



Multinational Technologies
LIMITED RC 159726

ENGINEERING | MANPOWER | PROCUREMENT | TRAINING



ENGINEERING SERVICES

ENGINEERING SERVICES

Multinational Technologies Limited (MTL) provides client with more information about defects associated with her asset, determining integrity, cracks, corrosion and other failure and damages of the processing plants and equipment to ensure safe operations and preventing any incident through key concepts required to optimize and implement preventive maintenance program.

Ineffective Preventive Maintenance programs produce unnecessary downtime due to equipment failures, resulting in higher maintenance and operations costs, lower quality, and lower productivity. We stand in this gap and prevent these consequences and provide quality maintenance objective for our clients.

The following are the maintenance services;

- Integrity Management (NDT Services).
- Cathodic Protection & Corrosion Control.
- Equipment Calibration & Servicing (Valves, Tanks etc.)
- Sludge Removal & Cleaning of Tanks.
- Pressure Testing.
- Project Management.



ENGINEERING SERVICES – DIGITAL RADIOGRAPHY TESTING

Digital Radiography Testing (DRT) Digital radiography is used in all industry sectors and, in particular, for assessing piping, pressure vessels and valves. The technique can detect discontinuities in a range of materials including aluminium, steel, plastics and composites. Unlike conventional radiography, digital radiography doesn't require film. Instead, it uses a digital detector to display radiographic images on a computer screen almost instantaneously. It allows for a much shorter exposure time so that the images can be interpreted more quickly. Furthermore, the digital images are much higher quality when compared to conventional radiographic images. With the ability to capture highly quality images, the technology can be utilized to identify flaws in a material, foreign objects in a system, examine weld repairs, and inspect for corrosion under insulation.



Multinational Technologies Limited also offers quality services in these NDT methods mentioned below:-

- Corroscan /C-scan
- Hardness Testing (HT)
- Acoustic Emission (AE)
- Pulsed Eddy Current (PEC)
- Short Range Ultrasonic Testing (SRUT)
- Phased Array Ultrasonic Testing (PAUT)
- Internal Rotating Inspection Systems (IRIS)
- Alternating Current Field Measurement (ACFM)
- Leak Testing of tanks and pipelines

ENGINEERING SERVICES - RADIOGRAPHY TESTING

CONVENTIONAL NDT METHODS

Radiography Testing (RT) involves the use of a film made up of a thin transparent plastic coated with a fine layer of silver bromide on one or both sides of the plastic. When exposed to radiation these crystals undergo a reaction that allows them, when developed, to convert to black metallic silver. That silver is then "fixed" to the plastic during the developing process, and when dried, becomes a finished radiographic film. To be a usable film, the area of interest (weld area, etc.) on the film must be within a certain density (darkness) range and must show enough contrast and sensitivity so that discontinuities of interest can be seen. These items are a function of the strength of the radiation, the distance of the source from the film and the thickness of the part being inspected. If any of these parameters are not met, another exposure ("shot") must be made for that area of the part.



ENGINEERING SERVICES – NDT INSPECTION

Non Destructive Testing (NDT) is the process of inspecting, testing, or evaluating materials, components or assemblies for discontinuities, or differences in characteristics without destroying the serviceability of the part or system. In other words, when the inspection or test is completed the part can still be used.

Multinational Technologies Limited provide NDT services to assist with integrity assessment at construction, in-service or shutdown stage. Our array of NDT services cover both conventional NDT methods and the advanced testing techniques.

Non Destructive Testing can be applied to both old and new facilities. During construction, NDT is used to ensure the quality of materials and joining processes during the fabrication and erection phases, and in-service NDT inspections are used to ensure that the products in use continue to have the integrity necessary to ensure their usefulness and the safety of people and the environment.

We support and protect your assets including but not limited to pressure vessels, piping systems, drilling and production facilities, processing plants, flow stations and other process related devices. Our scope of services which cuts across conventional and advanced NDT services are provided by properly trained and qualified inspectors.



ENGINEERING SERVICES – LONG RANGE ULTRASONIC TESTING

Long Range Ultrasonic Testing (LRUT) is an advanced non-destructive examination technique that was developed for testing large volumes of material from a single test point. LRUT is performed using a system which is made up of a low frequency flaw detector, a pulser receiver unit, some transducer rings, and a laptop computer which contains the software that controls the system. To begin, the transducer rings are fixed around a pipe, through which they will then generate a series of low frequency guided waves. It's the uniform spacing of the ultrasonic transducers around the circumference of the pipe allows for the guided waves to propagate symmetrically along the pipe axis, providing complete, 100% coverage of the pipe wall, including areas such as at clamps and sleeved or buried pipes. The waves are then reflected back to the transducer whenever they reach a change in wall thickness, which is how the process is able to detect corrosion, metal loss, or discontinuities.

LRUT is an invaluable non-destructive testing technique that has applications throughout the oil and gas industry. It is widely used in the inspection of pipes in areas such as road and river crossings, power plant tubing, risers, offshore topside pipework, jetty lines, and refinery pipework for the detection of issues such as corrosion under insulation. It has also found widespread use in situations where pipes or tubes are not accessible to other detection methods such as for pipes buried in soil, those encased in a sleeve, or those positioned at a high elevation.



ENGINEERING SERVICES – ULTRASONIC TESTING

Ultrasonic Testing (UT) is a Non Destructive Testing method of characterizing the thickness or internal structure of a test piece through the use of high frequency sound waves ranging from 0.1-15 MHz, and occasionally up to 50 MHz. In most common UT applications, these sound waves are transmitted into materials to detect internal flaws or to characterize materials. High frequency sound waves are very directional, and they will travel through a medium (like a piece of steel or plastic) until they encounter a boundary with another medium (like air), at which point they reflect back to their source. By analyzing these reflections it is possible to measure the thickness of a test piece, or find evidence of cracks or other hidden internal flaws. In ultrasonic testing, an ultrasound transducer connected to a diagnostic machine is passed over the object being inspected. The transducer is typically separated from the test object by a couplant (such as oil) or by water, as in immersion testing.



ENGINEERING SERVICES – MAGNETIC PARTICLE TESTING

Magnetic Particle Testing (MT) uses one or more magnetic fields to locate surface and near-surface discontinuities in ferromagnetic materials. The process puts a magnetic field into the test piece. The piece can be magnetized by direct or indirect magnetization. Direct magnetization occurs when the electric current is passed through the test object and a

magnetic field is formed in the material. Indirect magnetization occurs when no electric current is passed through the test object, but a magnetic field is applied from an outside source. The magnetic lines of force are perpendicular to the direction of the electric current, which may be either alternating current (AC) or some form of direct current (DC) (rectified AC). The presence of a surface or subsurface discontinuity in the material allows the magnetic flux to leak, since air cannot support as much magnetic field per unit volume as metals. When the magnetic field encounters a discontinuity transverse to the direction of the magnetic field, the flux lines produce a magnetic flux leakage field of their own.



To identify a leak, ferrous particles, either dry or in a wet suspension, are applied to a part. These are attracted to an area of flux leakage and form what is known as an indication, which is evaluated to determine its nature, cause, and course of if any action.

ENGINEERING SERVICES – VISUAL INSPECTION

Visual Inspection (VI) as the name implies involves the visual observation of the surface of a test object to evaluate the presence of surface discontinuities. VT inspections may be by Direct Viewing, using line-of sight vision, or may be enhanced with the use of optical instruments such as magnifying glasses, mirrors, and computer-assisted viewing systems (Remote Viewing).



Dye/Liquid Penetrant Testing (PT) may be applied to all ferrous and non-ferrous materials. The basic principle of liquid penetrant testing is that when a very low viscosity (highly fluid) liquid (the penetrant) is applied to the surface of a part, it will penetrate into fissures and voids open to the surface. Once the excess penetrant is removed, the penetrant trapped in those voids will flow back out, creating an indication.

Positive Material Identification (PMI) is a fast, essential 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. Specifically, PMI is used to confirm that the chemical composition of the metallic parts has the correct percentage of key elements, this ensures that material properties such as corrosion resistance meets the requirements. MTL owns the Handheld XRF Analyzer Spectrometer which is the most common PMI tool. It is portable, cost-effective and allows PMI to be performed in the field, production floor or in the lab.

Eddy Current Testing (ET) is an electromagnetic testing technique usually used to inspect non-ferromagnetic materials. In its most basic form – the single-element eddy current testing probe – a copper wire is excited with an alternating electrical current. This wire produces a magnetic field around itself in the direction ascertained by the right-hand rule. This magnetic field oscillates at the same frequency as the current running through the coil. When the coil approaches a conductive material, currents opposed to the ones in the coil are induced in the material – eddy currents.

A defect in the conductive material disturbs the path of eddy currents, creating a local magnetic field that changes the balance of the system. This can be detected by measuring the changes in impedance in the coil, which is an indication of the presence of defects.



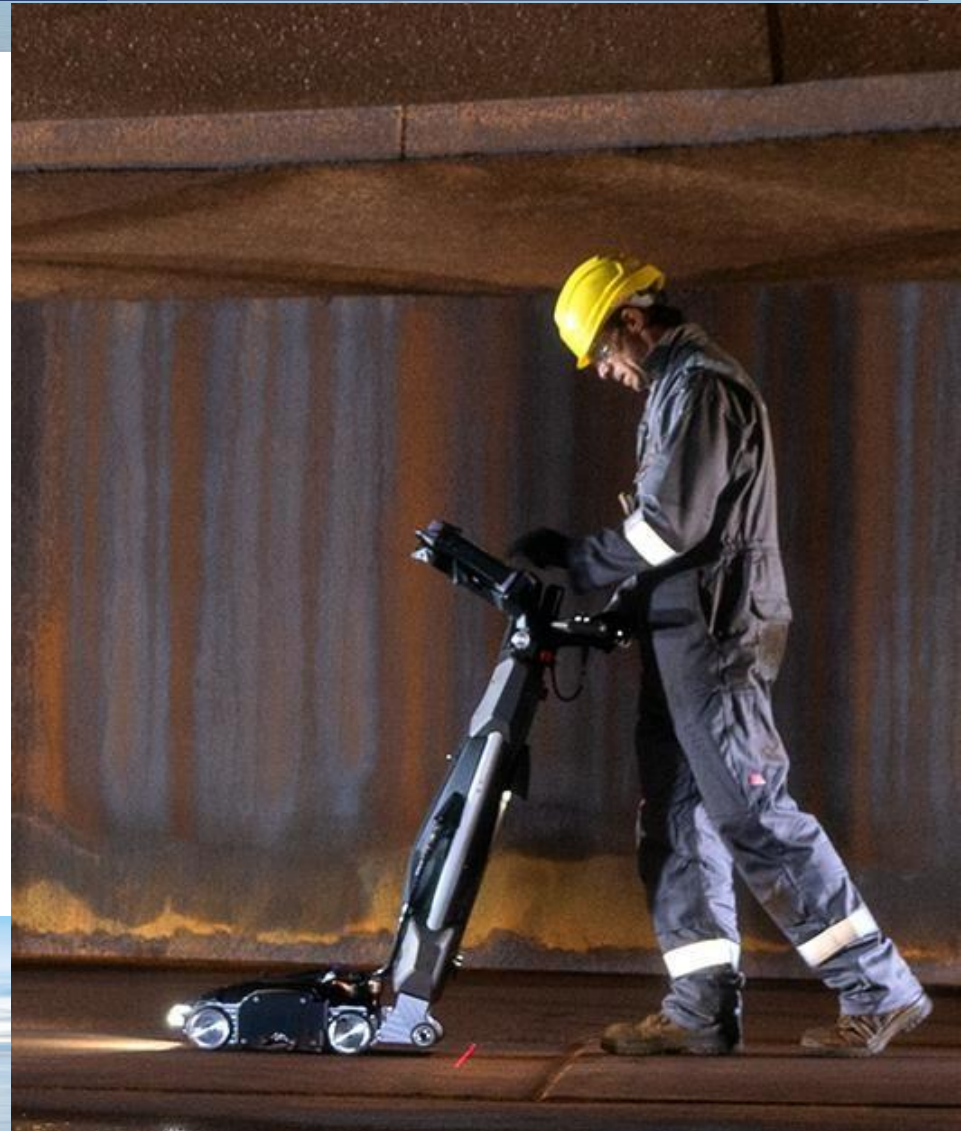
ENGINEERING SERVICES – MAGNETIC FLUX LEAKAGE (MFL)

ADVANCED NDT METHODS

Magnetic Flux Leakage (MFL) is an electromagnetic non-destructive testing technique used to detect corrosion and pitting. MFL uses a powerful magnet to magnetize the conductive material under test (usually steel). Where there are defects – corrosion or material loss – the magnetic field “leaks” from the steel.

MFL probes incorporate a magnetic detector placed between the poles of the magnet where it can detect the leakage field. During inspection, a magnetic circuit of sorts forms between the part and the probe. The magnetic field induced in the part saturates it until it can no longer hold any more flux. The flux overflows and leaks out of the pipe wall and strategically placed sensors can accurately measure the three-dimensional vector of the leakage field.

Because magnetic flux leakage is a vector and that a sensor can only measure one direction, any given probe must have three sensors to accurately measure the axial, radial, and circumferential components of an MFL signal.



ENGINEERING SERVICES – CATHODIC PROTECTION & CORROSION CONTROL

MTL PROFILE

Cathodic Protection & Corrosion Control

Cathodic protection systems are employed in numerous industries to protect a broad range of structures in challenging or aggressive environments. The oil and gas industry, in particular, uses cathodic protection systems to prevent corrosion in fuel pipelines, steel storage tanks, offshore platforms, and oil well casings.

Multinational Technologies Limited provides the world's most innovative, reliable, economical corrosion control and cathodic protection solutions for onshore and offshore structures, plants and pipelines.



Calibration Services

Multinational Technologies Limited provides accurate measurement and calibration of large petroleum, fuel, and chemical cargo storage tanks/facilities, Ship tank and installation, tank farms, LPG and LNG. We use the best calibration technology, and our Engineers and technicians are equipped with state-of-the-art measuring and calibration devices for tanks and equipment. Our reliable measurement and calibration methodology or techniques handles various shapes, sizes and designs of tanks/storage facility and equipment.

ENGINEERING SERVICES – LIFTING EQUIPMENT INSPECTION

Our Lifting Equipment Inspection is conducted in accordance with industry standards and applicable legislation locally and internationally.

We provide continued training and practical enhancement required to carry out this inspection services for our inspectors who are able to accomplish any given task and deliver on time and in good quality. To supplement thorough examination on any item of lifting equipment we provide the most comprehensive NDT methods available and as may be required.

CRANE INSPECTION

Crane inspection is a detailed visual and operational inspection whereby individual components of the crane and lifting gear are examined to determine their condition.

We carry out thorough examinations, in-service inspections of mobile, pedestal, gantry, jib, offshore, overhead and tower cranes. The crane inspections are performed by our experienced and qualified crane inspectors. Upon completion, detailed inspection report and findings are made available to the client.



ENGINEERING SERVICE

MTL has consistently rendered our core engineering services to our clients which includes:

- Nigerian Liquefied Natural Gas (NLNG).
- Total Energies.
- Seplat Energies.
- Platform Petroleum.
- PPMC.
- NPDC.
- Heritage Energy Operational Service Limited (HEOSL).
- Shell Petroleum Development Company (SPDC).
- Agip Energy & Natural Resources (AENR).
- Shell Nigeria Exploration and Production Company (SNEPCO).
- Niger Delta Petroleum Resources (NDPR).



WHY SELECT MTL

- Key project personnel are licensed Engineers.
- Use of advanced technology available within MTL.
- Demonstrated experience working with similar clients.
- Staff experienced in designing similar system.
- Provide unique capabilities used by industrial clients.
- MTL experience professionals are committed to demonstrated performance for all types of project.
- Available and ready to start project support now.



LIST OF PAST & PRESENT CLIENTS



PLATFORM
PETROLEUM LIMITED



Shell



Chevron



TOTAL



NIGER DELTA
Exploration & Production Plc



HERITAGE



NAPIMS



Oando



PAN OCEAN



DAEWOO E&C

CONTACT US



Lagos (Head Office)

ADDRESS:

6, Sam Adegbite Close,
Off Amodu Ojikutu
Street, P.O. Box 73945,
Victoria Island, Lagos
State.

PHONE:

+234 815 424 0055
+234 912 478 5975
+234 805 223 0649

EMAIL:

info@multitechng.com
amomoh@multitechng.com

WEBSITE:

www.multitechng.com

Branch Operations
(Port Harcourt,
Warri, Bonny)

No 3, 2nd Creekview, Off
Woji Road, Woji, Port –
Harcourt, Rivers State.

Km2 Opposite Naval
School Gate, Refinery
Road, Warri, Delta State.

+234 904 473 3789

+234 802 333 8701

info@multitechng.com
eitotoh@multitechng.com