

SILVERWING R-SCAN

Manual, dry-coupled ultrasonic inspection system for
ferrous and non-ferrous applications



MANUAL AND EFFECTIVE UT INSPECTION A PROVEN SUCCESS. MADE BETTER.

A cost-effective alternative to traditional thickness measurement locations (TML) and wall thickness inspections. The Silverwing R-Scan ultrasonic, dry-coupled B-Scan solution is easy to setup and operate. Combining portability with a high probability of detection, the system is the perfect versatile inspection solution.

The System

Combining the Silverwing R-Scan handheld, dry-coupled scanner with the Silverwing Swift ultrasonic data acquisition instrument delivers a simple to use, battery operated, portable ultrasonic inspection system ideal for applications ranging from 50 mm (2 in) up to flat plate. The software is packed with unique and intuitive features all designed to improve productivity and user experience.

Probe Design

Designed to be used in wide variety of industries, Silverwing's unique dry-coupled ultrasonic wheel probe eliminates the need for couplant or a constant water supply. The probe, a dual crystal 5 MHz ultrasonic probe with a unique rolling probe face is capable of measuring material thickness of ferrous and non-ferrous assets ranging from 2.5 mm up to 100 mm (0.1 in up to 4 in).

Telescopic Extension Pole

An optional carbon fibre extension pole increases the versatility of the system, opening doors to a wide range of applications. Operators now have a reach of 5 m (16.4 ft) reducing the need to work at height, from scaffolding or ladders.

Floating And Tracking Gate

A unique feature of the system is floating and tracking gates. The intelligent gates allow for a tolerance in the initial setup and deliver a more accurate inspection. The gates travel with the signal as it moves up and down, and from side to side, reducing the likelihood of incorrect or missing data, allowing for a more reliable and complete B-Scan inspection data set.

High Probability of Detection (PoD)

Compared to spot thickness measurement, the Silverwing R-Scan increases the likelihood of detecting corrosion by continuously recording thickness measurements as the scanning head is moved over the inspection surface. The captured thickness information is displayed as an A-Scan trace, a digital thickness measurement, an amplitude B-Scan or a simple to understand thickness profile.

Silverwing Swift Instrument

Silverwing Swift has a large 26.4 cm (10.4 in) non-reflective, touchscreen display. Its magnesium alloy casing is tough, rated to IP65 and designed to protect the instrument against dust and water.



VERSATILE SOLUTION DESIGNED FOR MULTIPLE APPLICATIONS, MATERIALS AND INDUSTRIES

Inspect ferrous and non-ferrous materials with reliable, recorded and auditable data. An extendable pole gives a reach of 5 m (16.4 ft) reducing the need to work at height and costly access systems.



Tank and vessel



Pipes and elbows



Ferrous and non-ferrous materials



Copper stills - reach of 5 m (16.4 ft)

Data Acquisition Software

The Silverwing Swift software controls both the Silverwing Scorpion2 and R-Scan. The intuitive software is easy to use with several advanced features resulting in high quality ultrasonic inspection data.

Operators are guided through a simple process of entering the inspection details followed by ultrasonic setup. Adjustments can be made using the touch screen or hard buttons located on the Silverwing Swift.

Data Collection and Analysis

Real time A-Scan and B-Scan data is displayed during the scan. Once a scan is completed the operator can analyse the results or simply save the scan and move onto the next scan. Scan analysis is made simple with active A-Scan and B-Scan display, placing the cursor over any part of the B-Scan window shows the A-Scan trace and thickness measurement for that specific location.

An adjustable threshold indicator can be displayed over the profile view, helping to identify reportable defects at a glance. The full amplitude view helps to characterize wall loss, allowing for a more detailed analysis and accurate corrosion assessment.

Reporting

Complete inspection data can be exported as a CSV or Excel file for statistical analyses and reporting. If preferred just A-Scan and B-Scan views can be exported as image files.

For advanced reporting, data can be exported as a CMAP file. CMAP software stitches all the scans automatically based on the export values, providing a complete inspection overview.

Applications

- Pipelines
- Pipe bends and elbows
- Pressure vessels
- Stainless Steel vessels
- Copper Stills
- Horizontal storage tanks
- Ferrous and non-ferrous materials



5 m (16.4 ft) reach with extendable pole

The Sensible Approach

Traditionally wall thickness surveys would entail taking single Thickness Measurements at given locations (TML's). Over time the statistical probability of repeatedly finding the minimum thickness is low. In addition, the collecting and reporting of these results can be significantly time consuming.

Silverwing's approach is to efficiently inspect as much of the asset as possible, recording a large number of measurements. Then analyse the results with dedicated tools to deliver a complete picture of the assets condition.

Silverwing R-Scan has been designed to increase the statistical probability whilst increasing efficiency by collecting more data in the same amount of time or less than a traditional approach.

SPECIFICATIONS

R-SCAN

Dimensions (W x H x D)	65 x 54 x 122 mm (2.5 x 2.1 x 4.8 in)
Weight	1.8 kg (4 lb)
Umbilical cable length	3 metres (10 ft), Optional 6 metres (19.7ft)
Max scan speed	Manual
Adhesion	Magnetic wheels and hand pressure
Transducer	5MHz twin element Dry-coupled
Near-surface resolution	2.5 mm (0.1 in)

SWIFT

Dimensions (W×H×D)		355 × 288 × 127 mm (14.0 × 11.3 × 5.0 in)
Weight	With batteries	6.6 kg (14.5 lb)
	Without batteries	5.7 kg (12.5 lb)
Power requirements		100–240 VAC, 50–60 Hz
Power supply		Direct VAC or onboard batteries
Batteries	Type	Li-ion, rechargeable, DOT compliant
	Typical life	6–8 hours
Display		26.4 cm (10.4 in), LCD touchscreen Non-reflective (AR coating)
Storage		SSD, 100 GB
Connectivity		Gigabit Ethernet, Wi-Fi, Bluetooth®, 3 x USB 2.0
IP rating		Designed for IP65
Ambient temperature		0–40 °C (32–104 °F)
Ambient humidity		95 %, non-condensing



R-SCAN CAPABILITIES

Minimum diameter	50 mm (2 in)
Maximum diameter	Flat plate
Minimum material thickness	2.5 mm (0.1 in)
Maximum material thickness	100 mm (4 in)
Maximum scan length	50 m (164 ft)
Minimum Surface temperature	0 °C (32 °F)
Maximum Surface temperature	80 °C (176 °F)

R-SCAN POLE (OPTIONAL)

Maximum reach	5 m (16.4 ft)
Weight	2.25 kg (5 lb)
Material	Carbon fibre

ULTRASONIC

Internal pulser/receiver	1 x Tx/Rx, 1 x Tx (for pitch and catch)
Transducer frequency	2.25-20 MHz
Max. pulsing rate	Capable up to 20 kHz
Pulse voltage	-75 to -200 in step of 25 volts
Pulse width	25 ns to 225 ns in 2.5 ns increment
Damping	50Ω
Receiver gain	8 to 70 dB, 40 dB TCG Range
Filter, Waveform	FIR filter, Full rectify
Sampling rate	100 MHz
Resolution	16 bits