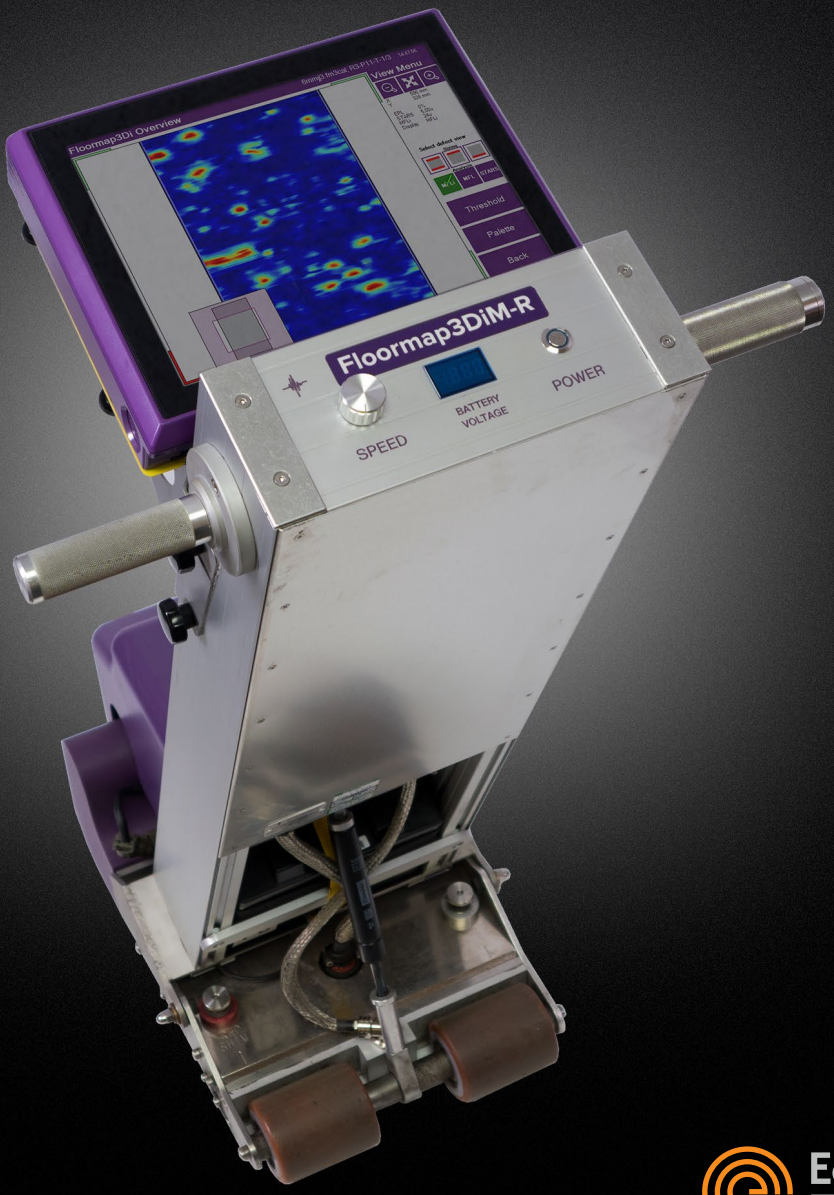
Technical
Specifications

# SILVERWING FLOORMAP

High-Speed Tank Bottom Inspection System
Featuring Top and Bottom Plate Corrosion Views.




Eddyfi Technologies

# SMART TANK BOTTOM INSPECTION
# THE LEADER. MADE FASTER.

Silverwing Floormap tank bottom inspection system utilizes two technologies, MFL and STARS. With top and bottom plate corrosion views and speeds up to 1 m/s (3.2 ft/s), Floormap improves the complete inspection process.

## Two Technologies - MFL & STARS

Silverwing Floormap combines two distinct technologies, MFL and STARS. MFL sensor are used to detect corrosion within the tank bottom whilst STARS (Surface topology air-gap reluctance sensors), Silverwing's patented technology enables the scanner to determine whether the corrosion is top side or bottom side. STARS can also be used to see the top surface below a coating.

## High-Resolution

The high resolution sensors provide excellent probability of detection down to defect as small a 2 mm in diameter. This, coupled with advanced signal processing and defect classification tools, significantly improves the corrosion detection and sizing capability. Results are translated on-screen into an easy to interpret pictorial view of the scanned area, making it easier to understand the condition of the tank bottom.

## Variable Speed

Silverwing Floormap is one of the fastest motor driven scanners on the market. Variable speeds of up to 1 m/s (3.2 ft/s) will increase inspection efficiency, reducing the time spent in a tank.

## Silverwing Floormap-R

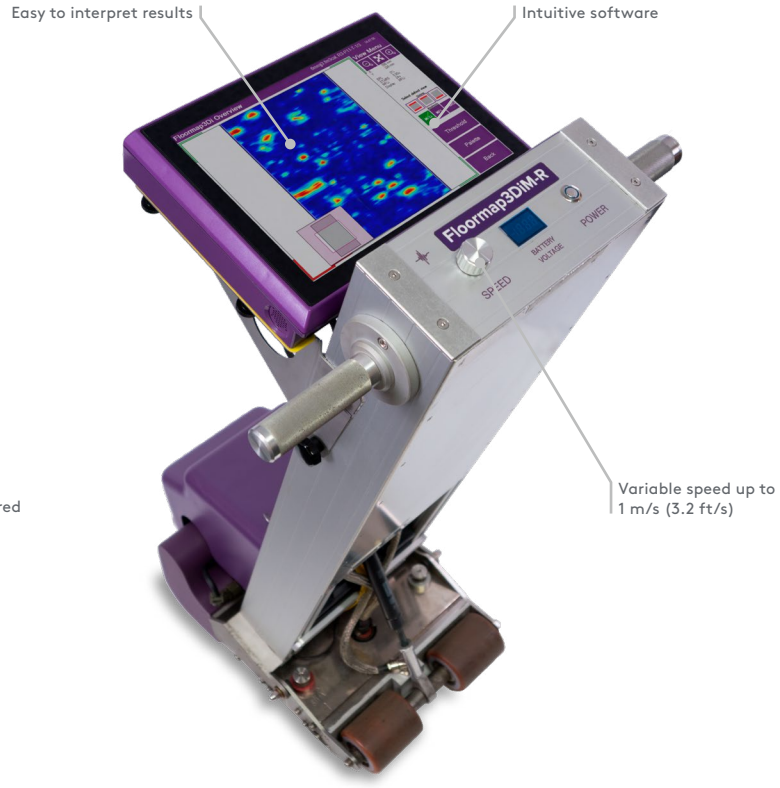
Basic model with free-scan and auto-stop modes is designed for rapid screening of tank bottoms. Free-scan displays a live MFL view of the plate, either color coded to show the magnitude of the MFL signals or as a simple black and white view showing only defects above a set threshold. Auto-stop mode stops the scanner whenever a defect is detected above a set threshold.

## Silverwing Floormap3Di-R

Intermediate model includes mapping mode. Unlike the basic model the scanner captures, saves and produces a corrosion map of the tank bottom. The corrosion map can be analyzed after each scan or post inspection within the dedicated SIMS reporting software which enables tank engineers to see the overall footprint and compare historically data sets to determine the optimum repair strategy.

## Silverwing Floormap3DiM-R

Advanced model combines the benefits of the basic and intermediate scanners into one fully featured system giving maximum flexibility.



# INSPECTION MAPPING SOFTWARE
# EASY TO ANALYZE, EASY TO REPORT

SIMS inspection mapping software automatically creates a corrosion map of the inspected tank bottom. Multiple views, analysis tools and automated reporting simplifies the post inspection process.

## Data Acquisition

Silverwing Floormap collects crucial inspection data at speeds up to 1 m/s (3.2 ft/s), this is made possible by the high-powered rugged touch-screen computer and advanced software processing. Silverwing Floormap produces a detailed plan view of the inspection area, operators can immediately view the scanned track and switch between multiple views, all designed to gain a better understanding of the tank bottom without the interpretation of complex signals as seen with other NDT technologies.

Basically, the operator is shown a pictorial view and can simply determine the nature and geometry, the location and percentage loss of a defect. Having this knowledge in an easy to understand format leads to faster and more reliable maintenance decisions.

**MFL view:** details all defects in the RAW unfiltered representation.

**STARS view:** depicts only top side defects, even through coatings up to 6 mm (1/4").

**MFLi high intensity view:** aids in the classification of corrosion.

These powerful tools can speed up the inspection process, reduce the amount of UT prove up whilst increasing inspection confidence leading to improved RBI calculations.

## SIMS Analysis and Reporting Software

Silverwing Inspection Mapping Software (SIMS) provides a powerful and efficient means of post inspection analysis, the ability to create high-quality inspection reports and data archiving for inspection traceability.

SIMS imports mapped tank bottom data from the Silverwing Floormap and automatically positions each of the separate plate files, producing a CAD drawing of the entire tank floor. Corrosion is displayed as a color coded map detailing precise location and severity in the form of X, Y coordinated and percentage loss. Alternatively, the plates can be colored according to the maximum corrosion detected on each track to provide an overview of the general condition of the tank.

Other features include a patch plate creator, view historical data side by side and the ability to add results from other inspection methods.

The comprehensive and easy to use analysis tools are supported with a customizable report printing wizard, simply choose what to include with our simple check-box selector, upload your logo then click print. The output, a high quality, branded, consistent report printing at the click of a button.

## SIMS KEY FEATURES

**Multiple Views:**

Tank, plate, photograph, data comparison.

**Image Marker:**

Link photographs to the exact point they were taken on the tank bottom.

**Top / bottom Views:**

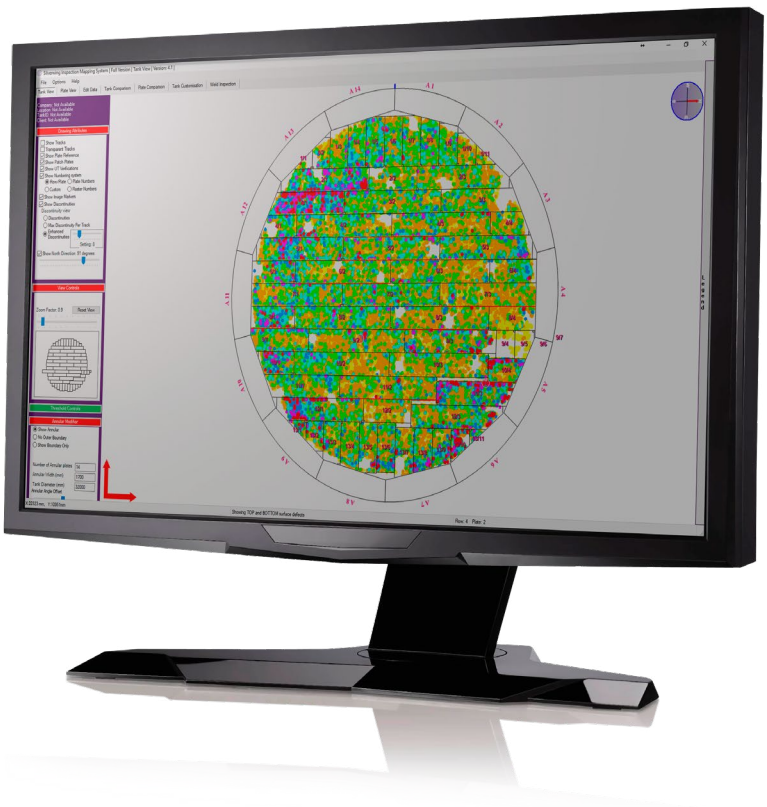
Tank and plate views can show all corrosion, top side only, or bottom side only.

**Automatic Tank Layout Drawing:**

Tank layout is created automatically on inspection import – no user input or CAD required.

**Tank Customization:**

Quickly add manways, piping, text and other tank features to customize the tank layout.



## Maximum Coverage

Silverwing Floormap is designed for efficient inspection covering the majority of the tank bottom but when combined with the Silverwing Handscan nearly 100% coverage is possible.

Silverwing Handscan is a simple to use push pull mini-scanner capable of fast screening in area such as critical zones, under internal pipe work, heating coils, around roof supports, annular plates and even the tank shell.

## FLOORMAP CAPABILITIES

| | |
|---|---|
| **Thickness range** | 5 mm up to 16 mm (3/16 in up to 5/8 in) |
| **Min defect detection** | 2 mm (0.08 in) diameter flat bottom hole (FBH) 50% deep |
| **Min defect sizing** | 20% material loss (ball type) under floor and top surface |
| **Max coating thickness for accurate sizing** | 6 mm (1/4 in) on 6 mm (1/4 in) plate<br>5 mm (196 mils) on 8 mm (5/16 in) plate<br>3 mm (118 mils) on 10 mm (3/8 in) plate<br>1 mm (40 mils) on 12 mm (1/2 in) plate |
| **Supported plate types** | Rectangle, annular and sketch |
| **Scan overlap** | 0 to 250 mm (9.8 in) with transparent tracks to show all defects |
| **Un-scanned area** | 10 mm (3/8 in) from plate weld<br>160 × 160 mm (6.3 × 6.3 in) corner dead zone |

## FLOORMAP TECHNICAL SPECIFICATION

| | |
|---|---|
| **Principle of operation** | Magnetic Flux Leakage & Magnetic Field Reluctance (STARS) |
| **Method of detection** | 256 Hall Effect sensors, 64 channels |
| **Top and bottom discrimination** | Yes, using STARS technology |
| **Test through coatings** | Yes, if non magnetic |
| **Speed** | Variable from 500 mm/sec to 1 m/sec (19.7 in/sec to (3.28 ft/sec) |
| **Scan width** | Max 300 mm (12 in) |
| **Maximum single scan length** | 32 m (105 ft) |
| **Scan coverage** | 9 m²/minute (30 ft²/minute) to 18 m²/minute (59 ft²/minute) |
| **Positional accuracy** | ± 0.04% (± 3 mm over 8 metres) (± 3/32 in over 26 ft) |
| **Method of propulsion** | DC motor, anti-static drive wheels |
| **Dimensions (W × H × D)** | 510 × 980.5 × 690 mm (20 × 27.1 × 38.7 in) |
| **Weight** | 57.5 kg (126 lbs) |
| **Minimum man-way size** | 500 mm (20 in) |
| **Transit case** | Meets IATA requirements for transporting magnetisable material |
| **Power requirements** | 1 × 12V, 42 amp-hour sealed lead acid batteries |
| **Batteries** | Supplied with 2 batteries and 2 chargers for continuous use |
| **Typical battery operational time** | Up to 4 hours |
| **Operating temperature** | -30°C to 55°C (-22°F to 131°F) |
| **Storage temperature** | -35°C to 75°C (-31°F to 167°F) |
| **Humidity** | 10 - 95% RH |
| **Real time analysis** | Defect size, x/Y position, plate view, top/bottom, MFL, MFLi, STARS |
| **Desktop analysis software** | 3 user license included. |
| **SIMS reporting suite** | Full version – 3 user license included. Read only version – unlimited.<br>Operating system requirement – Windows XP, Vista, 7, 8 or 10 |
| **Training** | 5 days Silverwing based training and examination available |
| **SNT-TC-1A Qualification** | 2 week level 1 and level 2 SNT course available |

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