



An Introduction to Non-Destructive Testing Methods

A Three Day 'Hands On' Course presented by
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NDT is a cost effective and reliable technique in a wide range of applications and it aids in the delivery of quality products and cost effective plant maintenance. Selecting the appropriate technique for a particular application requires care and understanding since all NDT techniques have limitations that must be well understood to ensure the desired reliability of inspections.

Managers, Supervisors, Engineers and Technicians often have a requirement for the use of Non-Destructive Testing (NDT) techniques to maintain their plant & equipment.

To assist non NDT experts in understanding NDT, this Training course covers the basic theory of each technique, some of the many applications, relevant limitations and provides basic practical exercises to support the theory.

Engineers, Managers, Supervisors and Technicians seeking to obtain a better understanding of NDT and its role in industry would benefit from attending An Introduction to NDT Methods!

An Introduction To NDT Methods

Course Content

Day 1

A Basic Introduction to NDT

An introduction to the basic theory and practice of the 5 main NDT methods and some newer technologies;

- Liquid Penetrant Testing (PT);
- Magnetic Particle Testing (MT);
- Ultrasonic Testing (UT);
- Radiographic Testing (RT);

- Eddy Current Testing (ET);
- Alternating current field measurement and;
- Thermography.

The Role of NDT in Industry

NDT has an important role to play in the Quality Assurance, condition monitoring and maintenance programs of many organisations.

A variety of typical examples will be examined and discussed, considering the importance that the correct NDT technique be selected and defect rejection/acceptance criteria be relevant to the material and its application.

Quality Control is required to ensure reliable use of NDT techniques because failure can have devastating results. The standards that NDT providers need to meet are outlined.

Liquid Penetrant Testing

Liquid Penetrant may be the least costly and easiest technique to apply, however the inspection techniques require care to achieve reliable results, because not all defects are detectable using some methods and the dwell times normally used, particularly when temperatures are low. Both colour contrast and fluorescent techniques are covered.

Liquid Penetrant Testing - Practical

Liquid Penetrant Testing is undertaken on a variety of welded, forged and cast specimens, using bulk liquids and aerosol packs.

Magnetic Particle Inspection

Magnetic Particle Inspection is only applicable to ferromagnetic materials, but it offers very high sensitivity in comparison with Liquid Penetrant techniques. It may be carried out by operators with limited training but an understanding of the techniques



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and equipment available will enable more effective inspection. Both black and fluorescent inks are covered using magnetic yokes, head, coil and threading bar on a bench.



Day 2

Magnetic Particle Inspection - Practical

Magnetic Particle Testing is undertaken using portable testing equipment, colour contrast and fluorescent magnetic particles. Guidance on interpretation of indications is given.



Thermography

A relatively new technology used in a wide range of applications from detection of termites to assessing the condition of switchboards, racehorses and aircraft structures. A brief introduction to the theory and some practical examples are covered.



Eddy Current Inspection Methods

Applicable to a wide range of inspections including metal sorting and crack detection. The operation of phase analysis systems is explained so that cracks can be found, sized and their depth determined.

Eddy Current Testing - Practical

Eddy Current Testing practice on film thickness, metal sorting, crack detection and conductivity measurements.



Day 3

Industrial Radiography

Industrial Radiography uses x-rays or gamma rays so both are covered. The significant limitations related to the orientation of the radiation, and the potential health hazards are covered in detail, as is the use of computed radiography.



Examination of radiographs including welds and castings with a range of defects will highlight viewing condition and interpretation requirements.

Principles and Applications of Ultrasonics

Ultrasonics is a widely used NDT technique that may be applied to thickness testing, crack detection and weld inspection. Basic theory of longitudinal and shear wave ultrasound behaviour in materials will be outlined and practical limitations explained.



Ultrasonics - Practical

The importance of trained operators cannot be understated. Students will be given the chance to carry out equipment calibration and simple inspections, including corrosion surveys and lamination sizing.

Assessment

There is no formal assessment conducted in the Introduction to NDT Methods course

Who Should Attend

The Introduction to NDT Methods Training Course is recommended for:

- Engineers;
- Managers;
- Supervisors;
- Quality Manager;
- Condition Monitoring Technicians;
- Engineering Technicians; and
- Any non-technical (NDT) person responsible for NDT Technicians or ordering NDT techniques to maintain plan & equipment.

Course Dates and Location

ATTAR NDT Training courses are constantly being updated and additional courses scheduled! For the latest on all course dates & locations, please visit our website; www.attar.com.au or contact Head Office on +61 3 9574 6144 or email to training@attar.com.au

Course Investment

ATTAR Training course fees can be obtained by contacting our Head Office on +61 3 9574 6144 or email to training@attar.com.au

As part of the training course investment ATTAR provides:

- Training Manual;
- Worksheets;
- Morning & Afternoon Tea;
- Lunch; and
- Light refreshments throughout!

Enrolment

ATTAR Training Course Enrolment forms and full details regarding the enrolment process can be found on the website www.attar.com.au.



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An official ATTAR Training Course Enrolment Form is required to be completed and a non-refundable deposit supplied to secure enrolment.



Transfer & Cancellation

As ATTAR Training Courses are held based on minimum attendance numbers, there are strict rules regarding transferring or cancellation of an enrolment.

For full details, please see the ATTAR Training Course Transfer & Refund Policy on the website www.attar.com.au



Other Information

Additional information regarding ATTAR and NDT Training courses can be found on the website including:

- Privacy Policy;
- ATTAR Code of Practise;
- Student Code of Conduct and;
- Customer Complaint Procedure



Trainer Qualifications

All ATTAR NDT Trainers & Consultants are qualified to an advanced level required to deliver ATTAR NDT courses!

Dr Gary Martin is ASNT Level III and ISO 9712 / AS 3998 Level 3 certified and has extensive experience in training delivery and the application of a wide range of NDT techniques in Industry.

Gary also holds a Certificate IV in Training & Assessment and has 30+ years experience in Engineered Materials Failure Analysis.

The Introduction to NDT Methods course is generally delivered by Dr Gary Martin; however ATTAR reserves the right to change Trainer without notice.



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