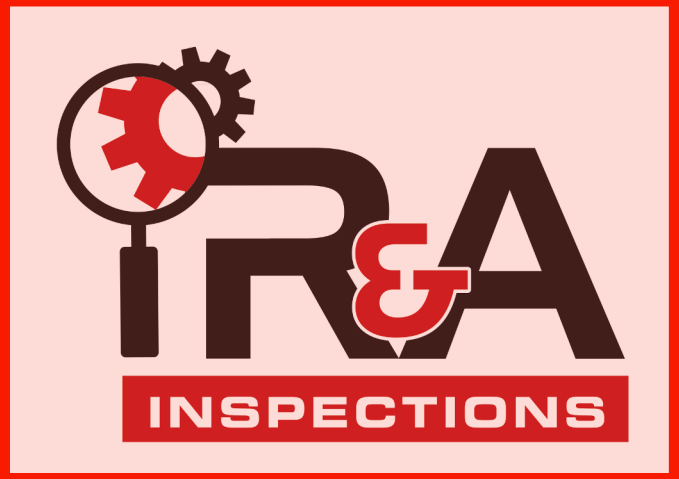
Its about your “piece” of mind



Our mission

TO PROVIDE NON-DESTRUCTIVE TESTING WITH INTEGRITY, HONESTY AND PURITY

ABOUT US

- R&A INSPECTIONS is an independent Non-Destructive Testing company which has expert knowledge and experience in providing their clients with inspections that not only saves time and money but also takes quality to its highest standard.
- With over 10 years' experience in the NDT field and a backing of a company that has been servicing Africa's railway industry for over 65 years, you can trust that we will provide the best quality inspections without compromising the integrity of the components.

OUR VISION

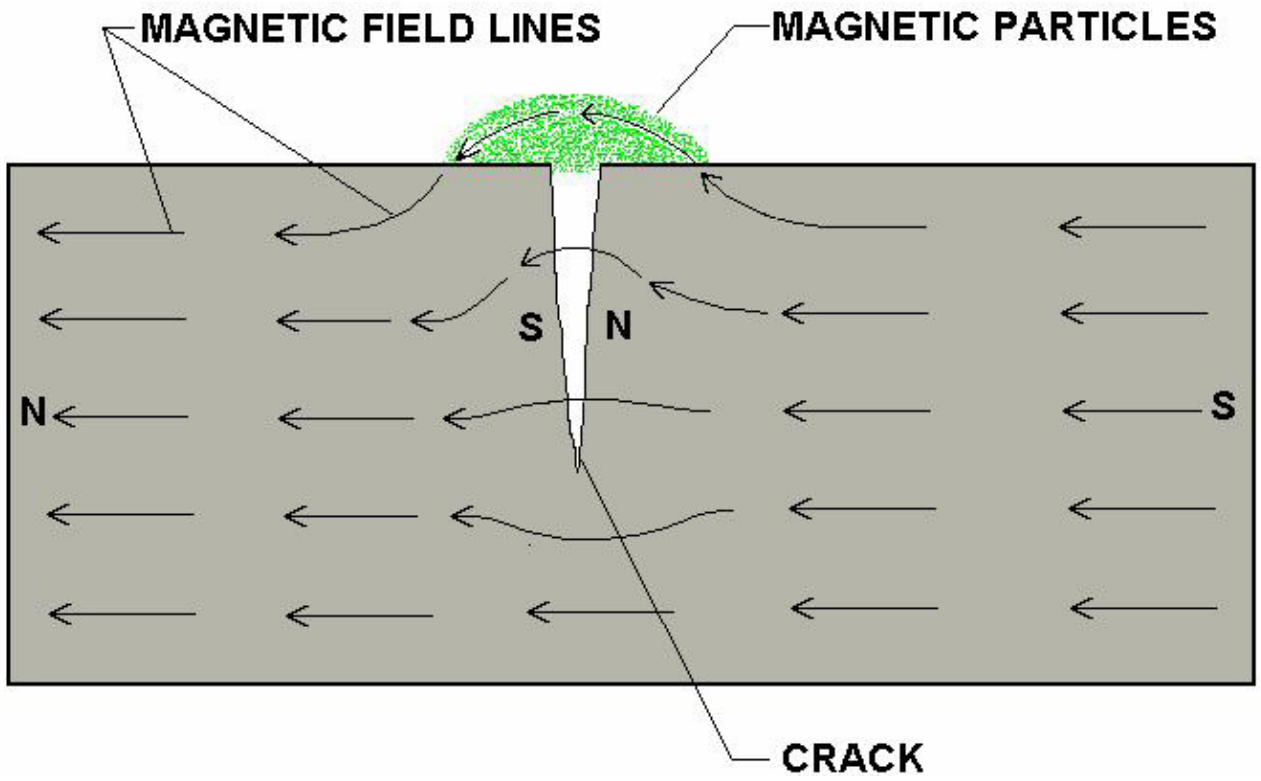
- To bring about a new era of Non-Destructive Testing by utilizing the latest technology and keeping up with the latest international standards in order to provide our clients with the peace of mind that their inspection requirements are fulfilled with integrity and the most cost-effective solutions.

Ndt methods

- Magnetic Particle Inspection
- Dye penetrant Inspection
- Ultrasonic inspection
- Radiographic Inspection
- Eddy current inspection
- Visual inspection
- Condition and monitoring
- Laser Alignment

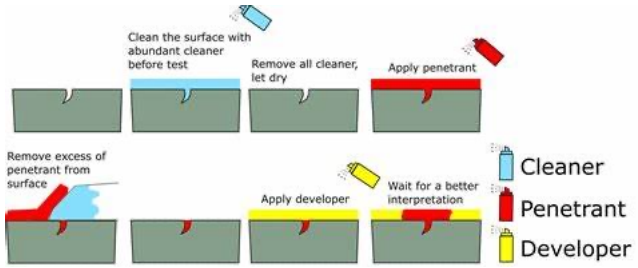
Magnetic Particle inspection

- **Magnetic particle Inspection** (**MPI**) is a non-destructive testing (NDT) process for detecting surface and shallow subsurface discontinuities in ferromagnetic materials such as iron, nickel, cobalt, and some of their alloys. The process puts a magnetic field into the part. 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)


MAGNETIC FIELD LINES
MAGNETIC PARTICLES
S
N
N
S
CRACK

Dye penetrant inspection

- **Dye penetrant inspection** (**DP**), also called **liquid penetrate inspection** (**LPI**) or **penetrant testing** (**PT**), is a widely applied and low-cost inspection method used to check surface-breaking defects in all non-porous materials (metals, plastics, or ceramics). The penetrant may be applied to all non-ferrous materials and ferrous materials, although for ferrous components magnetic-particle inspection is often used instead for its subsurface detection capability. LPI is used to detect casting, forging and welding surface defects such as hairline cracks, surface porosity, leaks in new products, and fatigue cracks on in-service components.


Clean the surface with abundant cleaner before test
Remove all cleaner, let dry
Apply penetrant
Remove excess of penetrant from surface
Apply developer
Wait for a better interpretation
Cleaner
Penetrant
Developer

Ultrasonic inspection

- **Ultrasonic testing** (**UT**) is a family of non-destructive testing techniques based on the propagation of ultrasonic waves in the object or material tested. In most common UT applications, very short ultrasonic pulse-waves with center frequencies ranging from 0.1-15 MHz, and occasionally up to 50 MHz, are transmitted into materials to detect internal flaws or to characterize materials. A common example is ultrasonic thickness measurement, which tests the thickness of the test object, for example, to monitor pipework corrosion.
- Ultrasonic testing is often performed on steel and other metals and alloys, though it can also be used on concrete, wood and composites, albeit with less resolution. It is used in many industries including steel and aluminium construction, metallurgy, manufacturing, aerospace, automotive and other transportation sectors.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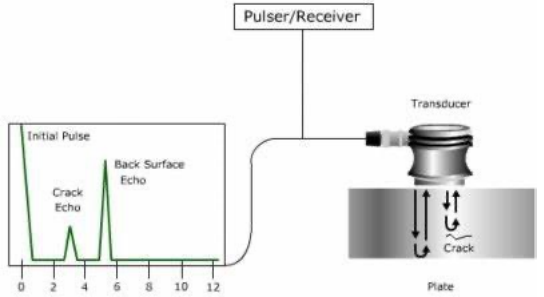
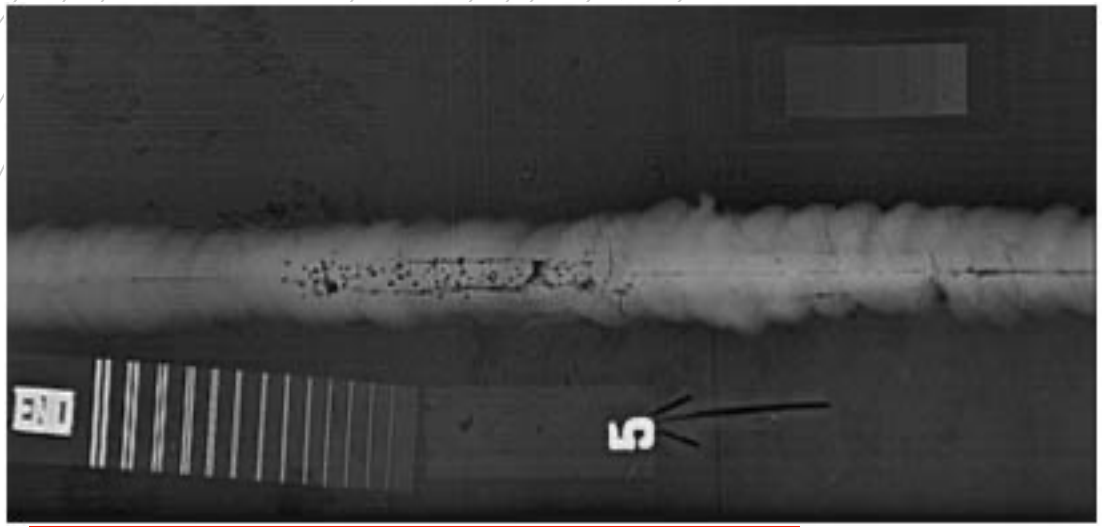

Pulser/Receiver
Transducer
Initial Pulse
Crack Echo
Back Surface Echo
0
2
4
6
8
10
12
Crack
Plate

Radiographic inspection

- **Industrial radiography** is a method of non-destructive testing where many types of manufactured components can be examined to verify the internal structure and integrity of the specimen. Industrial Radiography can be performed utilizing either X-rays or gamma rays. Both are forms of electromagnetic radiation. The difference between various forms of electromagnetic energy is related to the wavelength. X and gamma rays have the shortest wavelength and this property leads to the ability to penetrate, travel through, and exit various materials such as carbon steel and other metals.


END
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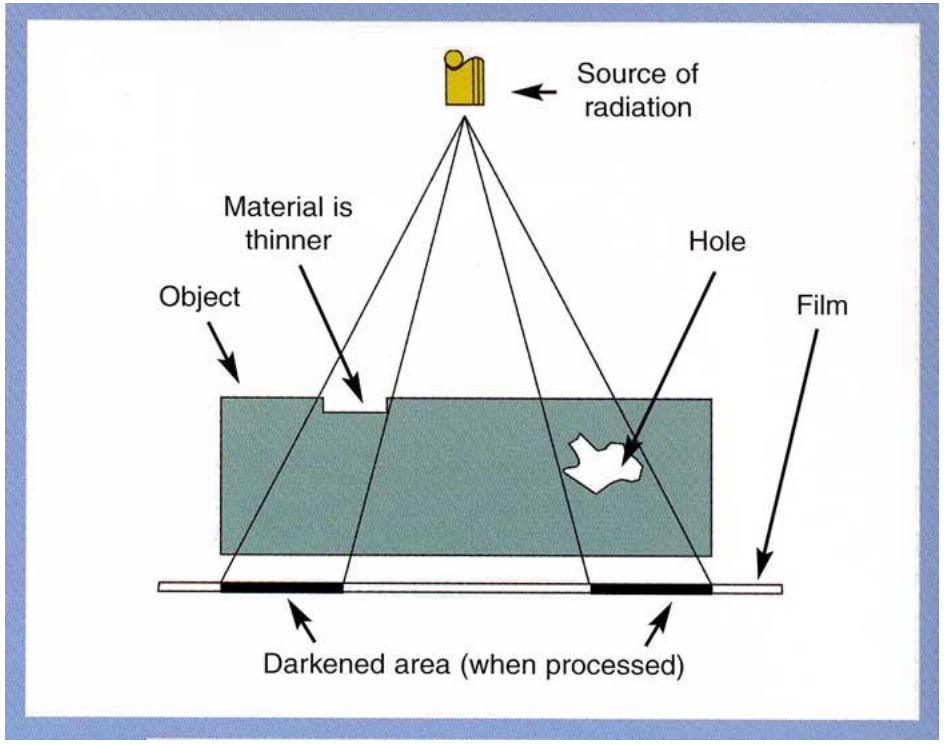

Source of radiation
Material is thinner
Hole
Object
Film
Darkened area (when processed)

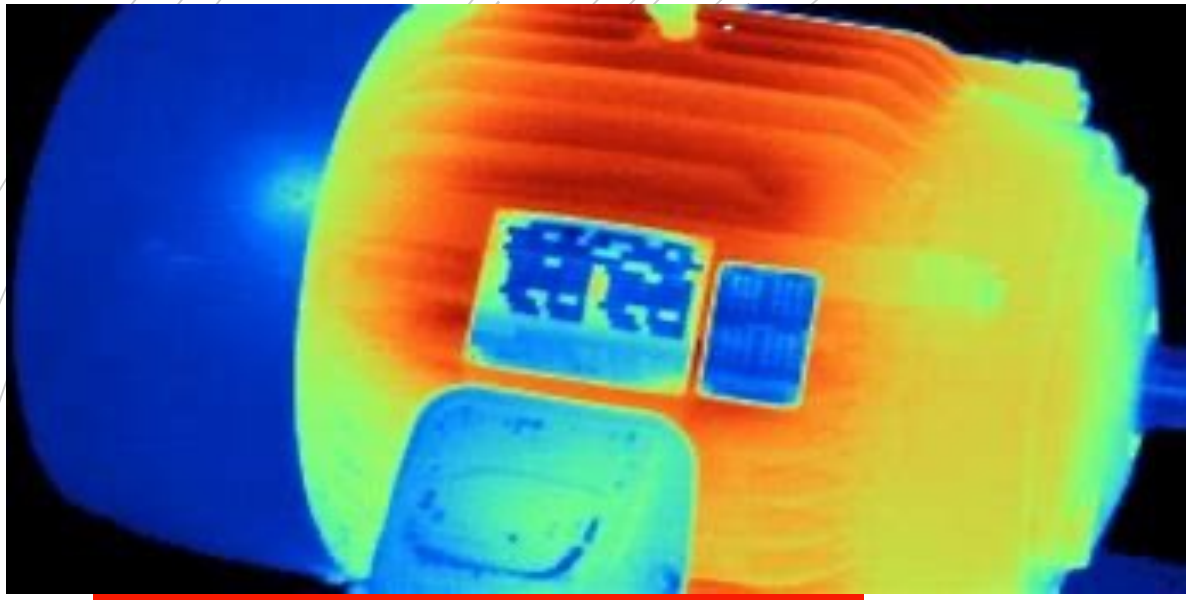
VISUAL INSPECTION

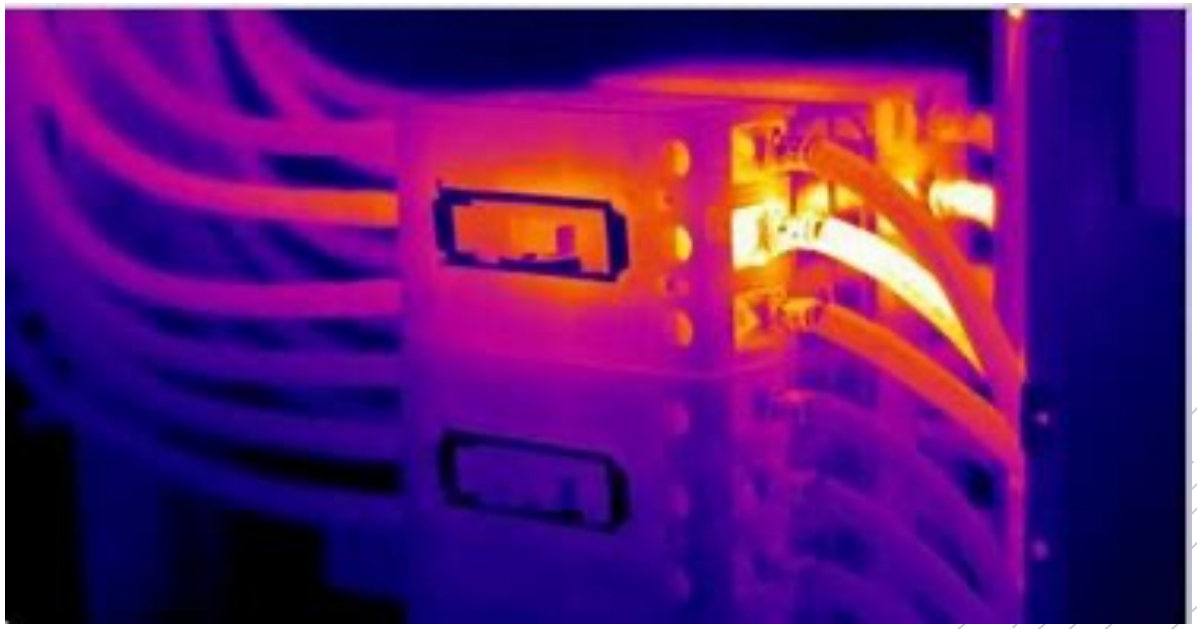
- **Visual inspection** is a common method of quality control, data acquisition, and data analysis. Visual Inspection, used in maintenance of facilities, mean inspection of equipment and structures using either or all of raw human senses such as vision, hearing, touch and smell and/or any non-specialized inspection equipment. Inspections requiring Ultrasonic, X-Ray equipment, Infra-red, etc. are not typically regarded as Visual Inspection as these Inspection methodologies require specialized equipment, training and certification


OLYMPUS

Thermographic imaging

- **Infrared thermography** (**IRT**), **thermal imaging**, and **thermal video** are examples of infrared imaging science. Thermographic cameras usually detect radiation in the long-infrared range of the electromagnetic spectrum (roughly 9,000–14,000 nanometers or 9–14 μm) and produce images of that radiation, called **thermograms**. Since infrared radiation is emitted by all objects with a temperature above absolute zero according to the black body radiation law, thermography makes it possible to see one's environment with or without visible illumination. The amount of radiation emitted by an object increases with temperature; therefore, thermography allows one to see variations in temperature. When viewed through a thermal imaging camera, warm objects stand out well against cooler backgrounds; humans and other warm-blooded animals become easily visible against the environment, day or night. As a result





Nextsense laser profiling

- The measurement device is based on laser light section technology. The user guides the sensor over the profile to be measured. Over a swiveling motion, the software records the gap or edge from different directions. Due to an automatic abbe error correction, sensor tilts and rotations are irrelevant to the system. After the measuring operation, the results are shown as measured values on the sensor and additionally as a profile curve on the tablet PC. Any deviations from the target values are highlighted in color. The results can be documented by printing PDF measurement protocols or by exporting them into your database.


CALIPRI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PRIME

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