Corrosion Mapping with Phased Array Ultrasonics

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Abstract:
Recently, Olympus NDT developed a new phased array ultrasonic device specifically designed for detection of wall thickness reductions due to corrosion, abrasion and erosion. This new device also detects anomalies such as Hydrogen induced blistering or manufacturing induced laminations, and easily differentiates these anomalies from loss of wall thickness. The new device can be used to create phased array compression wave and angle beam inspection techniques. This device is trade named HydroFORM. This device uses an ingenious local immersion concept allowing excellent surface conformance and optimized coupling conditions for easy synchronization on front-wall echo for OD and ID corrosion monitoring. Phased Array Ultrasonics provides the ability to covers a 60 mm (2.36 in.) wide strip at a speed up to 100 mm/s (4 in./s), with a 1 mm x 1 mm resolution. This methodology is safer than conventional automated ultrasonic scanners. It provides extremely high data point density. One device inspects 2” radius to flat surfaces. HydroFORM can be used manually or semi-automatically in conjunction with the field-proven chain scanner. Other standard equipment includes an OmniScan MX, chain scanner and TomoView for more detailed data analysis.

Keywords: