

# Phased Array Corrosion Mapping Solutions



- Fast measurement of wall thickness
- Excellent near-surface resolution
- High data-point density acquisition
- Inspect pipes, elbows, or plates
- Precise detection of volumetric damage

# Corrosion Mapping Solutions

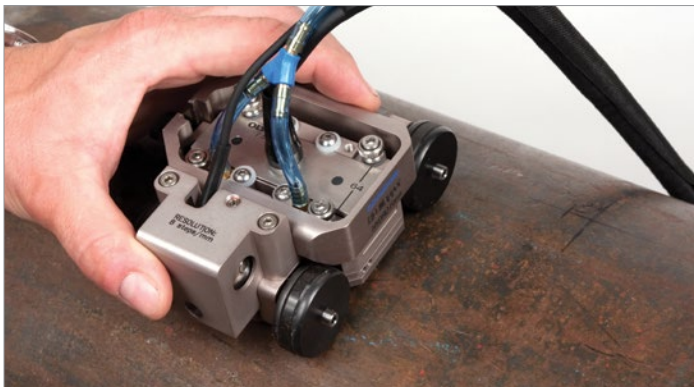
Phased array testing provides new technological solutions for the corrosion inspection market. These Olympus solutions enable inspectors to be more productive and collect higher resolution data with fully encoded C-scan imaging.

The HydroFORM® scanner, FlexoFORM™ scanner, RexoFORM wedge, and Dual Linear Array™ (DLA) probe offer efficient inspection options for the detection of wall thickness loss due to corrosion, abrasion, and erosion. Our solutions also detect mid-wall damage such as hydrogen-induced blistering or manufacturing-induced laminations, and easily differentiate these anomalies from loss of wall thickness.

## HydroFORM

### High-performance pipe corrosion mapping

The HydroFORM scanner utilizes an innovative water column that eliminates the need for a wedge, providing excellent surface conformance and optimized coupling conditions, even on rough surfaces. Easy gate synchronization with the front wall enables accurate backwall corrosion monitoring and remaining wall thickness measurements.



The HydroFORM scanner with an integrated Mini-Wheel™ encoder.

## FlexoFORM

### High-resolution elbow corrosion mapping

The FlexoFORM scanner uses a water column to maintain good coupling while conforming to the pipe elbow's shape. The scanner's innovative flexible phased array probe enables users to inspect the entire surface of elbows from 4.5 in. OD and greater using the same probe and scanner—only the water wedge needs to be changed to suit the elbow's diameter.



FlexoFORM scanner performing C-scan mapping on an elbow using an integrated encoder and indexing button.

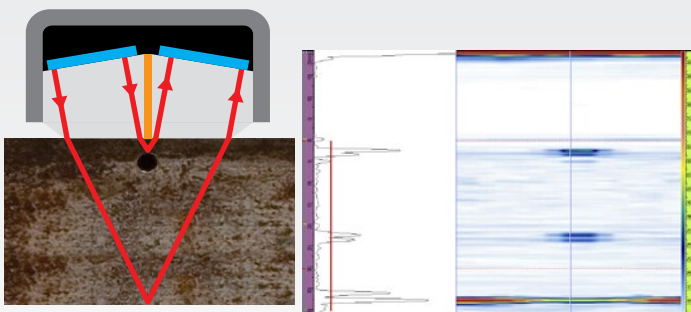
## Dual Linear Array Corrosion Probe

### Optimum near-surface resolution for smooth surfaces and limited access areas

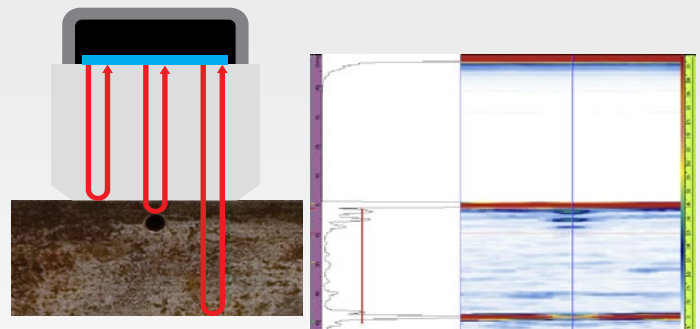
Dual Linear Array probes incorporate separate transmitting and receiving elements mounted on delay lines that are cut at an angle. This configuration generates beams that focus beneath the surface of the test piece, which considerably decreases the amplitude of surface reflection. This results in increased near-surface resolution, providing higher probability of detection of critical defects such as pitting, creep damage, and HIC (hydrogen-induced cracking).



### Pitch-Catch



### Pulse-Echo



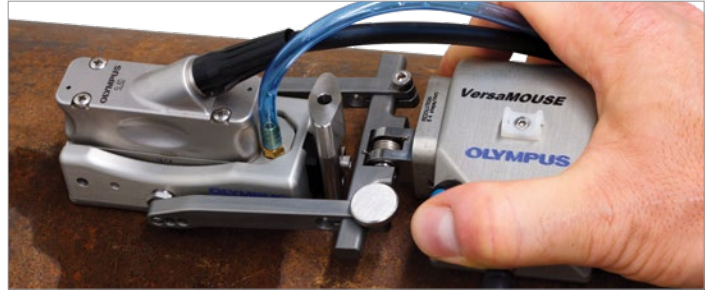
Compared to phased array pulse-echo, the pitch-catch technique produces very little interface echo, offering better near-surface resolution.

## Corrosion Inspection Scanning Methods

### Manual and manual encoded

Although all probe assemblies can be used as standalone encoded scanning devices when fitted with a Mini-Wheel™ or VersaMOUSE™ scanner, true 2D encoding is possible using Olympus semiautomated and automated scanners.

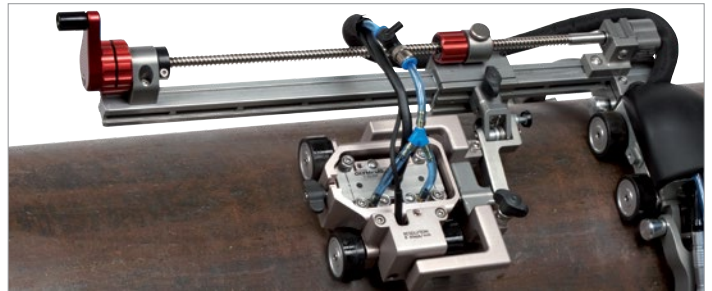
The RexoFORM wedge and VersaMOUSE scanner provide one-line encoded scans or 2D mapping using the integrated indexing button.



### Semiautomated



The MapSCANNER™ is a two-axis scanner optimized for corrosion mapping. It is shown here with the HydroFORM scanner.



The ChainSCANNER™ is a versatile two-axis scanner for corrosion mapping and weld inspection. It is shown here with the HydroFORM scanner.

### Automated



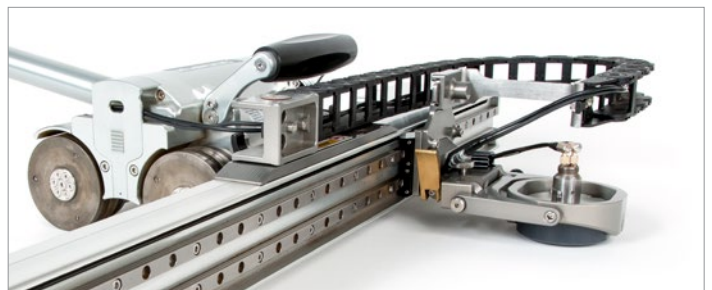
The HydroFORM scanner can be used with the MapROVER scanner to perform pipe inspection in circumferential direction.



The DLA corrosion probe can be used to perform automated inspection when combined with the MapROVER scanner.



The SFA1-AUTO wedge series can be used with the MapROVER scanner to perform pipe inspection in longitudinal direction.

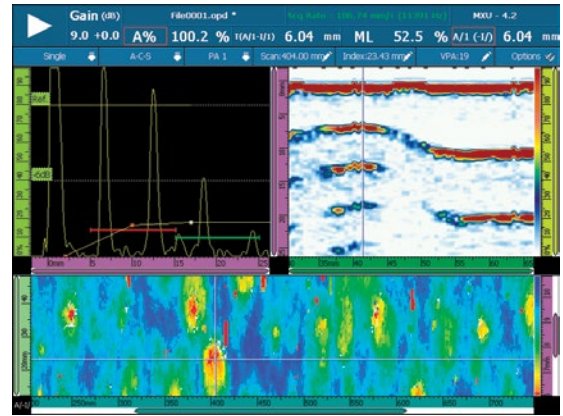


The MapROVER™ motorized scanner is also capable of inspection using dual element conventional UT probes.

# OmniScan® MXU Acquisition Software

The OmniScan® software has a full range of tools and displays for corrosion mapping applications:

- A-scan and thickness readings export to third-party software.
- Wizards for easy and fast setup and calibration.
- Minimum thickness monitoring during inspection.
- Full high-resolution A-scan storage.
- Thickness and position values for individual data points, a selected zone, or an entire scan.
- A-scan synchronization on the interface echo.
- Amplitude and position C-scan capability for two gates.
- Onboard report generation and printing capability directly from the instrument.



OmniScan MXU software displaying A-scan, S-scan, and C-scan views of corrosion.

## Specification Comparison

	DLA corrosion	FlexoFORM	HydroFORM	RexoFORM
Phased array probe type	REX1	FA1	I4	A12, A14
Maximum one-line scan coverage (width)	32 mm	64 mm	64 mm	38 mm (A12) 60 mm (A14)
Delay line medium	Rexolite	Water	Water	Rexolite
Delay line height	7.7 mm	9 mm	Short plate: 14 mm Tall plate: 30 mm	20 mm
Position of 2nd interface echo (in steel)	N/A	34 mm	Short plate: 54 mm Tall plate: 114 mm	50 mm
Max. recommended thickness (in steel)	80 mm	30 mm	Short plate: 50 mm Tall plate: 110 mm	46 mm
Typical near-surface resolution (1/8 in. FBH)	1 mm	2 mm	1.5 mm	2 mm
OD inspection range	4 in. and greater	4.5 in and greater	4 in. and greater	4 in. and greater
ID inspection range	N/A	N/A	10 in. and greater	N/A
Contact device with surface	Carbides	Wheels	Wheels	Carbides
Footprint	40 x 65 mm	92 x 230 mm	110 x 130 mm	40 x 95 mm
Scan direction	Circumferential	Longitudinal	Circumferential	Circumferential
Scan speed at 1 mm x 1 mm resolution	300 mm/s	123 mm/s	123 mm/s	123 mm/s
Scanner compatibility	MapROVER MapSCANNER ChainSCANNER VersaMOUSE	SFA1-Flexo: FlexoFORM SFA1-Auto: MapROVER	MapROVER MapSCANNER ChainSCANNER	MapROVER MapSCANNER ChainSCANNER VersaMOUSE

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