Thickness and Coating Measurement Echo to Echo Technique on the Alphagage+

Application Note

Introduction

This application note shows setup and advantages of the echo to echo (E-E) technique on the Alphagage+,

When inspecting coated components using pulse echo inspection, the first echo depth will include the coating thickness, if this is not taken into account the inspection can show inaccurate results, with areas of internal loss this could skew the results from a rejectable state to an acceptable result. The solution to this is to remove the paint, causing additional expense, often the shutdown of the line and the requirement to reinstate the coating after the inspection.

Using the E-E technique the results discount the paint thickness giving an accurate result for the material under the coating.

Since coatings have roughly 2.5 times slower sound speeds than steel, a .010" coating would automatically introduce an error of .025' (.010" x 2.5). ECHO To ECHO measures the sound bouncing in the steel only thus ignoring the coating. We now also have the ability to measure the coating and the substrate at their independent velocities with the Alphagage+ CW or Alphagage+ CDLW. The use of the live waveform is recommended to look for mode converted echoes (Longitudinal waves becoming shear waves) as well as the ability to adjust gain and blanks...both main bang blank and blank after first detected echo.

To activate E-E mode on the Alphagage, turn the setting on in the measurement menu, this will assign a coating velocity if unknown.

Industries

- Aerospace Aeronautical Inspection
- Aerospace Astronautical Inspection
- Rail Sector
- Maritime Shipping Industries
- Automotive Industry
- Technology & Research

Application

 Corrosion / Thickness measurement

Typical Parts

- Metallic panel coatings
- Composite panel coatings

Inspection Techniques

Manual UT

Features and Benefits

- Accurate material thickness results under coatings
- Ease of use
- Display both coating and substrate thickness results on one screen.

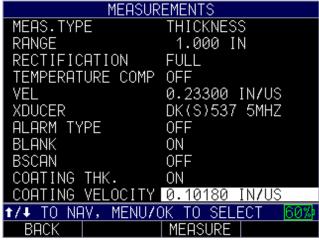


Figure 1 – Measurements menu showing coating velocity assigned when E-E mode is active



Figure 2 – A-scan display showing the coating thickness in yellow in the top right, and the material thickness in white in the top right

Using E-E measurements the technician can acquire accurate thickness measurement of materials under coatings without the need for expensive paint removal and shutdown times.

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

Recommended Tool Package

Category	Part #	Description
Acquisition Unit	Alphagage+ Precision	Alcholases 10.56

Get in touch with your local Sonatest expert, available in more than 50 countries over 5 continents!



Sonatest (Head Office)
Dickens Road, Old
Wolverton Milton Keynes,
MK12 5QQ
t: +44 (0)1908 316345
e: sales@sonatest.com
Sonatest

(North America) 12775 Cogburn, San Antonio Texas, 78249

t: +1 (210) 697-0335 e: sales@sonatestinc.com