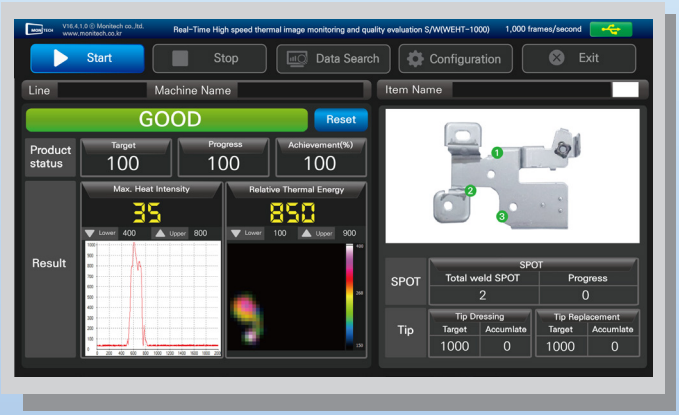
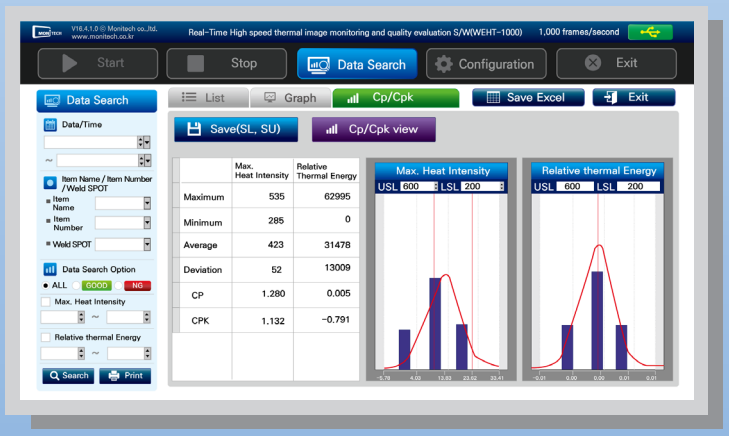
High speed thermal image welding monitoring system

World's first high speed real-time thermal imaging welding monitoring and quality evaluation system



NIT
New Infrared Technologies

Model WEHT-1000



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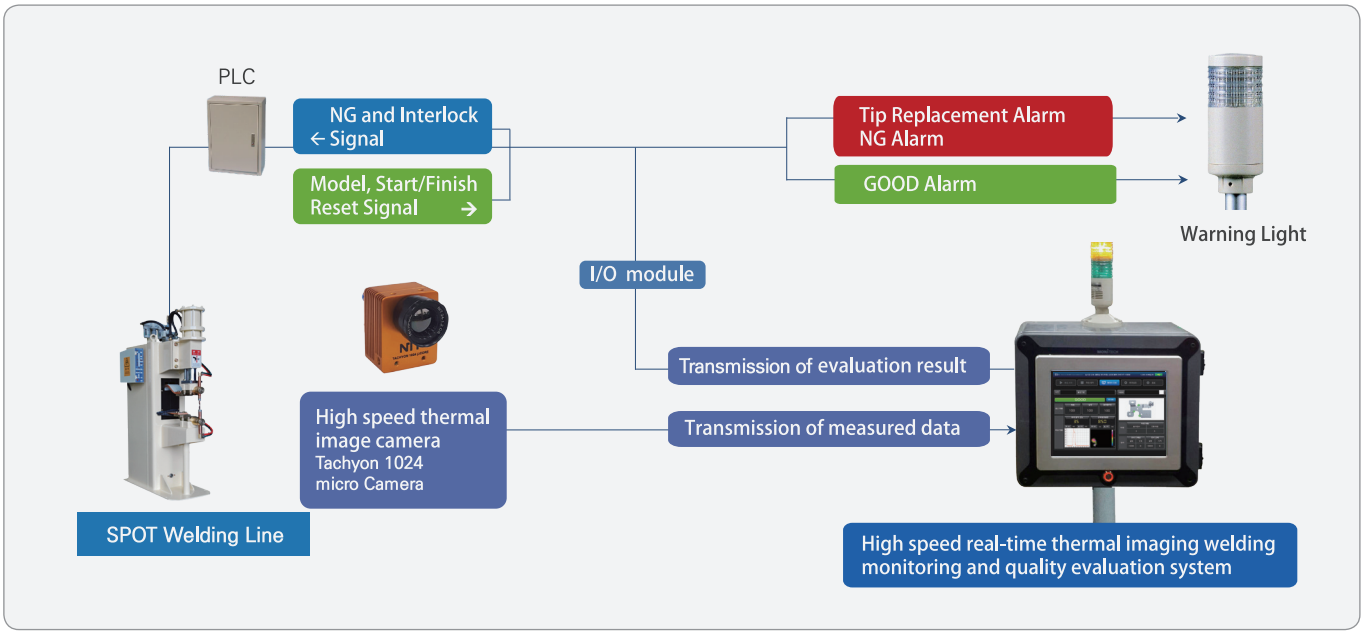
Monitech Co.,Ltd.
www.monitech.co.kr

Main Features

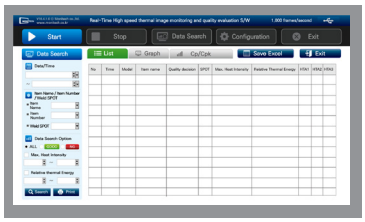
- Real-time monitoring of high speed thermal image monitoring system for quality control in various welding processes
- Scan speed: 1,000 frames/second
- Software dedicated to the analysis of two-dimensional thermal images is provided
- 1,000/2,000/10.000 frames/second is available depending on application
- USB or Ethernet communication
- PbSe detector manufactured by using a proprietary next-generation technology is adopted
- S/W for real-time management included to reflect various customer needs

System Diagram

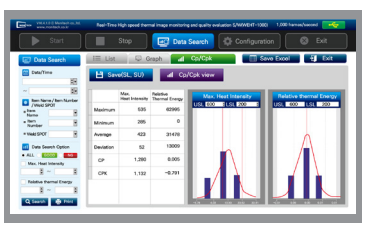


S/W Main Screen

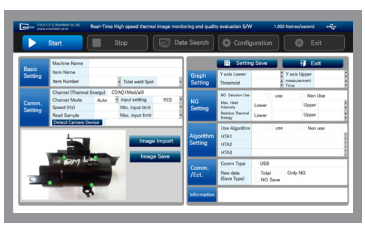
Main Screen



Data Search

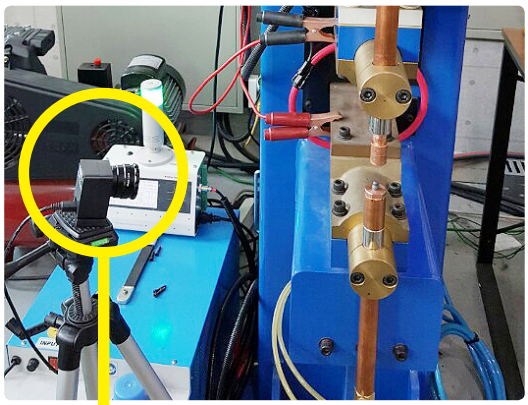


Data Search (Cp/Cpk)



Setup

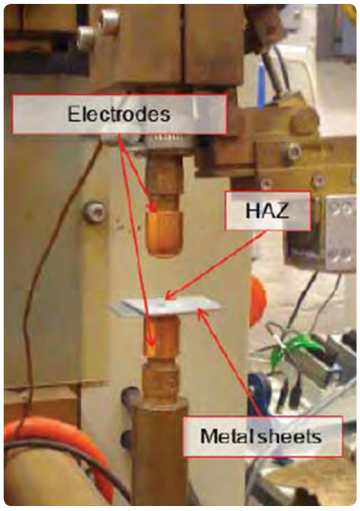
Application case #1 (SPOT Welding)

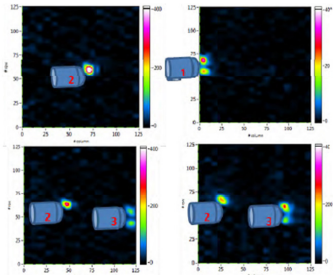


High speed thermal image camera TACHYON1024

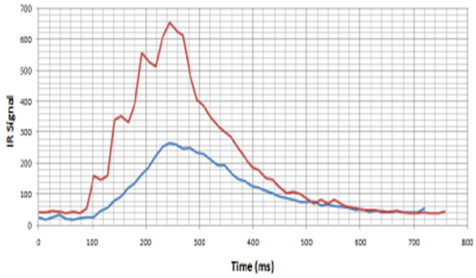
Application Area

RSW (Resistance Spot Welding) Monitoring

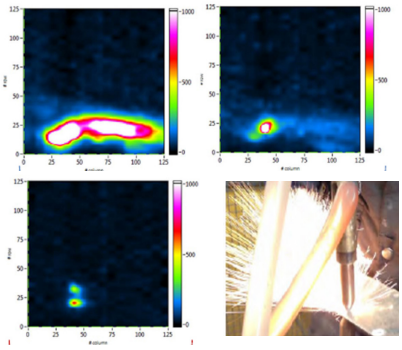


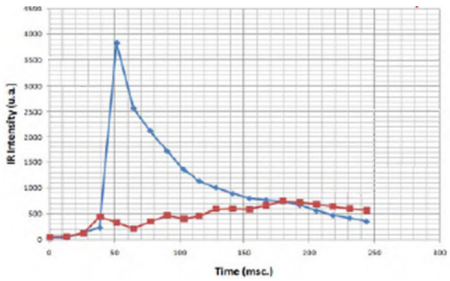


Thermal distribution of electrode tips



New electrode
Used electrode





Normal state
Spatter state

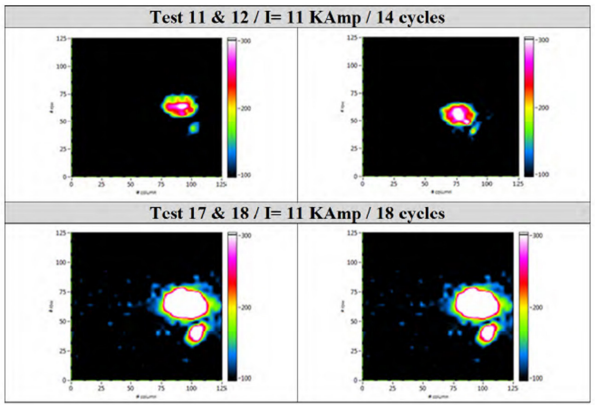
Application Case #2

- Thermal infrared image sensor shows heat discharged while current flows in the HAZ by electrode
- Analyzed data is used to forecast an appropriate replacement period by determining life and fatigue of electrode

Application Case #3

- Spatter occurs if current density applied to electrode is high
  Spatter creates high heat locally on the welded area to melt away the target material and causes empty spaces or defects.
  Spatter is expressed in blue graphic, while normal state is in red graphic.
- If current flow density is high, it is also used to protect Spatter that occur by newly replaced electrode.

Welding time VS. the heated area of the welding zone



Application Case #4

- Monitors a correlation of heat dynamics (thermodynamics) during process.
- Total power supplied during process is combined with the welding time. The more the conducting period of the current applied to parent metal, the more the increase of heat around the welded zone
- Frame rate: 1,000 image frame per 1,000 second
- Detects the intensity of infrared energy detected in each pixel of the spot center by using the real-time data
- Application Result: Identify a correlation between conducting time and IR signal intensity and reestablish appropriate process parameter

Camera type specifications

Type	TACHYON Series			MATRIX 1024	LUXELL
Product photo		NEW 			
Model	Tachyon 1024 micro Camera	Tachyon 16K Camera	Tachyon 1024 Core-HS	MATRIX 1024 CORE-S	Luxell Core-S
FPA resolution	32x32(1,024 pix.)	128x128 (16,384 pixels)	32x32	32x32	256 pixels(px. size :600 um x 60 um)
Max. frame rate /max. scanning rate	1,000 fps	2,000 fps	10,000 fps	100fps	300 lines/sec (256 px) 600 lines/sec (128 px) 1,200 lines/ sec(64 px)
Max.data Trans-mission speed	raw data, 10bit	raw data, 14bit	raw data, 10bit	raw data, 14bit	raw data, 14bit
Minimum tem-perature of detection(℃)	100~1,500				
Housing dimen-sions, in mm (LxWxH,mm)	93.6x49.5x61.0	66x62x62	55x90x60	57x40x40	80x45x50
Weight(g)	250	530	167	52	52
IP rated	IP67	IP67			

Main Clients

Jin Heung Industry | Dong Heung Tech and more

MONITECH

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