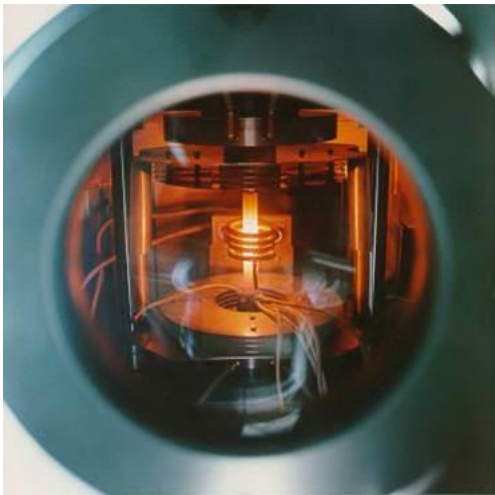


## BondTest – Development of an Ultrasonic Testing Technique to Characterise Diffusion Bonds in Layered Structures

Diffusion Bonding is a solid state joining process and is achieved by the atomic diffusion at the joint interface without any significant deformation of the components. The result is a very clean homogenous joint.

There is currently no NDT technique that can reliably detect defects of the required dimensions and size in diffusion bonded joints during manufacture or in-service.



The BondTest project will develop a validated NDT technique and system that will meet appropriate detection criteria, which will be commercialised and made available to industry.

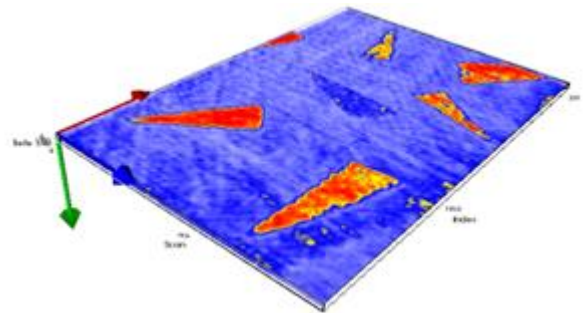
The main benefits of BondTest include:

1. A reliable and rapid manufacturing and in-service ultrasonic testing method that collects, processes and displays all of the ultrasonic data to a high defect detection capability.
2. Accurate sizing and characterisation of critical defects with a target amplitude Signal to Noise Ratio of 12dB with a minimum of at least 6dB. All detected defects could be evaluated allowing an Engineering Critical Assessment (ECA) to predict the future potential failure likelihood.

### Project objective

The overall project aim of BondTest is to deliver a high-sensitivity Phased Array Ultrasonic Testing (PAUT) system capable of operating with high near-surface resolution with Full Matrix Capture (FMC) techniques and Automatic Defect Recognition (ADR) software.

The scientific objective is to research and model the interaction of directional beam ultrasonic waves with the joint interface in diffusion bonded joints between agreed target combinations of dissimilar metals, including the capability to fine focus the ultrasonic beam at close proximity.



The key technical project objectives are:

- design and build a PAUT assembly
- develop FMC technique
- develop ADR algorithms
- develop a pre-production prototype integrated PAUT system
- evaluate the inspection performance of the BondTest ultrasonic inspection system.

For further information, please visit the project website at [www.bondtest.eu](http://www.bondtest.eu).

*This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under Grant agreement number 605288.*