A.I.S

SPECIALISING IN INSPECTION, CONVENTIONAL & HIGH-TECH
NON-DESTRUCTIVE TESTING & HEAT TREATMENT SERVICES

AFRICAN INSPECTION SERVICES

COMPANY PROFILE 2025

Detecting the Invisible. Delivering the Impossible

ABOUT US

At African Inspection Services (AIS) we specialize in non-destructive testing (NDT) services, a highly valuable technique that allows for testing without causing damage to the systems or components being tested.

Our mission is to provide reliable, high-quality, and cost-effective NDT solutions to businesses across various industries. Our team of certified professionals is equipped with the latest technology and has extensive experience in a wide range of NDT methods, including but not limited to ultrasonic testing, radiographic testing, magnetic particle testing, and liquid penetrant testing.

We are committed to ensuring the safety, reliability, and longevity of your equipment and infrastructure. We understand that each client has unique needs and challenges. That's why we offer customized testing solutions tailored to meet your specific requirements.

Whether you're in the oil and gas, manufacturing or construction industry, we're here to help you maintain the highest standards of quality and safety.

Our commitment to excellence extends beyond our testing services. We also provide comprehensive heat treatment, inspection and specialised NDT services

At AIS we believe in building long-term relationships with our clients. We achieve this by consistently delivering exceptional service, maintaining open communication, and providing ongoing support.

Trust us to be your partner in ensuring the integrity and performance of your assets.

MISSION, VISION & VALUES

Our Mission

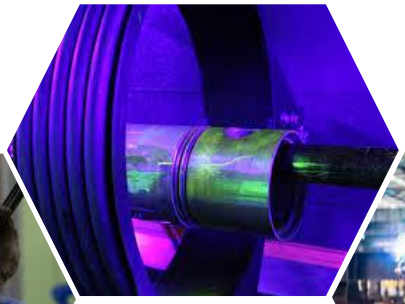
"Our mission is to deliver precise, reliable, and innovative non-destructive testing and heat treatment solutions that empower our clients to ensure safety, extend asset life, and meet the highest standards of quality - while fostering a culture of integrity, excellence, and continuous improvement."

Our Vision

"To be the global benchmark in non-destructive testing and heat treatment - pioneering advanced inspection technologies that safeguard lives, ensure structural integrity, and power a more reliable, sustainable future."

Our Values

1. Integrity: We uphold the highest ethical standards, delivering honest, objective, and accurate results every time.
2. Safety First :Safety is the foundation of our work. We help our clients prevent failures and protect lives by ensuring structural and material integrity through rigorous inspections.
3. Excellence: We pursue precision and quality in every inspection, test, and report, using best-in-class technology and proven methodologies.
4. Reliability: Clients count on us for dependable service, fast response times, and clear communication from start to finish.
5. Continuous Improvement: We invest in ongoing training, certification, and innovation to stay at the forefront of industry standards and best practices.
6. Customer Partnership: We collaborate closely with our clients to understand their unique needs, tailoring solutions that meet compliance, budget, and schedule requirements.

OUR SERVICES

Conventional NDT Services:

- Liquid Penetrant Testing (PT)
- Magnetic Particle Testing (MT)
- Visual Testing (VT)
- Ultrasonic Testing (UT)
- Radiographic Testing (RT)
- Ultrasonic Thickness Measurement (UTM)
- Holiday (Spark) Testing (HT)
- Vacuum Box Testing (VBT)
- Hardness Testing (HT)

Quality Inspection Services:

- AIA and Tank Inspections (API 653)
- Boiler inspection and Pressure Testing
- Corrosion Inspection & Monitoring
- Welding Procedures
- Welder qualifications.

Specialised NDT Services:

- Pulsed Eddy Current (PEC)
- Positive Material Identification (PMI)
- Tank Floor Testing (MFL)
- Time of Flight DiFraction (TOFD)
- Phased Array Ultrasonic Testing (PAUT)
- Rope Access NDT Solutions

Heat Treatment Services:

- Pre- heat
- Post weld stress relieving
- Degasification
- Normalizing
- Tempering
- Hardening

OUR AREAS OF EXPERTISE

At AIS we specialize in delivering precise, reliable, and industry-compliant solutions. Our team of certified technicians brings deep knowledge, hands-on experience, and a commitment to excellence across a wide range of industries including:

- Petrochemical
- Sugar Mills
- Chemical Storage
- Marine and Maritime
- Structural and Construction
- Boilers and Pressure Vessels
- High Pressure and Chemical Piping
- Cranes and Lifting Equipment

WHAT IS NDT?

Non-Destructive Testing, often called NDT, is a way of checking materials, components, or systems without causing any damage to them. It's like giving a machine or structure a health check-up!

Imagine you're a doctor and a machine is your patient. You want to find out if there's anything wrong with it, but you don't want to cut it open or break it apart. So, you use special tools and techniques to look inside or test it in a way that doesn't harm it. That's what NDT is all about.

It's used in many industries like aviation, construction, oil and gas, and manufacturing to make sure everything is working properly and safely. It helps find problems early before they can cause accidents or expensive damage.

Benefits of NDT

- Safety: NDT helps detect flaws or defects that could lead to failures, preventing accidents and ensuring the safety of workers and the public.
- Cost Savings: By catching issues early, NDT can save money in the long run. It's much cheaper to fix a small problem now than a big one later.
- No Damage: As the name suggests, NDT doesn't damage the items being tested. This means you can keep using them as normal after the test.
- Quality Control: NDT is a great way to make sure products meet certain standards of quality. It can be used to check a batch of items without having to destroy any of them.
- Preventive Maintenance: NDT can be used to regularly check equipment or infrastructure, helping to spot potential problems before they become serious.
- Efficiency: Many NDT methods are quick and can be done on-site, which means less downtime for equipment or operations.

LIQUID PENETRANT TESTING

Liquid Penetrant Testing (also known as Dye Penetrant Inspection or simply Penetrant Testing) is a type of Non-Destructive Testing that's used to find surface-breaking defects in materials. Imagine you have a piece of metal and you want to check if there are any tiny cracks on the surface. You can't see them with your eyes, so you use a special liquid (the penetrant) to help.

First, you clean the surface of the metal to make sure it's free of any dirt or grease. Then, you apply the penetrant, which is usually a bright, fluorescent dye. This liquid is really good at seeping into any cracks or defects on the surface.

After giving the penetrant some time to work its way into any defects, you remove any excess from the surface. Then, you apply a developer, which is a white powder that draws the penetrant out of the defects, making them visible under ultraviolet light.
So, in simple terms, Liquid Penetrant Testing is like using a highlighter to mark the tiny cracks or defects on a material's surface so you can see them clearly. It's a cost-effective method that's used in many industries to ensure the quality and safety of their products or equipment.

Advantages:

Sensitivity: It can detect very small surface-breaking defects.
Versatility: It can be used on a wide range of materials, including metals, plastics, and ceramics.
Cost-Effective: Compared to other NDT methods, it's relatively inexpensive.
Ease of Use: The process is simple and doesn't require highly specialized equipment.
Visual Results: The brightly colored or fluorescent dye provides clear, visual results that are easy to interpret.

Limitations:

Surface-Breaking Defects Only: It can only detect defects that are open to the surface. It won't find anything that's hidden beneath the surface.
Pre-Cleaning Required: The surface must be thoroughly cleaned before testing. Any dirt, oil, or grease can prevent the penetrant from entering the defects.
Smooth, Non-Porous Surfaces: It's not suitable for materials with rough surfaces or that are highly porous, as the penetrant may get trapped and give false results.
Not Suitable for High Temperatures: The penetrant can evaporate at high temperatures, making it unsuitable for testing in such conditions.

MAGNETIC PARTICLE TESTING

Magnetic Particle Testing (MT) is a type of Non-Destructive Testing. But unlike Liquid Penetrant Testing, it's used specifically for finding surface and near-surface defects in ferromagnetic materials. Imagine you have a piece of iron or steel, and you want to check if there are any cracks or defects. You can't see them with your eyes, so you use a special technique.

First, you magnetize the piece of metal. This can be done by passing an electric current through it or by using a magnetic yoke. When the metal is magnetized, it creates a magnetic field around itself.

If there are any cracks or defects, they will interrupt this magnetic field. You can't see this with your eyes, so you sprinkle some tiny iron particles over the surface. These particles are attracted to the magnetic field and will cluster around any areas where the field is interrupted, revealing the location of the defects.

So, in simple terms, Magnetic Particle Testing is like using a magnet and some iron filings to find the hidden cracks or defects in a piece of metal. It's a quick and effective method that's used in many industries, especially where safety is a critical concern.

Advantages:

Sensitivity: It can detect very small surface and near-surface defects.
Speed: The process is quick, providing immediate results.
Visual Results: The iron particles provide a clear, visual indication of defects.
Versatility: It can be used on any ferromagnetic materials, regardless of their size, shape, or condition.

Limitations:

Ferromagnetic Materials Only: It can only be used on materials that can be magnetized, like iron, nickel, and some types of steel. It won't work on non-ferromagnetic materials like aluminum, copper, or plastic.
Surface Preparation: The surface must be clean and free of any coatings that could prevent the iron particles from contacting the material.
Demagnetization: After testing, the material must be demagnetized, which can be an extra step in the process.
Limited Depth Detection: While it can detect near-surface defects, it's not effective for finding defects that are deep below the surface.

ULTRASONIC TESTING

Ultrasonic Testing (UT) is a type of Non-Destructive Testing that uses high-frequency sound waves to detect defects in materials or to measure their thickness. Imagine you're in a room and you clap your hands. The sound waves travel out from your hands, bounce off the walls, and come back to you. That's how you hear the echo. Ultrasonic Testing works in a similar way, but instead of using claps, it uses ultrasonic waves, which are sound waves that are too high-pitched for humans to hear.
First, you send ultrasonic waves into the material you're testing. This is usually done with a handheld device that contains a transducer. The transducer turns electrical energy into sound waves and sends them into the material.

If there are any defects in the material, like cracks or voids, the sound waves will bounce back sooner than expected. By measuring the time it takes for the waves to bounce back, you can figure out the location and size of the defect.
So, in simple terms, Ultrasonic Testing is like using echoes to find hidden defects inside a material. It's a powerful method that's used in many industries, especially where safety and quality are critical.

Advantages:

Depth of Inspection: It can detect internal defects and measure the thickness of materials.
Accuracy: It can provide precise information about the location, orientation, and size of defects.
Versatility: It can be used on a wide range of materials, including metals, plastics, and ceramics.
Safety: It uses sound waves, which are safe to use and don't require any special precautions like some other NDT methods.

Limitations:

Surface Condition: The surface of the material must be smooth and clean for the sound waves to enter effectively.
Complexity: The equipment can be complex and requires a skilled operator to interpret the results.
Material Limitations: It's less effective on porous materials or materials with coarse grain structure, as the sound waves can scatter and reduce the accuracy of the test.
Couplant Required: A liquid or gel (known as a couplant) is needed to transmit the sound waves from the transducer into the material.

RADIOGRAPHIC TESTING

Radiographic Testing (RT) is a type of Non-Destructive Testing that uses X-rays or gamma rays to inspect the internal structure of a material or component. Think of it like taking an X-ray at the doctor's office. When you break a bone, the doctor uses X-rays to see inside your body and check the condition of the bone. Radiographic Testing works in a similar way, but instead of looking at bones, we're looking at materials like metal or concrete.First, you place a source of radiation (like an X-ray or gamma ray source) on one side of the object you're testing. On the other side, you place a piece of film or a digital detector. The radiation passes through the object and hits the film or detector, creating an image.

If there are any internal defects in the object, like cracks or voids, they will block or reduce the amount of radiation that reaches the film or detector. This shows up as a darker area on the image, revealing the location and size of the defect.
So, in simple terms, Radiographic Testing is like taking an X-ray of a material or component to find any hidden defects inside. It's a powerful method that's used in many industries, especially where internal integrity is critical.

Advantages:

Depth of Inspection: It can detect internal defects, not just those on the surface or near-surface.
Permanent Record: The radiographic images provide a permanent record of the inspection.
Comprehensive: It provides a comprehensive view of the test object, not just the area suspected of having a defect.
Accuracy: It can provide accurate information about the defect's location, type, and size.

Limitations:

Safety: Radiographic Testing involves the use of ionizing radiation, which can be harmful if not properly controlled.
Access: It requires access to both sides of the test object.
Time-Consuming: The process can be slower than other NDT methods, as it involves the preparation, exposure, and development of radiographic films.
Interpretation: Reading and interpreting radiographic images requires a high level of skill and experience.

PHASED ARRAY ULTRASONIC TESTING

Phased Array Ultrasonic Testing (PAUT) is a more advanced form of Ultrasonic Testing. It uses the same basic principle of using sound waves to detect defects, but with a twist. In traditional Ultrasonic Testing, you have one transducer that sends out sound waves in a single direction. But in Phased Array Ultrasonic Testing, you have an array of multiple small transducers that can each send out sound waves independently.

By carefully controlling the timing, or "phase", of these sound waves, you can steer, focus, and scan with the beam in different directions without moving the probe. This allows for a much more detailed and flexible inspection.

So, in simple terms, Phased Array Ultrasonic Testing is like having a team of tiny sound wave detectives that can look in different directions and focus on different areas to find hidden defects. It's a powerful tool that's used in many industries, especially where complex structures or high standards of safety and quality are required.

Advantages:

Flexibility: The ability to steer, focus, and scan with the beam allows for a more flexible and detailed inspection.
Speed: It can scan large areas quickly, making it more efficient than traditional Ultrasonic Testing.
Accuracy: It provides high-resolution images, which can improve the detection and characterization of defects.
Documentation: The results can be recorded and stored for future reference or analysis.

Limitations:

Complexity: The equipment and techniques are more complex than traditional Ultrasonic Testing, requiring a higher level of skill and training to operate.
Cost: The equipment is more expensive than traditional Ultrasonic Testing equipment.
Surface Condition: As with traditional Ultrasonic Testing, the surface of the material must be smooth and clean for the sound waves to enter effectively.
Material Limitations: It's less effective on porous materials or materials with coarse grain structure, as the sound waves can scatter and reduce the accuracy of the test.

TIME OF FLIGHT DIFFRACTION

Time of Flight Diffraction (TOFD) is an advanced form of Ultrasonic Testing used for the detection and sizing of defects. In TOFD, a pair of ultrasonic probes sits on opposite sides of a weld. One probe, the transmitter, emits an ultrasonic pulse which is picked up by the probe on the other side, the receiver. When there are no defects, the sound waves travel in a straight line and reach the receiver in a predictable amount of time. But if there's a defect or crack in the weld, the sound waves will hit it and get diffracted, changing their path and the time it takes for them to reach the receiver.

By measuring this "time of flight" and the amount of diffraction, you can determine the size and location of the defect.

So, in simple terms, Time of Flight Diffraction is like using the speed of sound to find and measure hidden defects in a material. It's a powerful tool that's used in many industries, especially where safety and quality are critical.

Advantages:

Accuracy: TOFD is highly accurate in detecting and sizing defects, especially for in-service monitoring of high-temperature components.
Speed: It provides rapid scanning of large areas, making it more efficient than some other NDT methods.
Documentation: The results can be recorded and stored for future reference or analysis.
Comprehensive Coverage: It provides a complete image of the weld volume, increasing the probability of detection.

Limitations:

Surface Condition: The surface of the material must be smooth and clean for the sound waves to enter effectively.
Complexity: The equipment and techniques are more complex than traditional Ultrasonic Testing, requiring a higher level of skill and training to operate.
Geometry Limitations: It's less effective on components with complex geometries or small diameters.
Near-Surface Defects: TOFD may have difficulty detecting defects that are very close to the surface.

POSITIVE MATERIAL IDENTIFICATION

Positive Material Identification (PMI) is a testing method used to verify the chemical composition of a material and ensure it's the correct material as specified. Imagine you're building something, and you need a specific type of metal. But not all metals look different, and sometimes they can get mixed up. So, how do you make sure you're using the right one? That's where PMI comes in.

In PMI, a handheld device is used to analyse the material. This device uses techniques like X-ray fluorescence or optical emission spectrometry to identify the elements present in the material.

The device sends out a beam of energy, which hits the material and causes it to emit characteristic "signatures" that can be detected and analyzed. By looking at these signatures, you can determine what elements are present and in what proportions, allowing you to identify the material.

So, in simple terms, Positive Material Identification is like having a handheld detective that can tell you exactly what a material is made of. It's a quick and non-destructive method that's used in many industries to ensure the quality and safety of their products.

Non-Destructive: PMI is a non-destructive method, meaning it doesn't damage or alter the material being tested.

Advantages:

Speed: It provides quick results, often in a matter of seconds.
Versatility: It can be used on a wide range of metals and alloys.
Portability: The testing equipment is usually handheld and easy to carry, allowing for on-site testing.

Limitations:

Surface Condition: The surface of the material must be clean and accessible for the testing device.
Depth: PMI only analyzes the surface layer of the material, so it won't detect internal composition differences or defects.
Accuracy: While PMI is good for identifying elements, it may not be as accurate for determining exact concentrations or for identifying certain alloys.
Cost: The testing equipment can be expensive, although this is often offset by the speed and convenience of the method.

HARDNESS TESTING

Hardness Testing is a method used to measure the hardness of a material, which is its resistance to deformation, penetration, scratching, or cutting. Imagine you're trying to scratch a diamond with a piece of glass. It won't work, right? That's because the diamond is harder than the glass. Hardness Testing is a way to measure this property. In a typical Hardness Test, a hard indenter is pressed into the surface of the material under a specific force. The depth or size of the indentation left in the material is then measured. The harder the material, the smaller the indentation.

There are several types of Hardness Tests, including the Rockwell, Brinell, and Vickers tests. Each uses a different type of indenter and a different method of measuring the indentation.

So, in simple terms, Hardness Testing is like a scientific way of seeing how scratch-resistant a material is. It's used in many industries to ensure the quality and durability of products.

Advantages:

Non-Destructive: Most hardness tests are non-destructive, meaning they don't significantly damage or alter the material being tested.
Quick and Easy: Hardness tests are relatively quick and easy to perform.
Versatility: They can be used on a wide range of materials, from metals to plastics.
Indicative of Other Properties: Hardness often correlates with other material properties, like strength and wear resistance.

Limitations:

Surface Condition: The surface of the material must be prepared and polished for accurate testing.
Not Fully Comprehensive: Hardness is just one aspect of a material's properties and doesn't provide a complete picture of its performance.
Variability: Results can vary based on the specific test used, the load applied, and the individual piece of material.
Size and Shape Limitations: The size and shape of the material can limit the effectiveness of hardness testing.

HEAT TREATMENT

Heat treatment is a process used to alter the physical and sometimes chemical properties of a material, most often a metal, through heating and cooling. Imagine you're baking a cake. You start with a liquid batter, but after you heat it in the oven, it becomes a solid cake. And not just solid, but also fluffy and delicious. That's a bit like what heat treatment does to materials.

In heat treatment, you heat the material to a specific temperature and then cool it down in a specific way. This changes the structure of the material, which can make it harder, softer, more flexible, more brittle, or give it other properties.
There are many types of heat treatment, including annealing, quenching, tempering, and normalizing. Each type uses different heating and cooling techniques to achieve different results.

So, in simple terms, heat treatment is like baking for materials. It's a way to change their properties to suit different purposes. It's used in many industries, especially in manufacturing and engineering, to improve the performance of products.

Advantages:

Improved Properties: Heat treatment can enhance various properties of the material, such as hardness, toughness, ductility, and resistance to wear and tear.
Versatility: It can be applied to a wide range of materials, especially metals and alloys.
Control: The process allows for a high degree of control over the final properties of the material.
No Material Waste: Since it's a process that modifies existing materials, there's no material waste.

Limitations:

Cost: Heat treatment processes can be energy-intensive and therefore costly.
Size Limitations: The size and shape of the material can limit the effectiveness of heat treatment.
Risk of Distortion: Improper heat treatment can lead to distortion or warping of the material.
Requires Expertise: The process requires a deep understanding of the material properties and the effects of temperature changes.

ROPE ACCESS SOLUTIONS

Rope Access is a safe method of working at height using ropes, harnesses, and specialized equipment (similar to rock climbing but industrial-grade). It allows technicians to access difficult-to-reach areas of structures such as oil rigs, wind turbines, bridges, high-rise buildings, storage tanks, and refineries without the need for scaffolding or cranes. Rope access work is governed by international safety standards such as IRATA (Industrial Rope Access Trade Association) or SPRAT (Society of Professional Rope Access Technicians).

When coupled with NDT, rope access allows inspectors to physically reach remote or elevated areas, while NDT provides the technical tools to inspect and evaluate materials. The combination of these two techniques have many advantages such as:

1. Cost effectiveness:

   No need for large scaffolding structures, lifts, or cranes, fewer personnel and equipment required and shorter mobilization and demobilization times reduce project costs.

2. Fast Setup and flexibility:

   Rope access technicians can be mobilized quickly and reach inspection points within minutes. Ideal for short-duration inspections, emergency callouts, and areas with limited access. Minimal downtime for the asset (e.g., offshore platforms, refinery plants).

3. Minimal disruption and down time:

   Technicians can access areas without blocking walkways, production lines, or transport routes. Unlike scaffolding, rope access doesn't take up large ground space. Work can often be carried out while the facility remains operational.

4. Access to difficult or confined areas:

   Technicians can reach places that are otherwise impossible with scaffolding or machinery (e.g., inside tanks, flare stacks, bridges, offshore rigs). Rope access provides 360° mobility around complex structures.

OUR BRANCHES

DURBAN
Unit 1A, 41 Alexander Rd,
Westmead,
New Germany, 3600,
KZN, South Africa

UMKOMAAS
No 24 Hillary Road
Naidooville, Umkomaas
4170, KZN, South Africa

MOZAMBIQUE
Rua de Palma, Parcela
Numero 680,
Escritorio 1
Cidade Da Matola,
Mozambique

Contact Us

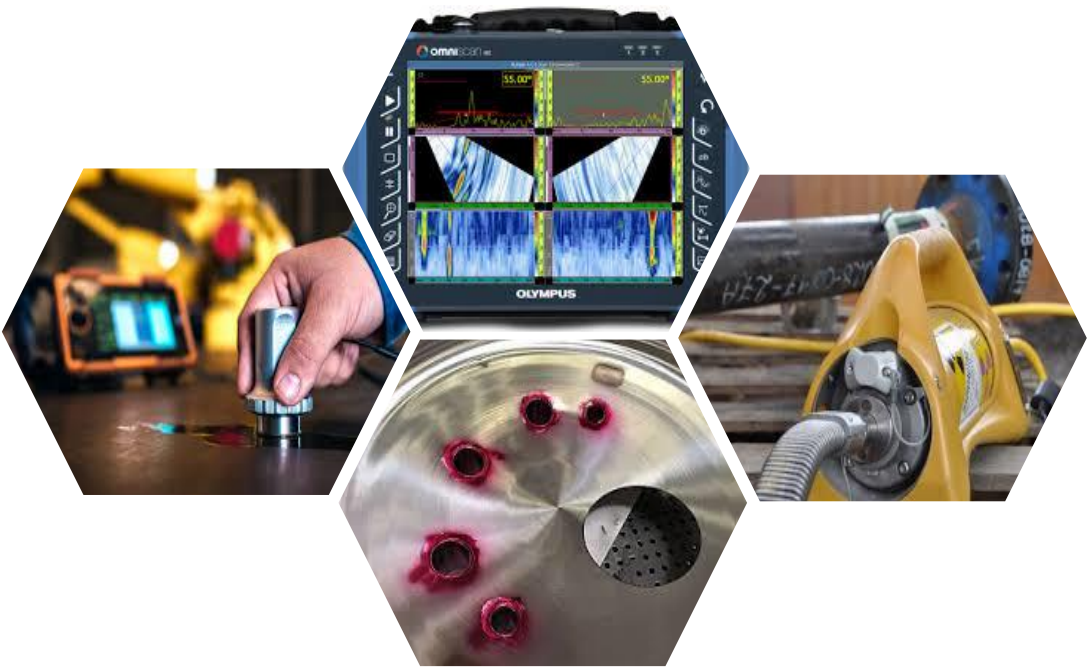
Durban / Umkomaas: +2774 3398 053 (Call / WhatsApp Chat)

Mozambique: +25884 660 7874 (Call / WhatsApp Chat)

Durban / Umkomaas: alvin@aisndt.co.za

Mozambique: africaninspectionservices@gmail.com

Website: www.aisndt.co.za



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