BABA NDT ENGINEERING SERVICES

Third Party Inspection Services|NDT & Advance NDT Services
Engineering Consultancy Services |Expediting Services

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INTRODUCTION

BABA NDT ENGINEERING SERVICES is one of the inhouse **NDT** service company in India which was established in 2019. All technicians ,Engineers specializing in the various NDT related services, especially for testing of pressure vessels, heat exchangers, boilers, piping and structure in the fields of oil refinery, power plant, petrochemical plant, ship building, offshore, bridge and building construction, and other various heavy industries.

BABA NDT ENGINEERING SERVICES has provided comprehensive NDT services to a broad range of industries for more than 5 years. **BABA NDT ENGINEERING SERVICES** informed and knowledge personnel have been bringing their extensive expertise to the industries in India to create a safer, more productive environment by utilizing Nondestructive Testing (NDT). Our comprehensive NDT capabilities include conventional NDT applications combined with advanced technologies delivered by highly trained, experienced inspection professionals.

VISUAL TEST

Visual Testing (VT)

VT is based on the inspection for flaws that are visible to the naked eye and is the most commonly used NDT method across all industries. It allows for a feasible and fast control of quality at every step of the fabrication or maintenance process.

Visual Testing (VT) is used to detect visible flaws such as deformation, welding defects and corrosion. Many tools can be used during the inspection such as a ruler, gauges, cameras, etc

Visual Testing (Borescope)

Visual Testing is done with the help of advance technology Video Borescope equipment which provides the high quality image and videos. The inspection can be done up to 6 meters using the probe also the probe can be inserted in any machine, pipes, tubes, etc.

Remote Visual Inspection (RVI) is the evolution of the traditional visual testing and it is based on the use of flexible borescopes, videoscopes or similar equipment.

This technique evaluates the discontinuities or other degradation phenomena not accessible in-situ to the naked eye. The observations can then be evaluated based on the different codes or norms. A typical application is the inspection of the suction roller holes in the paper industry, or piping in the petrochemical and power generation industries.

LIQUID PENETRANT TESTING

Liquid penetrant testing (LPT), also known as dye penetrant inspection (DPI) or liquid penetrant inspection (LPI) is one of the most common and affordable solution and one of the oldest, if compared to non-destructive testing challenges.

The method leverages capillary action, i.e., the ability of a liquid to flow into narrow spaces without help, even in opposition to, external forces such as gravity—to detect surface-breaking defects.

The excess is removed and a developer is applied after applying the penetrant and letting it dwell for a certain period. From surface-breaking defects, the developer draws the penetrant where it's seeped, revealing their presence.

Liquid Penetrant Testing is widely used in aeronautic, Automobile , Heavy Fabrication, steel structure fabrication and aluminium industry for welded or forged parts or castings.

Advantages:

- Quick and easy method;
- Affordable;
- Great at detecting surface breaking flaws;
- Applicable to ferrous and non-ferrous materials.

MAGNETIC PARTICLE TESTING

Magnetic Particle Testing (MT) is a common surface inspection technique based on inducing a magnetic field on the surface of a ferromagnetic material and spreading a powder or solution concentrated with magnetic particles that will align with the magnetic field. A crack will act as a dipole magnet for the magnetic particles to cluster.

Magnetic particle testing is a non-destructive test method, which can be used to inspect a variety of ferromagnetic components and products. These include castings, forgings and weldments. The method is used across different industry sectors, especially when determining if a component is fit-for-service.

This technique is used for surface or just below the surface discontinuity detection.

Advantages :

- Reliable, fast, and easy to pick up equipment;
- Test can be performed at any stage of a project;
- Independent from the part dimensions or geometries;
- Portable equipment.

ULTRASONIC TESTING

Ultrasonic testing (UT)is done in materials to determine whether there are flaws or defects present in a material, and also to determine the thickness of a material. Ultrasonic testing methods use sound waves to find defects and measure thickness.

UT technology can detect small defects such as corrosion, pitting, abrasions, and cracking. It can also spot abnormalities on a volumetric level and can detect anomalies that other NDT methods may miss. However, certain UT techniques are more adept at reading flaws than conventional UT.

These include the use of ultrasound in medical diagnosis; in the treatment of certain diseases; in flaw-detection and navigation systems; for control systems in industry; for cleaning; in the operation of drills and saws; and in various metal-working processes.

Advantages :

- Internal defects can be detected and sized when a validated procedure is applied.
- Thick specimens take no more time to examine than thin ones, assuming correct instrumentation set up.
- Access to only one side of the component is needed.

ULTRASONIC THICKNESS TESTING

The main use for ultrasonic thickness gauge (UTG)is in material thickness and quality testing in manufacturing industries. An ultrasonic thickness gauge apart from thickness testing can also check for defects that are otherwise not visible to the naked eye.

- **Wall thickness determination.** Ultrasonic thickness measurement is used to check wall depth or of materials. Wall thickness monitoring is important especially in industries where materials are subjected to high heat and pressure.

In the petroleum industry, for example, high standards of wall thickness has to be maintained to avoid accidents and losses by explosion or leakages.

- **Corrosion checking.** Corrosion in simple terms is rusting. Frequent testing of metal surfaces for rust using an ultrasonic thickness gauge helps ensure structures meet expected standards, and minimizes safety risks. Constant monitoring for corrosion also helps reduce the need for frequent repairs saving you money and time.
- **Material defect testing.** One of the reasons that make an ultrasonic thickness gauge stand out from other thickness testing equipment is the ability to detect defects on solid materials.

- Measurement can be done from only one side of the sample material.
- Gives accurate measurements with readings as low as 0.1mm or less.
- Portable and easy to use and allows more measurements to be done within a short time.
- Settings can be done to manage testing on different metal coatings and linings.
- Have a wide measurement range

PAUT & TOFD TESTING

Phased Array Ultrasonic Testing (PAUT) is an advanced non-destructive technique that utilizes a set of Ultrasonic testing (UT)probes made up of numerous small elements, each of which is pulsed individually with computer-calculated timing ("phasing"). When these elements are excited using different time delays, the beams can be steered at different angles, focused at different depths, or multiplexed over the length of a long array, creating the electronic movement of the beam.

PAUT can be used to inspect almost any material where traditional UT methods have been utilized and is often used for weld inspections and crack detection.

Time of Flight Diffraction (TOFD) is a reliable method of non-destructive Ultrasonic testing used to look for flaws in welds. TOFD uses the time of flight of an ultrasonic pulse to find the location of a reflector. It can also be used for weld overlays and the heat affected zones of other components as well such as piping, pressure vessels, clad material, Storage Tank, and structural steel.

Like most UT methods, TOFD works by emitting sound waves into a component and measuring the time from them to return. What makes TOFD different from other UT methods is that, rather than measuring only for the high amplitude sound waves that reflects off of the back of the component, it instead measures the response time of low amplitude waves that are diffracted by the tips of cracks.

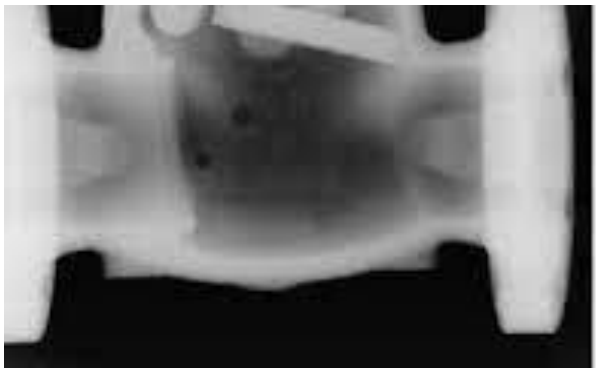
REDIOGRAPHIC TESTING

Radiographic Testing (RT) is a non-destructive testing (NDT) method which uses either x-rays or gamma rays to examine the internal structure of manufactured components identifying any flaws or defects. In Radiography Testing the test-part is placed between the radiation source and film (or detector).

It is based on the principle that radiation is absorbed and scattered as it passes through an object. If there are variations in thickness or density (e.g. due to defects) in an object, more or less radiation passes through and affects the film exposure. Flaws show up on the film, usually as dark areas.

Radiographic testing is widely used in a variety of industry sectors including aerospace, power generation, construction, petroleum, chemical and automotive, and for all types of components and parts.

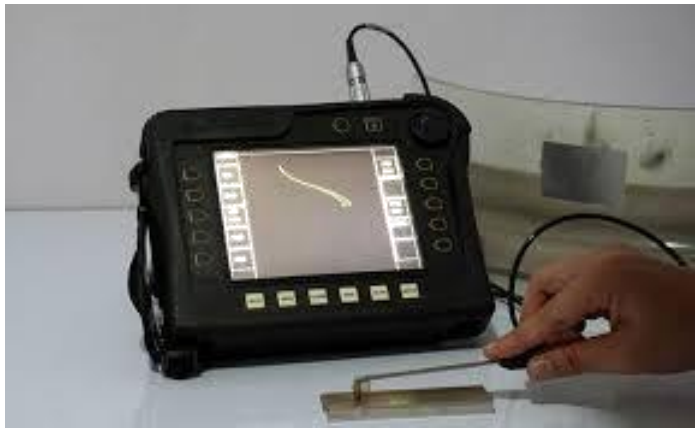
In industrial radiography there are several imaging methods available, techniques to display the final image, i.e. Film Radiography, Real Time Radiography (RTR), Computed Tomography (CT), Digital Radiography (DR), and Computed Radiography (CR).



EDDY CURRENT TESTING

Eddy Current Testing (ECT) is the process of running electronic probes through the length of various types of tubes or along the surfaces of materials in order to find flaws in them. An eddy current is a current that runs opposite to the current introduced by a probe into a conductive material.
Eddy Current Testing (ECT) is an electromagnetic testing method for nondestructive testing (NDT) of conductive materials. This method can be used in several applications such as crack detection, measuring metal thickness, detecting metal thinning, determining coating thickness, and measuring electrical conductivity and magnetic permeability.
Advantages of eddy current testing include:

- ECT is sensitive to and can detect small cracks and other defects
- ECT equipment is portable
- Minimum part preparation is required
- The test probe does not need be in contact of the part
- ECT can be used to inspect complex shapes and sizes of conductive materials



PMI TESTING

Positive Material Identification (PMI) is a rapid, non-destructive method of verifying the chemical composition of a metal or alloy. As a highly portable tool, it offers the quickest and most cost-effective solution to determining the chemical composition of a component or batch material.

Positive Material Identification (PMI) is a fast and non-destructive testing (NDT) method for verifying the chemical composition of metals and alloys. PMI can be used to verify that supplied materials conform to the proper standards and specifications.
Elements that can be identified using PMI include. Ti, V, Cr, Mn, Co, Fe, Cu, Zn, Ni, Se, Nb, Mo. Interesting to know is that the exposure of radiation is sufficiently low, so that extra safety measures are not required.

These instruments are highly accurate at determining the chemical composition of alloys, and thereby their grade. Moreover, they do so within a matter of 5 seconds or less for most stainless-steel grades, without significant sample preparation, and safely.

FERRITE TESTING

Ferrite content tests (Fe)can measure when the content is low and the welded material is susceptible to hot-cracking. Conversely, if the ferrite content is too high, a reduction in the toughness, ductility and corrosion-resistance of the steel can be tested.

The ferrite content can be measured by magnetic methods, quantitative metallography like for example planimetry, lineal analysis, or differential point counting [14] or by different methods using electron diffraction such as X-ray diffractometry (XRD) or electron backscatter diffraction (EBSD).

Ferrite testing is sometimes necessary to avoid material failure in duplex and austenitic stainless steels. A ferrite content that is too high or too low can be detrimental. If the ferrite content is too low, then the stainless steel may be susceptible to solidification cracking (hot cracking) upon welding.

PORTABLE HARDNES TESTING

Portable hardness testers in contrast to the bench hardness testers, have small sizes, light weight and they are compact devices which measure the hardness by several hardness scales. Usually, the modern portable hardness testers can measure the hardness of all hardness scales.

Hardness testing is used in mechanical and materials engineering to test the hardness of a material, such as a metal. Hardness tests analyze a specific material and its properties and ascertain whether or not a given material is the best fit for the job.

Portable hardness testers are often used for checking flat and round structural pieces in the field. An example of a hardness test of a welding joint could be a Vickers test. Vickers hardness tests use a square pyramid shaped diamond indenter and a load ranging from 1 to 120 kg.

THIRD PART INSPECTION

Third Party Inspection (TPI) is **an independent, unbiased group who inspects a manufacturing company's key assets such as equipment, processes and heavy machinery**.

As a service provider, the 3rd party inspection body delivers unbiased inspection results for the objects inspected /audited on an independent basis. The responsibilities of a 3rd party include but are not limited to: **Being independent, impartial, integrity and professional**. Keeping confidential undertaking.

One of the main benefits of ***Third-party inspections***, as opposed to those performed by either the manufacturer or the buyer, is that the inspectors performing **TPIs** are unbiased by either side and can thus deliver a verdict that is fair without compromising the interests of either party – while, of course, looking out for the client and the requirements put forward. In simple words, their decision will only be influenced by hard facts and both participants of the manufacturing process will be able to get a clear picture of where they stand in the current project.

- Quality Assurance & Quality Control
- Inspection Services
- Site Assessment
- In-Service Inspection
- Post Shipment Inspection
- Risk based Inspection
- Plant Inspection
- Piping inspection

TRAINING

➢ WELDER TRAINING: -

he objective of this training program is to enhance the skill of welder and develop their hands-on competency in arc welding processes, enabling them to meet the industrial requirement. The training program includes imparting of complete know-how on welding with SMAW, GMAW & GTAW processes, setting-up process parameters, conducting quality checks on output product, rectifying & preventing welding defects and maintaining a safe & healthy working environment on the shop floor.

➢ NDT L- I & LEVEL-II TRAINING : -

We Provide Non-destructive certifications, NDT Level 1 & NDT Level 2 are offered in the following method as per SNT-TC-1A in The Following Method.:-

- Ultrasonic Testing
- Eddy Current Testing
- Radiography Testing
- Magnetic Particle Testing
- Liquid Penetrant Testing
- Radiography Film Interpretation Course
- Infrared Testing/ Thermography Testing
- Leak Testing
- Visual Inspection Training Course
- Ultrasonic Thickness Gauging
- PAUT
- TOFD

➢ PROFEESIONAL TRANING :-

- WPS,PQR & WPQ
- ASME SEC IX
- ISO 15614
- ISO 3834 AWERNESS
- WELDING INSPECTION PERSONAL

NDT SERVICES ISO 9712 & ASNT

We Are a Unique in the Industry to Provide our Precious Clients the Best Quality Non Destructive Testing Services. The provided service is carried out by our skilled team of professionals in the best possible manner. While performing this service, our experts ensure that the offered service delivers precision results and is within the budget to attain maximum clients' satisfaction.

We help you ensure the reliability, durability and safety of your products, equipment, or plant assets with our superior class services in Non Destructive Testing (NDT). We understand the procedures involved in the whole product cycle, from design and production to operation and maintenance, as well as the necessity for quick turnaround times.

Our Total Quality Assurance services can help with new construction, pipelines, plant maintenance, and planned shutdown inspection, as well as quality control and regulatory compliance. We provide one of the best **Non-Destructive Testing and Inspection Services in India.**

WE ARE QUALIFIED EN ISO 9712 L- II & L-II By TUV-NORD Germany in Multisector (Welding,Forging,Casting)

Method :-

1. ULTRASONIC TESTING
2. MAGNETIC PARTICLE TESTING
3. LIQUID or DYE PENETRANT TESTING
4. VISUAL TESTING
5. REDIOGRAPHIC TESTING & FILM INTERPRITATION
6. EDDY CURRENT TESTING
7. PAUT

EN ISO 9712 L-II & L-III
&
ASNT NDT L-II & L-III

WELDING ENGINEERING CONSULTATION

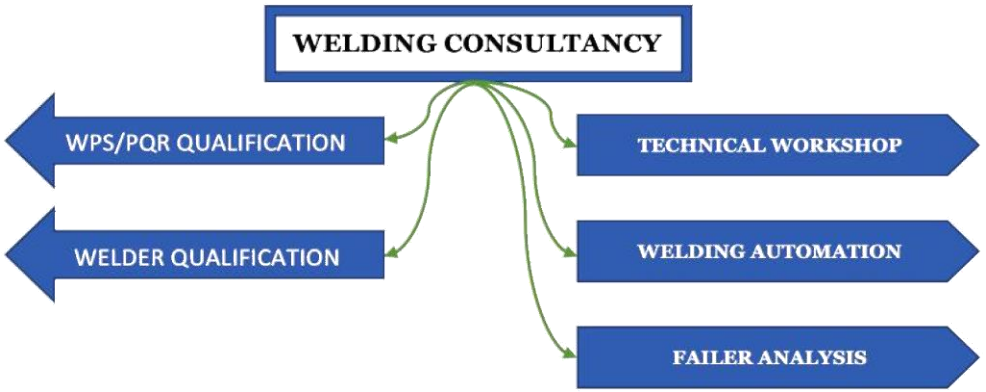
Why do you need welding engineering ?

- To reduce rework, scrap and wastage.
- To increase production.
- To obtain the qualifications you need.
- To increase quality & reliability of products.
- To comfort shortage of good welders.
- To improve your bottom line.

Professional welding engineering is a good way to look for cost effective solutions to unsatisfactory manufacturing processes.

WICS relying on its many years of experience and professional welding engineers, provides following welding engineering services:

- Preparing and review of welding procedures (WPS)
- Qualifying of welding procedures (PQR)
- Testing and approving of welding consumables
- Installing and triggering of High-Tech welding machines
- Testing and qualifying of welders & welding operators



ISO 3834 -2
CONSULTANCY SERVICES

SCOPE OF SERVICES WILL BE AS FOLLOWS

- Consultancy Services for Certification of ISO 3834-2/3 of your Welding shop.
- Empanelment of IWE Engineer if required shall be organized separately on chargeable basis.
- Development of Quality manual, procedures, work instructions in-line with the standard.
- Initial and periodic audits will include the check of the following items
    1. Study the existing system for easy alignment with the standard.
    2. Review of process for Production and inspection of welding
    3. Training of QA/QC engineers.
    4. Training of welders.
    5. Review of Equipment's Calibration certificates of measuring instruments
    6. NDT Procedure Approved by ISO 9712 L-III

- Assistance during the Initial visit of one day to define the audit program by Certification body.
- Assistance during the audit of Certification body.

ISO 3834

ISO

3834

WELDER & PROCEDURE QUALIFICATION TEST

Welder Qualification and Welding Certification Services

Welder certification, (also known as welder qualification) are specially designed tests to determine a welder's skill and ability to deposit sound weld metal. The tests consist of many variables, including the specific welding process, type of metal, thickness, joint design, position, and others. Most often, the test is conducted in accordance with a particular code. The tests can be administered under the auspices of a national or international organization, such as the American Welding Society (AWS), or American Society of Mechanical Engineers (ASME), but manufacturers may specify their own standards and requirements as well

Once a welder passes a test (or a series of tests) their employer will certify the ability to pass the test, and the limitations or extent they are qualified to weld, as a written document (welder qualification test record, or WQTR).

Our company with professional and experienced international welding engineers & senior inspectors is ready to take welder approval test according to the company procedure or famous codes and standards including:

- ISO 9606
- EN 287
- AWS D1.1
- ASME IX
- API 1104
- ISO

Accepted welders based on their employer's request, will receive national or international certificate.

SURFACE ROUGHNESS

A roughness tester is used to quickly and accurately determine the surface texture or surface roughness of a material. A roughness tester shows the measured roughness depth (Rz) as well as the mean roughness value (Ra) in micrometers or microns (µm).

With a contact-type roughness meter, **surface roughness is measured by tracing the probe across the surface of the target**. In contrast, a laser-based non-contact roughness meter emits a laser beam onto the target and detects the reflected light to measure the roughness.

With contact-type surface roughness instruments, **a stylus tip makes direct contact with the surface of a sample**. The detector tip is equipped with a stylus tip, which traces the surface of the sample and electrically detects the vertial motion of the stylus.

Surface roughness is a component of surface texture and plays an important role in determining how an object will interact with its environment. Roughness is **a good indicator of the potential performance of a mechanical component**, since irregularities on the surface may form nucleation sites for cracks or corrosion.

CRANE INSPECTION SERVICES

Crane inspection is a thorough visual and operational examination of each crane and lifting gear component to assess their condition. It can be done quarterly or semi-annually, depending on the service requirements. We have the capacity to check all crane types such as Gantry, Pedestal, Hoists, and Overhead Cranes. we provide **Crane Inspection Services in India**.

WICS is a highly experienced crane inspection company with many years of expertise. We provide the highest quality inspection and verification service for safe and uninterrupted crane operation, strictly adhering to local and international norms and inspection requirements.

LIFTING EQUIPMENTS INSPECTION

WICS is a prominent participant in offering Lifting Equipment Inspection Services in India. We provide various lifting services such as lifting gear, cranes, elevators with substantial onshore and offshore industry expertise. We work with you to inspect lifting equipment and ensure compliance with regulatory standards and regulations, eliminating the risk of an accident, unnecessary delays, or downtime, and ensuring safe lifting operations.

are well-equipped with lifting engineers, technical experts, and advanced equipment and technologies to perform a wide range of Lifting Equipment inspections and certifications, including Type tests that are performed during the installation and commissioning of Lifting Equipment. Our extensive inspection services are available at an affordable price range in India.

PAINTING, COATING, CARROSION INSPECTION

A coating inspector's work is **to confirm that coatings have been applied correctly, to prevent corrosion that can have disastrous consequences**.

The expense of corrosion is rising, and as an asset owner, you want to know that you are getting the best service possible. You want your bridges, pipelines, tanks, plants, and other structures to last a long period with minimum maintenance. Our **Coating Inspection Services in India** helps industrial structures reduce the risk of corrosion by evaluating the quality of defensive coating systems.

There are requirements for verification at the time of surface preparation and coating of any application whether outside or inside linings. At WICS, we provide authentic **Corrosion Testing Services in India** that give verification that contractors' practices are capable of attaining the desired final product as per the painting specifications.

Our unparalleled painting examination services work on different types of tanks, structural steel, pipelines, chemical plants, bridges, commercial buildings, and industrial plants

Coating & Painting Inspection :-

1. TEMPERATURE.
2. DEWPOINT
3. RELATIVE HUMIDITY
4. WIND VELOCITY
5. ABRASIVE CHECK
6. BLASTING EQUIPMENT CHECK
7. POST-SURFACE PREPRETION
8. INDUCTION TIME AND POT LIFE.

INDUSTRY WE SERVE

Industries we serve:

- Oil and Gas Industry
- Cross-country Pipelines
- Foundries
- Aerospace (Bonding material)
- Automobile Engineering
- Boiler Components
- Ship Yards
- Defence
- Power Plants
- Sugar Factories
- Cement factories
- Navy
- Infrastructure Development
- Railways
- Refining
- Petrochemical
- Construction and Fabrication
- Transportation
- Metal Working
- Nuclear components

BABAN NDT ENGINEERING SERVICES

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