ANDT

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Welcome to ANDT
Welcome to ANDT the Isle of Man’s first NDT Company. Based at Ronladsway airport

ANDT has been developed primarily to support the islands busy aerospace and

manufacturing cluster.
ANDT offer an extensive range of NDT services that include radiography, phased

array, ultrasonic inspection, ultrasonic leak testing, the list is endless.
At our office in hanger 5 we have a large penetrant line, alkaline cleaning systems

and large magnetic bench units, to support our customers on and off island.
ANDT's philosophy is simple; we offer an exceptional quality service executed by

highly skilled technicians, using only state of the art equipment, streamlined

processes, systems and procedures.
Health & safety is paramount in all that we do. We will undoubtedly provide comprehensive and continual in-house or on-site services by deploying skilled technicians who are committed to completing your job on time, within budget and offering over and above what is expected.
Contact the team today to learn more about how we can work with you to achieve the testing required to keep your business moving.ANDT SERVICESANDT Radiographic Testing (RT)
Radiography as a non-destructive test is exceptionally good at detecting volumetric flaws including voids, gas pores and solid inclusions, while ultrasonic's (Phased Array) are recommended when measuring the thickness of the identified flaw.
For purposes of inspection, including weld inspection, there exist several exposure techniques.Panoramic (SWSI) technique
SWSI arrangement
Exterior placement
Flat object
Super impose
DWDI technique
The process for radiography consists of positioning a source of ionising radiation close to one side of the test item with the radiographic film placed to the other. Radiation is partly absorbed during transmission with material thickness or absorption quality results being recorded as a full-size image.
Both X-ray and gamma X-ray testing are available; the former being electrically generated by a high voltage X-ray tube, the latter by natural disintegration of nuclei in a radioactive isotope. Both processes are carried out under stringent safety measures.
Our inspection staff have substantial experience radiographing flight critical aerospace composites, aerospace structures, castings, welds and complex components for a varied selection of customers and industries.
Why ANDT?
Here at ANDT we pride ourselves on the high quality of application and testing by our experienced technicians. Our workforce is fully qualified to current standards and work to approved procedures and control checks. Environmental and health & safety issues are of paramount concern to all staff working on your site, with expert consultation always available.
ANDT offers a comprehensive 24hr in-house and on-site service. Dye Penetrant Inspection (DPI)
For an effective low-cost inspection, Dye Penetrant Inspection (DPI) is a widely used

technique for locating cracks in all non-porous materials such as metals and plastics.
It is particularly suitable for non-ferrous, forged, cast or welded products which are prone to cracking.
The Process
A visible or fluorescent dye, either solvent or water-based, is applied to the surface or the item by immersion or spray
The dye penetrates any cracks through capillary action (known as the dwell time) and is usually left for a minimum of 20 minutes
Excess dye is then removed with lint-free cloth leaving none visible to the naked eye
A developing agent is applied, which, using reverse capillary action, quickly and clearly reveals crack lines.Dye Penetrant Inspection is suitable for components of any size.
Section of material with crack not visible to the naked eye
Dye is applied to the surface
Excess dye is removed
Developer is applied, making the crack visible.Dye penetrants are classified by sensitivity levels. Visible penetrants are typically red or blue in colour, and represent the lowest sensitivity. Fluorescent penetrants contain two or more dyes that fluoresce when excited by ultraviolet (UV-A) radiation (also known as black light). Since fluorescent penetrant inspection is performed in a darkened environment, and the excited dyes emit brilliant yellow-green light that contrasts strongly against the dark background, this material is more sensitive to defects.
Advantages and disadvantages
The main advantages of DPI are the speed of the test and the low cost.
Disadvantages include the detection of only surface flaws, skin irritation, and the inspection should be on a smooth clean surface where excessive penetrant can be removed prior to being developed and it will not work on painted or rough surfaces
ANDT have a bespoke, dual penetrant line for water washable and post emulsifiable penetrants using level 2 & 3 sensitivities for components up to15kg in weight and small detail components.
Both systems are capable of handling both small batches of items or very large volumes of components.
Alternatively, we can visit a client’s premises or site.Why ANDT?
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Magnetic Particle Inspection (MPI)

MPI (Magnetic Particle Inspection) is used for the detection of surface and near-surface flaws in ferromagnetic materials like iron, nickel, cobalt and gadolinium. During inspection a permanent magnet, electromagnet or electromagnetic coil is used to apply a magnetic field to the test item, with flaws being revealed by the distortion of magnetised flux.

The component surface is first magnetised in at least two perpendicular directions at 90 degrees to each other, ensuring complete inspection in both planes. The process consists of spraying fine magnetic particles within a carrier fluid onto the component. Particles are then attracted to the area of flux leakage, creating a visible flaw indication.

The most sensitive process for revealing finer imperfections uses fluorescent particles viewed under UV light.

Types of electrical currents used for MPI

There are several types of electrical currents used in MPI. For a proper current to be selected considerations is given to the part geometry, material, the type of discontinuity being looked for, and how far the magnetic field needs to penetrate into the part.Alternating current (AC) is commonly used to detect surface discontinuities. Using AC to detect subsurface discontinuities is limited due to what is known as the skin effect, where the current runs along the surface of the part. Direct current (DC, full wave DC) is used to detect subsurface discontinuities where AC cannot penetrate deep enough to magnetize the part at the depth needed. The amount of magnetic penetration depends on the amount of current through the part. DC is also limited on very large cross-sectional parts in terms of how effectively it will magnetize the part.

Each method of magnetizing has its pros and cons. AC is generally the best for discontinuities on the surface, while some form of DC is better for subsurface defects.

ANDT has an 8000-amp fixed bench unit capable of taking 2-meter-long items for inspection at its head office in hanger 5.

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Perhaps one of the most versatile NDT techniques is eddy current testing, which uses induced electrical currents to detect defects. Essentially, the technique uses an alternating current in a test coil to induce an alternating magnetic field in the component to be tested. This causes eddy currents to flow in the components – the flow of which is influenced by the presence of flaws or defects.
Though, in general, the technique is used to inspect relatively small areas and is therefore better suited for inspecting areas where damage is already suspected, it nevertheless has a variety of applications, from measuring material thickness to detecting corrosion damage. As eddy currents are affected by the electrical conductivity of materials, they can also be used to sort materials and determine, for instance, whether a structure has been exposed to high temperatures. TCrack detection
Material and coating thickness measurements
Conductivity measurements for material identification
Heat damage detection
Monitoring and determination of casing depth.Advantages of Eddy Current Testing:
Sensitivity to small cracks and other defects
Surface and near-surface detection
Immediate feedback as results
Versatile
Lightweight and portable probe kit
Test objects need minimal preparationWhy ANDT?
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