

فراوسهائڻ موژٽ سنڊيرين برحد



**MOZZAT**  
ENTERPRISE SDN BHD



<http://www.mozzatbrunei.com/>

## A B O U T U S

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MOZZAT ENTERPRISE SDN BHD is a leader in Non-Destructive Testing (NDT) inspection services, certification and laboratory testing. Mozzat was formed in 2008 as a fire extinguisher services company, diversified into NDT inspection in 2013. Mozzat assist clients to improve their performances by offering innovative services and solutions in order to ensure that their assets, products, infrastructures and processes meet standards and regulations in terms of quality, health & safety, environmental protection and social responsibility.

Mozzat provides innovative NDT services to the Oil & Gas, Power & Utilities, and Industrial Service, and Marine & Offshore. Mozzat currently have over 20 qualified and trained, professionals and state-of-the-art NDT equipment.

### OUR MISSION

The mission of our company is to be a leader in the Local Bruneian Development and Implementation of advanced non-destructive testing technology in on-stream inspection, satisfying the expectations of our customers to safely deliver any project, at any time and in any environment to the benefit of all our clients.

### OUR VISION

Our vision is to be the leading Inspection Company in Brunei, providing an ever-reaching and excellent, high class quality service to Companies both within and beyond our borders. We aim to continue to provide employment and training to the unemployed and under-privileged in Brunei Darussalam.

### OUR VALUES

- A firm commitment to Quality workmanship, Health & Safety Standards.
- An open relationship with our employees based on mutual trust, respect and success in the workplace.
- To strive to maintain the expertise of our staff by ensuring that their technical knowledge and skill requirements is updated on a regular basis through the channels of Sun-Focus.
- To act in an objective manner, being thorough and factual in any written report of the work performed and to include all relevant or pertinent information in such documents.
- To maintain the highest degree of integrity, reliability and credibility at all times.
- We do not discriminate on the grounds of race, ethnicity, religion, sex, nationality, gender, disability & etc.

## OUR CREDENTIALS

We have impeccable credentials and a strong record of accomplishment in executing large-scale NDT projects. Strict adherence to Industrial Health and Safety Regulations, cultural adaptability and an aggressive growth strategy has been the key drivers in the expansion of our operations. Contracts in many other geographies are expected soon.



## OUR SCOPE

- Advanced NDT Services
- Conventional NDT Services
- Complementary Services
- Third Party Inspection Services
- Static Equipment Inspection Services
- Training and Certification Services
- Fire Extinguisher Services
- Hydrant Products



## WE PROVIDE

### ADVANCED NDT SERVICES

- Phased Array & TOFD for Weld Inspection and Hydrogen Induced Crack Deduction Survey
- Corrosion mapping using Phased Array UT (C Scan, B Scan) for piping and pressure vessels
- Digital Radiography / Computed Radiography DR/CR Tube
- Tube Inspection of using MS5800 multi-frequency eddy current (ECT), near field, remote field (RFET), MFL, NFT, Acoustic Eye and Internal Rotary Inspection System (IRIS).
- Tank Floor Inspection using MFL
- Laser Optics Profile Measurement by Laser Technology
- Long Range Ultrasonic Testing (LRUT)
- Acoustic Emission Testing (AET)
- Low Frequency Eddy Current Testing (LFET)
- Remote Video Inspection (RVI)
- Alternating Current Field Measurement (ACFM)
- Infrared Thermography
- Pulsed Eddy Current (PEC) Corrosion Under Insulation (CUI)
- ECT Weld Surface Inspection
- Phased Array Flange Face Inspection
- Phased Array Bolt Inspection
- Short Range Ultrasound Tank Annual Plate Inspection (TAP)
- Short Range Ultrasound Corrosion Under Pipe Support (CUPS)
- Borescope Inspection
- Positive Material Inspection XRF (PMI) - Stainless Steel content
- Positive Material Inspection OES - Carbon content and metal and element composition



### CONVENTIONAL NDT SERVICES

- Radiography X-ray and Gamma ray
- Crawler X-Ray Radiography for Pipeline
- SCAR (Small Controlled Area Gamma Radiography) Services
- Positive Alloy Material Identification (PAMI)
- Visual Inspection



- Ultrasonic Testing
- Ultrasonic Testing Thickness Gauging & Weld Integrity Assessment
- Magnetic Particle Testing
- Vacuum Box Testing
- Hardness Testing
- Ferrite Measurement
- Helium Leak Testing
- Holiday Testing
- ECT Weld inspection & Coating Thickness Check

## COMPLEMENTARY SERVICES

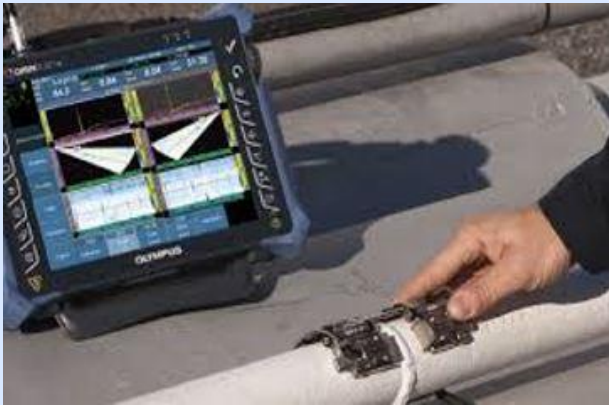
- Weld Inspection (CSWIP - 3.1)
- Digitization of Computed Radiographs
- Post Weld Heat Treatment
- Training & Certification of all NDT Methods & Radiation Safety
- Radiation Safety Management & Consultant
- Rope Access Services
- API inspector supply
- ASNT Level-III inspector supply
- Scope specific training and certification in advanced inspection accordance with Mozzat written practice document complies with ASNT SNT-TC-1A-2020
- OCTG Inspection & Maintenance
- Internal & External Audit Services for inspection company



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Phased Array Ultrasonic Testing (PAUT) is an advanced nondestructive examination 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. This technique can be used to inspect more complex geometries that are difficult and much slower to inspect with single probes. 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.

Compared to other forms of UT, PAUT has several advantages. PAUT can be conducted more quickly. It has a high degree of repeatability. By emitting multiple angles sequentially, PAUT is able to create detailed and accurate cross-sections of a part. It is also particularly useful in situations where there is less room for mechanical scanning because it is able to sweep the beam without moving the probe.



### PAUT WELD INSPECTION

- Capacity to perform Carbon Steel Butt Weld Inspection.
- Any joint configuration shall be inspected, such as pipe to pipe, pipe to flange, nozzle to pipe, etc.
- Diameter range from 0.85" inch to infinite diameter.
- Thickness ranges from 4 mm to 120 mm.
- High system sensitivity and less sensitive to false call.
- High probability of deduction.

### PAUT FLANGE FACE

- Capacity to perform Carbon Steel Butt and Stainless Flange.
- Any flange configuration shall be inspected, such as RTJ, Raised face, weld neck, etc.
- Flange Diameter ranges from 1.0" inch to infinite diameter.
- Thickness ranges from 10 mm to 120 mm.
- High system sensitivity and repeatability.
- Produce repeatable, reproducible and reliable result.





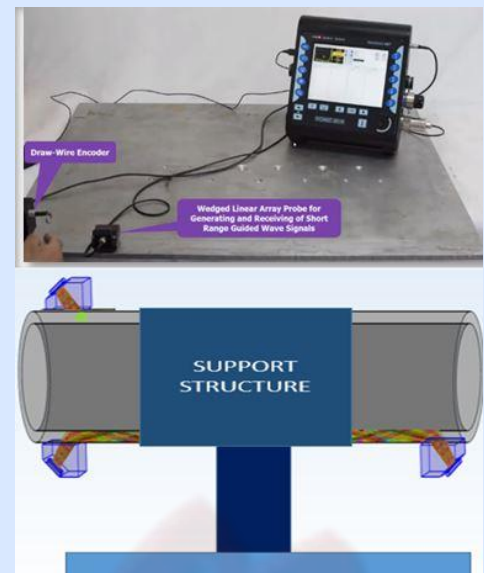


### PA-SRUT TANK ANNULAR PLATE

- Corrosion deduction on Carbon Steel above ground storage tank.
- Any diameter shall be inspected.
- Thickness ranges from 6mm and above shall be inspected.
- Able to deduct the corrosion in broad severity level.
- Able to discriminate corrosion either on bottom or top of the plate.
- High sensitivity, good screening com sizing tool.
- High probability of deduction and less prone for false call.

### PA-SRUT CORROSION UNDER PIPE SUPPORT

- SRUT - Short Range Ultrasonic Testing shall be used for detection of corrosion on under pipe support.
- Guided Wave is a technique which uses low frequency sound waves to flood thin wall material and then reflect back at interfaces such as cracking or corrosion/ pitting.
- The guided wave technique is to be used as a screening tool and measure the remaining wall thickness as a propositae amplitude response.
- Limited access - insulated line with minimal insulation removal, corrosion under supports without need for lifting, inspection at elevated locations with minimal need for scaffolding, and inspection of road crossings and buried pipes. Data is fully recorded. Fully automated data collection protocols.



### PAUT CORROSION MAPPING OF ELBOW

- Inspect Corrosion on Elbow and 5-D bend.
- Diameter from 4 inch to 16 inches shall be inspected by use of FlexoForm Scanner and Olympus search unit.
- Thickness ranges from 4 mm and above shall be inspected.
- Able to deduct corrosion on both top and bottom of the scope.
- Capable to deduct 0.5 mm depth wall loss.
- High sensitivity, good screening com sizing tool.
- High probability of deduction and less prone for false call.

### PAUT CORROSION MAP OF PIPE, VESSEL & TANK

- Inspect Corrosion on carbon steel pipe, vessel and tank.
- Diameter from 4 inch and above shall be inspected by the use of Hydroform Scanner and Olympus search unit.
- Thickness ranges from 4 mm and above shall be inspected.
- Able to deduct the corrosion in both top and bottom of the scope.
- Capable to deduct 0.5 mm depth wall loss.
- High sensitivity, good screening com sizing tool.
- High probability of deduction ad less prone for false call.



Time of Flight Diffraction (TOFD) is a reliable method of nondestructive ultrasonic testing (UT) used to look for flaws in welds. TOFD uses the time of flight of an ultrasonic pulse to deduct the defect. It can also be used for assessing the heat-affected zones of other components as well as piping, pressure vessels, clad material, storage tanks, and structural steel. TOFD uses a pair of ultrasonic transducers emitting sound waves into a component and measuring the time of flight, one as a transmitter and the other as a receiver. The low frequency waves propagate at an angle and diffract back to the receiver on hitting any defect.

### TIME OF FLIGHT DIFFRACTION APPLICATION

- It is best depth sizing tool with depth accuracy of  $\pm 0.3$  mm.
- TOFD is the fastest method to located the defect.
- Thickness ranges from 6 mm to 500 shall be inspected.
- Can deduct the corrosion in weld.
- High sensitivity, good screening com sizing tool.
- High probability of deduction and less false call rate.
- High degree of repeatable, reproducible and reliable result.
- The growth of any defects shall be tracked at any time.
- Capable to pick up the defects found in conventional NDT method such as RT or Pulsed Echo ultrasound.





Eddy Current Test uses electromagnetic induction to detect flaws in conductive materials. The eddy current test set-up consists of a circular coil placed on a test surface. The alternating current in the coil generates changing magnetic field, which interacts with the conductive surface and generates eddy current. The flow of eddy current can be disrupted due to change in resistivity or conductivity, magnetic permeability, any physical discontinuity. The change in eddy current flow and a corresponding change in phase and amplitude is measured against known values.

### EDDY CURRENT SURFACE INSPECTION

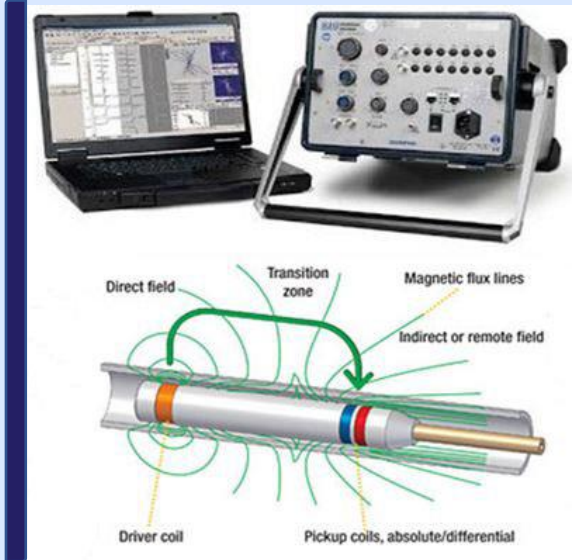


- Eddy current test method can detect very small cracks in or near the surface of the material, the surfaces need minimum preparation
- It can deduct surface flaws on painted or coated surface
- Need not required to remove protective surface coating
- Some notable applications of Eddy current test are conductivity measurement, sorting of material, assesment of heat treatment conditions, sorting of materials based on hardness and strength, measurement of thin components.

### EDDY CURRENT TUBE INSPECTION FOR NON FERROUS CONDUCTIVE HEAT EXCHANGER, AIR COOLER AND FIN FAN

- Eddy Current Tube Inspection is primarily for longitudinal crack detection pits, corrosion, erosion and axial cracking in nonferrous tubing.
- Use of multi frequency enables better analysis and flaw sizing.
- Probe needs a good fill factor to remain sensitive.
- It is very fast technique with 2 meter per second pulling speed.
- Able to discriminate the wall loss is on inner side and outer side.
- High sensitivity, good screening com sizing tool.





### RFT INSPECTION FOR FERROMAGNETIC TUBES

- Remote Field Testing (RFT) successfully inspect ferromagnetic tubing such as carbon steel or ferrite, stainless steel. Offers good sensitivity in detecting and measuring defects resulting from erosion, corrosion, wear and baffle cuts.
- Detect inside and outside defects with approximately equal sensitivity.
- Probe needs a small fill factor to remain sensitive.
- It is less fast compared to eddy current inspection with 0.5 meter per second pulling speed.
- Can discriminate the wall loss is on inner side and outer side.

### IRIS TUBE INSPECTION SOLUTION

- IRIS system works on the principle of Ultrasonic Testing. It is used as an alternate hypothesis for verify the results of Eddy current and RFT.
- Detect inside and outside defects.
- Probe needs proper centering device.
- It is quite slow technique but reliable.
- Able to discriminate the wall loss is on inner side and outer side.
- High probability of deduction and less prone for false call.



### PULSED EDDY CURRENT FOR CORROSION UNDER INSULATION

- Pulse Eddy Current Testing (PECT) is a technique used for corrosion under insulation (CUI) screening on carbon steel structures as pipes, vessels, tanks and spherical tank legs without the need of contact with the steel surface.
- PECT is a static technique measure spot percentage variations in steel thickness through any non-magnetic material between the sensor and steel surface such as air, insulation material, concrete, plastic coatings, paint, sea water, marine growth, deposits, oil etc.
- PECT is comparative technique, where the percentage variations measured on the specimen are compared with a calibration value which assumed to be the full wall thickness.

Long Range Ultrasonic Testing (LRUT), also known as guided wave ultrasonic testing is a fast and cost-effective method for inspecting long lengths of pipes. The technology operated by placement of an array of probes (transducers) placed in belt, circumferential wrapped around the pipe being inspected. The transducer then generates and receives low frequency ultrasonic guided waves longitudinally down the length of pipe. The returning echoes indicate defects such as corrosion and other abnormalities. Distance covered by the ultrasonic waves is dependent on number of factors related to pipe coating, branch connections, and fittings and above ground or buried locations. The system can inspect both the directions from each inspection location and therefore can maximize the production.

### LONG RANGE ULTRASONIC TESTING (LRUT)

The benefits of LRUT are:

- Screening long lengths of pipes at one time.
- Inspection of 100% of pipe.
- Detection of corrosion and erosion under insulation of pipes.
- Analysis of pipes at different access-locations such as wall penetration, road crossing and buried sites.
- Screening of on and offshore pipe work, even in tightly packed racks and riser inspection.



### THE VANTA HANDHELD XRF SERIES

The Vanta analyzer is our most advanced handheld X-ray fluorescence (XRF) device and provides rapid, accurate element analysis and alloy identification to customers who demand laboratory-quality results in the field.

Vanta handheld XRF analyzers are built to be tough. Their rugged and durable design makes them resistant to damage for greater uptime and a lower cost of ownership.

With intuitive navigation and configurable software, the Vanta series are easy to use with minimal training for high throughput and a fast return on investment. Featuring innovative and proprietary Axon technology, Vanta analyzers give you accurate results and help boost productivity no matter the environment or working conditions.

- Exceptional durability under extreme conditions.
- Analytical superiority.
- Optional Wireless LAN and Bluetooth for real-time data sharing. Cloud technology enabled.



## HITACHI MASTER SMART MOBILE OPTICAL EMISSION SPECTROMETERS

Seamless quality control is essential for any metalworking, especially for safety critical positive material identification on-site. But very often the spot of analysis is difficult to access e.g., plant components. Simply hold the probe to the sample, push the trigger and read the result. The alloy grade and the full chemical composition appears within a few seconds on the integrated touch screen. Tailored to your specific application, different operation modes offer complete analysis, grade identification or sorting of metals.



The PMI-MASTER Smart identifies the metal grade automatically and indicates where concentration limits are exceeded.

This robust spectrometer is designed for the precise analysis of key elements, rapid material verification, PMI and metal sorting.

Despite its light weight and compact size, the PMIMASTER Smart offers high analytical performance, unparalleled portability, convenience and ease of use.



## MAGNETIC FLUX LEAKAGE TESTING OF TANK (BOTTOM PLATE)

The benefits of MFL are listed as follows:

- Full Floor data recording and mapping.
- High resolution 64 channel sensor arrays to maximize detection capability.
- 256 individual sensor and defect classification tool.
- Through coating inspection up to 6 mm including FRP, GFP, and SS.
- USB based, simplified data transfer
- Digital calibration for different plate thickness
- Touch screen computer provided immediate plate view.



## CONTACT US



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