

Eddyfi Technologies
Beyond current

Technical
Specifications

FLOORMAPX

MFL array tank bottom scanner

Floormap®X is the latest multi-technology MFL Array tank bottom solution offering an unmatched probability of detection – including in the critical zone – and can address thick plates and coatings brilliantly. Thanks to patented STARS technology, it provides top/bottom corrosion discrimination. Blazing fast, it can be used in either full floor mapping or Freescan™ mode. FloormapX increases your efficiency when inspecting tank bottoms like no other system.

FloormapX delivers unparalleled improvements to tank floor bottom inspection for maximum coverage and efficiency.

BENEFITS

- Full coverage, including critical zone, with one scanner
- High-resolution for improved POD and small-defect detection
- Fast scanning for higher inspection productivity
- Multi-technology for top/bottom defect discrimination
- Defect mapping and sizing for better assessment
- Supports plate thicknesses above 18 mm in detection-only mode
- One scanner, three flexible scan modes
- Built for tougher field conditions
- Faster, simpler service with modular sealed assemblies
- Expanded service and software options
- EEMUA 159, API 653, and API 575 Annex D compliant



MULTI-TECHNOLOGY ARRAY SOLUTION

MFL Array: 64-channel configuration with 128 multi-oriented MFL sensors, delivering high-resolution imaging, market-leading probability of detection, wide coverage (300 mm / 12 in.) and scanning speeds up to 1 m/s for highly productive tank floor inspection. On its own, MFL cannot distinguish whether corrosion originates from the top side or bottom side of the tank floor. With STARS, FloormapX can.

STARS: The patented technology enabling the FloormapX to differentiate between the top side and bottom side corrosion and report them separately. STARS also generates detailed top surface image profiles, even in the presence of coating, thus contribute to vital tank integrity information.

MORE POWER FOR THICKER PLATES AND OPTIMAL PROBABILITY OF DETECTION

The advanced bridge design, inclusive of the most powerful rare-earth magnets, injects up to 30% more magnetic flux into the inspection surface compared to previous models. This, combined with an exceptional signal-to-noise ratio, allows the FloormapX to detect smaller defects and for the first time inspect tank bottoms up to 20mm (3/4in) thick with a high sensitivity. The magnets can also be controlled and set to an 'off' condition for easier, safer handling, cleaning, and transportation.

ENGINEERED FOR HARSH FIELD CONDITIONS AND SERVICING

Upgraded sealing and ingress protection across critical assemblies help keep water, dust, and contaminants out. Reinforced connectors, fastening, and scanner-head protection improve durability in demanding inspection environments. A modular design, simplified maintenance, and smarter battery status monitoring help reduce downtime and make servicing easier in the field.



Figure 2: FloormapX annular mapping.

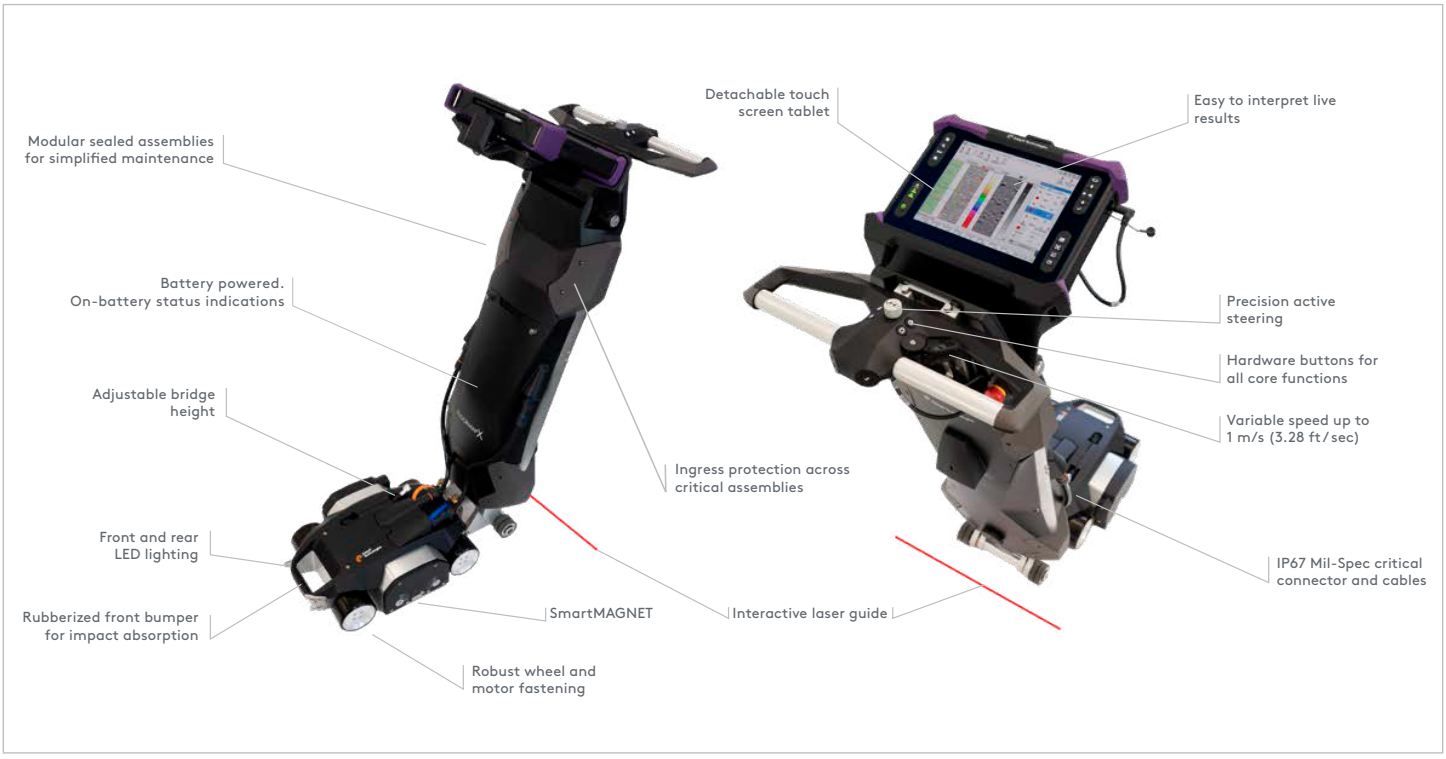

Figure 1: Annotated breakdown of FloormapX showing its key features.

FEATURES

Critical zone inspection, without compromise: Inspect the critical zone with the same FloormapX unit used for the rest of the tank floor. Its steering, tilting handlebar enables scanning tight to the tank shell, positioning the high-power magnet and high-resolution MFL sensor array within 12mm of the wall. This allows inspection of annular plates and adjacent floor plates with one system, while maintaining the magnetic performance and signal quality needed to scan thicker plates and deliver high-resolution, high-POD data in this critical area. The result is a unique combination of coverage, versatility, and performance.

Interactive laser guide: Marking the floor while you map is now fast and easy, thanks to laser-assisted defect location. The laser line is simulated live in the C-scan, allowing to correlate the physical location of tank floor defects with C-scan indications.

SmartMAGNET™: Variable automated magnetic flux strength for optimized inspection performance depending on plate thickness. Besides, literally turn off powerful rare earth permanent magnets for easier placement during critical zone inspection, storage and shipping, and safer handling.

Adjustable bridge height: Reach maximum sensitivity where conditions allow, and easily raise the bridge to scan even in the most challenging conditions, such as undulated plates, or when surface preparation is not ideal.

Onboard powerful lighting: Front dimmable, focalized LEDs with a diffusing lens and rear backlighting deliver high, uniform-intensity illumination based on chip-on-board technology and in line with API recommendations for visual inspection. This helps operators clearly identify product-side pitting and scan obstacles, while providing better visual confirmation of the areas highlighted by the laser line during scanning.

Easy-break™: Optimized design for intuitive and ergonomic breaking of the magnets by operators.



Figure 2: FloormapX MFL tank bottom inspection.

FULL FLOOR MAPPING OR FREESCAN™ MODE: THE CHOICE IS YOURS

The FloormapX supports multiple scan modes and the capacity to map the annular plate, including the critical zone. Customizable reporting options to suit EEMUA 159 and API653 recommendations.

INSPECTION FLEXIBILITY WITH 3 SCANNING MODES

Mapping: A comprehensive inspection with full auditable data sets. Interrogate inspection data while in the tank or use the dedicated PC-based SIMS PRO™ analysis and reporting software. During a scan, the operator can see the live data for both top and bottom defects.

Freescan: A simple, fast detection mode, leveraging all of the underlying technology for the best possible result. A quick way to locate corrosion. Scan in any orientation, with no need to measure plates.

Pause on defect: A new feature built into both mapping and Freescan modes. Allows the scanner to pause during a scan for defect mark-up or prove-up. Continue the scan without missing a step; the data will be seamless.



Figure 3: Tank floor inspection using FloormapX.

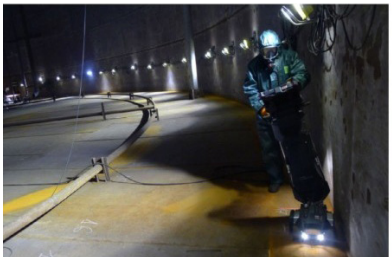



Figure 4: Tank floor inspection using FloormapX.

SOFTWARE

SIMS GO - DATA ACQUISITION

An intuitive software designed to increase workflow efficiency and produce accurate and comprehensive tank inspection data.

With a streamlined interface and operation, operators can select pre-planned workflows or create their own for both mapping and manual modes.

A first for the Floormap are real-time live scan displays during acquisition. An operator can see live MFL Array and STARS C-scan images. This feature combines seamlessly with an ability to pause the scan and use the laser-assisted defect location feature for rapid and precise defect location and identification: prove-up times have never been so fast. Once proven, the operator can update the automated and editable indication list leading to a paperless reporting strategy.

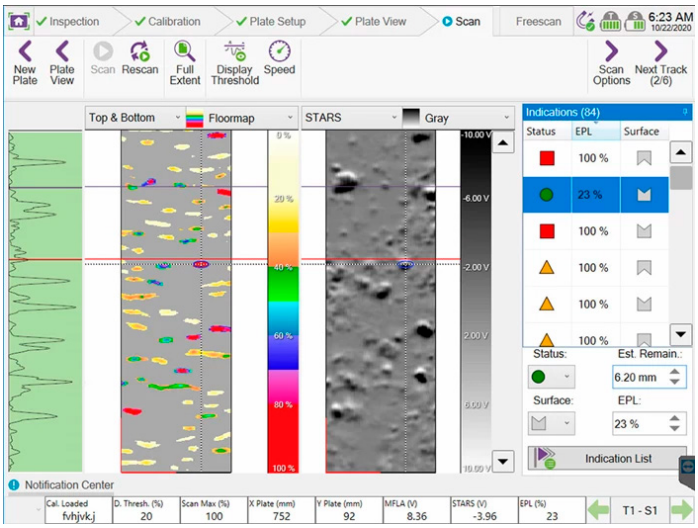

Figure 5: SIMS GO MFL software.

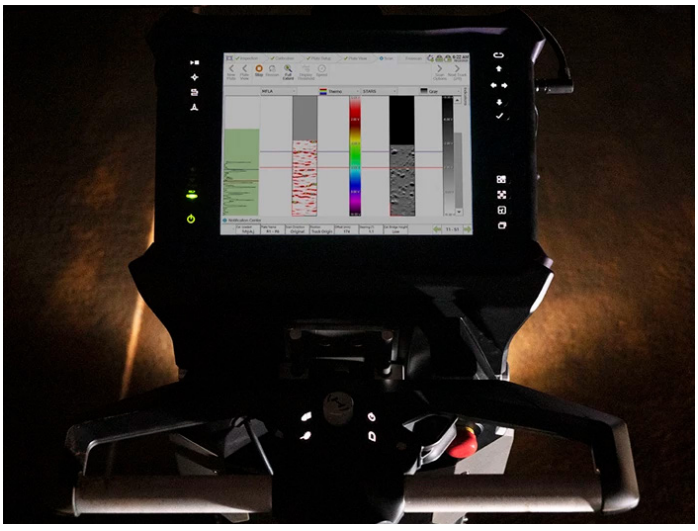

Figure 6: SIMS GO MFL software.

With a minimal software button click approach, operators spend more quality time scanning. An Ergonomic hardware thumb button allows operators to stop a scan, move to the next track, then start a scan without removing their hands from the drive handles or touching the tablet.

Once the inspection is complete, the removable tablet contains all the required data to produce a customizable report in accordance with EEMUA 159 and API 575 recommendations.

SIMS PRO - REPORTING AND MORE

SIMS PRO has been developed with customer feedback and engagement to provide a reporting solution that adheres to the modern inspection demands including those outlined in EEMUA 159 and API 653.

Seamlessly integrating with the FloormapX, SIMS PRO automatically displays the inspection data in an intuitive and immersive manner to provide a clear condition image of the tank bottom which is essential for devising optimal maintenance and repair strategies.

The FloormapX system combines seamlessly with SIMS PRO software suite to deliver detailed, high-quality inspection reports in the shortest possible timeframe.

SIMS COMPANION - FULL DATA REVIEW, PROTECTED ANALYSIS

SIMS Companion gives asset owners full access to inspection data for review, exactly as it appears in SIMS PRO, without the ability to modify analysis or report details. Available through Eddyfi's Customer Success Program, it helps stakeholders review data, vary thresholds, create repair options all with confidence while preserving the integrity of the inspector's work.



Figure 7: SIMS PRO FloormapX data analysis and reporting software.

SPECIFICATIONS

FLOORMAP

Principle of operation		Array Magnetic Flux Leakage & Magnetic Field Reluctance (STARS)
Numbers of sensors/channels		192 Hall Effect sensors, 64 channels
Top and bottom discrimination		Yes, using STARS technology
Detection capability		as small as 20%, ø 2mm (ø 0.080in)
Test through coatings		Yes, if non-magnetic
Coating thickness		up to 10mm (0.394in)
Speed		Variable from 500mm/sec to 1m/sec (19.7in/sec to 3.28ft/sec)
Scan width		300mm (12in)
Scan coverage		up to 263 m^2/h (2831 ft^2/h)
Plate thickness range	Mapping & sizing	4.7-18mm (0.185-0.709 in.)
	Detection only	19mm+ (0.75 in.+)
Positional accuracy		± 0.04% (± 3mm over 8m) (± 3/32in over 26ft)
Method of propulsion		DC motor, anti-static drive wheels/or push pull
Dimensions (W × H × D)		510 × 980.5 × 690mm (20 × 27.1 × 38.7in), shipped in 2 transit case
Operational weight		57.5kg (126lb)
Minimum man-way size		500mm (20in)
Batteries		Supplied with 3 batteries and 2 charger for continuous use
Typical battery operational time		Up to 4 hours depending on set up
Operating temperature		-10°C to 45°C (-14°F to 113°F)
Storage temperature		-35°C to 60°C (-31°F to 140°F)

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