

M-Skip®

Corrosion assessment of inaccessible areas

Multiple Skip (M-Skip®) is an advanced ultrasonic inspection method used for inspection of areas of pipes, risers, and vessels rendered inaccessible by obstructions such as supports, clamps, and saddles.

M-Skip® is an ultrasonic pitch/catch method that allows probe placement either side of an obstruction, such as a support, at separation distances of up to 5.25 ft (1.6 m). Ultrasound is pitched through the wall of the parent material, beneath the external obstruction, and detected on the far side.

The ultrasonic waves will 'skip' between the internal and external surfaces and the arrival times of the signals are used to calculate wall thickness. For corrosion, loss of signal amplitude, reduction in signal arrival times and changes to signal shape are used to provide qualitative and quantitative information. M-Skip is part of the Oceanearing SIS package for non-intrusive inspection covering vessel support areas, amongst others.



FEATURES

100% encoded coverage of support area

Material thickness range: quantitative: >9 mm, qualitative: 6 - 9 mm

Temperature range 32° - 212° F (0° - 100°C)

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The system is capable of high-speed, high-resolution data collection. Data is presented in A-Scan/D-Scan format. Real time analysis enables operators to detect and report areas of corrosion immediately after scanning.

To ensure accurate and consistent probe/wedge placement for scanning, a purpose-built, fully-automated scanning system is used. The M-Skip scanning system is capable of scanning a range of assets including from 4 inch diameter piping up to flat plate.

Applications

Pressure vessels and pressure systems are required to undergo periodic statutory inspection to ensure continued safe and reliable operation. Traditionally, this has been achieved by means of manual ultrasonic inspection or radiography; however, when considering supports these methods are not possible due to the inherent restriction on the scanning surface.

As visual inspection by removing clamps or lifting a pipe off its support is costly and time consuming, M-Skip offers an alternative non-destructive examination of these areas, in-situ. It provides fully-encoded data collection, ensuring 100% coverage, significantly increasing probability of detection of corrosion, and enables engineers to determine the optimum repair strategy and improve risk based assessment (RBA) and risk based inspection (RBI) maintenance programs.

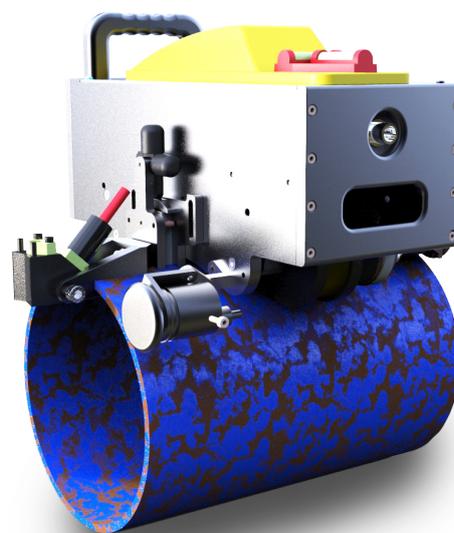
Benefits

- » Fully auditable inspections
- » Circumferential and axial inspections, including complex geometry such as pipe to bend, are possible
- » High detection and through wall sizing inspection efficiency for general wall thickness loss [DNV-RP-G103]
- » High detection and medium through wall sizing inspection efficiency for local wall thickness loss, pitting [DNV-RP-G103]
- » Through wall measurements based on arrival times, therefore more accurate than amplitude techniques
- » 100% coverage, permanent record, instant analysis, and reproducible fingerprinting for condition monitoring
- » Probe/wedge placement either side of support negates the requirement for direct access to the area of interest

- » Uniform wall thickness measurements +/-0.1mm (ESR technology)
- » Localized wall loss through wall extents accuracy better than +/- 1.0mm in some cases (ESR technology)

Considerations

- » Measurement extends in scan direction only
- » Material to be inspected must be penetrable by ultrasonic sound waves
- » Coatings can reduce signal amplitudes and cause skip signal merge
- » The outer surface of the asset being inspected should be clean and free from loose impediments such as insulation or other debris.
- » Suitable for ferrous materials



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