

*Manage Your Career*

# **HANDS ON INTRODUCTION TO NDT**

**UNLOCK YOUR POTENTIAL WITH WORLD CLASS NDT  
TRAINING AND SKILLS DEVELOPMENT DELIVERED BY  
EXPERTS IN THE INDUSTRY**

**MAKE INFORMED DECISIONS FOR COST-EFFECTIVE INSPECTIONS**

Non Destructive Testing (NDT) plays an important role in Risk Based Inspections, to identify defects during all phases of an asset's life cycle. When used properly, NDT is both cost-effective and reliable, yet many companies neglect opportunities to optimise their inspections and achieve better outcomes – improved asset health and substantial reduction of the maintenance burden.

Selecting an appropriate technique to achieve the desired outcome requires understanding of many NDT methods; all have limitations that must be well understood to ensure the reliability of inspections. To facilitate non-NDT personnel in understanding NDT, this course covers the basic theory of each method, some of the many applications and limitations, as well as providing practical exercises to support the theory.

## High Impact Training that Achieves Your Objectives

- Understanding of the principles and capabilities of distinct NDT methods
- Awareness of a specific NDT method's advantages, disadvantages and limitations
- Appreciation of the level of understanding, experience, information and degree of operator interpretation required for NDT inspections to be reliable and relevant
- Ability to discriminate between comparable inspection methods so as to ensure the best outcome
- Hands-on experience.

### WHO SHOULD ATTEND

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.

### COURSE CONTENT

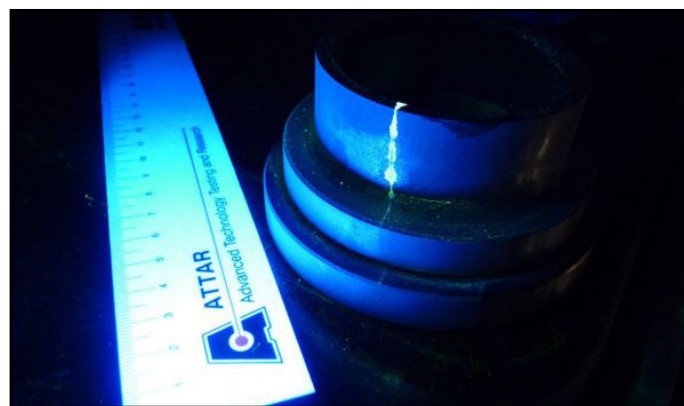
#### THE ROLE OF NDT IN INDUSTRY

NDT has an important role to play in Risk Based Inspections, Quality Assurance and maintenance programs, as proper application of these methods can detect defects during all phases of manufacturing, condition monitoring, repair and overhaul.

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

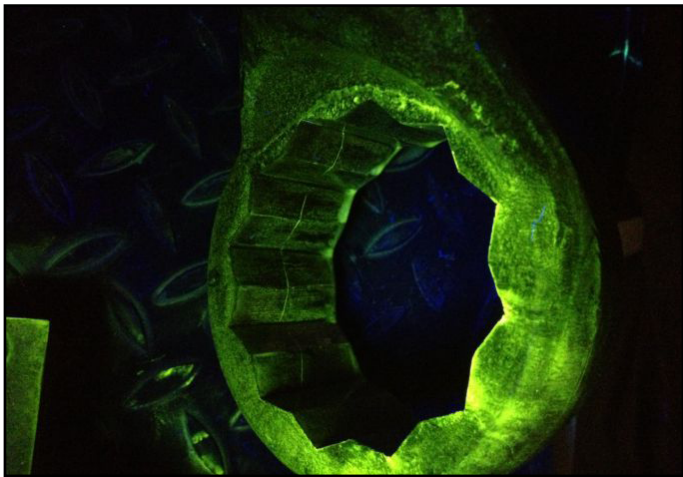
Liquid Penetrant may be the least costly and easiest technique to apply; however, the inspection techniques require care to achieve reliable results because not all defects are detectable using some methods. Also, dwell times and low temperatures contribute significantly to detection. Both colour contrast 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 and equipment available, will enable more effective inspection. Both visible and fluorescent inks are covered using magnetic yokes, head, coil and threading bar on a bench.

**Magnetic Particle Inspection (Practical):** Magnetic Particle inspection is undertaken using portable testing equipment, visible and fluorescent magnetic particles. Guidance on interpretation of indications is given.



## INDUSTRIAL RADIOGRAPHY

Industrial Radiography uses x-rays or gamma rays. The significant limitations related to the orientation of the radiation, as well as 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 the importance of viewing conditions and interpretation.

## EDDY CURRENT INSPECTION METHODS

Eddy Current is applicable to a wide range of discontinuities, including metal sorting and discontinuity detection. The operation of phase analysis systems is explained, so that discontinuities can be found, sized, and their depths determined.

**Eddy Current Testing (Practical):** Eddy Current testing is practiced for measuring film thickness, metal sorting, discontinuity detection and conductivity sorting.

## THERMOGRAPHY

Thermography is 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 practical examples are covered.

## ACOUSTIC EMISSION MONITORING

Acoustic Emission is used to monitor whole structures for fatigue, cracking, delaminations, disbondment, leaks and a wide variety of corrosion activity, and has the capacity to locate and characterise



the source, type and stage of defects experienced under service conditions.

Acoustic Emission is based on the detection of transient elastic waves generated by materials under stress. Theory and application are examined.

## **PRINCIPLES AND APPLICATIONS OF ULTRASONICS**

Ultrasonics is a widely used NDT technique that may be applied to thickness testing, discontinuity detection, materials analysis 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.

Additional topics that can be discussed,



depending on attendee requirements, include but are not limited to:

- ISO17025(NATA) accreditation
- The criticality of reporting
- The role of Level 3 Certified Personnel
- Applicable standards and compliance
- Client specific proficiency assessments
- NDT contract management (technical)
- National and International NDT Technician
- Quality Assurance/Quality Control qualification/certification process.

## **COMPLEMENTARY SERVICES**

### **NDT TRAINING**

ATTAR delivers comprehensive NDT training covering a multitude of disciplines and levels to suit your needs:

- Basic and Advanced courses (e.g. ToFD, PAUT, UT Corrosion)
- Training & examination for AINDT & BINDT (PCN) certification (ISO 9712)
- Public & Private/ Customised Training
- Courses in Materials Technology, Post Weld Heat Treatment, Hands On Intro, Advanced Techniques
- In-house Qualification Programs (e.g. ASNTis).

## NDT CONSULTING & AUDITING

Does your company require the services of an independent Level 3?

Our dedicated team of NDT Level 3 personnel hold current AINDT (AS3998), BINDT (PCN to ISO 9712) and ASNT certifications, and possess detailed knowledge of national and international Standards as well as extensive experience in a multitude of applications covering many industries.

We can assist your business with personnel qualification, written practices, procedure writing & review, auditing services and program recommendations:

- Detect/assess (early stage) discontinuities
- Optimise inspection and testing procedures
- Solve difficult problems.

## MATERIAL TESTING, ADVICE & FAILURE ANALYSIS

ATTAR's experts have a wide base of knowledge and experience with materials and mechanical testing, corrosion, risk assessments and failure analysis.

Our materials & and mechanical testing experts will work with you to determine the best program to suit your needs - and ensure products are performing to your expectations. We also advise on materials selection for cost efficient manufacturing

and durability, recommend manufacturing process parameters, surface finishes and other related practices to arrive at the optimum fit for your application.

ATTAR specialises in quantifying how materials and products fail, including an assessment of equipment that has deteriorated due to corrosion, fatigue, damage, abuse, and improper manufacture.



## CONTACT US

For further details regarding the Hands On introduction to NDT or other NDT training and courses, please contact Tracey Herbert on 03 9574 6144 or [training@attar.com.au](mailto:training@attar.com.au) or visit our website [www.attar.com.au](http://www.attar.com.au).