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Non-destructive testing

Overview

Non-Destructive Testing (NDT) can be as simple as a visual inspection with the naked eye, to the use of remotely operated automatic inspection systems within the nuclear industry.

It is vital to utilise the correct NDT method in support of our examination services where a more detailed surface or sub surface inspection is required commensurate with the risk of failure or the mode of failure. Examples of this are the risk of catastrophic failure from the release of stored energy within pressure vessels, the release of harmful materials from storage vessels, or the failure of a boom on a material handler as detailed within PSSR, COMAH or PUWER/ LOLER regulations.

Repercussions for not completing the required inspections are the potential to cause harm to persons, failure of the installation and the potential loss of production or operation of your business.

How we can help?

We offer the least intrusive and most effective NDT services on a range of plant and machinery to ensure that any inspected installation is not only fit for use, but that it also conforms to all relevant health and safety regulations. Our NDT services are conducted by audited and approved sub-contractors, managed by our own senior NDT specialists as part of our inspection, structural health and condition monitoring services.

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When conducting non-destructive testing, it’s vital that you have confidence in those undertaking the work. Our experienced subcontractors are audited and approved by us to provide you with that confidence.

Peter Milton,

Chief Engineer,
Allianz Engineering
Inspection Services.

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We offer a wide range of standard services and can tailor bespoke services to suit your needs:

- **Visual inspection** - can be classed as the most basic form of NDT and will always be utilised prior to all NDT inspections, to assess both quality and preparation by the NDT practitioner and is the most important part of our engineer surveyors' normal examination routine.

- **Remote visual inspection** - uses specialist cameras chosen dependent upon plant type, access, restrictions on man entry and the required criticality of inspection. Many systems have recording equipment providing a permanent record of the inspection for future trending of the item condition. Generally used as part of a risk based inspection package utilising other NDT techniques.

- **Ultrasonic inspection** - a non-intrusive inspection technique, may be manual or automatic, detecting both sub surface and surface breaking planar or volumetric defects. It can quantitatively measure the physical characteristics of an object from one surface only, e.g. thickness surveys for corrosion, weld inspection for lack of fusion/ fatigue cracking.

- **Magnetic particle inspection** - used to detect surface breaking defects in ferromagnetic materials that may not be visible to the naked eye. It includes weld, wrought product and casting inspections, whether on newly manufactured or in service equipment.

- **Dye penetrant inspection/ liquid penetrant inspection** - used to detect surface breaking defects in nonferrous materials that may not be visible to the naked eye. This method may be used for many applications from stainless steel welding in pressure vessels to plastics and other non-metallic materials.

- **Eddy current inspection** - used to detect surface and sub-surface defects in conductive materials that may not be visible to the naked eye. This method can be used for weld inspections (structural or pressure), condenser tube inspections and coating thickness applications. Can also be used without removal of well adhered coatings and paints.

- **Thermal imaging/infrared thermal imaging** - uses a thermal imaging camera to detect the heat signature from various plant items. It can be used in a range of environments, including detection of temperature loss in a building and surveying of electrical distribution installations, process plant and machinery. It can also assist in indicating overloading, poor connectivity, process changes and incorrect or inefficient operation in such systems.

Note: Preparation of inspected items prior to the provision of NDT is vital to the sensitivity and success of the listed techniques. Full scopes of service and preparation requirements are available upon request.

When should you use this service?

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

- To regularly monitor the degradation of plant over its working life, ensuring that all previous lifecycle calculations are still valid and that fatigue or corrosion/erosion defects are not in excess of expected norms (e.g. environmentally assisted cracking in shell boilers or stress corrosion cracking in vessels or pipework, erosion or cracking within crane or material handler structures).

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- Where defects have been found, NDT will ensure that the defects have been removed completely and that, where required, the quality of the repair process is in accordance with agreed procedures and method statements. This will apply on pressure related items and lift and crane structures.

- NDT is one of the tools used to ensure the weld quality on plant modification has been carried out in accordance with the required standard/procedure.

Other regulations or guidance to consider

- The Pressure Systems Safety Regulations (PSSR)
- Control of Major Accident Hazards Regulations (COMAH) 2015
- Provision and Use of Work Equipment (PUWER)
- The Lifting Operations and Lifting Equipment Regulations (LOLER)

We also offer

In addition to NDT, we offer comprehensive inspection and consultancy services relating to:

- **Lift and Vertical Transportation Consultancy Services** - inspection and consultancy services in support of LOLER and PUWER

- **Control of Major Accident Hazards Regulations (COMAH)** - regulations that aim to prevent and mitigate the effects of major accidents involving dangerous substances, which can cause serious damage or harm to people and/or the environment

- **Electrical Testing** - including emergency lighting, fire alarm testing and thermal imaging in support of the Electricity at Work Regulations (EaWR) 1989

- **Energy Services** - designed to meet the requirements of the Energy Performance of Building Regulations 2007, including inspections for heating and cooling systems, often referred as TM44 inspections.

For further information
To discuss how we can help you with your engineering needs, please contact:

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Email: special.services@allianz.co.uk

Alternatively, visit us online at allianz.co.uk/specialservices for our full list of engineering services.

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