The temate® BW-LT(ERW) is an automated system for inspection of longitudinal welds in ERW Tubes. The system uses Electro-Magnetic Acoustic Transducer (EMAT) methods to perform ultrasonic non-destructive testing of welds without couplant. The lack of coupling fluid permits inspection of tubes at higher temperatures, and installation immediately after the welder without the need for heat quenching. The system can detect weld defects, such as hook cracks, pinholes, inclusions, penetrators, mismatch, skelp burr, and poor scarifying (ID and OD) and meet all API standards. As the weld is inspected, the system provides immediate disposition of weld quality, and saves a complete record for post-analysis, tracking, and process monitoring. All the records can be saved on a network drive and are easily exportable to different formats. Installation is also available for off-line ultrasonic inspection without the need for couplant.

Advantages Include:

• Non-contact ultrasonic EMAT technique.
• Installs immediately after welder for immediate feedback on the quality of the weld.
• Provides full volumetric inspection of the weld according to API standards.
• Detects ID and OD notch-type defects 12mm long and 5% deep, and 1.3mm thru-holes at speeds of up to 1.5m/s.
• Discriminates between ID, OD and point-type defects, including a custom algorithm for ID Trim problems.
• Independent PLC for line integration.
• Automated flaw marking option.

The temate® BW-LT(ERW) system uses an overhead gantry with independent calibration and operation positions, and supports a variety of factory interface connections for automated setup, and real-time alarming and tagging.

The temate® BW-LT(ERW) provides a superior return on investment by minimizing scrap rates while meeting all the quality codes.
## temate® BW-LT(ERW) - Specifications

### Materials Inspected
- Carbon Steel Tube and Casings (all API carbon steel grades).
- Diameter: 2.375” (60.33mm) to 16” (406mm). Consult with Innerspec for other diameters.
- Thickness Range: 0.188” (5mm) to 0.623” (16mm). Consult with Innerspec for other thicknesses.
- Provides inspection of ID, OD and mid-weld.
- The pipe should be secured by pinch rollers separated by ~2m (7’) for inspection and is relatively straight, level with minimal movement.

### Defect Detection
- ½” / 1” (12.7 mm/25.4 mm) N10 and N5, ID and OD longitudinal notches.
- 1/16” (1.6 mm) through drilled hole(TDH).
- Hook cracks, pinholes, mismatch, skelp burrs, poor scarifying (OD & ID) and point defects such as inclusions and penetrators not easily detected with conventional systems.
- Meets all API Standards and the most stringent oil company requirements.

### Inspection Technique
- Multi-mode shear wave technique in pulse-echo configuration with sensors on both sides of the weld.
- Sensors located offset from the weld seam by approximately 50mm (2”) avoiding direct heat from the weld. Permits up to 6mm (0.25”) of weld wander without reducing sensitivity.
- Maximum sample rate of 2000 pulses per second for inspection speed of 1.5m/s.

### Sensor Head Assembly
- Four sensor assemblies (two on each side of the tube) with independent air cooling.
- Each sensor assembly includes an electromagnet, removable EMAT RF Coil circuits and protective wear surface.
- Replaceable protective wear pad rides in contact with the part surface during inspection and provides protection for EMAT RF Coil circuits.

### Data Acquisition Electronics
- 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 approximately 500 lbs (225 Kgs).
- Includes EMAT T/R electronics, magnet pulser, power supplies, computer, communication interfaces, monitor, keyboard and mouse.

### Software Features
- The temate® software is capable of operating under multiple operating systems.
- Automatic and manual operation modes.
- Easy-to-use interface to define and save inspection settings.
- Real-time data acquisition and analysis of EMAT signals.
- Programmable thresholds for go/no-go disposition, and output trigger for marking system.
- Automatic (using discrete I/O) and manual (keyboard) operation control modes.
- Self-diagnostics automatically performed during each inspection for immediate feedback of the maintenance condition of the equipment and process.
- Automatic storage of data to up to two locations (e.g. local and network drive).
- Recall display of past inspection data.

### Power & Environment Range
- 240VAC (+/-10%), 60 Hz, minimum circuit capacity at 15 Amps.
- 3-phase at 240VAC(+/- 10%), 60 Hz, minimum circuit capacity at 25 Amps.
- Single supply of compressed air 80 to 120 PSI (5.51 to 8.27 bar) pressure.
- Operating temperature 32°F (0°C) to 105°F (40°C).
- Humidity, non-condensing, 5% to 95% RH.