**About**

Strategically headquartered in Dubai, TIC QC is a quality control service company that takes pride in consulting services and quality solutions in highly competitive environments by strategically adapting and making improvements in performance in line with current market trends and deliver best practices for projects of all sizes.

Our vision is to be a key player within the quality control and calibration services market by introducing high innovative cost-effective technical service to our clients worldwide.

Our inspection services are led by a group of experienced experts within the field, who will help you eliminate the risk of product defects, assure material safety as well as meeting industry and regulatory requirements. We are dedicated to helping you meet the safety, quality, and ethical standards you demand throughout your supply chain.

**Our Values**

**Vision**

To be the preferred solution provider in the MENA region, leading the local and regional market in Inspections and Calibration services by introducing innovative service to our client.

**Mission**

To succeed we must evolve, stay committed to our sold work ethics, have a passion to keep current with the newest of innovation of our industry, and continually strive to find new and better ways of working. Our goal is to provide the right services and solutions, in the right setting, at the right time.

**Core Values**

To create a sustainable growth, we believe in the foundational commitment of social responsibility being at the heart of our operation which includes accountability, and integrity.

**Our team**

Our diverse team are skilfully trained individuals, we strive to consistently deliver innovative quality control services and customized solutions to all our clients and industries that we operate in. We also believe in the importance of on-going training and education throughout our team’s employment here at TIC Quality Control.

(We can add a diagram of all our manpower)

**Front Page**

**Industries**

**Vehicle**

Pre-exports vehicles Inspections & Confirmation of Conformity verification service to ensure shipments conform to local importing standards to be cleared at destination.

**Oil and Gas**

We help support highlighting the maintenance equipment, as well as the safety of petroleum refining and extraction operations.

**Food Safety Testing**

TIC provide reliable methods and services to guarantee food safety and better food control throughout the entire food supply chain.

**Agriculture Inspections & Testing**

Our agricultural inspection and testing services help companies be more transparent and comply with contractual obligations

**Vegetable Oils and Fats Inspection & Testing Services**

TIC offer inspection and testing services for all types of vegetable oils, oilseeds, and feed related by-products.

**Grains and Pulses Inspection & Testing Services**

We deliver a wide range of inspection and testing services covering all types of pulses, grains, lentils, and dry beans

**Fruit and Vegetables Inspection & Testing Services**

Our inspection and testing services will help businesses to have better control and track their food supply chain.

**Civil**

TIC engineers provide Non-Destructive Testing services and inspections to investigate the integrity of client structure and ensure maintenance.

**Marine**

We offer services to help support the marine industry manage their compliances and regulations.

**INDUSTRIES**

**We will have a section where we will list the industries**

**Vehicle COC**

**PRE-EXPORT VEHICLE INSPECTION & CONFIRMATION OF CONFORMITY (COC) CERTIFICATES**

Pre-export vehicle inspections are crucial for exporting cars to international countries and Confirmation of Conformity (COC) Certificates are required for vehicles to enter certain countries.

TIC is an approved quality control company that can provide quick and efficient vehicle inspections and COC certificates that meet specific vehicle requirements that are assigned by a country’s government. We provide inspections and COC Certificates for heavy machinery, and agriculture machinery that is imported into a country with assurance that all machinery and vehicle inspections ensure compliance and meet safety requirements.

# **Kurdistan – Certificate of Conformity for Exports of Used Vehicles**

TIC Quality Control have been appointed as the sole Certification Body authorised to issue Certificates of Conformity for Used Vehicles entering Kurdistan through the Parvez Khan border crossing.

# Kurdistan’s Consignment Based Conformity Assessment (CBCA) requires the conformity of regulated products including used Vehicles entering the borders of Kurdistan.

This Programme highlights, the safety and well-being of not only the drivers but also the public. Such processes in place not only guarantees environmental and roadworthy vehicles entering the country by implementing international quality standard guidelines, but also ensures Kurdistan does not become a dumping ground for poor quality unwanted used vehicles. The program also required the history of the used vehicles they are purchasing to ascertain proof of ownership of vehicle.

**What are the legal requirements of the CBCA programme for Used Vehicles entering Kurdistan?**

* A Certificate of Conformity is mandatory for Custom clearance of shipments Used for Vehicles in Kurdistan.
* Each vehicle must be inspected and accompanied by a Certificate of Conformity (CoC) issued By TIC Quality Control prior to export of your used vehicle into Kurdistan.

**What is included in the inspection?**

TIC Quality Control will conduct a pre-export inspection based on the legal requirements of the CBCA programme for Used Vehicles, below listed some of the requirements:

* Documentary verification to check vehicle history
* Inspected for water flood, fire accident
* Check of Chassis
* Two fully functional and working front-seat airbags
* Vehicles (ABS) system inspection
* Seat stern vehicles or changed stern inspection
* Body exterior and interior components of vehicles inspection

A Certificate of Conformity shall be issued should the vehicle pass its inception. This will confirm that the vehicle complies with the relevant Kurdistan Technical Regulations and Approved Standards and Customs clearance. In the event a vehicle fails to pass its inspection, no Certificate of Conformity will be issued, resulting in severe delays at the border or the return of vehicle/s to the country of export.

**List industries and link to new pages for each industry**

**Oil and Gas**

Non- Destructive Testing (NDT) plays a critical role in the lifecycle of oil and gas industries. Maintaining the integrity of the equipment, as well as the safety of petroleum refining and extraction operations ensures potentially hazardous fluids and chemicals are safely contained within pipes and pressure vessels.

Methods such as Eddy Current and Ultrasonic Testing, PAUT, TOFD, MT, PT, RT, allows inspections of any defects, crack and flaws within welds and metals, with such processes in places help the daily running of an efficient, safe and profitable petroleum extraction operation on land or offshore.

Failure of assessments at power station and oil rig can prove catastrophic for company’s reputation and personnel and the environment.

**Pressure Vessel and Tanks**

Thorough vessel testing is one of the most important aspects of the entire fabrication process. Prone to hazardous or toxic fluids and gases pressure vessels can leak or fail, becoming a major health and safety concern which can lead to catastrophic implications. Failure of a reactive pressure vessel for example in a nuclear power plant can lead to the release of toxic pollutants into the environment.

**Reactors, Storage Tanks Manufacturing**

Regular inspections of storage tanks is vital to highlight any deterioration or flaws in the structure of the tank which could cause leakages, corrosion or excessive wear. Contributing factors can be weather conditions, general aging and life cycle of tanks, the content within the storage tanks or even near by industrial activities.

With the assistance of regular NDT inspections, our team can identify any cracks, voids, laminations, and other structural deformities caused by wear and tear and areas of corrosion by testing the thickness of the shell material.

**Cross Country Pipelines and Oil & Gas Piping Refineries**

Ongoing and planned pipeline expansions as well as existing cross-country pipelines are some of the most crucial transportation infrastructures globally, that people around the world rely on daily. Whilst we understand these assets are essential in keeping society operating, it is also vital to understand it is just as important to inspection the very same pipelines for prevention of hazardous conditions for the environment and communities nearby.

Non-destructive testing is the preferred method of pipeline testing in the oil and gas sector, due to the threat and environmental hazard oil and gas poses to the integrity of pipeline welds regular inspections of the pipelines are vital during and after the construction process and helps detect these issues before they become a larger problem.

NDT can detect the smallest vulnerabilities in these welds, allowing welds to be repaired before catastrophic damage is done to the pipeline and environment. NDT pipeline inspections are quick, easy and accurate, during initial construction and during welding. Because NDT is portable it also allows inspections to be conducted in remote areas which are common for pipeline crossing.

**Power Plants**

The power generation is a highly demanding industry which also requires very specialised testing practices to secure the safety of the plant and work as evidence to government agencies that the business is proactive in its maintenance and regulatory compliance strategies to prevent outages, costly accidents, but more importantly to keep the public safe and prevent any catastrophic damages.

Non-destructive testing methods plays a vital assistance in specifying possible shortcomings or structural deformities early, these necessary services help support power generation corporations to deal with such issues before inflated downtime or loss of power generation potentials arise. Non-destructive services also secure the safety of the power plant and work as evidence to government agencies that the business is being proactive in its maintenance and keeping up with regulatory compliance requirements.

Just as important testing of concrete structures is, non-destructive techniques are equally as important to check mechanical systems, materials such as heat exchangers, piping systems, and boilers. Non-destructive testing can also be used to ascertain the integrity of welds and other types of elements, for example, nozzles and valves.

It is important for industries such as Power Plants to understand regardless of the situation, regular maintenance, testing, and inspections are vital to daily plant operation.

**Offshore Jackets - Oil Rigs - Windmills**

Offshore jackets are large tubular steel three-dimensional frames which are anchored to the seabed using steel piles which takes the loading of the sea environment and the topsides which is fixed on offshore platform.

The function of the jacket is to support the topside facilities, providing support for conductors, risers, and other appurtenances, and serve as a template for the foundation system.

As weather conditions vary from location to location, such structures are exposed to all sea environment changes, hence it is essential for each jacket structure to be designed appropriately for each operating location regardless of the distance.

There are various risks inherent in these structures:

* **Nodes** – are prone to corrosion, which is why design and fabrication are essential with regular inspections.
* **Structure** – subject to various forms of fatigue loading, risk of ongoing corrosion, including vortex-induced vibration (VIV)
* **Piles** - must be able to resist tension as the hydrodynamic forces which act on the structure have a tendency to cause overturning

**Food Safety Testing**

We provide systematic methods to help businesses to have better control and track their food supply chain. With a strong focus on response turnaround times, efficiency, urgencies, and specific food safety issues, we are committed to the pursuit of inspecting and handing out fair reports of any food samples coming to our laboratories through scientific procedures, and standardized compliance regulations.

Our food safety laboratories specialize in biochemical, microbiological, chemical, and sensory analysis for a extensive range of food items which include, organic food, and ingredients, baby food, food supplements and food contact materials. Evaluation of a variety of goods by our team provide a clearer picture of hazard analysis and critical control point systems that encompass all stages of production, processing, and distribution before reaching the hands of consumers.

**Contaminants Testing**With our advanced technology, our laboratories allow us to determine the presence of a wide range of contaminants in food, such as mycotoxins, process contaminants (3-MCPD, acrylamide, furans etc.), pesticide residues, persistent organic pollutants (POPs, IPA, dioxin, PCB etc.), drugs and heavy metals.

**Physical Testing**

Physical testing refers to the test methods used to evaluate the different physical properties of a food product and a indicator of its quality, and product consistency. Commonly tested properties of food include colour, size and thickness, weight and texture, viscosity and the texture of the granulation to name a few.

**Chemistry and Nutritional Analysis**

Testing food products is necessary to assure food is free of physical, chemical, and biological hazards and to also determine the safety of the food for consumption. Our tests help you identify the nutritional composition of food supplements, their macro elements content, and qualitative properties. Nutritional tests consist of the determination of proteins, carbohydrates, fibres, fats, sugar, vitamins, minerals, and a wide range of phytochemicals. Food chemistry testing help you understand what is safe and what is edible.

Here are some of the analytical instruments used in our laboratories

* **HPLC: High-Performance Liquid Chromatography**
* **ICP-OES: ICP Optical Emission Spectrometer**
* **FT-IR: Fourier-Transform Infrared Spectroscopy**
* **NIR: Near-Infrared Spectroscopy**
* **XRF: X-Ray Fluorescence**
* **ELISA: The Enzyme-Linked Immunosorbent Assay**

**Microbiological Testing**

The purpose of microbiological testing is to identify and restrict harmful microorganisms, which can spoil and contaminate food during the manufacturing process. Our microbiology testing services help detect and ensure food is free from pathogenic and non-pathogenic organisms. Common test formats for microbial food testing are Traditional Culturing Techniques, Advanced Rapid Petri-film Plates Real-Time Advanced Molecular Pathogen Detection Real Time PCR Technique.

**COC Services for Food Products**

According to the request standards from our accredited laboratories or from our international partners, who are certified by ISO-IEC 17025:2017, we can provide our partners a credited Certificate of Conformity (CoC) for food and beverages prior to product shipment, based on the according to the target country standard and regulation

We are also providing certificate of analysis for any product according to client requirements.

**Agriculture Inspections & Testing**

Agriculture and green growth play a major role in the pursuit of economic growth and development, the aim is to maximise the chances of exploiting cleaner sources of growth, leading to more environmentally sustainable growth model. Integrity, safety, and sustainability play a crucial role within the agriculture industry, meaning close monitoring of each principal aspect is vital to business compliance and efficiency. As agriculture will continue to be significant source of employment and income, it will play an important part in the future of economic development.

**Fertiliser Inspection & Testing Services**

Fertilisation of farm soil plays significant role in the quality of a crop, it provides analysis information on nutrients such as what are available and what is needed to be introduced, which is critical information for commercial producers. Such analysis services provide valuable insight that can help to maximize the yield and quality of crops in farm soil.

Agricultural soil testing allows producers to use optimum fertiliser, increase productivity, and enhancing efficiency to maximise profits for a crop season whilst maintaining good environmental practice. We offer seamless access to comprehensive customised agricultural services which cover every stage of production.

* Monitoring
* Weighing
* Sampling
* Testing

**Our inspection and testing services for agricultural commodities**

* Moisture, size, and weight determination
* Tally supervision
* Monitoring of foreign materials and others
* Sampling and chemical analysis in laboratory
* Sample preparation
* Checking of packaging
* Damage survey
* Cargo visual inspection and storage condition survey
* Loading and discharge supervision, including loading process, temperature
* Daily and final activity reports

**Vegetable Oils and Fats Inspection & Testing Services**

Food items must be able to maintain their integrity to meet customer expectations for satisfaction and safety. Monitoring, maintaining, conducting tests, and other analysis, regarding fats and oils ensures the safety and quality of all these products whilst maintaining edible oil quality are produced throughout the chain supply are of paramount importance to ensure safety of the product for consumption.

Testing also helps prevent potential spoilage due to rancidity as it can help determine the shelf life of the products and naturally negatively impacts the customer experience.

We provide support in the reliable quality and quantity assurance as well as safety and traceability of vegetable and animal fats and oils.

**Pre-Shipment Inspections / Loading and Discharge Supervision**

* Loading and discharge supervision
* Stock monitoring
* Verification of cleanness of vessels and shore tanks
* Empty/full flexitanks weighing supervision
* Sealing of ships tank
* Sampling and analysis
* Photographic reporting

**Inspection & Tested Vegoils (RBD/Crude)**

Sunflower seed oil

Palm stearin

Palm olein

Olive oil

Palm kernel

Soybean oil

Coconut oil

Rapeseed oil / Canola oil

Groundnut (peanut) oil

Flaxseed (linseed) oil

Mustard oil

**Testing & Laboratory Services**

Moisture

Acidity (FFA)

Insoluble Impurities

Flash Point

Saponification Value

Lovibond Colour

Sediments

Slip Melting Point

Ash Wax Content

A complete offer of physical and chemical analyses

**Grains and Pulses Inspection & Testing Services**

The increase in production, processing, and trading practices have raised the demand for quality assurance and standardization in grains and pulse products due to the large quantities consumed globally. Food companies are increasingly paying attention to their corporate responsibilities and practices and has now become a pre-condition for the export of grains and pulses due to social and environmental impact of their businesses and before reaching consumers. There is a growing need for food supply chain transparency and sustainable practices into their business policies. With such process in place, it ensures continued improvement in the quality of grains in the market and significantly contributes to good health and eventually reduce the prevalence of diseases associated with poor handling and storage of grains.

**Pre-Shipment Inspections / Loading and Discharge Supervision**

* Loading and discharge supervision
* Stock monitoring
* Verification of cleanness of vessels and shore tanks
* Empty/full flexitanks weighing supervision
* Sealing of ships tank
* Sampling and analysis
* Photographic reporting

**Weighing and Sampling**

* Verification of scales
* Gross weight, tare weight, and net weight determination

**Laboratory Testing**

* Complete physical testing
* Chemical contamination and microbiological analysis
* Standard specific capabilities
* Grading
* GMO testing
* Pesticide residue and contamination analysis

**Inspected & Tested Products**

* Wheat
* Corn
* Barley
* Rice
* Sorghum
* Dry beams
* Lentils
* Chickpeas

**Fruit and Vegetables Inspection & Testing Services**

Fruit and vegetables in supermarkets today must be of high quality to ensure adequate nutritional benefit and products remain fresh and edible. From the time of harvest to when they appear on the shelf, fruit and vegetable go through many different environments, they are highly perishable and susceptible to damage due to their high-water content they are delicate. They can be affected by multiple factors and conditions in different facilities along with handling mode which can also influence the quality of what ends up on your folk.

**Weather conditions**

**Pests, Diseases and Genetics**

**Handling and Storage Conditions**

**Internal Changes, and Genetics**

**We provide you with a full visual and physical inspection including:**

* Size and Shape
* Quality and Condition
* Colour
* Physical Damage and Foreign Object Contamination
* Certification
* Loss and Weight Control
* Tally
* Packaging Condition
* Temperature Determination
* Brix/ Acidity

It is vital for fresh fruit and vegetable to be shipped quickly and stored under proper conditions to retain their quality and taste. Hence regular quality testing and ripening gas analysis is necessary at several stages of the supply chain to ensure your products maintain their quality and freshness and minimise any delays, rejections by retailers, or potential dangers as well as understanding their quality.

**These services include:**

* Pre-production Inspection and Monitoring
* Food Contact and Package Testing
* Sampling Services
* Pre-shipment Inspection
* Loading Supervision/Discharging Supervision
* Survey/Damage Survey
* Tally Services

**Fresh Produce Factory Inspection Audits.**

Choosing the right factory who use the correct and efficient manufacturing and storage processes are essential as food products perish quickly. It is vital for industries to ensure standards in food hygiene and safety, storage capabilities and efficient supply chain.

**Our Factory inspections include:**

* Social Compliance Audits
* Factory Technical Capability Audits
* Food Hygiene Audits
* Storage Audits

**Civil**

Civil engineering is one of the oldest disciplines of engineering, it deals with the design, construction and maintenance of the physical and natural environment, which includes work such as road, buildings, bridges, canals and dams.

Civil Engineering plays a vital part in developing the infrastructure that makes our modern lives possible and safe. It takes the responsibly to ensure that the structures are built to last, can withstand environment and weather changes.

Non-Destructive Testing has an integral role in ensuring the maintenance of the structures that Engineers create. Materials such as wood, masonry units, concrete, fiber-cement and steel are subjected to tests for various reasons and at different times, e.g., during construction, but mainly during the service life.

Depending on the degree of their invasiveness, testing methods can be divided into destructive, semi-destructive and non-destructive methods. Non-destructive methods are mainly used to test strength and investigate its changes over time.

**Applicable methods:**

* Infrared/Thermography testing for concrete walls & Electrical panels
* Leak testing
* Ultrasonic testing for steel pipes
* Magnetic particle testing for steel pipes
* Penetrant testing for steel pipes
* Radiography testing

**Marine**

With growing needs in all modern industries, the [heavily regulated marine industry](https://www.eddyfi.com/en/industry/maritime-and-shipping) understand the importance on best operating practices and the need to maintain regular inspections for environmental compliance and growth, safety precautions, equipment standards as well as cost-efficient solutions.

With heavy scrutiny of the marine industry, strict compliances are in place where vessels must undergo regular inspections not only to lower operating expenses, reduce delay times but also to highlight the importance of health and safety and for the marine industry to take environmental responsibility as priority.

To proactively address such market needs, NDT inspections are used to carry out assessments of commercial vessels including bulk carriers, tankers, cruise liners, barges, ferries, and floating production storage and offloading units.

Typical applications include, but are not limited to:

* [Ship and yacht floor inspection](https://www.eddyfi.com/en/appnote/mitigating-the-cost-of-not-knowing-in-ships-1) with Pulsed Eddy Currents ([PEC](https://www.eddyfi.com/en/technology/pulsed-eddy-current-pec))
* [Corrosion](https://www.eddyfi.com/en/application/corrosion) measurement and mapping on ship hulls with Ultrasonic Testing (UT)
* Piping inspection with Long Range UT ([LRUT](https://www.eddyfi.com/en/technology/long-range-ut-lrut--guided-wave))
* [Weld inspection](https://www.eddyfi.com/en/application/welding-defects) for surface cracking with Alternating Current Field Measurement ([ACFM®](https://www.eddyfi.com/en/technology/alternating-current-field-measurement-acfm))
* Marine HVAC: inspection of air conditioning systems onboard vessels with [tube testing technologies](https://www.eddyfi.com/en/application/heat-exchangers-1)
* Critical tank inspections on tanktainers for pitting corrosion with Eddy Current Array ([ECA](https://www.eddyfi.com/en/technology/eddy-current-array-eca))
* Weld quality verification with [bubble leak testing](https://www.eddyfi.com/en/product/v750-vacuum-box-for-weld-inspection)
* Critical components of marine propulsion systems and engines
* [Structural integrity assessment of ship hulls](https://www.eddyfi.com/en/blog/in-the-wake-of-good-ideas) with Remote Visual Inspection ([RVI](https://www.eddyfi.com/en/technology/remote-visual-inspection-rvi))

**SERVICES**

[**Non-Destructive Testing**](https://www.intertek.com/non-destructive-testing/)

**What is Non-Destructive Testing – NDT**

Testing that is used to examine and evaluate the properties of materials, structures, and equipment without causing damage or increasing the risk of the integrity of the items being tested.

**Why use** **Non-Destructive Testing - NDT**

NDT plays a crucial role in everyday life for companies using pipelines, refineries, civil structures, oil and gas platforms, power stations, marine and many more.

NDT helps support and protect your investment made in infrastructure, by providing the valuable data needed to detect, monitor, and improve processes and assessments, as well as looking to extend the life of equipment.

The goal of NDT is to ensure that [critical infrastructure](https://www.flyability.com/bridge-inspections?hsLang=en) is properly maintained in order to avoid catastrophic accidents and failures which can also have devastating impact and disruptions, where some companies may never recover. NDT also allows you to meet and comply with industry and government regulations and requirements.

In the event of undetected flaws and defects, repairs and replacements can be expensive and risk the safety and conditions of your company employees, general public and can result to a loss of revenue, and company reputation in the event of unplanned shutdown or delays due to equipment failure.

**Which industries use Non-Destructive Testing – NDT**

There is a growing need for companies who are looking to make sure their products, materials and equipment achieve their design requirements and maximise expected life and improve reliability. There are also needs for stricter and increased regulations in place for regions and industries to assess everyday safety preventing accidents and manage assets and resources.

**Conventional NDT Methods (CNDT)**

**Ultrasonic Testing**

Ultrasonic wave signal transmitted into a structure, which then detects defects by receiving and examining subsequent signals.Ultrasonic testing (UT) comprises a range of [non-destructive testing (NDT)](https://www.twi-global.com/technical-knowledge/faqs/what-is-non-destructive-testing) techniques that send ultrasonic waves through an object or material.

These high frequency sound waves are transmitted into materials to characterise the material or for flaw detecting. Most UT inspection applications use short pulse waves with frequencies ranging from 0.1-15 MHz, although frequencies up to 50 MHz can be used.

One common application for this test method is ultrasonic thickness measurement, which is used to ascertain the thickness of an object such as when assessing pipework corrosion.

**Ultrasonic Bonding / Cladding Testing**

Pulse-echo ultrasonic testing method for determining bond defects between the bearing metal and the backing. The measurement of bond between the babbitt and the backing metal of the sample bearings shall be determined using ultrasonic methods.

The ultrasonic signal reflected by the bond interface between the bearing metal and the backing is used to determine bonding defects.

**Ultrasonic Thickness Measurement**

Fast, reliable, and versatile use of non-destructive testing technique for measuring the thickness of a material from one side. This method is commonly used to wide range of structures and components including ship hull, pressure vessels, piping, and structural steels.

**Magnetic Particle Testing**

Magnetic Particle Testing uses one or more magnetic fields to locate surface and near-surface discontinuities in ferromagnetic materials.

**Liquid Penetrant Testing**

Liquid penetrant drawn surface-breaking crack by capillary action and excess surface penetrant is then removed, developer applied to surface, to draw out the penetrant in the crack and produce a surface indication.

**Radiographic Testing**

Industrial radiography involves exposing a test object to penetrating radiation so that the radiation passes through the object being inspected and a recording medium placed against the opposite side of that object.

**Infrared Thermography**

A tool used for proactive troubleshooting and predictive maintenance. Thermographic inspection can detect problems in motor control centers, electrical panels, switchgear cabinets, transformer bushings and terminations, and equipment control panels.

It is vital for companies to conduct regular checks to avoid electrical fires and mechanical breakdowns resulting to significant business interruption.

**Advance NDT Methods – (ANDT)**

**Phased Array Ultrasonic Testing**

Phased Array Ultrasonic Testing (PAUT) is a focused inspection technique designed to incorporate beam technology to detect complex geometries & sizing defects.

Phased Array Ultrasonic Testing (PAUT), also known as phased array UT, is an advanced non-destructive inspection technique that uses a set of [ultrasonic testing (UT)](https://www.twi-global.com/technical-knowledge/faqs/ultrasonic-testing) probes made up of numerous small elements.

Each of these is pulsed individually with computer-calculated timing to create the phased aspect of the process, while the array refers to the multiple elements that make up a PAUT system.

The beam from a phased array probe can be focused and electronically swept across an inspection piece without moving the probe itself. This differs from single element probes (also known as monolithic probes). These more conventional probes need to be physically moved or turned to cover larger areas, which is not required for PAUT.

**Eddy Current Testing**

Uses the principle of electromagnetic induction to detect and identify flaws or differentiate in conductive materials. An excitation coil carrying current is placed in proximity to the component to be inspected.

The electrical conductivity variations, the magnetic permeability of the test-part, or the presence of any discontinuities, will cause a change in the eddy current and a corresponding change in phases and amplitude of the measured current. The changes are shown on a screen and are interpreted to identify defects.

**Magnetic Flux Leakage**

Magnetic flux leakage is a [magnetic](https://en.wikipedia.org/wiki/Magnetism) method used to detect [corrosion](https://en.wikipedia.org/wiki/Corrosion) and [pitting](https://en.wikipedia.org/wiki/Pitting_corrosion) in steel structures, most commonly pipelines and storage tanks. The basic principle is that a powerful [magnet](https://en.wikipedia.org/wiki/Magnet) is used to magnetize the steel.

At areas where there is corrosion or missing [metal](https://en.wikipedia.org/wiki/Metal), the [magnetic field](https://en.wikipedia.org/wiki/Magnetic_field) "leaks" from the steel. In an MFL (or [Magnetic Flux](https://en.wikipedia.org/wiki/Magnetic_flux) Leakage) tool, a magnetic detector is placed between the poles of the magnet to detect the leakage field.

**Time of Flight Diffraction – (TOFD)**

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 tanks](https://inspectioneering.com/tag/aboveground+storage+tanks), and structural steel.

**Calibration Services**

**What is Calibration?**

Calibration is quite simply a service aimed at detecting the uncertainty and inaccuracy of a measuring instrument or piece of equipment. During the calibration testing, the device under test is compared to a reference of known value and parameters to determine the deviation of the measurement from the true value. The equipment used as a reference should itself be directly traceable to equipment that is calibrated.

**Why are Calibration services important?**

Calibration is critically important when measurements are important, they simply work hand in hand, the cost of calibration to your equipment as an investment and the potential result of an incorrect reading is a cost at the result of not making the investment.

Calibration allows users and businesses to have confidence in the results that they record, monitor, and subsequently control. Factors such as frequent usage, environment, man handling can increase measurement error and uncertainties, meaning instrument and equipment’s must be subject to regular calibrations.

Reliable measurements and equipment allow engineers to minimise the assignable causes of variation by prevention and early detection. When such operating conditions and parameters are left uncontrolled in a factory or site, it can endanger the people and the environment within its surroundings.

Lastly, calibration services keep a consistency of all measurements performed and keeps all measuring instruments and equipment’s up to date with international agreements and standards.

**How often to Calibrate?**

For most industries, the standard calibration of measuring instruments and equipment’s are done on an annual basis. Once you gain results from calibration tests you can adjust the frequency of calibrations, upgrade of equipment’s to more robust instruments if required.

Most calibration laboratories supply a printed calibration certificate for the customer to retain as proof of quality standards which can be presented to clients.

**Our Calibration Laboratory Capabilities**

* Electrical Calibration
* Linear
* Temperature Measuring Devices
* Mechanical Calibration
* Pressure Calibration
* Gas Analysis
* Humidity Indicators
* On-Site Calibration
* Flowmeters
* Weight
* Volume
* Balance

**Applicable Industries for Calibration Services**

* Oil & Gas, Chemical Refineries
* Power Plants
* Offshore Oil Rigs
* Marine
* Automobile
* Electricals
* Manufacturing
* Aerospace
* Civil

**Corrosion**

**What is Corrosion**

Corrosion is the process of decay on a material caused by a chemical or electrochemical reaction with their environment, exposure of surfaces which come into contact with gas or liquid, and the process is accelerated by exposure to warm temperatures, acids and salts. Corrosion is recognized as one of the most significant and costly problems that affects almost every major industry, without control methods, there is likely to be equipment and structural failure that can have catastrophic consequences.

**Why is it important**

It is vital for industries to have safety measures in place to protect not only their investment but also surrounding communities, through proper Non-Destructive Testing and inspections. Regular maintenance, repairs and inspections will vary throughout the lifecycle of the equipment and infrastructure, older equipment with signs of deterioration may require more frequent inspections. Non-destructive testing (NDT) is crucial for comprehensive corrosion mapping, especially in the oil and gas industry, which deals with materials that are corrosive by nature and carry billions of gallons of fluid flowing through pipelines.

It is important for industries to introduce frequent and regular inspections to monitor corrosion. These measures along with reliable NDT techniques can help improve safety and efficiency in industries which use vessels, transportation pipelines and other equipment in petrochemical and similar industries.

**NDT Methods**

Below are the NDT methods plays a major role in corrosion analysis:

* Phased array Ultrasonic testing - PAUT
* Time of Flight diffraction – TOFD
* Manual Ultrasonic Testing
* Ultrasonic Thickness gauging
* Magnetic Flux leakage – MFL
* Radiography testing
* Surface - Eddy Current Testing

**For the methods we can link them back to the page where there is a breakdown of the tests and explanation.**

**Steel Manufacturing and Fabrication**

**What is this?**

Steel manufacturing and fabrication is an important trade catering to almost all industrial sectors. Steel products are essential to industries such as transportation, construction, energy, agriculture, mining, and consumer goods manufacturing.

**Steel Fabrication** is the process of creating steel products through metal manufacturing processes, manipulation of parts to make machines and structures. Examples of these processes are cutting, bending, and joining. Additional processes include finishing and heat treatment as well as additional characteristics to the metal product.

**Steel Manufacturing** it is the process that raw materials go through before they become the final product to be sold to consumers. The role of the manufacture is the practice of putting raw materials through a process to create a finished product or part.

The Non-Destructive Testing techniques are used for detecting and evaluate defects and during manufacture and fabrication as well as the defects developed during service of the steel components. Such methods are a group of analysis techniques used for evaluating the properties of steel materials, components, or welds without causing any damage to them.

(Link to NDT Methods page)

**Laboratory Testing Services**

**Petroleum Quality Control**

Testing and petroleum analysis can be conducted on petroleum that comes from different sources such as oil refineries, gasoline plants, petroleum wholesalers, or retail outlets. Testing services can also be carried out to products prior to preparation of usage such as petroleum intended for fuel or lubrication purposes.

**Why** **Petroleum Testing Important?**

Our aim here at TIC Quality Control is to provide a comprehensive testing and reporting system which allows companies to understand the quality of their products, which impacts the performance of their production. Better quality of fuels not only helps reduce pollutants and emissions which contribute to the health and environmental issues but also supports better business practices and prevention of machinery and equipment damage.

**Industries Which Can Benefit from Testing Services:**

* Petroleum and Petrochemicals
* Fuels
* Asphalt
* Refined Products
* Gases, Liquefied Natural Gas (LNG), Liquefied Petroleum Gas (LPG)
* Motor Oil, Engine Oils, Jet Oil, and other Hydrocarbon products

**Our Petroleum Laboratory Capabilities**

Our fuels and lubricant testing laboratories follow international standards including ASTM, ISO, IP, as well as Iraqi standards such as DIN, NOM.

Our facilities are equipped with advanced technology services and bands such as ERAVAP, ERASPEC, Automatic Flash Pointer, Viscometer, WDXRF, Density Meter, Cloud and Pour Point, and Advanced distillation System, performed by fully qualified Chemists. The laboratory network is skilled in hydrocarbon related quality control, troubleshooting, problem-solving and research support.

**Chemical Testing**

The role of a chemical testing laboratory is to determine how well a product performs the job that it’s designed to do, and how long it will last with normal usage. Chemical testing allows industries to check the quality of materials by identifying what a certain material or product is made of and whether they contain anything that shouldn’t be there according to relevant standards, requirements, or regulations.

Various chemical testing methods are used across a wide range of industries to help manufacturers and suppliers ensure their products comply with regulatory safety requirements. Chemical Testing can provide a wealth of information about a sample’s quality and chemical composition, including trace metals and impurities. Testing is performed with high-tech instrumentation that can also identify unknowns.

**Our Chemical Testing Laboratory Capabilities**

Our advanced chemistry laboratory allows us to measure and evaluate the quality of imported materials, according to specific local and international standard procedures. Our team follow the Good Measurement Practices (GMPs) Strategy which provides instructions for Maintaining, Calibrating, and using Equipment and Instrumentation.

* Foods
* Fuels
* Detergents Drugs
* Cosmetics
* Fruits and Vegetables
* Industrial Equipment
* Technological and Smart Tools

Almost most products intended for international markets must be tested by accredited laboratories to ensure they meet health and safety regulatory requirements whilst protecting consumers and the environment. Our laboratories follow the specifications and standards of ASTM, API and ISO to conduct the necessary analysis.