

Inspection of Large Elbows with Pocket UT™

Introduction

The accurate inspection of elbows in petro/chemical and power generation plants is very challenging. The remaining wall thickness data must be accurate and thorough. The importance of complete data can mean the difference between a planned repair or replacement, or an unplanned shutdown due to a leak.



Pocket UT™

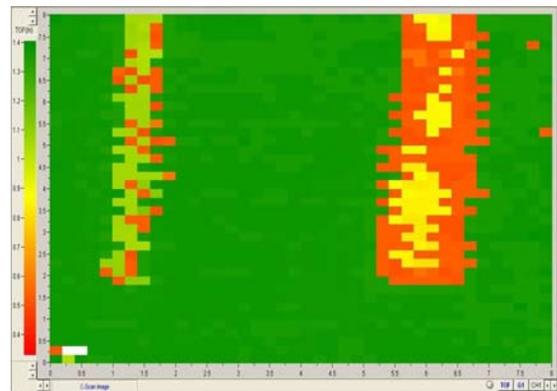
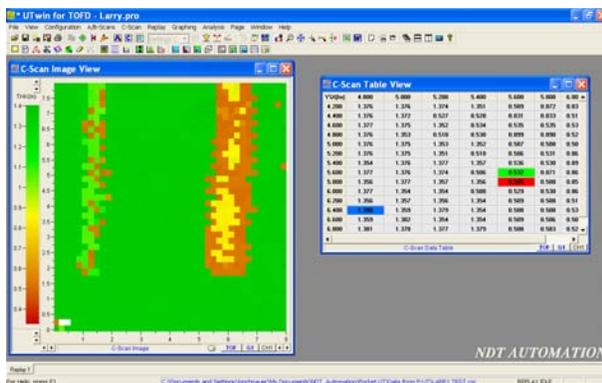
The Pocket UT™ is the innovative, battery powered C-scan system which can complete the inspection of elbows with confidence. Using the accompanying R-scan dry coupled scanner, the system can gather the thickness data faster and give a graphical image thickness map to show the areas of corrosion/erosion. The system runs on Windows CE and Pocket UT Win for data acquisition, analysis, and archiving. It also has the capability to perform A, B, and C-scans, placing the unit in a unique class. The inner workings of the two pound unit is a 20MHz, 1kHz pulser/receiver powered by a 7.2V NiMH battery giving the instrument 4 hours of continuous use. Thickness, amplitude and waveform data is stored on a compact flash card, that can be transferred to a laptop computer using the USB port.



The Pocket UT™ can interface with 2 axes of motion, whether motorized or manual. The open architecture allows the instrument to interface with any 2 axis encoded scanner or to control stepper motor scanners. Resolution is limited only by the scanner, with typical scans taken at .020" .

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An inspection was completed using the traditional thickness gage and the Pocket UT™ with a R-scan single axis encoded scanner. The area of interest was outlined with grid lines to show areas where thickness readings were to be taken. The separation between each reading was 1.0". The thickness gage data showed very little corrosion/erosion on the 10" diameter elbow. The same area was scanned using the Pocket UT™ at four times the resolution, readings every 0.250". The results from the Pocket UT™ showed a very different story as corrosion/erosion was found to be significant enough to need a scheduled repair. The results from the Pocket UT™ are shown below.



The Pocket UT™ not only found areas of corrosion/erosion that were not found using the conventional method, but completed the inspection and displayed the results in a fraction of the time, saving thousands of dollars.

NDT Automation Solution

The Pocket UT™ allows inspectors to gather ultrasonic data and evaluate that data so repairs can be completed in a fraction of the time compared to the current methods.

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