

## In-service inspection



The development of computerised ultrasonic imaging technology has revolutionised in-service inspection, both in terms of the versatility of inspections and the quality of reporting.

### The Problem

Welded regions in high pressure piping and pressure vessels in Power Station and other process industry applications are subject to life-limiting phenomena due to normal service conditions of temperature, pressure, cyclic stresses and environment. These often manifest themselves as cracks and/or micro-structural degradation which varies in size, position, morphology etc. As these components are often relatively thick-walled and structurally complex, the application of volumetric NDE techniques can be fraught with difficulty. There is often more emphasis on sizing or monitoring of existing flaws than detection, which strongly influences the inspection strategy.

### The Challenge

To replace existing methods of inservice inspection, which rely heavily on manual ultrasonic techniques and the corresponding subjective interpretation of data, with automated or semi-automated techniques. These will allow improved speed of inspection, repeatable results and consistency of reporting. Furthermore, flaw types and conditions hitherto difficult to detect and size will be more readily discerned.

### Our Solution

By undertaking a review of current inspection methodologies carried out on pressure system components, we are able to systematically introduce computerised ultrasonic technology as appropriate to the material, geometry, access and flaws sought. Recent examples of where this has paid dividends have been the introduction of Time of Flight Diffraction techniques to routinely size thermal fatigue bore cracking and monitoring the development of creep cracking in girth welds of reheat drums.

### Product

- much more speed and accuracy of inspections for numerous components
- great improvement in visualisation of flaws in complex geometries
- digital data gives opportunity for fingerprinting critical components.

### Benefits

- multi-channel ultrasonic data acquisition units with combinations of wave propagation modes and imaging options
- automated or semi-automated scanning with position encoding
- a choice of data presentation in several scan formats depending on inspection objectives.