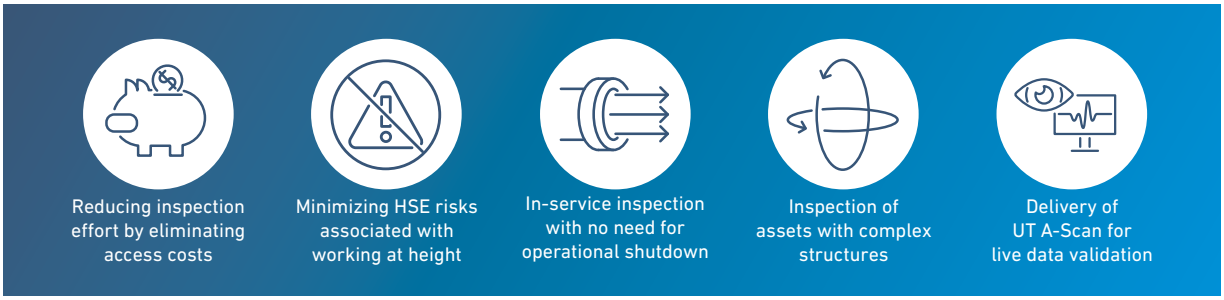
Drone Inspection Services
Comprehensive Ultrasonic Data Collection with Drone Technology

Drone inspection is a non-destructive testing (NDT) method that utilizes ultrasonic testing (UT) and visual and thermal inspections to evaluate areas in tanks, piping systems, chimneys, and other installations that are challenging or hazardous to access due to obstacles or heights. Drone inspections overcome the technical and physical limitations of conventional methods and significantly reduce health, safety, and environmental (HSE) risks. Beyond inspections, drones are also effective for cleaning and maintenance tasks such as coating repair, rust removal, and painting.



Collecting ultrasonic data at height can often be challenging and costly due to the necessity of access equipment such as ropes, boom lifts, and scaffolding to position workers for inspections. Traditional methods not only present logistical and safety issues but also significantly increase inspection costs. Ultrasonic technology is complemented by visual and thermal inspection capabilities, providing a thorough assessment of the condition of the structure, leading to more accurate and effective integrity decisions.
In addition to data collection, maintaining the integrity of structures by mitigating corrosion growth is crucial to prevent further damage. Drones offer a revolutionary solution by enabling precise cleaning and recoating of these areas without the need for expensive access equipment, ensuring both efficiency and safety.

Key Advantages of Using Drone Inspections:

- Automated or manual UT couplant dispensing
- Measurement validation assistant will help determine the best A-Scan
- Real-time data visualization during flight
- Data collection in line with industry standards, e.g. EN ISO 9712

Measuring Description:

The drone probe houses several different systems and sensors to collect UT thickness data. Once the pilot has navigated the drone to an inspection area, the pilot engages contact mode. With feedback from the forward-facing LiDAR aid, the drone moves forward at a fixed speed. Just prior to contact, the couplant is automatically released. During contact, the drone automatically adjusts its angle with feedback from the force sensor. These adjustments mimic the accuracy of hand-tested measurements. The live waveform is reviewed by the UT inspector, and the pilot flies the drone to the next inspection point.

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Technical Specifications

Aircraft specifications

Maximum wind speed	10 knots static gusting up to 15 knots (18 – 27 km/h; 11.2 – 16.8 mph)
Operating range	100 m (328.1 ft)
Ambient temperature	-20 °C to +40 °C (-4 °F – 104 °F)
Deployed dimensions	90 x 90 x 48 cm (35.43" x 35.43" x 18.9")
Clearance requirements	1 m (3.28 ft) of clearance in each direction
Measurement performance	50 - 60 readings per hour
Max take-off weight	8 kg (17.64 lb)
GNSS	Dual GPS+, Glonass, Beidou + Galileo
Hovering Precision	Vertical +/- 2.5 cm (0.08 ft), Horizontal +/- 1.0 cm (0.03 ft)
Max hover angle	45 degrees pitch and roll
Video resolution	1920 x 1080 at 60 fps
Streaming resolution	1920 x 1080 at 60 fps

Ultrasonic specifications

Thickness range	2 mm (0.08") to 50 mm (2")
Material velocity range	0.508 mm/µs (0.002 ft/µs) to 13.998 mm/µs (0.046 ft/µs)
Transducer	D7906 dual element 11 mm (0.43")
Frequency	5 MHz
Coating	Non-metallic
Coating thickness	0.125 mm (0.005") to 5 mm (0.2")
Surface temperature	-20 °C (-4 °F) to 200 °C (392 °F)

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