

Introduction

Inspection for wall loss at pipe and vessel supports is complicated due to limited access caused by the position of the support, if it is welded to the surface, if other supports are close by etc.

For the inspection of these areas, indirect techniques are required which have the sensors positioned away from the area of interest, and fire into the area of interest from a distance or through the area to another sensor on the other side.

Corrosion profile and pipe geometry can produce very complex transmission paths and attenuation at different angles. Conventional ultrasonic techniques rely on data from only a single angle and often only the edge of a corroded area is detectable leaving the severity of the corrosion unknown.

The PA-CAT™ phased array technique developed by Holloway NDT & Engineering Inc, is an attenuation-based modelling algorithm used to evaluate the minimum remaining wall thickness of externally corroded piping and plate at supports. The current effective range of suitable samples is 2" (50.8mm) and above pipe diameter and up to 5/8" (15.9mm).

The technique consists of two phased array transducers and wedges setup on either side of the pipe support in a "pitch-catch" formation. Focal laws are setup to pass from one transducer, through the area of interest and be caught by to opposite transducer. A scan is taken across the full length of the support and the data collected. The data is extracted to CSV file format and analysed online via www.pa-cat.ca

Industries

- Chemical & Petrochemical Sector
- Oil & Gas Sector
- Nuclear Energy Sector
- Construction and Infrastructure
- NDT Service Providers

Application

- Corrosion / Thickness measurement
- Storage Vessel Inspection
- Asset integrity

Typical Parts

- Pipeline support locations
- Vessel support areas
- Corrosion blisters

Inspection Techniques

- Phased Array S-Scan

Features and Benefits

- The Veo3 completely controls the sectorial pitch-catch scan and the two probe coupling checks
- Powerful electronics provides clean multi-skip results over long sound paths
- Comprehensive profile data over an unreachable section of the pipe



Figure 1 – PA-CAT axial and circumferential scan configurations

The VEO3 instrument is fully compatible with the PA-CAT™ technique "in the box" and can easily generate the focal law setups for the scan, and run seamlessly with the scanners available for this technique. With the ease of use and high-speed scanning capabilities of the VEO3, it is the perfect fit for the PA-CAT™ Technique.



Figure 2 – PA-CAT™ scan being carried out with the VEO3

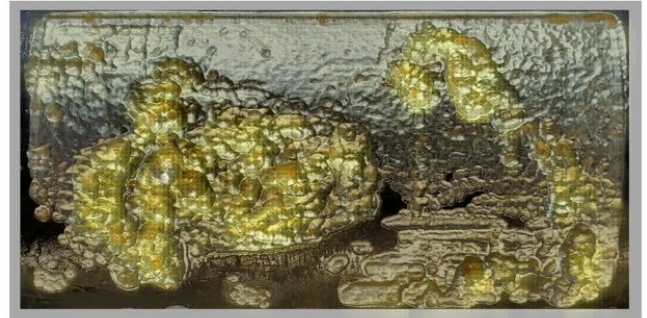
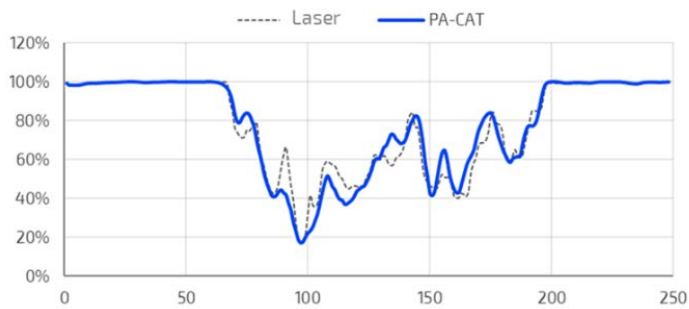


Figure 2 – PA-CAT results compared to 3D laser scan results from the corrosion patch shown

For further information or support, please contact the Sonatest Applications Team: applications@sonatest.com

Recommended Tool Package

Category	Part #	Description
Acquisition Unit	Veo3 UT BNC KIT with CSV or Veo3 UT LEMO KIT with CSV	Veo3 32:64 BNC or LEMO Note: 32 PR element is required
Probes	2x X2B-001 or 2x D1A-002	X2B-5M32E-0.6x10-SQX2.5 or D1A-5M32E-0.8x12
Splitter	ADAP-005 (if X2B's) or D1-CABLE-003 (if D1A's)	PA-Splitter- IX64 to IX32:32 or D1-CABLE-D-QX2
Wedges	X2BW-003 or D1AW-004	N55S Wedges kit Contouring in COD or AOD on request
Scanner	BGG017-AD-02	4 inches Diameter and up

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