

# Robotic PELT®

## Automated Coating Thickness Measurement System

### Benefits

- Automated measurement solution ensures adequate sampling of paint production processes for multiple body styles, paint lines, and colors.
- Fully automatic multi-layer coating thickness measurements.
- Utilizes proven PELT® measurement technology.

### Features

- Multi-layer: gauges up to 5 coating layers at each measurement point.
- Integrated distance sensor to determine distance and optionally orientation of measurement locations.
- PELT End of Arm tooling can be used in conjunction with robotic color and appearance devices on the same robots.

### Robotic PELT

The Robotic PELT gauge is an automated coating thickness measurement system. A Robotic PELT system can continuously collect multi-layer thickness measurements of all body styles and paint lines that are routed to the measurement cell.

The system utilizes the same proven high resolution PELT® ultrasonic technology used by our industry standard hand-held coating thickness gauges. The system can individually measure up to 5 coating layers simultaneously. Measurements can be made on virtually any substrate material including steel, aluminum, plastics, composites, glass, and wood.

The Robotic PELT End of Arm Tool can be used in conjunction with online color and appearance gauges, enabling thickness, color, and appearance measurements from a single robotic cell.

Systems can be configured with single or multiple robots. Each robot utilizes a single PELT sensor End of Arm Tool (EOAT) with integrated distance sensing.



### End of Arm Tooling and Positioning

The compact and lightweight EOAT includes an automatic, non-contacting distance sensor. Automated positioning using the distance information requires only rough programming of the measurement point locations. The robot's final angle and distance to each measurement point can be adjusted automatically.

### PELT End of Arm Tooling



### PELT Thickness Measurement Data

Thickness measurement data is output in XML format to data files available over the Ethernet network.

# Robotic PELT<sup>®</sup> Specifications

## Performance Characteristics

### Measurement

**Method** PELT contact pulse-echo ultrasonic.

**Couplant** Deionized water.

### Calibrated

**Accuracy** ± 1.3 microns (+/- 0.05 mils) or ± 2% of the coating thickness, whichever is the greater value.

**Resolution<sup>1</sup>** 1 micron (0.001 mm, 0.04 mils)

### Minimum Thickness<sup>1</sup>

Mid coatings: 07 microns (0.007 mm, 0.28 mils)

Single coatings: 15 microns (0.015 mm, 0.6 mils)

Top coatings: 25 microns (0.025 mm, 1.0 mils)

**Max Layers** 5

**Repeatability** ± 0.51 micron (0.02 mils), typical (std deviation measurements, repeatedly gauging same job/part).

**Radius of Curvature** 11 mm diameter transducer with  
15 mm diameter wear cap:  
15 cm convex surface  
50 cm concave

<sup>1</sup> Minimum Thickness and Resolution are a function of coating material properties and transducer type utilized.

## System

**PELT Sensors** One per robot.

**Sensor Outer Diameter** 15 mm.

**Sensor Cable Length** 33 m from robot arm to equipment cabinet/console.

**Surface Temperature** 49 °C (120 °F) maximum  
7 °C (45 °F) minimum  
  
10 °C (50 °F) to 32 °C (90 °F) preferred.

**Cycle Time** Approximately 6.5 minutes for 50 measurement locations with 2 Robots.

**Max Points** No limit. Programmable as a function of body/part style.

**Max Part/Body Styles** No limit.

**Conveyor/Cell Requirements** Stop station.

**PLC Interface** OPC over Ethernet.

**Power** 100-230 VAC, 50/60 Hz

## Robots

**Min/Max Robots** One, two, or more robots can be accommodated.

**Communication** Cell PLC via OPC over Ethernet.

## Measurement Data Output

**Measurement Data Format** XML formatted files.

**Ultrasonic Data Files** PELT .wv3 file format. Compatible with PELT Explorer browser software.

## End of Arm Tooling

**Weight** 1.6 kg (PELT sensor tool, distance sensor, and turret).

**PELT Sensor Spring Force** 6 N

**Over-travel Protection** Over-travel sensor triggers at 19 mm sensor shaft displacement.

**Maximum Travel/Displacement** 19 mm.

**Distance Sensor** Non-contacting ultrasonic.

**Water** Requires filtered DI (deionized) water for ultrasonic couplant mister, 3 to 5 bar pressure. Approx. 1 milliliter per measurement location.

**Air** Utilized for EOAT air bearing and optional air blowoff. 3.4 bar pressure.

Note: Specifications are typical at 25° C  
Specifications subject to change without notice.

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