The temate® Si-WB is an automated laser weld inspection system for metallic tailor welded blanks. The system uses Electro Magnetic Acoustic Transducer (EMAT) methods to perform volumetric non-destructive testing of the welds.

Our proprietary EMAT sensors provide rapid, full-length, volumetric inspection of the weld seam, and can detect weld defects such as pinholes, lack of fusion, lack of weld penetration, porosity, concavity and mismatch. For each weld inspected, the system features an immediate disposition of weld quality, and saves a complete record for later post-analysis, tracking, and process monitoring.

Advantages of the temate® Si-WB over other techniques:

- Adaptable to carbon steel, aluminum and stainless steel blanks.
- Capable of providing volumetric inspection to detect internal defects such as porosity and lack of fusion.
- Detects all structural defects that can compromise the quality of the weld while ignoring “cosmetic” problems that do not affect its quality.
- Optimal correlation with stamping failures with the minimum reject rates.
- Self-calibrated sensor for inspections at speeds up to 1m/s.
- Exclusive flexible-sensor technology conforms to surface undulations of the blank.
- Multi-sensor capabilities to control several sensor heads with one system to minimize investment.
- Easy to program and to interpret results.
- Only inspection system endorsed by OEMs for inspection of safety parts with over 100 inspection stations worldwide.

The system can be installed in-line or off-line and adapted to any line configuration. The temate® Si-WB can be installed on a robotic positioner (articulating or Cartesian) or on a stationary mount. Custom Integrations for tailor welded blank inspection, such as the temate® WB-TableScan are also available.

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## temate® Si - WB Specifications

| Materials Inspected                                                                 | • Steel and Aluminum, all grades coated and uncoated.  
|                                                                                     | 0.010” (0.3mm) to 0.138” (3.5mm) thickness. |
| **Defect Detection**                                                                | Volumetric guided waves for inspection of the weld (i.e. top and bottom surface, and internal).  
|                                                                                     | Dry-coupled piezoelectric testing provides the high accuracy and repeatability of EMAT and conventional UT for applications where liquid couplant is not an option.  
|                                                                                     | Pitch-catch and pulse-echo configurations.  
|                                                                                     | Maximum sample rate of 2000 pulses per second. |
| **Inspection Technique**                                                            | 6” (152mm) W x 7.1” (180mm) L x 5.9” (150mm) H. Weight 10 lbs (4.5 Kgs).  
|                                                                                     | Includes pulsed electromagnet, EMAT coil circuit, protective wear pad, vertical compliancy unit.  
|                                                                                     | Replaceable protective wear pad is in contact with the part surface during inspection and provides protection for the EMAT coil circuit.  
|                                                                                     | Vertical compliancy to the part surface accommodated in the sensor up to 0.25” (6mm). |
| **Sensor Head Assembly**                                                            | Industrial enclosure; NEMA 12 and IP 55 per EN 60 529/10.91 protection rating, located up to 165 cabling feet (50 m) from sensor.  
|                                                                                     | Enclosure is 24” (610mm) W x 32.3” (820 MM) L x 69” (1750 mm) H, weighing 500 lbs (225 Kgs).  
|                                                                                     | Includes EMAT T/R electronics, magnet pulser, power supplies, computer, communication interfaces, monitor, keyboard and mouse.  
|                                                                                     | temate® software capable of operating under multiple operating systems.  
|                                                                                     | Automatic and manual operation modes.  
|                                                                                     | Easy-to-use interface to define and save inspection settings. |
| **Data Acquisition Electronics**                                                    | Simultaneous, real-time data acquisition and analysis.  
|                                                                                     | Interactive and configurable windows to display results from sensors and previous inspection.  
|                                                                                     | Defect map highlights relative location of defects on part bitmap image.  
|                                                                                     | Programmable weld-specific defect thresholds for each ultrasonic channel.  
|                                                                                     | Immediate weld disposition (pass/fail), both display and discrete outputs, following each weld inspection.  
|                                                                                     | A-Scan (oscilloscope) display mode available for ultrasonic setup and diagnostics.  
|                                                                                     | Self-diagnostics automatically performed during each inspection for immediate feedback on the maintenance condition of equipment and inspection.  
|                                                                                     | Serial numbers and part specific comments are accepted using serial port messages.  
|                                                                                     | Inspection data is tagged with the serial number identification and comments information.  
|                                                                                     | Complete record of inspection settings, data and results are stored for each weld inspection.  
|                                                                                     | Also integrates easily with Innerspec DataHub for management all system data on one or more inspection systems.  
|                                                                                     | Recall display of past inspection data. |
| **Software Features**                                                               | 115v AC to 220v AC (Electrical power and air requirements may vary depending on the integration.)  
|                                                                                     | Operating temperature 32 °F (0 °C) to 105 °F (40 °C)  
|                                                                                     | Humidity non-condensing 5% to 95% |

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Innerspec High-performance NDT solutions