

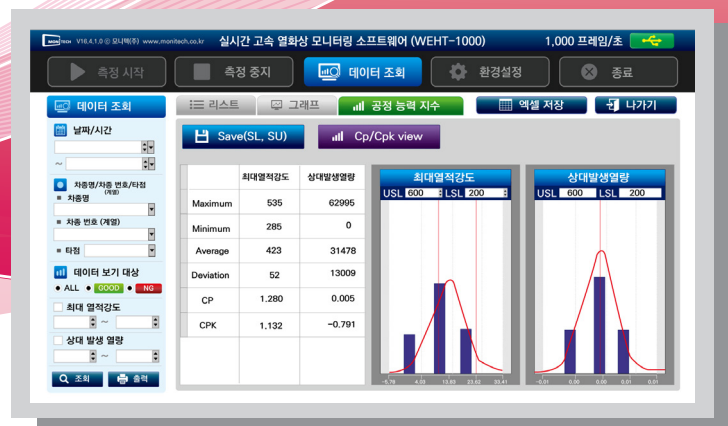
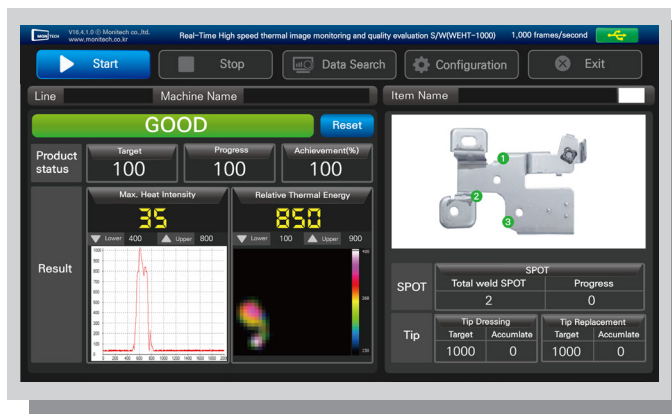
05

# High speed thermal imaging welding monitoring system

Model

WEHT-1000

High speed thermal image



Monitech co.,ltd.  
www.monitech.co.kr



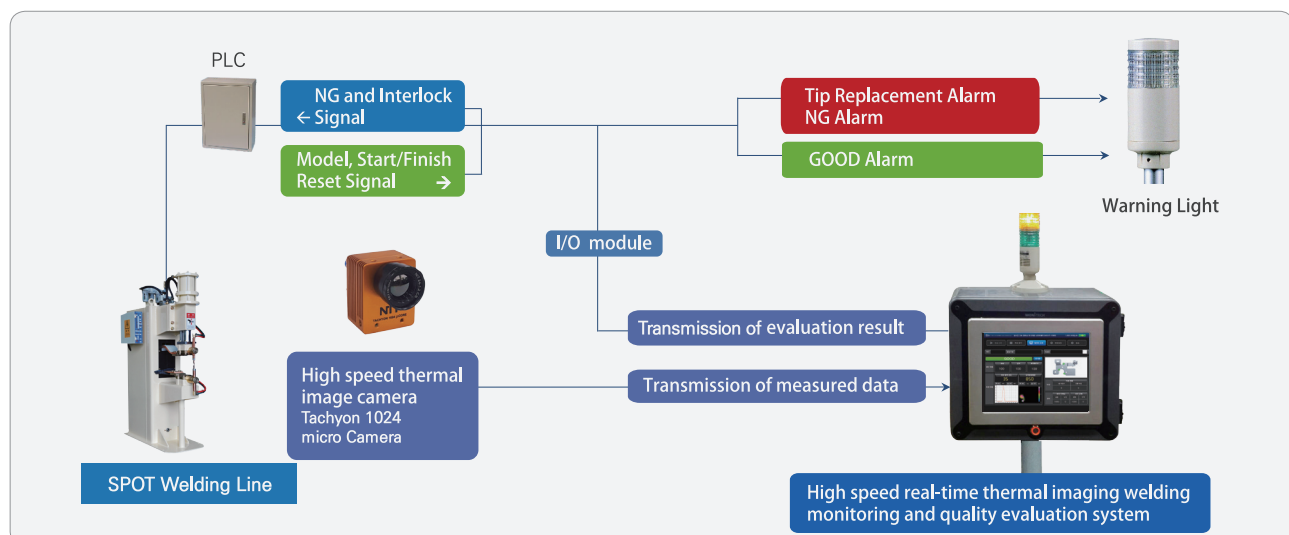
## Main Features

- High speed real-time thermal image monitoring for quality control of various welding process
- Scan speed: provide 2D thermal image analysis S/W analyzing 1,000 frames/second
  - Possible to apply a 1,000/2,000/10,000 frame camera depending on the application (optional) (1,000 fps standard)
- USB or Ethernet communication
- Use PbSe detector produced by a next generation new proprietary technology
- Provide dedicated real-time management S/W

## Main Purposes

- Optimized for soldering/brazing process monitoring
- Resistance welding (SPOT, Seam)
- TIG welding, ARC welding and Laser welding
- Resistance seam welding in steel roll production process
- Applicable to real-time quality control of other various processes

## Basic Configuration of System



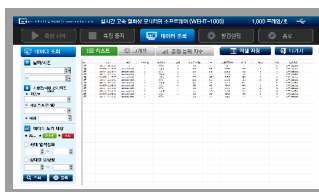




## S/W Main Screens



Main Screen



Data search(List)

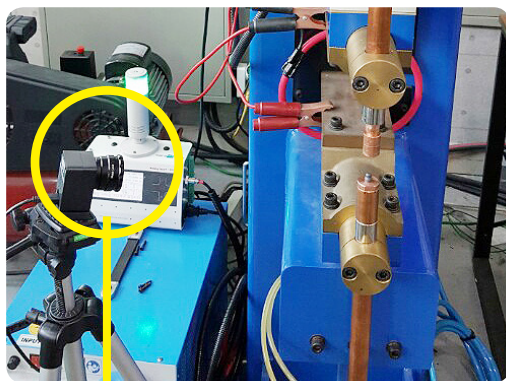


Data search(Cp/Cpk)



Setup screen

## Application case



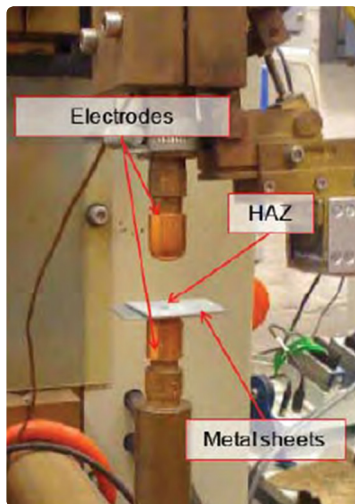
High speed thermal image camera



High speed thermal imaging welding monitoring system Installation

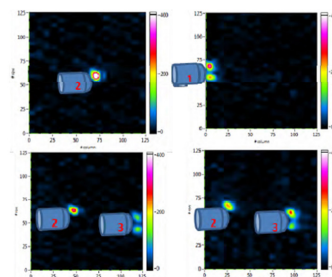
## Application Area

### ■ RSW (Resistance Spot Welding) Monitoring

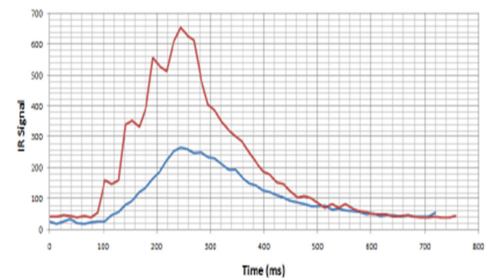
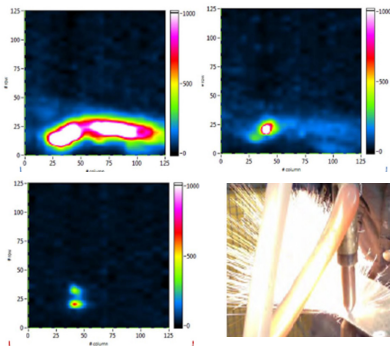


#### ■ Application Case #2

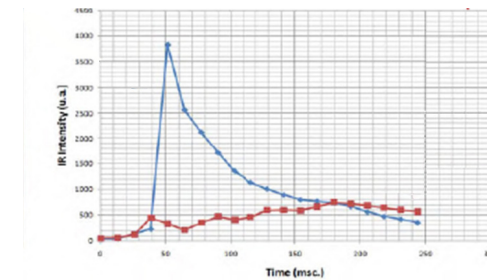
- Thermal infrared image sensor shows heat discharged while current flows in the HAZ by electrode
- Analyzed data is used to forecast an appropriate replacement period by determining life and fatigue of electrode



Thermal distribution of electrode tips



— New electrode  
— Used electrode

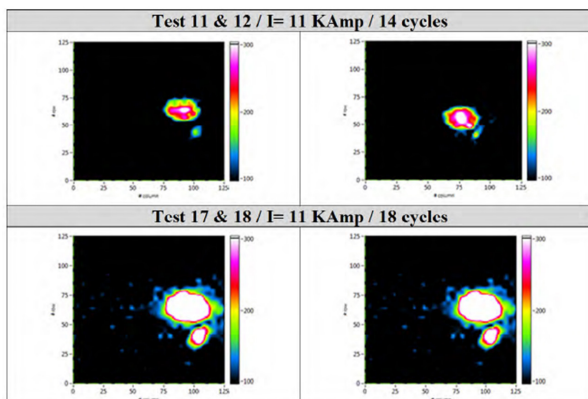


— Normal state  
— Spatter state

#### ■ 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

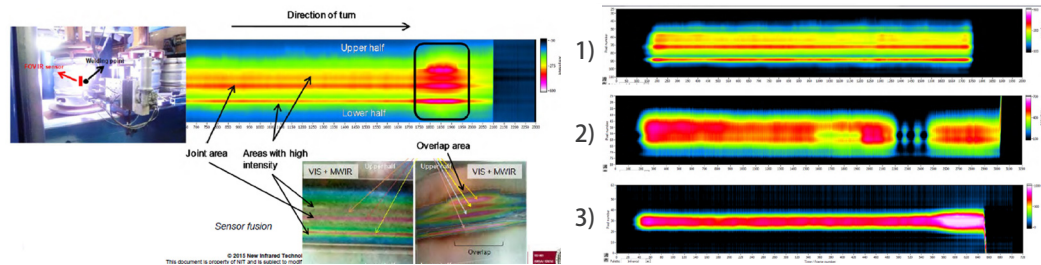


#### ■ Application Case #4

- 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



## ■ TIG Welding processe



Examples of traced defects






- 1) Lack of overlap
- 2) Voids
- 3) Decrease in inert gas

Successful application of quality evaluation and welding results

## ■ Other applicable areas

- Optimized for soldering/blazing process monitoring
- Resistance seam welding
- Laser Beam Welding & Laser Cutting Process
- Arc welding
- Resistance seam welding for steel roll manufacturing process

## Camera type specifications

Type	TACHYON Series			MATRIX 1024	LUXELL
Product photo		<b>NEW</b> 			
Model	Tachyon 1024 microcore	Tachyon 1024 micro Camera	Tachyon 6400 Core-HS	Tachyon 1024 Core-HS	Luxell Core-S
FPA resolution	32x32 (1,024 pix.)	32x32(1,024 pix.)	80x80	32x32	1x256/1x128/1x64
max. frame rate /max. scanning rate	1,000 fps	1,000 fps	2,000 fps	10,000 fps	300 lines/sec(256 px) 600 lines/sec(128 px) 1,200 lines/sec(64 px)
max. data-Transmission speed	raw data, 10bit				raw data, 14bit
Minimum temperature of detection(°C)	100~1,500				
Housing dimensions, in mm (LxWxH,mm)	46.5x39.5x29.5	93.6x49.5x61.0	55x90x60	55x90x60	80x45x50
Weight(g)	120	250	200	200	60
IP rated		IP67			

## Real-time welding quality control and inspection solution

### Real-time welding monitoring system

- 01. Welding quality monitoring system (ARC/SPOT/TIG)
- 02. Intelligent welding monitoring system (NUT & BOLT Projection welding)
- 03. Welding calibration master equipment (ARC/SPOT/DUO)
- 04. MICRO SPOT welding monitoring system
- 05. High speed thermal imaging welding monitoring system
- 06. Ultrasonic welding monitoring system
- 07. Laser welding monitoring system

### Welding process measurement and equipment

- 08. Welding force measuring gauge (FORCE)
- 09. Current and force gauge (HANDY)
- 10. Advanced current and force gauge (HANDY PRO)
- 11. Measuring analyzing equipment for WPS/PQR (WPS)
- 12. Welding waveform analysis management equipment (MULTI)

### Inspection and integrated monitoring S/W

- 13. Integrated management and control system (MIS)
- 14. Inspection record computerized management system for the Initial, middle, and final products (IM)



**Monitech co.,ltd.**

ISO 9001 / ISO 14001 / INNOBIZ / Venture

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