SIMPLEOILFIELD

EMA-3T

ULTRASONIC THICKNESS GAUGE

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Intro

EMA-3T is a NextGen EMAT ultrasonic thickness (UT) gauge designed to bring efficiency and reliability to the UT inspection process.

It is unique in that it uses EMAT technology to perform UT measurements without requiring contact with the material, uses asset identification technology to quickly identify assets, loads customs inspection workflows from asset database and allows multiple connectivity options for measured data to be transferred, all while not requiring a single piece of paper or inspection guidelines.

EMA-3T is the future of efficient and human-error free inspections. Most of all, it was designed to be simple to use.

No paint removal

Integrated inspection workflows

Inspect more with less cost

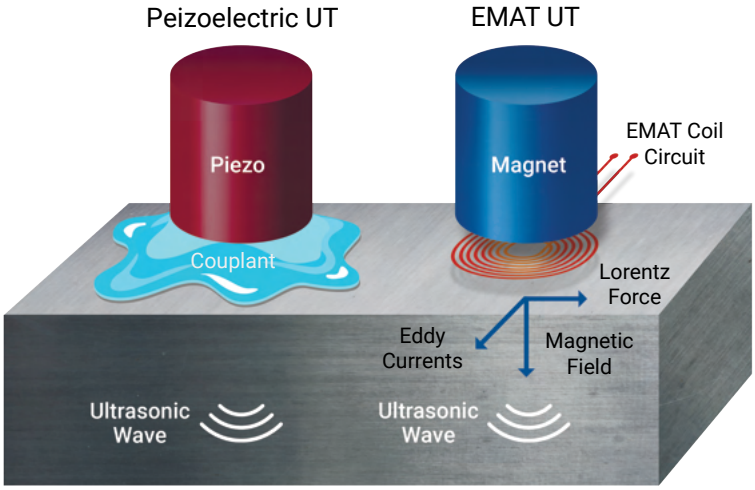
Digital from start to end

Technology

Electro-Magnetic Acoustic Transducer (EMAT) generates ultrasound in the material under test whereas piezoelectric transducers generates it in the probe, allowing EMAT to eliminate the need for coupling gel and direct contact.

This brings significant advantages to the inspection process as it does not require paint removal, using couplant or the need to be perfectly aligned to the surface; reducing time, complexity and requirements in UT inspections process.

Technology Comparison



Asset Identification

Integrated RFID and Barcode readers allow asset identification without human interpretation which can cross-reference the asset inspection workflows and automatically guide the inspector to perform inspections.

Custom Workflows

These digital workflows allows users to define how to inspect an asset and predefine the fail/pass trigger values only once and can be reused for same asset types.

Connectivity

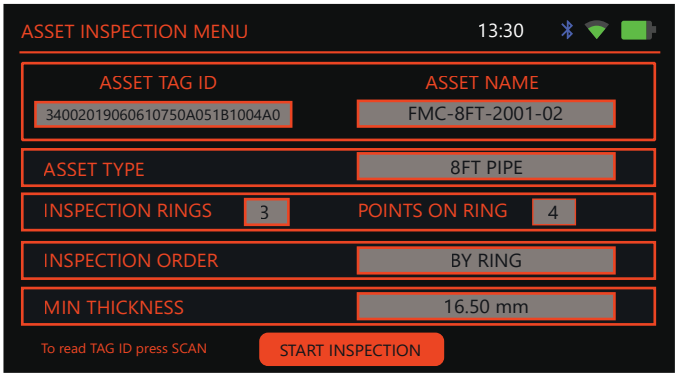
EMA-3T is a fully digital product and to ensure maximum flexibility, it comes with multiple connectivity options. Wi-Fi and Bluetooth for wireless and USB-C for wired data transmission.

Inspection process

Asset inspection in 3 simple steps

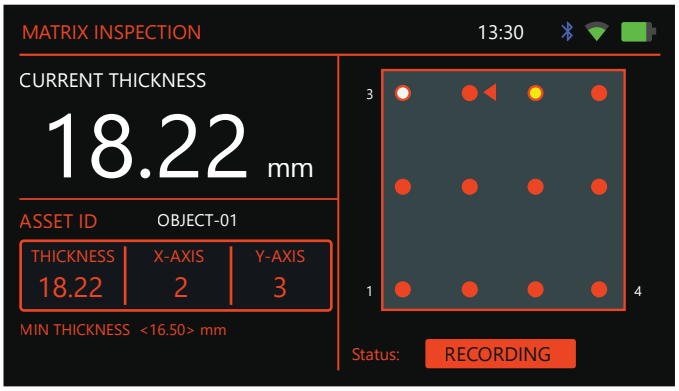
1

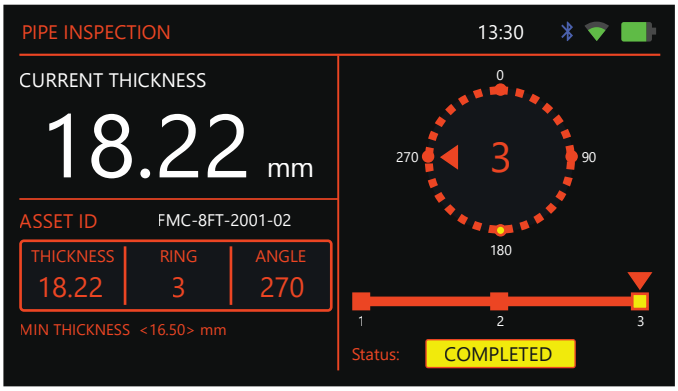
Asset database uploaded to EMA-3T with predefined inspection parameters for each asset.



2

Inspector scans asset ID tag, performs inspection and saves data in a structured format.





3

Inspection data transfer from EMA-3T in customized format

Serial number	Tag ID	Min. thick.	Length ft	Ring 1	Ring 1	Ring 1	Ring 1	Ring 2	Ring 2
FMC-8FT-2001-02	34002019060610750A051B1004A0	0.649	8	0.6755	0.7174	0.7076	0.6870	0.6891	0.6846
FMC-8FT-1020-02	34002019061010750A051B1012B9	0.349	8	0.3279	0.2944	0.3043	0.3106	0.3106	0.3311
FMC-8FT-1020-03	34002019061010750A051B1012C8	0.247	8	0.3232	0.3232	0.3263	0.3248	0.3248	0.3248
FMC-8FT-1020-04	34002019060610750A051B10038A	0.349	3.281	0.6177	0.5972	0.5925	0.6161	0.6161	0.6161
FMC-8FT-1020-05	34002019061310750A051B100D34	0.349	3.281	0.6003	0.6003	0.6003	0.6003	0.6003	0.6003

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Specification

Measurement	Metric	Imperial
Measurable thickness range [1] [2]	2 - 60 mm	0.0787 - 2.3622 in
Measurement accuracy +/- [3]	0.04 mm	0.0015 in
Measurement resolution	0.02 mm	0.0007 in
Maximum operating gap [3]	4 mm	0.1574 in
Minimum inspection diameter	20 mm	0.7874 in
Acoustic speed range	1000 - 9999 m/s	3280 - 32805 ft/s
Acoustic speed increment	1 m/s	3.2 ft/s
Operating frequency	3-5 MHz	
Maximum sensor inclination	25 deg	
Minimum radius of curvature	10 mm	
A-Scan Mode	Yes	
B-Scan Mode (Time-based)	Yes	
Custom Workflows	Yes	
RFID reader	865 - 928 MHz	
Barcode reader	1D & 2D Symbols with laser aimer	
Asset database	Yes	
Workflow database	Yes	
Internal memory	16 GB (SLC)	
Thickness readings	10,000,000	
Thickness readings with A-Scan	500,000	
Workflow data	Variable (depends on data points)	
Wi-Fi	802.11 b/g/n	
Bluetooth	Bluetooth 4.2 & BLE	
Cloud Ready	Yes	
Continuous operation	6 hours	
Battery	Lithium-ion	
Charging & data connector	USB-C	
Charger (GaN)	100 - 240 VAC (61W)	
Device design	IP65	
Transport case design	IP67	
Dimensions - Gauge (L x W x H)	230 x 132 x 77 mm	9.1 x 5.2 x 3 in
Dimensions - Probe (D x H)	30 x 44 mm	1.2 x 1.7 in
Weight	830 g	1.83 lbs
Operating temperature	-20 to +60 °C	-4 to +140 °F
High temperature probe [4]	700 °C	1292 °F

(1) – Using carbon steel
(2) – Thickness range possible up to 200 mm
(3) – Based on defined thickness range and carbon steel
(4) – High temperature probe not included in standard kit

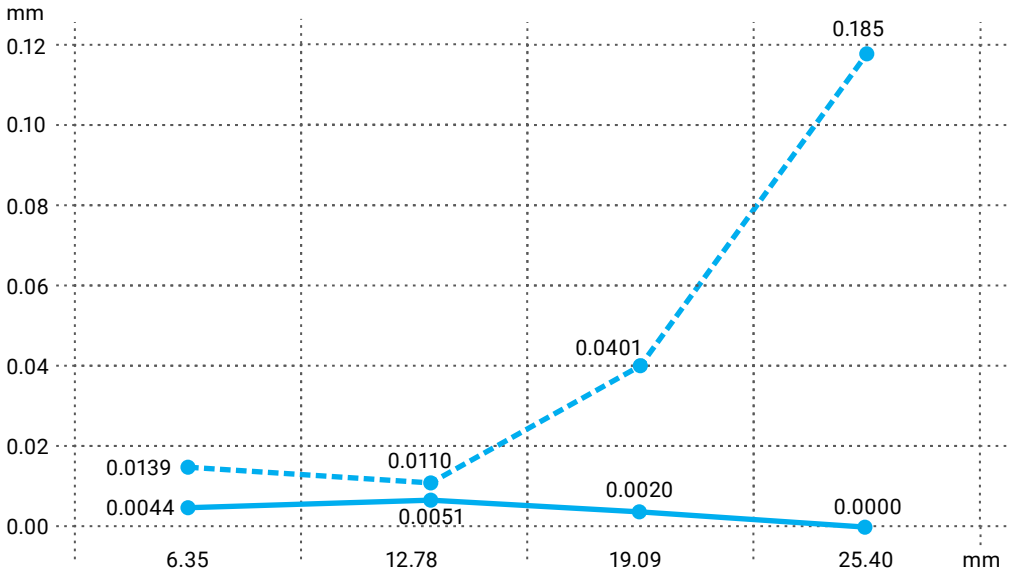
Performance comparison Piezo vs EMAT

EMA-3T vs Standard Piezo-electric device with Certified Standard

The graph shows the performance results of EMA-3T vs a Standard Piezoelectric gauge on the same certified standard (detailed report available on request)

EMA-3T

Standard Piezoelectric



Photos

High Temperature Probe
thickness measurement on surfaces with temperatures up to 700 °C

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