MAGNETIC THICKNESS DETECTOR (MTD)

The Magnetic Thickness Detector (MTD) is a 1-11/16 in O.D electromagnetic corrosion measuring instrument primarily run through tubing with the unique ability to simultaneously inspect tubing and the casings behind it. The integrity of the casing string can be evaluated with neither the requirement for costly workover rig, nor the time-consuming removal of the tubing completion.

This next-generation MTD tool is capable of evaluating quantitative thickness measurements up to three concentric pipes. The state-of-the-art instrument combines a high power transmitter, improved signal-to-noise (SNR) electronics and fully configurable acquisition. This flexible approach allows a wide range of evaluations under different conditions and conveyance systems.

A simple engineer selection of the functional mode allows features such as:

- Log up to 18-5/8" casing
- Simple mode selection
- Fast logging of single strings

The tool samples the pulsed eddy current transient decay response every 1ms for a duration controlled by the logging mode. This data can be transmitted real-time to surface or stored downhole during memory logging as the MTD tool is fully PegasusStar compatible.

When run with our PegasusStar platform, the MTD is fully combinable with Multi-Finger calipers (MFC), Gamma-Ray/Temperature/CCL (GTC) and our Digital Radial Bond Tool (RBL). The combination provides a comprehensive evaluation of the well integrity, providing accurate thickness information for multiple pipe strings as well as the cement bond quality.

Application & Features

- Slim tool with 1-11/16 in O.D
- Combinable with all Pegasus Series Tools
- Quantitative 3 pipe thickness evaluation
- Pre-job planner software with forward modeling module
- Fully configurable tool caters to a wide range of downhole conditions.
- Processing with user friendly module of MIPS Pro Well Integrity Platform
- Warrior Compatible
- Qualitative evaluation of fourth pipe

The MTD tool has two sets of sensors, one short ("C") and one long ("A"), which deliver high-energy electromagnetic pulses into the pipes surrounding the tool. Based on the Pulsed Eddy Current (PEC) physics principles, the tool records the composite decay of the eddy current signals that are used to evaluate the pipe conditions.

The long sensor records up to 60 channels spanning the decay time from 1ms to 300ms. This captures the fast decay of alloy pipes to the far-field signals of large casings. The short sensor has a smaller measurement aperture that scans the inner pipe at higher vertical resolution.

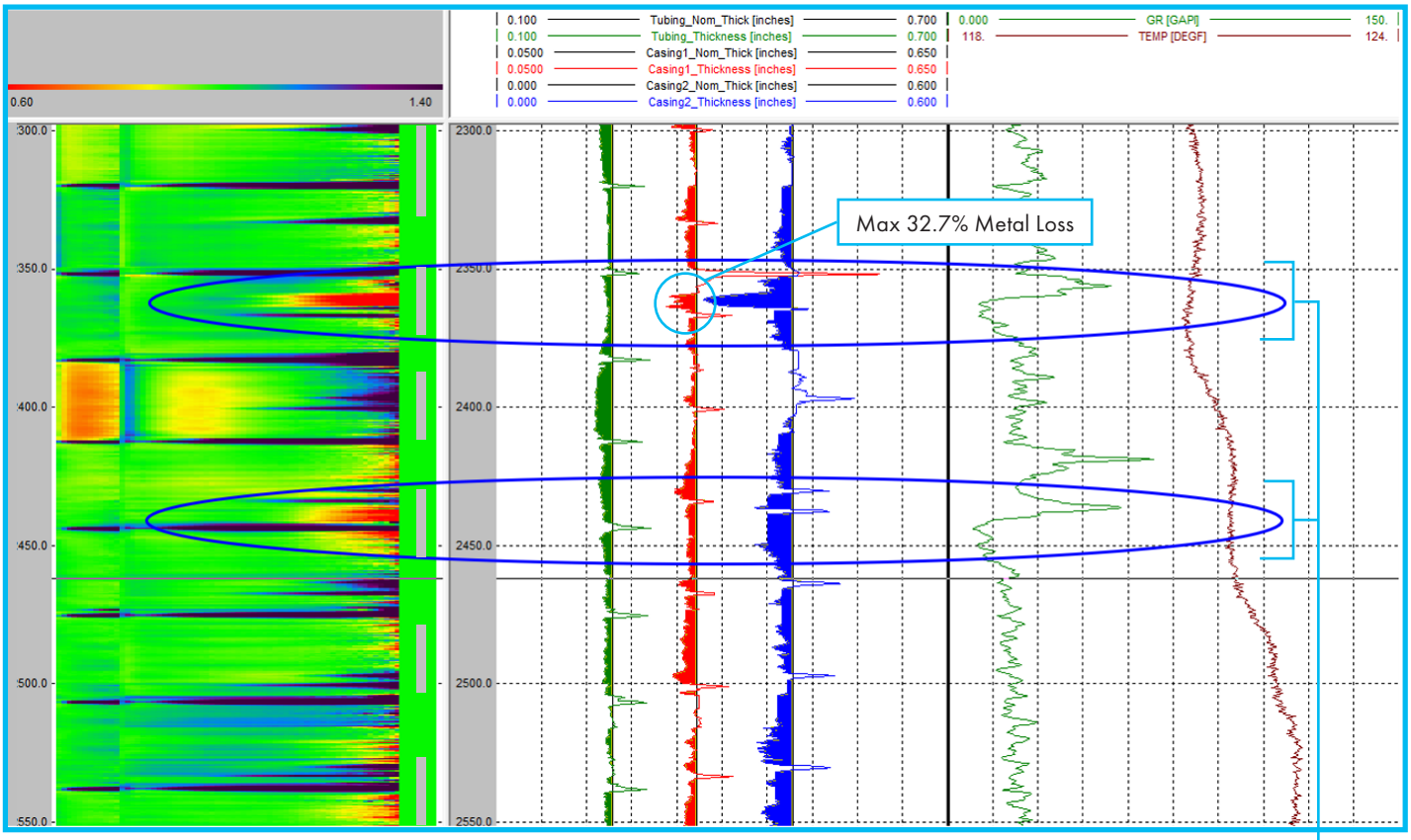
Log processing is performed with Nine's proprietary module built within the industry leading Well Integrity platform – MIPSPro. All MFC and MTD data can be processed, viewed and interpreted side-by-side within a single software platform.

GENERAL SPECS	
	MTD43C-G P/N 100514064
Maximum Pressure	15,000PSI (103MPa)
Temperature Range	-4°F ~ 350°F (-20°C ~ 175°C)
Diameter	1-11/16 in (43 mm)
Length	44.3 in. (1.125 m)
Weight	12 lbs (5 kg)
Recommended Logging Speed	30ft/min (single pipe), 8ft/min (double pipe) and 6ft/min (triple pipe)
Thru-wired or Bottom Only	Thru Wired
Measuring Range	2.362 in. ~ 18.625 in. (60 mm ~ 473.1 mm)
Metallurgy	17-4 SST, Titanium & Al-Bronze
Total Pipe Wall Thickness	1.75 in. (44.4 mm)
Combinability	13pin PegasusStar

WALL THICKNESS MEASUREMENT	
First Pipe Measurement	
Maximum Pipe Wall Thickness	0.9 in. (22.86 mm)
Thickness Accuracy	0.0075 in. (0.190 mm)
First Pipe (2-7/8") minimum aperture **	0.5 in. (12.7 mm)
Second Pipe Measurement	
Maximum Pipe Wall Thickness	1.2 in. (30.48 mm)
Thickness Accuracy	0.01 in. (0.254 mm)
Second Pipe (2-7/8" + 7") minimum aperture **	1.5 in. (38.1 mm)
Third Pipe Measurement	
Maximum Pipe Wall Thickness	1.5 in. @ 0.06 in. Accuracy (38.1 mm @ 1.52 mm Accuracy)
Thickness Accuracy	0.06 in. (1.52 mm)
Third Pipe (2-7/8" + 13-3/8") Minimum Aperture **	3 in. (76.05 mm)

** Minimum aperture is the minimum detectable height of a circumferential slot (100% loss)

Magnetic Thickness Detector - MTD-E/G 3 pipe Evaluation



For more information, and to find a representative near you, visit nineenergyservice.com