



Asset Care Counts

October 2014

Shutdown Management - Replacing Conventional Radiography with Phased Array UT (PAUT/TOFD)

Plant Shutdowns are a significant cost to plant owners, both due to the cost of the work done on shutdowns and the loss of production. To minimise these costs, the plant must be kept off line for the minimum time possible.

New and Repair welds made during shutdowns have traditionally been verified by conventional radiography. A disadvantage of this traditional technique has been:

- Access is restricted around the area of radiography work whilst testing is completed due to the radioactive source.
- This can delay / restrict other works.

To minimise access restrictions to other workers, shutdown managers have often used radiography on night shift, which can improve workflow but exposes the plant to additional shift costs.

A Better Way - PAUT / TOFD

The use of phased array ultrasonics (PAUT) and time of flight diffraction (TOFD) methods, often in combination, is becoming a preferred technique for ALS in delivering our highly effective shutdown inspection services.

These methods can be preferable because:

- There are no exclusions zones that minimise productivity.
- The length of shutdowns can potentially be shortened using this technique, provide substantial savings.



Figure 1 - Large Diameter Heavy Wall Scanning using PAUT.

Other key attributes of these techniques are:

- They can be developed to be compliant with statutory and construction code requirements. This does however require consultation with plant owners.
- The methods can be more sensitive than Radiography in the detection of many defects, and can result in a more reliable inspection.

Using PAUT / TOFD in Shutdowns

To realise the benefits of PAUT / TOFD in Shutdowns typically requires planning prior to engaging these techniques.

Welds that are to be inspected must be correctly identified with key operating parameters, some of which include:

- Material Type
- Welding Process
- Weld Geometry
- Pipe Schedule
- Construction Standard
- Acceptance Criteria

Armed with this information, we can develop procedures and demonstrate the effectiveness of the method to key technical stakeholders. Where necessary, ALS will make use of standard calibration test samples and also develop specific test pieces required to validate these procedures.

As these techniques require significant skill to ensure that probability of detection of defects is not compromised, ALS conducts in-house performance trials of both staff and proposed methods to ensure that they are fit for the job.

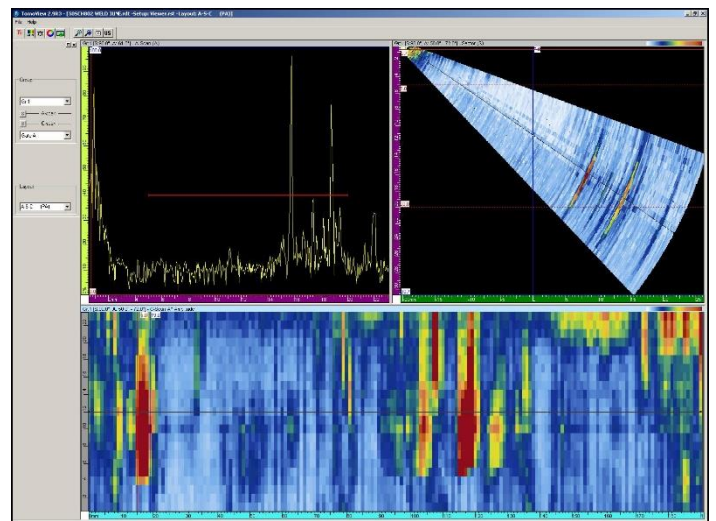
Our Advanced Inspection Team

ALS Industrial has PAUT / TOFD staff in locations across Australia.

These staff support our extensive group of Inspection technicians and allow ALS to effectively man even the largest site shutdowns.

For enquiries in regard to how PAUT / TOFD can replace radiography and shorten your shutdowns.

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Figures 2 – Phased Array Inspection Results

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