

**Introduction**

Phased array L-scanning is a widely used technique for corrosion mapping and thickness monitoring of metallic and composite materials. It allows users to quickly identify and map areas of wall loss, delamination, or degradation.



Figure 1 – VEO3 corrosion mapping of steel pipes

**Manual/Semi-Automated Scanning**

Phased array L-Scans can be carried out freehand (no encoder with a live timed scan on the screen) over large areas or semi-automated (scanning manually with an encoder) to gather scans in a set area.

Manual/semi-automated scans have advantages over fully automated systems with large scanners:

- Freehand scanning allows the user to screen large areas without recording data to locate areas of wall loss for further investigation. PA probes cover a larger area than conventional UT enabling the user to scan the same area much faster.
- Freehand or small encoders allow inspection in restricted areas that large scanners cannot access.
- An efficient screening tool to evaluate inspection areas quickly and in greater detail than conventional UT.



Figure 2 – Encoded manual scan on steel plate

- Chemical & Petrochemical Sector
- Oil & Gas Sector
- Nuclear Energy Sector
- Wind Power Renewables Sector
- Military Sector
- Maritime Shipping Industries
- Pharmaceutical Sector
- Mining Sector
- Construction and Infrastructure
- NDT Service Providers

**Application**

- Corrosion / Thickness measurement
- Casting / Forging Inspection
- Composite Material Inspection
- Plastics Inspection
- Storage Vessel Inspection
- Asset integrity
- Flaw Detection and Evaluation

**Typical Parts**

- Pipelines
- Storage Vessels
- Infrastructure
- Composite / Plastic materials

**Inspection Techniques**

- Phased Array L-Scan

**Features and Benefits**

- Easy large surface inspections
- Larger scan coverage per pass compared to conventional UT
- Small and compact encoder design for an easy and close access to any part encounters.

**Software**

UTStudio+ and UTMMap data review software are designed with corrosion mapping in mind. Both software offer advanced post-processing tools, automated defect sizing with annotations, and CSV file exporting of results. UTMMap adds the ability to adjust scan line positions in a Merged C-Scan and combine multiple scan files into a single map that can be evaluated together and show a complete picture of the inspection.

Scanning an area manually can produce errors in position between scan lines; the UTMMap T-scan canvas allows the scan line to be re-positioned to the correct location.

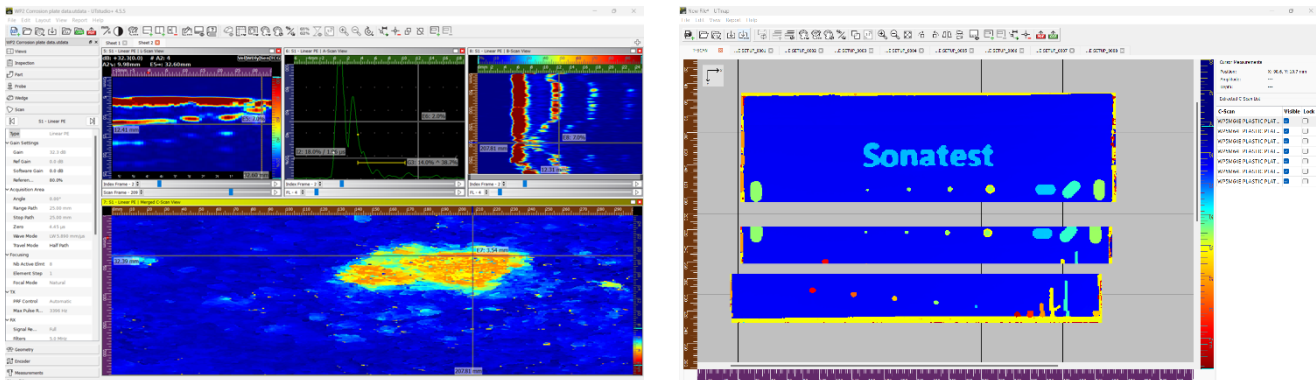


Figure 3 – UTStudio+ (Left) and UTMMap (Right) merged C-Scan data review

For further information or support, please contact the Sonatest Applications Team: [applications@sonatest.com](mailto:applications@sonatest.com)

**Recommended Tool Package**

Category	Part #	Description
Acquisition Unit	VEO3 or RSFlite	<a href="https://sonatest.com/products/flaw-detectors-phased-array/veo3">https://sonatest.com/products/flaw-detectors-phased-array/veo3</a> <a href="https://sonatest.com/products/flaw-detectors/rsflite">https://sonatest.com/products/flaw-detectors/rsflite</a>
Probe	Phased array transducer and wedge suitable for the application	<a href="https://sonatest.com/products/phased-array">https://sonatest.com/products/phased-array</a>
Software	UTStudio+ or UTMMap	<a href="https://sonatest.com/products/software/utstudio">https://sonatest.com/products/software/utstudio</a> <a href="https://sonatest.com/products/software/utmap">https://sonatest.com/products/software/utmap</a>

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