

Welding Inspection

NON-DESTRUCTIVE TESTING

Most materials processes and fabrication techniques require considerable knowledge of various combinations of the parameters involved. In welded assemblies, considerable skill and experience in the welding processes are required to bring about a reasonably acceptable product. It is therefore, inevitable that mistakes during subsequent processes and flaws within the material are a likely occurrence. To prevent these unwanted occurrences, pre and post fabrication inspection is becoming more and more essential to detect such flaws caused by deficient processes; to enable to define corrective actions to be applied; and finally, to ensure the integrity of the finished product prior to putting it into use. Such a quality assurance scheme involves non-destructive testing in the inspection process.

NDT processes employed singularly or together can create a clear picture of flaws present in a component. These provide evaluation of such flaws which may impair the performance of the end product and may require removal. Furthermore, NDT aids in monitoring welding performance by providing evidence (almost in real time) of flaws created by inefficient combination of welding parameters, thus, providing a cost effective fabrication process by timely prevention of reworks.

Radiography, Ultrasonic Testing, Magnetic Particle Testing and Liquid Penetrant Testing can all be employed in various fabrication processes without degrading the component being tested. Because of the portability of equipment used, non-destructive testing may be carried out on site or in the laboratory. Methods and procedures may be prepared to meet the requirements of the governing specification, codes or standards.



Ultrasonic test equipment being calibrated



Our NDT services are backed up by destructive techniques

Applications

- Ship Building and Maintenance
- Petrochemical and Power Plants
- Infrastructure Construction
- Offshore Structures
- Manufacturing Plants
- Metals Fabrication
- Avionics Maintenance

WELDING INSPECTION



Radiography • This method involves passing X-rays or Gamma-rays through a material into a film, producing a permanent latent image of the material's exterior and the interior. This is one of the most accurate of NDT methods as it provides a permanent record that can be directly compared to the specimen for defect location, although the depth of a flaw may only be determined by exerting a considerable amount of time by using multiple exposure technique. Radiography may be applied to almost all kinds of materials where the two opposite surfaces are accessible.



Liquid Penetrant Testing • This method is one of the oldest and simplest forms of NDT and can only be used to detect surface breaking discontinuity. A penetrant liquid is applied to the surface of the part and seeps into a surface opening by capillary action. Excess penetrant will then be removed from the surface and a powdery substance applied to absorb the residual penetrant by reverse capillary action. The contrast between the color of the penetrant and the powdery background gives a clear indication of the surface discontinuity.



Magnetic Particle Testing • This method is one of the effective means of detecting surface or subsurface discontinuities in ferromagnetic materials such as iron, steel, nickel and cobalt alloys. The material is magnetized by inducing either electrical current or magnetic field and any discontinuity in the direction transverse to the lines of force creates a flux leakage or distortion of the magnetic field. The flux leakage field then attracts magnetic particles and in turn creating a discernible pattern.



Ultrasonic Testing • This method can be used to detect internal defects as well as surface irregularities by inducing high frequency sound waves into the material in the form of mechanical vibrations. Any disturbances or flaw along the path of the sound wave can be detected by converting the reflected sound energy into electrical signals that can be displayed on the oscilloscope screen. The intensity of the signal can be correlated to the size and the location of the signal along the horizontal scale of the screen corresponds to the depth of the reflector flaw. Ultrasonic method can also be used for accurate thickness monitoring or corrosion survey.

NDT Level III Services

Different methods of non-destructive testing can vary from a very simple process to a very complex procedure. A NDT operator should have sufficient knowledge of various aspects including, metallurgy, manufacturing process, dimensional considerations, the end use of the material, and the basic principles of the NDT method to be used. A perfectly established procedure may not serve its purpose if not properly carried out. That is the main reason why most codes, standards and specifications require all NDT operators to be qualified and certified in accordance with a well organized scheme.

Stanger Asia Limited offers comprehensive training courses, as well as certification for NDT (RT, UT, MT, PT) technicians, in accordance with the latest edition of (The American Society for Non-destructive Testing) ASNT-SNT-TC-1A. NDT seminars may also be offered to engineers, fabrication supervisors and quality control personnel, sales representative, etc., to provide them with sufficient know-how on various NDT methods that they might be involved with. Training and seminars can be conducted at the customer's designated location or at Stanger Asia's training facilities.

Other NDT Level III Services Offered:

- Establishment and preparation of NDT procedures and written practice
- Level III review and approval of NDT procedures
- Consultancy



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