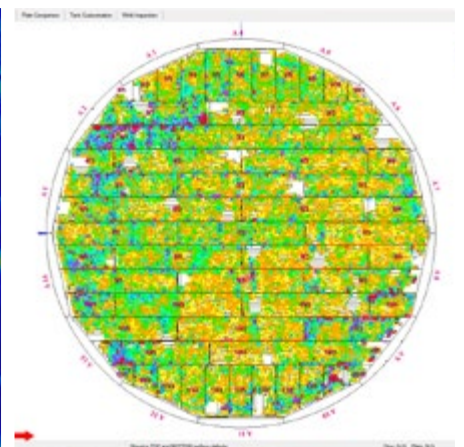
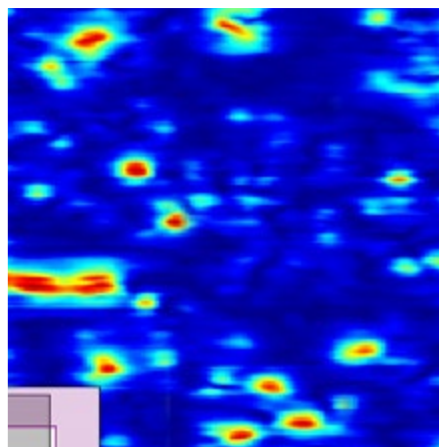
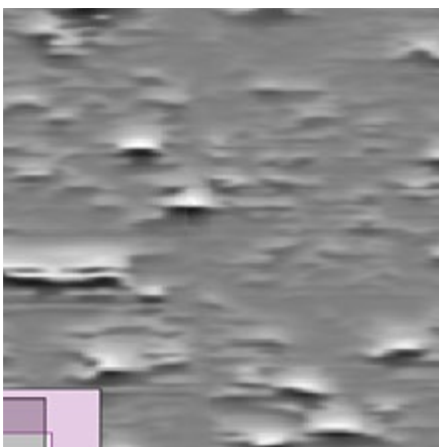
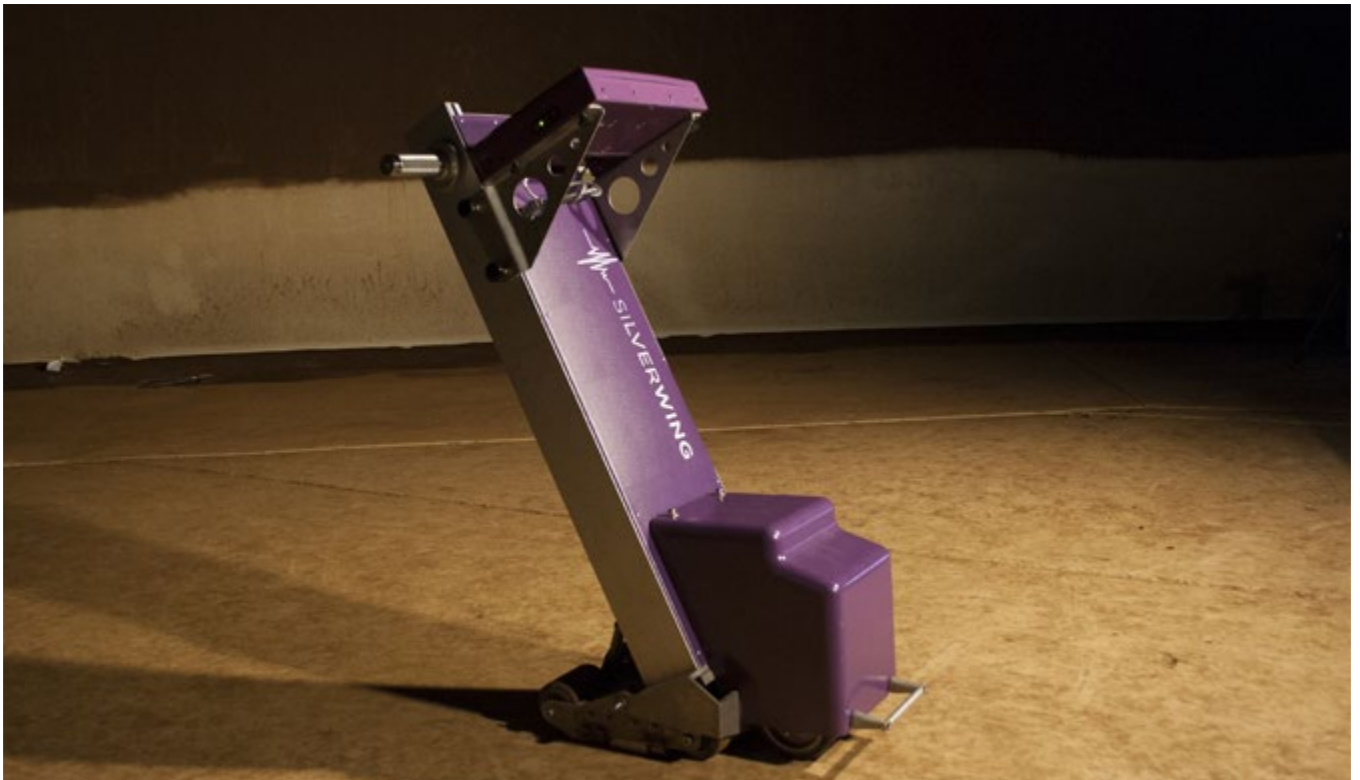
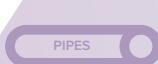


FLOORMAP

MFL Floor Scanner with STARS Top & Bottom Defect Discrimination
& MFLi Advanced Defect Analysis



TANKS



PIPES



VESSELS

- > COMPLETE TANK FLOOR MAPPING
- > ENHANCED PROBABILITY OF DETECTION
- > HIGH RESOLUTION SCANNING UP TO 1440 M²/DAY
- > FIELD PROVEN DURABILITY & RELIABILITY

FLOORMAP3Di & FLOORMAP3DiM

ADVANCED MFL TANK INSPECTION WITH STARS TOP & BOTTOM DEFECT DISCRIMINATION & MFLi ADVANCED DEFECT ANALYSIS

Building on the success of the Floormap3D with STARS top and bottom defect discrimination, continuous research and development has resulted in the most advanced Magnetic Flux Leakage (MFL) storage tank bottom scanner, the Floormap3Di.

The new system introduces:

- > **MFLi (intensity)** - advanced search and verification tool
- > **Dynamic cursor** - advanced defect sizing and classification tool

Together these innovative features achieve significant advances in corrosion measurement, with the potential to reduce inspection times and significantly enhance the quality of a tank inspection. This enables tank engineers to determine the optimum repair strategy and improve the outcome of Fitness For Service (FFS) assessments, Remaining Life Assessment (RLA), and Risk Based Inspection (RBI) programs.

KEY FEATURES

- > Full tank floor data recording and mapping
- > High resolution 64 channel sensor arrays to maximise detection capability
- > 256 individual sensors for 4.6 x 2 mm scanning resolution
- > Advanced signal processing and defect classification tools
- > 30 years MFL development in over 66 global locations
- > Through coating inspection up to 6 mm including FRP, GRP and SS
- > USB based, simplified data transfer
- > Digital calibration for different plate thicknesses
- > Battery powered, no external cables required
- > Touch screen computer providing immediate plate view for defect assessment
- > Field proven durability & reliability
- > Motor driven, 0.5 m/s constant scanning speed
- > Floormap3DiM adds free scan and stop on defect mode with adjustable threshold

HIGH PRODUCTIVITY AND ACCURACY

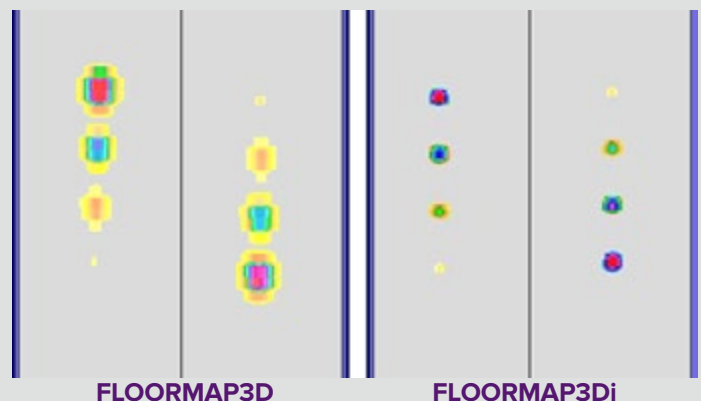
The Floormap3Di has a wider scan width than previous models capable of scanning up to 1440 m² per day, and unlike manual “stop on defect” systems, this is irrespective of the number of indications found. The software guided mapping process encourages the most efficient plate coverage, and helps ensure the maximum area is scanned reducing the chance of missed corrosion. The high resolution MFL sensor head coupled with advanced signal processing, and new defect classification tools significantly improves corrosion detection and sizing capability over previous generation systems.



DEFECT PRESENTATION

New signal processing algorithms developed for the Floormap3Di introduce greater accuracy for defect area presentation, and automatically separate and filter ‘noise’ indications from the displayed plate view.

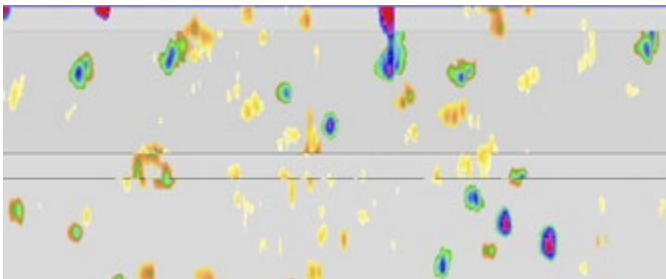
The enhanced area representation and noise reduction filters further improve accuracy for top / bottom discrimination using STARS, whilst simultaneously reducing the requirement for ‘prove up’ and increasing inspection efficiency.



CALIBRATED MFL VIEW

New signal processing algorithms developed for the Floormap3Di introduce greater accuracy for defect area presentation, and automatically separate and filter 'noise' indications from the displayed plate view.

The enhanced area representation and noise reduction filters further improve accuracy for top / bottom discrimination using STARS, whilst simultaneously reducing the requirement for 'prove up' and increasing inspection efficiency.

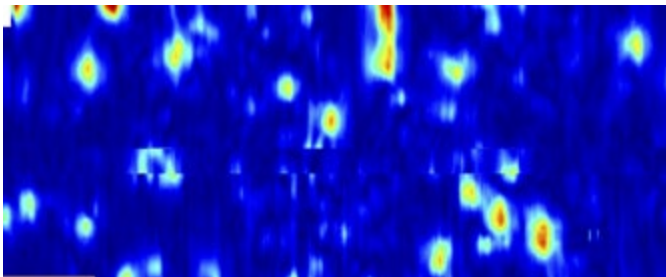


MFLi VIEW

The Floormap3Di introduces a new high contrast plate view based on the intensity of MFL signal response.

The MFLi defect map uses multiple colour palettes to highlight areas of corrosion, reduce the effect of spurious indications, and most importantly to help classify defect type.

This powerful detection and classification tool can reveal the presence of small diameter pitting, SRB attack, erosion patterns and other features that require further verification.



STARS TOP VIEW

The innovative STARS technology adds an additional 64 channel sensor array to detect variations in magnetic field strength caused by top side defects. STARS and MFL signals are combined and processed within software to distinguish top side defects from bottom side defects.

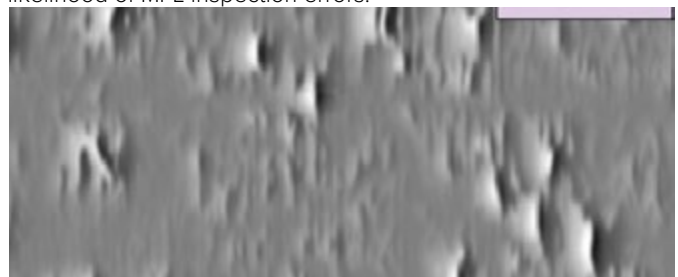
STARS works effectively through up to 6 mm (1/4") of coating, enabling efficient defect surface discrimination without coating removal.



MFL RAW VIEW

The Floormap3Di has been made possible by the industry's highest resolution sensor array and advanced signal processing capabilities. These high resolution sensors are essential to providing the detailed MFL raw view.

The MFL raw view is an unfiltered depiction of all the data, both top side and bottom side. The MFL raw view allows the operator to analyse and verify inspection data, this process will increase inspection efficiency and confidence and reduce the likelihood of MFL inspection errors.

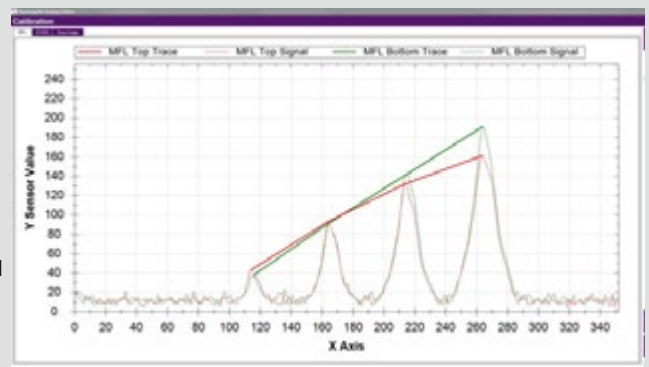


CALIBRATION CONFIDENCE

The Floormap system incorporates a novel calibration routine that creates separate calibration curves for top side and bottom side corrosion.

During the inspection, the software first identifies if a signal is generated from the top side or bottom side, and then automatically applies the most relevant calibration curve for more accurate defect depth estimates.

These calibration curves are linked to the inspection data and reproduced in the report along with the scanner serial number to provide an auditable inspection data archive which increase inspection confidence for both inspection companies and asset owners.



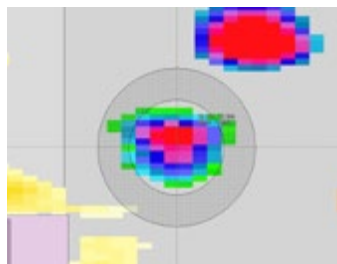
DYNAMIC CURSOR

The unique Dynamic Cursor (DC) sizing and verification tool assists in identifying difficult to size defects such as deep pits, bacterial attack and through holes.

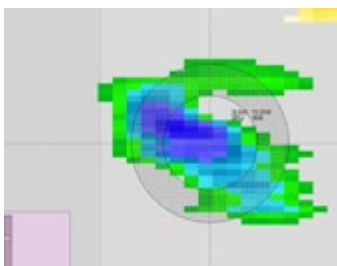
Dynamic Cursor is based on the expected volume loss and diameter of 'known depth' reference defects. The screen cursor forms a ring when moved over an indication which dynamically changes to show the expected diameter of the defect.

By using the DC, prove-up inspections such as pit gauging and ultrasonic measurements can be targeted towards the most relevant defects, reducing overall inspection time and improving inspection accuracy.

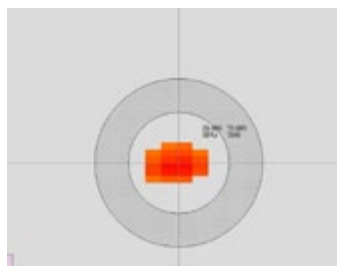
At a glance, the operator is able to determine which indications are likely to have been sized within expected accuracy levels, and which defects may have been oversized or undersized due to volumes being significantly different to the reference defects.



CORRECTLY SIZED
Indication within Dynamic Cursor



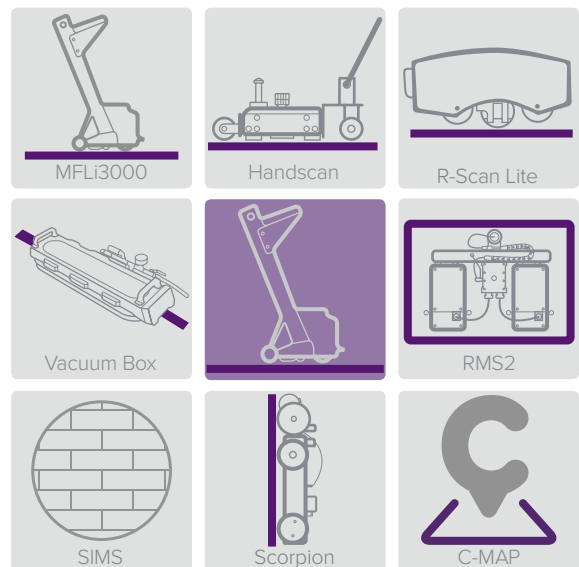
OVERSIZED
Indication outside Dynamic Cursor



UNDERSIZED
Indication inside Dynamic Cursor

THE SILVERWING SYSTEM

Silverwing produce a full range of equipment for corrosion inspection of storage tanks, including floor plate, wall and roof structures. The product range includes MFL mapping and manual systems, ultrasonic crawlers for thickness measurement, and vacuum boxes for weld inspection. By supplying a complete range we can offer unrivalled support, and ensure the highest quality inspection in the most efficient way. All our products are field proven by our in house teams and used by the most respected global inspection companies. For a complete overview contact our technical sales team.



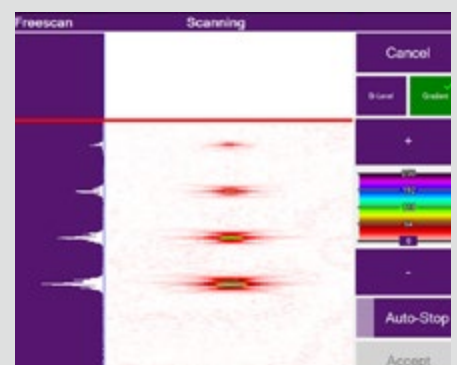
For more information on Silverwing Systems please visit our web site: www.silverwingndt.com

FLOORMAP3DiM

The Floormap3DiM model adds free scan and a stop on defect mode, which bring together the advanced defect detection capability of our Floormap systems with simple to use operation of the MFLi3000.

The Floormap3DiM has a unique Real Time Scan view that displays the MFL signal response whilst scanning, and the latest MFLi defect analysis view for evaluation at the end of each scan. An innovative reverse drive mode allows the technician to retrace the scan, easily locating areas of interest and significantly reducing prove up time. Also incorporated is Silverwing's patented STARS sensor technology giving a detailed image of top side corrosion.

For more information on the M features please visit our website or view the MFLi3000 brochure.



SIMS REPORTING SUITE

Silverwing Inspection Mapping Software (SIMS) reporting suite provides the most powerful and efficient means to create high quality reports on tank condition, and archiving of inspection results for traceability.

SIMS imports data from the Floormap and automatically positions each of the separate plate files together to produce a CAD drawing of the entire tank floor showing the location and severity of all corrosion over 20% loss or specified value with 10% colour banding.

TANK CONDITION ANALYSIS

Corrosion can be displayed as individual coloured pixels to provide precise information on the condition of specific areas of the tank floor. Alternatively the plates can be coloured according to the maximum corrosion detected on each track to provide an overview of the general condition of the tank.

A 'Plate View' allows the operator to view tank inspection data in more detail. The precise position and estimated percentage loss of individual corrosion indications can be displayed by holding the cursor over a specific point on the plate.

Tank Data imported from the Floormap has been further enhanced allowing the location of all top surface / bottom surface / combined corrosion to be available at a press of the button.

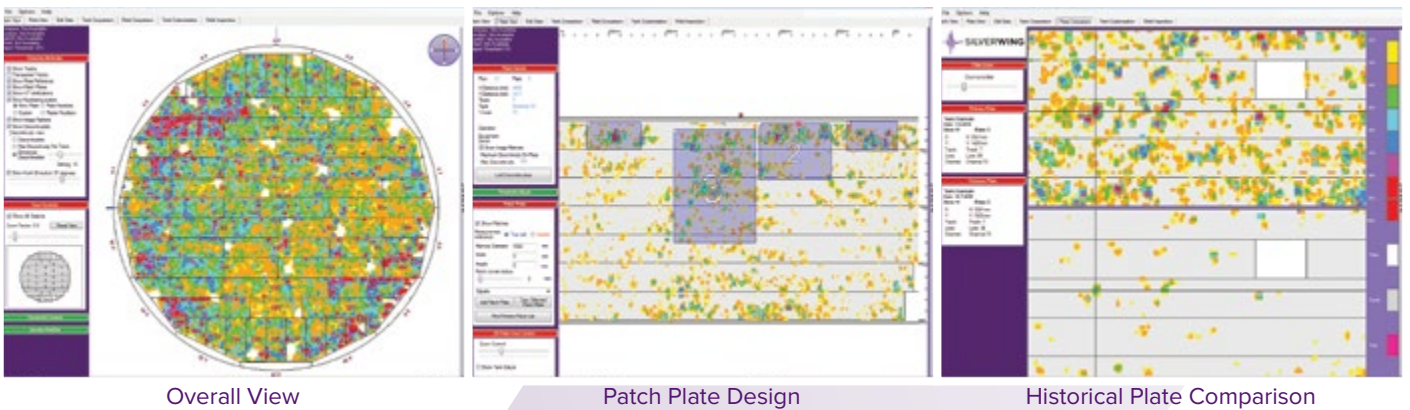
KEY FEATURES

- > Displays complete tank floor inspection data
- > Automatic CAD layout when used with Floormap systems
- > CAD layout tool for manual recording
- > Measurement tools for sizing areas of corrosion
- > Patch plate design tool (includes API standardised plates)
- > Incorporate Manual MFL, Vacuum box, MT, UT test results as well as visual observations
- > Top / Bottom defect views
- > Comparison of historic inspections
- > Add areas for further verification
- > UT prove up lists and data recording
- > Free viewer for report distribution

ADDITIONAL INSPECTION DATA

A unique feature of SIMS is the ability to add results from other inspections carried out on the tank floor. Results from visual, ultrasonic, Handscan, MFL and even weld inspections can be added to the SIMS report to produce a complete 'fingerprint' of the tank floor condition.

Digital images taken during the inspection can be added to the tank data and linked to specific areas of the tank floor to add a further level of detail into the report.



REPORTING TOOLS

To compliment the powerful reporting features, SIMS includes several tools to aid decision makers while evaluating the inspection data.

A repair plate tool is seamlessly integrated into the software allowing the user to quickly design patch plate locations. Once all patch plates have been entered, the software will automatically produce a cutting list showing the total amount of material required to repair the tank.

An innovative feature of the software is the data comparison tool, allowing the user to overlay two separate sets of tank data recorded on different dates and provide a direct comparison of corrosion growth at either the tank or plate level and assess as part of RLA/ RBI programme.

The comprehensive and easy to use SIMS reporting and analysis tools are further enhanced with statistical displays and a comprehensive and customisable report printing tool.



TECHNICAL SPECIFICATION

Patent Pending (EU: GB105193.5, GB1110889.1, GB1109371.3 and USA: 13175440)

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:	500 mm / second (19.7" / second)
Scan width:	300 mm (12")
Maximum single scan length:	32 metres (1,260")
Scan coverage:	9 m ² / minute (97 ft ² / minute)
Positional accuracy:	± 0.04% (± 3 mm over 8 metres) (± 3/32" over 315")
Method of propulsion:	DC motor, anti-static drive wheels
Rollers:	Heavy duty, multi compound rollers
Dimensions:	Height: 980.5 mm (38.7") - Width: 510 mm (20") - Length: 690 mm (27.1")
Weight:	57.5 kg (126 lbs)
Minimum man-way size:	500 mm
Transit case:	Meets IATA requirements for transporting magnetisable material
Power requirements:	1 x 12V, 25 amp-hour sealed lead acid batteries
Batteries supplied:	4 supplied and 3 chargers for continuous use
Typical battery operational time:	Up to 2 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
Minimum defect detection sensitivity:	2 mm (0.08") diameter pipe type 50% deep
Minimum defect sizing sensitivity:	20% material loss (ball type) under floor and top surface **
Maximum coating thickness for accurate sizing:	6 mm (1/4") coating on 6 mm (1/4") plate 5 mm (3/16") coating on 8 mm (5/16") plate 3 mm (3/32") coating on 10 mm (3/8") plate 1 mm (5/64") coating on 12 mm (15/32") plate
Supported plate types:	Rectangle, annular and sketch
Scan overlap:	0 to 250 mm (9.8") with transparent tracks to show all defects
Un-scanned area:	10 mm (3/8") from plate weld, 160 x 160 mm (6.3 x 6.3") corner dead zone
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
Operating system requirement:	Operating system requirement – Windows XP, Vista, 7 or 8
Training:	4 days Silverwing based training and examination available

Silverwing UK Ltd - (Head Office)
Clos Llyn Cwm
Swansea Enterprise Park
Swansea
SA6 8QY
Wales, UK
t: +44 (0) 1792 798711
f: +44 (0) 1792 793481
e: sales@silverwingndt.com
w: www.silverwingndt.com

Silverwing Middle East LLC
P. O. Box 75950
Dubai
United Arab Emirates
t: + 971 4 360 6751
f: + 971 4 360 6124
e: sales@silverwingme.com
w: www.silverwingme.com

Silverwing Africa (PTY) Ltd
Private Bag X1
Postnet Suite 419
Melkbosstrand
7437
South Africa
t: + 27 21 557 5740
f: + 27 21 557 4354
e: sales@silverwingafrica.com
w: www.silverwingafrica.com

Silverwing USA Inc
Suite 120
2911 South Shore Blvd
League City
Texas
77573
USA
t: + 1 281 549 6658
e: sales@silverwingndt.com
w: www.silverwingndt.com

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