SHORT TERM COURSES
For
QA/QC ENGINEERS / INSPECTORS &
NDT TECHNICIANS

Suitable for Mechanical Engineers

Free Seminar on QA/QC and NDT
In every Month

NDT Training and Certification
Internship in NDT
QA/QC Orientation Course
COURSES WE OFFER

NDT Training and Certification

- Radiographic Testing
- Ultrasonic Testing
- Magnetic Particle Testing
- Penetrant Testing
- Visual Testing
- RTFI Training

QA/QC Orientation Course

- Piping Engineering (Fittings and symbols)
- Welding Engineering (WPS, PQR, WPQT, Weld Symbol Etc.)
- Codes and Standards (ASME, API, AWS, ANSI etc.)
- Drawing Reading (P & ID, Equipment Drawing, Isometric etc.)
- Fundamentals of Quality Control
- Post Weld Heat Treatment
- Non Destructive Testing
- Hydrostatic Testing
- Coating Inspection
- QA/QC Documentation
### JOB OPPORTUNITIES

Engineers qualified as QA/QC engineers / inspectors with relevant certification and experience are placed in engineering companies with attractive salary. Well experienced QA/QC engineers have better opportunity with Third Party Inspection companies, EPC Companies and Vendor Inspection Companies as well.

#### INDUSTRIES OF INTEREST

<table>
<thead>
<tr>
<th>RIG</th>
<th>Power plant construction</th>
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<tr>
<td>Gas Oil Separation Plant (GOSP)</td>
<td>Ship building</td>
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<tr>
<td>Pipelines (oil, gas, water etc.)</td>
<td>Heat Exchangers</td>
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<td>Refinery</td>
<td>Storage Tanks</td>
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<td>Aeronautical Companies</td>
<td>Pressure Vessels</td>
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<td>Petrochemical Plants</td>
<td>Process Piping</td>
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<tr>
<td>Offshore Platforms</td>
<td>Storage Tanks</td>
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<td>Water treatment plants</td>
<td>Water Treatment Plants</td>
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<td>Nuclear Plants</td>
<td>Steel Plants</td>
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<td>Automobile Companies</td>
<td>Fertilizers</td>
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</table>
INTRODUCTION

METALSCAN INSPECTION SERVICES is an ISO certified organization which has registered under small scale industries act and established in 1998 at Chennai and is a corporate partner of American Society for Nondestructive Testing (ASNT). Metalscan Inspection Services exists as a Servicing, Consulting, Vendor Inspection, Training and Certifying organization in the field of Non-Destructive Testing. Metalscan Inspection Services is working under the leadership of multi-talented consultant who is qualified to ASNT Level III, NAS 410 Level III, Radiation Safety Officer (RSO) from BARC India and EN 473 / 4179.

Since its inception, METALSCAN INSPECTION SERVICES has provided quality services to its clients with a basic policy as "HIGHEST QUALITY SERVICES IN COMPETITIVE PRICE TO MEET THE SCHEDULE OF CUSTOMERS"

Metalscan Inspection Services team is lead by an NDT professional, who is

- 30 years experienced in India and abroad.
- Experienced as Technical Manager in a Multinational Inspection Company abroad.
- Experienced as a QA/QC Engineer in an ISO 9002 certified aerospace engineering company
- Certified RSO by BARC / AERB (One year Post-Graduate Diploma Course)
- Certified ASNT NDT Level III in RT, UT, MT, PT & VT
- Certified ACCP NDT Level III in RT, UT & MT
- Certified Aerospace Standard NAS410 Level-III in RT,UT,MT,PT & ET
- NADCAP NDT Consultant

We have our offices at Chennai, Tamil Nadu and Kochin, Kerala. NDT service division operates from our base in Chennai. This facility is approved by BARC / AERB (Bhabha Atomic Research Centre) for the use of X-ray equipment and Gamma ray equipment for radiographic testing. In addition to that our laboratory has NADCAP approval to conduct inspection of Aeronautical Component.

In Kerala, Metalscan Inspection Services focused in NDT training for QA/QC Engineers as an NDT Institute. Metalscan Inspections Services extends our support to fresh Mechanical, Automobile and Aerospace Engineers to develop their carrier. Our institute conducts training on various NDT methods which include Ultrasonic Testing, Radiographic Testing, Magnetic Particle Testing, Penetrant Testing, Visual Testing, Eddy Current Testing etc. We offer ASNT (American Society for Nondestructive Testing) Level I and Level II, NAS 410 (National Aerospace Standard), EN 473 (European National Standard) training and certification for candidates to meet your specific requirements
TRAINING DIVISION IN KERALA

In Kerala, Metalscan Inspection Services serves as a training institute for Quality Assurance and Quality Control professionals.

Our Vision

Since long time, Kerala is one of the well known manpower resources for India as well as for the world especially in technical and industrial sectors. Availability of highly qualified, skilled and experienced professionals willing to work anywhere in the world earned this fame for us.

Now a day, fresh technical graduates require specialization and on-job experience to get better placement. Engineering works are also in the same track. Quality Control Department has a key role in engineering companies and NDT is an integral part of it. Unfortunately Engineers from Kerala have to depend industries in other states to develop their carrier in this sector because of inadequate opportunities in Kerala based Industries. We support candidates to overcome this limitation.

Values

Quality of product / component / construction ensures durability of the item and safety for the operators. Trained professionals are well placed with attractive salary.

Our Mission

To offer our best service to various organizations involved in Mechanical Engineering, Aeronautical Engineering, Automobile Engineering and Production Engineering activities.…

By Services: we conduct various NDT inspection services in accordance with relevant standards

By Consultancy: We assist organizations to establish quality assurance program through consultancy

By training: Our training makes job seekers as well as existing professionals competent for the post in Quality Control Department.

By Internship: Fresh engineers are supported with on job training. Engineering students are also supported with short term internship and assistance to submission of project report towards end of course.

Goals

To provide quality services to our clients with basic policy as “Highest quality services in competitive price to meet the schedule of customers” and ensure our distinguished position in the service industry.

QA/QC TRAINING PROGRAMME

Quality Assurance and Quality Control is applicable in construction, production and servicing industries. Mechanical, Civil, Electrical, Electronics, Instrumentation, production, automobile and even other engineering branches also has QA/QC programs according to their requirement. Usually qualified and well experienced persons are working in quality control department of engineering companies.

In the case of Oil and Gas, Power Plant, Ship Building industry, specialization courses became essential for placement in QA/QC department.

Usually fresh mechanical engineers do not have clear idea about the specialization courses and certifications necessary to get placement in QA/QC department of industrial construction companies. This condition became worse when candidates approach certain institutes and they offer variety of diploma certificates for QA/QC Engineers. Those certificate holders may not get placement. Hence this has to be clear at first.
News paper cutting given here is a classified advertisement for recruitment of QA/QC engineers. Engineers with specified qualification only will be considered for the post. Requested certifications are mainly of three categories for Mechanical Engineering.

1) Welding Inspector (AWS-CWI / CSWIP Cert.)
2) Non Destructive Testing (ASNT / PCN Cert.)
3) Coating Inspector (NACE / BGS Certification)

BEWARE!!!
Avoid Non Standard Diploma Courses

These certifications are American / British Standard certification. Certification from other countries or organizations may not be considered for the posts. Please understand, what is the reason behind this? Usually industrial construction (Oilfield Industries, refinery, power plant, petrochemical etc.) follows standards/ codes/ specifications for its quality and safety. Well established and recognized standards are from either of these countries (ASME, API, AWS, ANSI, BS etc.) and are mostly used in every regions of the world. Accordingly, qualifications should meet requirements of standards.

- NDT has to be performed in accordance with ASME Sec V
- Welding Related Activities in Accordance with ASME Sec IX
- Coating Activities in accordance with standards of SSPC

BEWARE!!! Avoid Non Standard Diploma Courses
ABOUT OUR TRAINING PROGRAMME

Metalscan Inspection Services offers constructive courses at reasonable rates for for fresh engineering graduates / diploma holders to develop carrier as QA/QC Engineers / Inspectors.

- NDT Training and Certification
- QA/QC Orientation Programme
- Internship
- On Job Training

NDT Training and Certification:- NDT is a specialized branch of engineering science which use of noninvasive techniques to determine the integrity of a material, component or structure without impairing its usefulness and is an integral part of Quality Assurance and Quality Control. It confirms quality of materials such as structural beams, pipes, plates, valves, nozzles etc. used in construction of industrial equipments. It also confirms quality of fabrication and joining process where testing of welds is of major importance. General procedure for NDT has given in ASME Section V and engineers have to follow these procedures for each NDT methods. Hence NDT training and certification is a must for QA/QC Engineers.

Design Engineer requires Expertise in CAD
Production engineer requires Expertise in CNC

Similarly
QA / QC Engineer requires Expertise in NDT

QA/QC Orientation Program (Fresh Engineers):- QA/QC Engineers have to do different activities quality control department. The major activities are:

- Pre-Inspection Meeting
- Inspection of Raw materials
- PMI / Destructive testing
- Material Certificate Control
- Review of Drawings
- Review of Procedures
- Review of operator qualification
- Fit up inspection of spools
- Monitoring of Welds
- Visual Inspection of finished welds
- Identification of spools
- Post Weld Heat Treatment
- Hardness Test
- Non Destructive Inspection of welds
- Surface Preparation and painting of spools
- Inspection at erection
- Pressure Test
- Coating Inspection

There are international certification in welding inspection, ndt and coating inspection. Most of these certifications cost more one lakh Indian rupees, which may not be affordable for fresh engineers. In Indian projects, such costly certifications are not requested by companies because they don't pay for it. However engineers have to perform all activities in the project. Accordingly this orientation programme has designed to support fresh engineers to meet Indian working conditions. Hence it will be ideal for a fresh engineer to have a basic understanding of construction projects and quality control activities in project. This orientation course will be highly supportive to fresh engineers looking for entry to industrial construction.
Internship and On Job Training: Since Metalscan Inspection Services is servicing company in the field of Non Destructive Testing, we offer Internship and On Job Training for candidates.

Eligibility for Course:
Engineers of below stream are beneficiaries of our training program:
- Mechanical Engineers
- Aeronautical Engineers
- Production Engineers
- Automobile Engineers
- 10th Pass – NDT Technician

Fee Structure:
Please contact our office for latest fee structure for training and certification. In the case group joining we offer discount from normal fee structure.

Hostel Facility:
Third party hostel facilities shall be arranged for candidates at reasonable rates.

Placement:
Being a servicing company, Metalscan Inspection Services absorbs many candidates as our employee in our NDT servicing wing at head office in Chennai. Remaining candidates shall be provided with placement assistance.

Free Seminars:
In order to introduce scope of Quality Assurance, Quality Control and NDT to fresh engineers and Engineering students, we conduct a totally free half-day seminar on first Mondays of every month at 10 a.m. Topics covered are:
- Quality Assurance and Quality Control
- Application of NDT in QA/QC Activities
- Relevant courses for QA/QC
- Job Opportunities

Mechanical, Aeronautical, Automobile and Production engineering students may attend this seminar. Interested candidates are requested to contact us for booking. Please note that a maximum of 25 candidates will be entertained on every week.

In addition to monthly seminar at our premises we arrange free seminars and demonstrations at premises of Engineering Colleges and Poly Techniques in Kerala on request.
How NDT Training in Metalscan is different?

NDT training in Metalscan Inspection Services will give a unique experience to candidates because of high standard of our training programme. It is mainly because of our well qualified and well experienced faculties (India and abroad). Moreover we have best training facility and lab facility. Our faculties are conversant with quality standards such as ASME, API, AWS, ANSI, British Standards etc.

**FACULTIES**

Our faculties are highly qualified and well experienced (India and Abroad).
- ASNT Level III
- NAS 410 Level III
- BARC certified Radiation Safety Officer (RSO)
- BARC certified Site-in-Charge
- AWS CWI – Welding Inspector
- RSO Saudi Arabia (KACST Certified)
- Saudi Aramco Certified RTFI

**LAB FACILITY**

We keep latest equipment for practical.
- UT equipment – Digital and Analogue
- MPI Yoke, Prods, bench type
- Penetrant Testing Chemicals
- 100s of films for RTFI practice
- Defective Test Plates and Pipes

Practical sessions are in detail under immediate supervision of experienced faculties. For example ultrasonic testing practical includes thickness / dimensional measurement, corrosion scanning, lamination checking, weld scanning etc.

**TRAINING FACILITY**

- LCD Projectors
- Comfortable classroom
- Power point presentation
- Specially developed study material on CD

Specially designed software for examination practice

**RENEWAL / RECERTIFICATION**

NDT personnel are recertified (certificate renewal) by us on reasonable rates based on continuous satisfactory performance in the respective method.

Radiographic Testing (RT)

- Laboratory at our Chennai facility is approved by BARC. X-ray and Gamma ray equipment are available with us.
- Safety classes for ASNT level II are handled by BARC certified Radiation Safety Officer (RSO) and Site-in-Charge.
- Similarly KACST (King Abdul-Aziz City for Science and Technology) is the regulatory authority in Kingdom of Saudi Arabia (KSA). Our faculties are RSO qualified from KACST, Saudi Arabia. RT work in Saudi ARAMCO, SABIC, SWCC etc. follows regulations of KACST.
- Radiographic Test Film Interpretation (RTFI) is another important segment in RT training. Accuracy of film interpretation is matter of knowledge and experience. A film interpreter should have sound knowledge about welding and casting process to interpret defects in it. RTFI training in Metalscan is very effective since training on welding defects will be handled by qualified welding inspector (AWS-CWI) and Interpretation will be guided by Saudi Aramco certified RTFI.
- Being a servicing company we keep 100s of radiographs with defect for interpretation practice.
Ultrasonic Testing (UT)

Ultrasonic testing uses ultrasound waves (greater than 20,000 Hz) to check integrity of materials. Sound waves are transmitted into the material and reflections are analyzed to detect defects. Accuracy of ultrasonic testing is purely skill of technician acquired through knowledge and experience. Practical training of Ultrasonic testing is directly under the supervision of well experienced faculty. Practical training programme covers common test requirements in the worksites.

- Thickness / Dimension measurement
- Lamination Checking
- Corrosion Scanning
- Weld Scanning & Defect Identification

UT operator must know calibration and performance checking of equipment. Accordingly we give individual attention to students in the following segment.

- Horizontal linearity
- Vertical Linearity
- Calibration of Single Probe
- Calibration of Duel Probe
- Calibration of Angle Probe (Beam Exit Point and Probe Angle Verification)

NB: We keep digital and analogue UT equipment for training. Since equipment is costly, most of QA/QC-NDT institutes do not possess UT equipment, hence no proper practical training.

Magnetic Particle Testing (MT)

Magnetic Particle Testing applies magnetic flux into the ferromagnetic material being tested and indications are observed after application of magnetic powder. Surface and sub-surface defects can be identified using this method. There are different types of magnetic particle testing equipment and we provide training on below equipment:

- DC and AC Electromagnet (Yoke)
- Prods
- Bench Type Equipment

NB: Both visible and fluorescent testing facility is available.

Liquid Penetrant Testing (PT):

Liquid Penetrant Testing applies principle of capillarity for detection of surface breaking defects.

- Solvent Removable System
- Water Washable System
- Post Emulsifiable System

NB: Both visible and fluorescent testing facility is available.
## Syllabus for NDT Training

### Magnetic Particle Testing:
- Introduction
- Theory on Magnetism
  - Magnetic Field
  - Permanent magnets and electromagnets
  - Hysteresis Loop
  - Diamagnetic, paramagnetic and ferromagnetic materials
  - Circular and longitudinal magnetization
- Principle of magnetic Particle Testing
- Familiarization of common magnetic particle equipments
- Detecting medium
- Demagnetization
- Usage of black light for inspection
- Codes, standards and specification
- Evaluation of Defects
- Preparation of test reports

### Penetrant Testing:
- Introduction
- Principle of magnetic Particle Testing
- Methods of Pre-cleaning
- Properties of penetrant
- Types of penetrant
- Methods of penetrant application
- Methods for removal of excess penetrant
- Methods for drying
- Properties of developers
- Types of developers
- Methods for developer application
- Inspection requirements
- Post cleaning
- Usage of black light for inspection
- Familiarization of various penetrant systems
- Codes, standards and specification
- Evaluation of Defects
- Preparation of test reports
## Syllabus for NDT Training

### Radiographic Testing:
- Introduction
- Structure of Atom
- Production of X-ray and Gamma Ray
- Radiation Safety and work permit system
- Interaction of radiation with matter
- Radiation detection and measurement
- Biological Effects of Radiation
- Regulations on use of radiography sources
- Elements of industrial radiography
  - Geometrical principles in image quality
  - Selection of radiation source
  - Control of scattered radiation
  - Use of Image quality Indicators
  - Selection of radiography films
- Film Processing
- Radiographic Techniques
  - Plate Radiography
  - Structure Radiography
  - Pipe Radiography
  - Pipeline Radiography
  - Radiography of castings
  - Radiography of tanks and vessels
  - Calculation of exposure time
- Special Radiographic Techniques
- Codes, standards and specification
- Radiographic Test Film Interpretation
  - Welding
  - Castings
- Preparation of test reports

### Ultrasonic Testing:
- Introduction
- Theory on Sound
  - Wave theory
  - Types of sound waves
  - Velocity of sound in material
  - Amplitude of sound
  - Modes of sound waves
  - Reflection & Transmission
  - Refraction
  - Diffraction
  - Absorption
  - Scattering
  - Attenuation
  - Mode conversion
- Familiarization of common ultrasonic equipments
- Familiarization of ultrasonic testing probes
- Familiarization of Calibration Standards
- Training on A Scan Equipment
  - What is A scan display?
  - Production of ultrasound
  - Types of probes
  - Features of probes
  - Profile of sound (Near field, far field and Dead Zone)
  - Selection of probe diameter
  - Selection of probe frequency
  - Sensitivity
- Practical:
  - Calibration of equipment
  - Setting up of test sensitivity
  - Thickness / dimensional measurement
  - Corrosion Scan
  - Lamination Check
  - Weld Scan on plate and pipe
  - Defect Identification
  - Defect Sizing
- Codes, standards and specification
- Preparation of test reports
## LIST OF EQUIPMENT

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<tr>
<th>Sl. No.</th>
<th>DESCRIPTION</th>
<th>Qty.</th>
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<tbody>
<tr>
<td>1.</td>
<td>Remote Operated Radiography Camera (Iridium-192)</td>
<td>4</td>
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<tr>
<td>2.</td>
<td>X-Ray Machine (200 KV, 10mA, 1.5mmX1.5mm Focal Spot)</td>
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<td>3.</td>
<td><strong>Ultrasonic Flaw Detector</strong></td>
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<td>Electronic Engineering Corporation Make EEC</td>
<td>2</td>
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<td></td>
<td>Modsonic Einstein II</td>
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<tr>
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<td>Krautkramer, Model USM-35</td>
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<td>4.</td>
<td><strong>Ultrasonic Thickness Meter</strong></td>
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<td>Modsonic, Model: Edision-1P, Resolution:0.01mm</td>
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<td>Krautkramer, DM3</td>
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<td>Stresstel T Mike</td>
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<td>5.</td>
<td><strong>Magnetic Particle Testing Equipment</strong></td>
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<td>Horizontal Magnetic Unit, Three Phase, FWDC, 3500 Amperes</td>
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<td>AC/DC Prod Type Equipment, 2000 Amperes</td>
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<td>AC/HWDC Magnetic Yoke</td>
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<td>6.</td>
<td><strong>Fluorescent Penetrant Inspection system</strong></td>
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<td>Type I, Method A - Water Washable System (S2 &amp; S3)</td>
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<tr>
<td></td>
<td>Type I, Method D – Post Emulsifiable System (S2 &amp; S3)</td>
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<tr>
<td>7.</td>
<td>Black Light Unit</td>
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<td>8.</td>
<td>UV/LUX Meters</td>
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<td>9.</td>
<td>Portable Hardness Tester</td>
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<tr>
<td>10.</td>
<td>Eddy Current Material Sorting Equipment</td>
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