

A thermal image of industrial pipes, showing a color gradient from blue (cooler) to red (warmer). The pipes are arranged in a complex network, with some horizontal and some vertical. The background is a clear blue sky.

Allianz Engineering Inspection Services Ltd

# Non Destructive Testing

The least intrusive solution to  
plant inspections

**Allianz** 

# Non Destructive Testing

NDT (Non Destructive Testing) can be as simple as a visual inspection with the naked eye, up to remote automatic inspection systems within the Nuclear Industry.

We pride ourselves in being able to provide, in support of our clients and our team of engineering experts, the least intrusive and most cost effective solution to ensure the inspected plant is suitable for further service within the confines of the **PSSR\*** or **COMAH WSE\*\*** (Written Scheme of Examination).

## When should NDT be used?

To establish a baseline for future trending purposes in thickness and quality of manufactured items.

To regularly monitor the degradation of plant over its working life ensuring that all previous life cycle calculations are still valid and that fatigue or erosion defects are not in excess of expected norms (e.g. Environmentally Assisted Cracking in shell boilers or Stress Corrosion Cracking in vessels/pipe-work).

Where defects have been found NDT will ensure that the agreed repairs have been carried out in accordance with the agreed method statements whether on pressure related items or lift and crane structures.

NDT is also used to ensure that any welded plant modification has been carried out in accordance with the required standard/procedure.

## Types of NDT

NDT covers a wide range of inspections, including;

**Simple visual inspections** carried out by non approved personnel.

**Remote visual inspections** using visual aids where fibre optic cameras can provide a permanent record of the inspection for witnessing at a later date by the competent/responsible person. This method can be used in toxic areas to remove the need for access by personnel.

**Ultrasonic inspection** is a non-intrusive inspection method used to detect sub surface planar or volumetric defects. It quantitatively measures the physical characteristics of an object from one surface only (thickness surveys etc.) and can remove the need for entry into a confined/hazardous area.

\*PSSR = Pressure System Safety Regulations 2000

\*\*COMAH = Control of Major Accident Hazards Regulations 1999

**Magnetic Particle Inspection** is used to detect surface breaking defects in ferromagnetic materials that may not be visible to the naked eye. It includes weld inspections, tube-plate inspections, forgings and castings.

**Dye Penetrant Inspection (Liquid Penetrant Inspection)** is used to detect surface breaking defects in non-ferrous materials that may not be visible to the naked eye. This method can be used for plastics and other non-metallic materials stainless steel welding in pressure vessels and GRP joints on chemical vessels.

**Eddy Current Inspection** is used to detect surface breaking defects in conductive materials that may not be visible to the naked eye. This method is used for weld inspections, condenser tube and coating thickness applications.

**Thermography/Thermal Imaging** is the use of a thermal imaging camera to detect changes in heat signature from various items. Changes may indicate faults that may lead to future failure or fire or items that are operating incorrectly or inefficiently. It may even indicate inefficient insulation in buildings causing increased energy usage.

## How Allianz Engineering can help

Allianz Engineering Special Services department offer NDT Services through audited and approved sub-contractors managed by our Senior NDT Specialist. Specialist NDT services can also be organised, including; automated systems, long range and TOFD ultrasonic techniques and remote field eddy current systems. The use of Radiography as an inspection tool is highly regulated by legislation and is carried out by specialist companies only, however, auditing and third party inspection/witnessing can be undertaken.

### Contacting Us

For further information on

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