

What is the future for NDT/NDE?

Madhusudan CP

NDT is a set of non-invasive techniques used for Quality Assurance, Materials Evaluation and Asset Integrity Management. Common NDT techniques include Ultrasound, X Ray, Visual Testing etc. The terms NDT and NDE are used interchangeably and imply the same thing.

We have also recently founded the India chapter of ASNT and the speech of the Regional Director was illuminating. The most sought-after course at Saudi Arabian chapter was still " Interpretation of Radiographic Film". This of course harks back to the reason for ASNT's founding. I wonder if there are still similar organizations where 100-year-old technologies continue to rule the roost.

There are a couple of trends that have become prominent in the last few years and these relate to X ray testing and Ultrasonic testing which are by far the most significant of the NDE methods

1. X ray inspection first - The increasing use of **digital radiography** lends itself nicely to automation or semi automation of analysis. This is referred to in industry speak as **Assisted or Automated Defect Detection**. Almost all of the inspection data acquired is analyzed by trained technicians and this is the opportunity/challenge in the new world of digital imaging. The Aerospace industry is a good example to understand this situation. The industry has very high-quality standards and has adopted advanced manufacturing practices which has brought down rejection rates to the order of 1% or lower. Yes, many of these parts require 100% inspection (welds for example) and inspectors have to trawl through 100% of the data to identify the bad 1%. Further the use of Digital Radiography has ensured that the images produced are of a consistent and reliable nature which makes it feasible for an algorithm to interpret. Most digital x

ray images are available as **Tiff or DICONDE** formats which eliminates the data compatibility issue. This makes adoption of ADR in Digital Radiography a simple (just joking) problem of changing mind sets. The business case exists. **Sales Pitch** - Lucid has developed a number of ADR algorithms for **weld** inspection, **castings** and special process such as **Swaging**. ADR in this case expands to Assisted Defect Recognition.

2. Ultrasonic next - The world of **Ultrasound (UT)** presents greater challenges and possibly greater rewards as well. The trend that is slowly coming to the fore is the development of specialized applications for inspection of welds, corrosion mapping etc. The medical industry for e.g. has moved to specialized devices as in UT device for a cardiologist or UT device for a gynecologist. The NDE industry teams has largely used general purpose machines and depended more on the training and skill of the inspectors for the diagnosis. The significantly greater data volumes and complexity of technologies such as advances in **Phased Array** are leading to a shift away from general purpose machines. The business case also exists in that service providers need to differentiate themselves and use of general purpose machines will not allow them to do that **Sales Pitch again** - Lucid has developed applications for **composite** testing, **weld** inspection and **corrosion** mapping with interfaces to a number of different ultrasound instruments.