in °C
Noise equivalent temperature difference	< 0.2 K (blackbody 50 °C, frame rate 32 Hz)
Frame rate	Internal 256 Hz, selectable: 256 Hz, 128 Hz, 64 Hz, ...
Response time	Internal 8 ms, selectable: 2 / frame rate
Interface	Fiber optic interface (PCI card)
Housing	Protection degree IP65, optional: integrated water cooling, air purge, swivel base
Weight	3.2 kg
Power supply	18 V to 36 V DC, 20 VA
Operating temperature	0 °C to 50 °C (without water cooling), -25 °C to 150 °C (with water cooling)
Storage conditions	-20 °C to 70 °C, rel. humidity max. 95 %

Console Cabinet Specifications

Enclosure	Rittal cabinet (operator console 30" × 38" × 24"), IP55
PC	Panel PC with 15" TFT touch screen, Pentium III 800 MHz, 256 MB RAM, Ethernet
Interface	Fiber optic interface for IR line camera
Digital I/O	National Instruments Fieldpoint 16 × DI 24V DC, 16 × DO 24 V DC
Power supply	110 V / 60 Hz or 230 V / 50 Hz
Remote I/O Box	Terminals for deck signals, optional relay input, connection cable 100 m

Software IR-WBS

	Real time board map
	Profile map for up to 16 decks (actual and historical)
	Profile image single board (actual and historical)
	Trend image for process temperature and deck temperatures
	Data storage: profiles, trend data
	Password protected user levels, editable product list with storing of actual settings

DIAS reserves the right to change specifications to reflect the latest changes in technology and improvements at any time without notice.
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