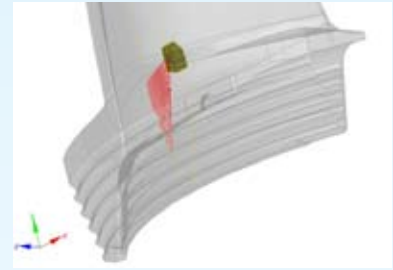


# Phased array ultrasonic inspections



The development of information technology has been crucial the improvement of ultrasonic imaging techniques. The latest phased array techniques bring considerable benefits to the inspection of complex geometries.

## The Problem

Ultrasonic inspections on components with complex geometries can give rise to confusing signal patterns which influence the speed and integrity of inspections. Additionally, access restrictions often limit probe movement, further affecting test integrity.

## The Challenge

To develop high integrity ultrasonic inspection techniques that enable imaging of complex geometries and scanning of components where access is restricted.

## Our Solution

The utilisation of phased array ultrasonic hardware and analysis software, enabling high integrity, high speed scanning and imaging of complex components. Technique development is aided by the use of beam modelling and ray tracing software. Electronic scanning can be carried out from static positions enabling coverage where access is restricted and electronic focussing of the beam within the inspection volume gives a high ability to resolve and size small defects. Ultimately all data can be stored for future interrogation.

## Product

- the phased array probe contains multiple elements, and scanning can be mechanical (probe movement), electronic (pulsed beam sweep), or a combination of both
- ultrasonic modelling and ray tracing software is used to aid technique development and optimise inspection technique. Bespoke wedge design is carried out for complex geometries
- component drawings and geometries can be overlaid on the phased array images enabling both inspection design and ease of analysis
- advantages are gained through scanning complex geometries quickly with high integrity. Focusing of optimal inspection angle gives improved defect detection
- electronic data storage enables an auditable inspection fingerprint.

## Benefits

- significant cost savings from fast high integrity scanning
- can offer an alternative to radiographic images, enabling inspections to take place without disruption to adjacent work parties, and other safety implications
- improved plant life management from better detection parameters and accurate, repeatable data for metallurgical appraisal