



INSPECTION WITH **INTEGRITY**



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Website
<https://www.masterscan.com.sg/>



29, Benoi Road, Pioneer Lot
Singapore 629922



+65 62614766 (Office)
sales@masterscan.com.sg

About The Company

Masterscan Engineering was founded in Summer 2005, head-quartered in Singapore and operates in several countries worldwide. We are an independent Testing & Inspection organization accredited by **SINGAPORE ACCREDITATION COUNCIL-SINGAPORE LABORATORY ACCREDITATION SCHEME (SAC-SINGLAS)** to ISO/IEC 17025, in the field of Non-Destructive Testing.

We have been providing NDT solutions to various key industries such as Oil & Gas, Petro Chemical, Chemical, Marine and offshore, Aviation and Construction. Masterscan is also an approved testing centre by DNV Singapore to carry out NDT inspection of offshore and ships structures.

Our Vision and Mission

Our goal is to provide Testing & Consultancy services with Highest Quality, Integrity, Efficient and Accurate Inspection. We also aim to provide Cost Effective Inspection Strategies to all our customers.



Pioneers in the NDT industry

16+ years in the NDT industry with a proven track record, Serving multiple clients across various industries.



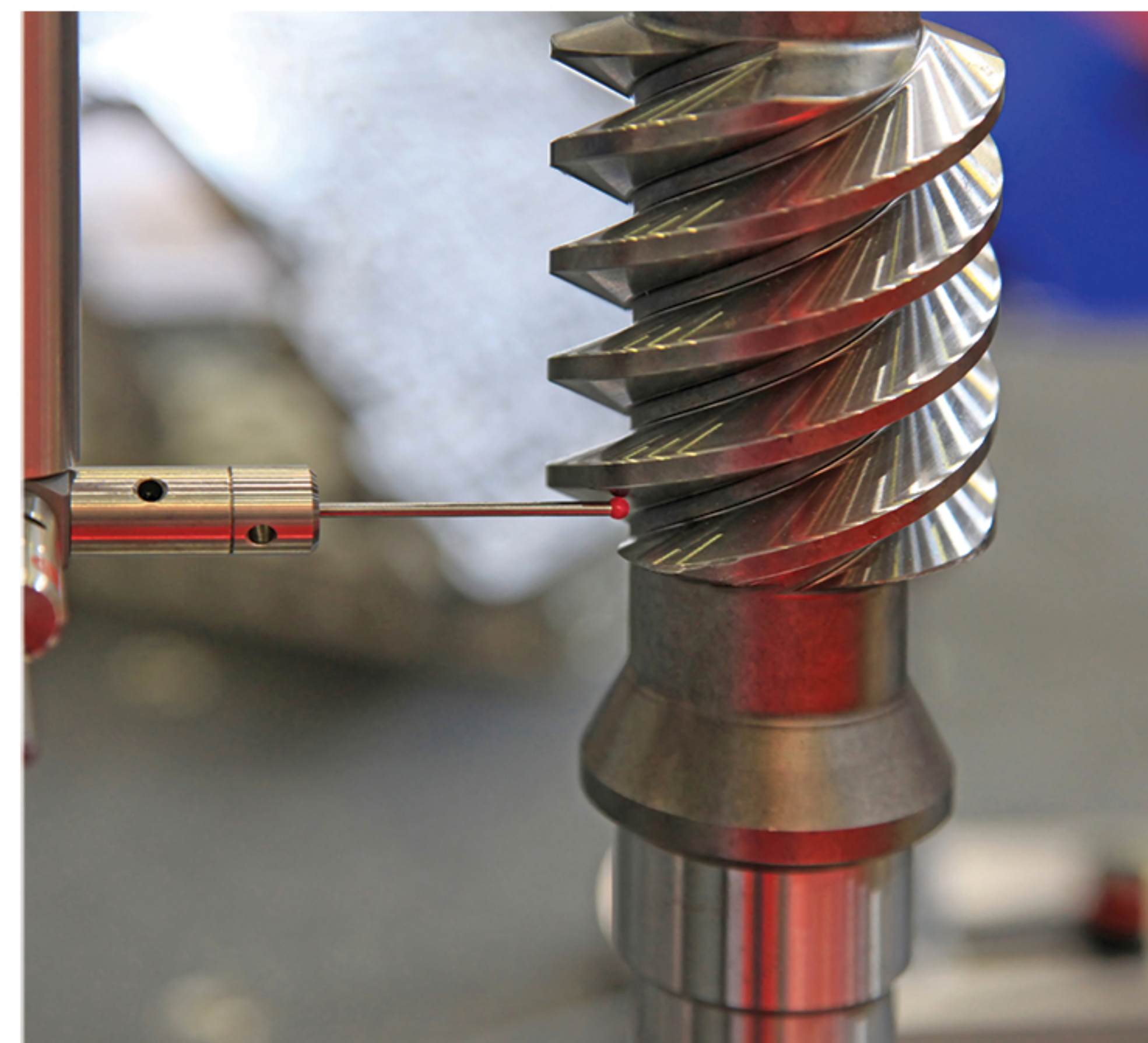
Established expertise

Our Leadership and technical team have a combined of over 100 years of experience in the industry.



Constantly evolving with new ventures

We will remain relevant in the industry and continue to evolve as the industry progresses hence promising our clients the best solutions at any given time.



We offer the **best services with safety** our utmost priority

Masterscan Services

Advanced NDT

Phased Array Ultrasonic Testing (PAUT)

- Masterscan Offers State of the art PAUT services in oil & gas marine sector through its use of powerful instrumentation, software, high fidelity probes and transducers
- Weld inspection in pipes and pressure vessels and large structures, Bifurcation lines, Valve bodies at great speed and efficiency, simplicity and imagery.
- Composites inspection
- High accuracy in defect sizing
- Complex geometries' volumetric inspection including painted cylindrical, trapezoidal fuel transport tankers
- Individually tailored development of qualification blocks, configuring rigs for data collection and levels of post-analysis reporting.

Masterscan is the first in Singapore to procure the latest Olympus X3. These machines offer Total focusing method, Focus Matrix Capture and also feature the AIM (Acoustic Influence Map). With a great range of inventory, expertise and versatility, Masterscan is primed to offer solutions to projects of any complexity and scale.



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Tube Inspection



Eddy Current

It is notably the fastest and most preferred tube inspection technique available. It can only be used on non-ferrous materials like Brass, Copper, Copper-Nickel and Austenitic Stainless steel. EC can detect both internal and external defects and can distinguish between them.



Near Field Testing

NFT is specifically suited to detecting corrosion, erosion, and pitting inside carbon steel tubing. NFT is perfect for fin-fan tube heat exchangers because eddy currents do not go through the wall of the tube. NFT is also much more sensitive to defects close to structures such as support plates and tube-sheets.



Remote Field Testing (RFT)

RFT is being used to successfully inspect ferromagnetic tubing such as carbon steel or ferritic stainless steel. It offers good sensitivity when detecting and measuring volumetric defects resulting from erosion and corrosion.



Magnetic flux leakage

MFL is a technique used for the inspection of tubes made of ferritic materials. This technique will normally be applied as a fast screening technique if small diameter pitting is expected.



IRIS

IRIS is a technique that can be applied on both ferrous and non-ferrous materials and even on non-conductive materials like plastics. With IRIS the remaining wall thickness of tubes can be accurately measured. IRIS is more accurate than other tube inspection techniques and has the advantage of presenting information about the geometry of defects.



Remote Visual Inspection

RVI can be used to visually inspect every possible tube. RVI doesn't provide any information about defect depth. But it can be useful to obtain information about defect geometry and the possibly present degradation mechanisms in a tube.



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Tank Inspection

- ✓ **Corrosion Mapping**
- ✓ **Time of Flight Diffraction (ToFD)**
- ✓ **Magnetic Flux Leakage**
- ✓ **IRIS (Internal Rotational Inspection System) Testing**
- ✓ **Computerized Radiography**
- ✓ **Acoustic Emission**



Advanced Radiation Techniques

Digital Radiography (DR)

Digital radiography (DR) is an advanced x-ray inspection which produces real time digital radiographic image on a computer. Through usage of x-ray sensitive panels to capture data during inspection, data is transferred to a computer immediately in an image form. As such it improves testing efficiency by:

- Real time imaging(DRT)
- Shorter exposure time, increased speed and productivity
- Digital images and data storage
- Improved detectability

Computerised Radiography (CRT)

CRT is the Digital replacement of conventional radiography using photo-stimulated luminescence screens to capture X-ray images. Through its reusable and flexible cassettes, it converts the stored images into digitalised images, providing high quality images that can be post processed for evaluation.

Small Controlled Area Radiography (SCAR)

It enables radiography to be carried out with radiation levels as low as possible. These systems are capable of performing radiography inside a controlled area in midst of busy areas, without disrupting operations. The reduction of unwanted radiation scattering effects around the film through effective photoelectric absorption has an additional benefit of improving radiographic quality.

- Smaller area of radiation barricaded areas - can allow other processes to occur without disrupting production
- Used with Se75 source, better image qualities



Masterscan Services

Non-Destructive Testing

Conventional Methods



ULTRASONIC TESTING

Ultrasonic testing (UT) is a family of non-destructive testing techniques based on the propagation of ultrasonic waves in the material. Highly effective for volumetric inspection and flaw detection.



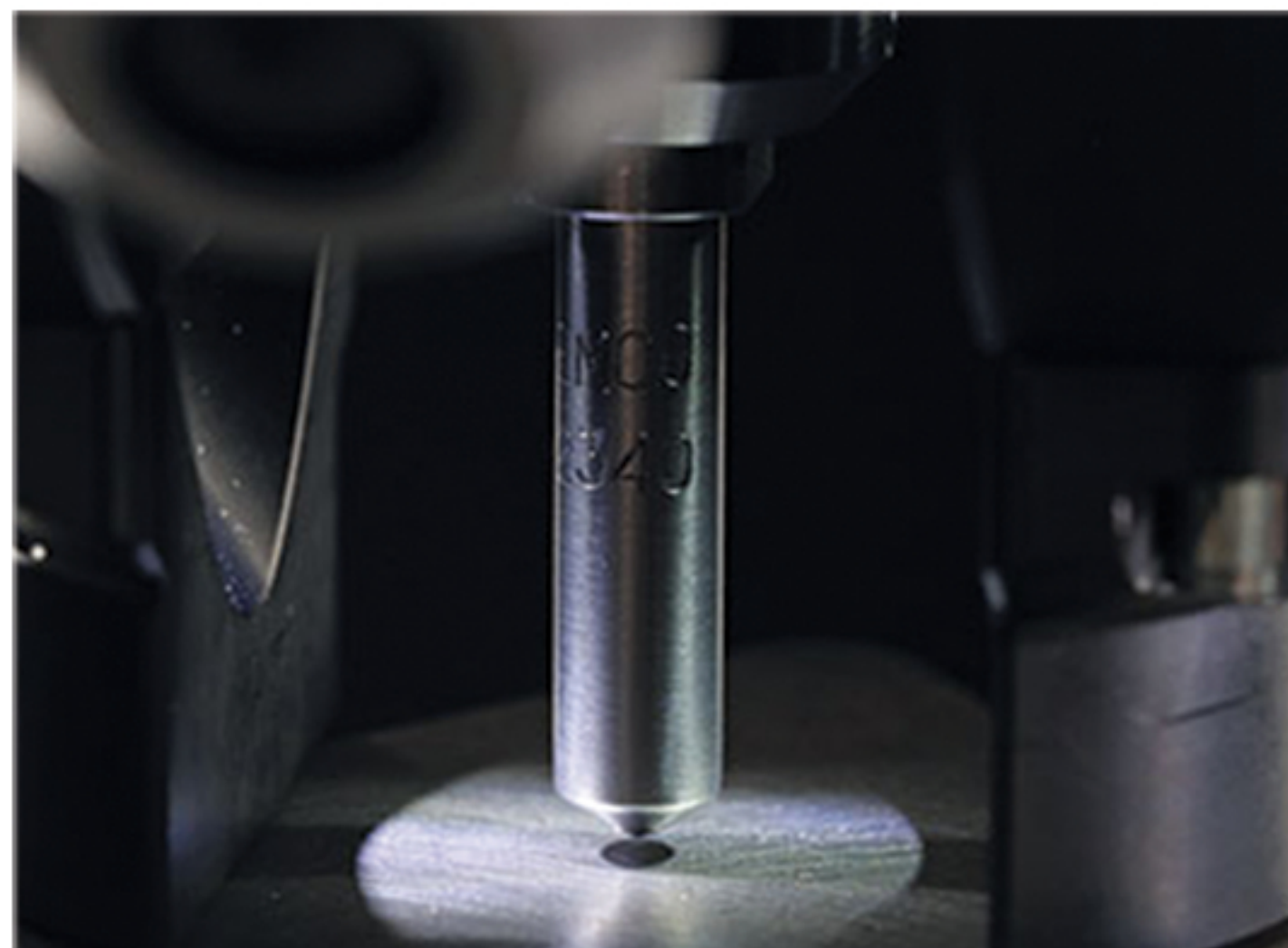
POSITIVE MATERIAL IDENTIFICATION

PMI (Positive Material Identification) testing is the analysis of materials to determine the chemical composition of a metal or alloy at particular (usually multiple) steps of alloy manufacturing or in-process alloy installation.



LIQUID/DYE PENETRANT TESTING

Liquid penetrant inspection is used to detect any surface-connected discontinuities such as cracks from fatigue, quenching, and grinding, as well as fractures, porosity, incomplete fusion, and flaws in joints.



HARDNESS TESTING

Hardness testing is a test to determine the resistance a material exhibits to permanent deformation by penetration of another harder material.



RADIOGRAPHIC TESTING

Radiographic Testing (RT) is a non-destructive testing technique that involves the use of either x-rays or gamma rays to view the internal structure of a component. Used widely due to its ability to offer permanent record during volumetric inspection.



MAGNETIC PARTICLE TESTING

MT is a fast, relatively simple and low-cost method of NDT inspection to detect surface and sub-surface cracks in castings, forgings and welds that are often not visible to the human eye.



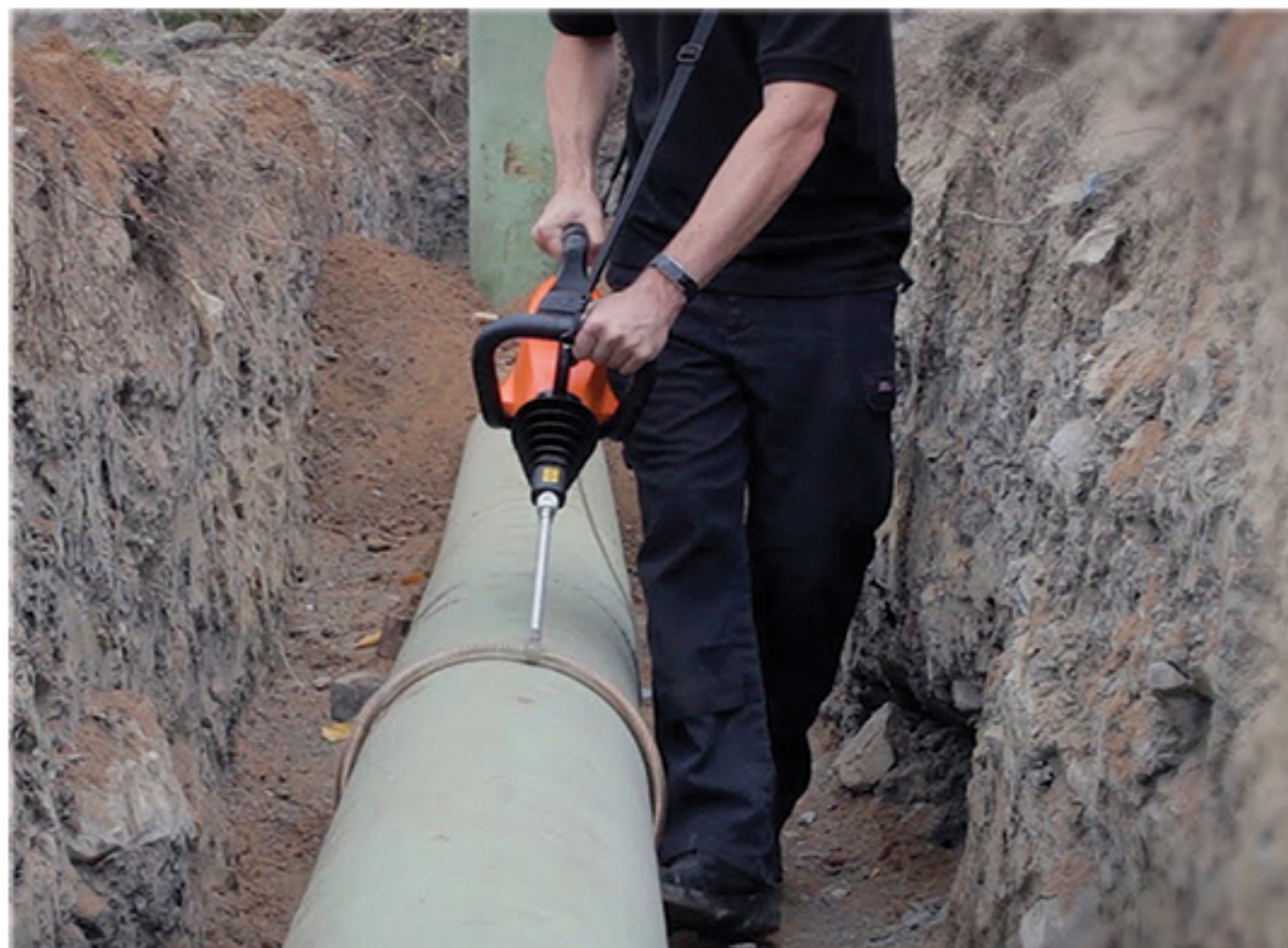
VISUAL TESTING (VT)

This test method is applied to almost every product as a quality assurance tool. Generally, the most detrimental unacceptable discontinuities in the objects or items are the surface opening discontinuities. Visual scanning, inspection or testing can successfully detect these unacceptable surface discontinuities without applying expensive test methods.



ULTRASONIC THICKNESS GAUGING (UTG)

The usage of an ultrasonic thickness gauge for non-destructive testing is to check material properties such as thickness measurement.



HOLIDAY TESTING

Holiday testing is a non-destructive test method applied on protective coatings to detect unacceptable discontinuities such as pinholes and voids.

Masterscan Services Remote Inspection

Robotic Crawlers

Mostly used in pipeline, large vessel, or holding tank inspections, Robotic Crawlers are another device in the Remote Visual Inspection (RVI). Where long distances need to be traveled in order to complete an inspection, robotic crawlers operate much like a remote control car with a controllable camera.

Steer Rover Scanner for Weld Inspection and Corrosion Mapping

The portable motorized scanner is based on the field-proven MapROVER Scanner but adds steering capabilities so that users can position it from a distance.

Drone Inspection

Through our CAAS certified pilots, we currently offer remote visual inspection and Ultrasonic thickness gauging (UTG) through drones. With intrinsic advantages such as safety and greater accessibility, this rapidly evolving inspection offers cost-beneficial solutions to clients.



Masterscan Services Other Services

Heat Treatment Services

Primos-CWQ Welders Qualification

Level III Services

Professional Engineering

Quality Assurance

Technical Manpower Supply

Masterscan provides professional man power services to our clients as per their requirements:

- QA/QC engineers
- Plant inspectors
- NDT inspectors

Training and Certification

At Masterscan, we provide specialized training programs tailored to meet exact customer needs and demands. By constantly updating the instructional materials and equipped fully with latest equipment sets and accessories to provide industry standard training, Our training guarantees in-depth knowledge of the subjects with both theory and practical aspects of the inspection technique.

The list of training offered are listed below:

- Ultrasonic Flaw Detection Technique
- Magnetic Particle Testing
- Fluorescent Magnetic Particle Testing
- Eddy Current Testing
- Phased Array Ultrasonic Testing
- Visual testing
- Time of flight diffraction



Our Awards

- ✓ **SMEAA – SME's Asia Award – 2014**
- ✓ **ExxonMobil – Safety Award**
 - 1 Million safe Man-hours w/o recordable Injury
 - 7.5 Million Man-hours w/o Lost Time Injury
 - 4.5 Million Man-hours w/o Lost Time Injury
 - 2 Million Safe Man-hours w/o recordable Injury
- ✓ **Hai Leck Engineering – Safety Award**
 - 2 Million Safe Man-hours w/o recordable injury
- ✓ **PEC Ltd – Safety Award**

Certifications & Accreditations



Key Clients



CONTACT US

VEERA R DAYALAN
Chief Executive Officer
dayalan@masterscan.com.sg
+65 9451 6487

VIGNESHWAR PRABU
Executive Director
vigneshwar.prabu@masterscan.com.sg
+65 9424 9656

ARAVINDHAN DAYALAN
Director
aravind@masterscan.com.sg
+65 8113 2724