

QUALITY CONTROL TRAINING

(INTERNATIONAL CERTIFICATION)

ONLY SERVICING COMPANY IN THIS SEGMENT IN KERALA

by

ASNT LEVEL III



Practical Training under overseas experienced faculties



METALSCAN INSPECTION SERVICES

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HO : Chennai

Br : Kochi



METALSCAN INSPECTION SERVICES



Corporate
Partner

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

**INTERNSHIP AND ON JOB
TRAINING AT CHENNAI
FOR STUDENTS**

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

RIG

Gas Oil Separation Plant (GOSP)

Pipelines (oil, gas, water etc.)

Refinery

Aeronautical Companies

Petrochemical Plants

Offshore Platforms

Water treatment plants

Nuclear Plants

Automobile Companies

Power plant construction

Ship building

Heat Exchangers

Storage Tanks

Pressure Vessels

Process Piping

Storage Tanks

Water Treatment Plants

Steel Plants

Fertilizers





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



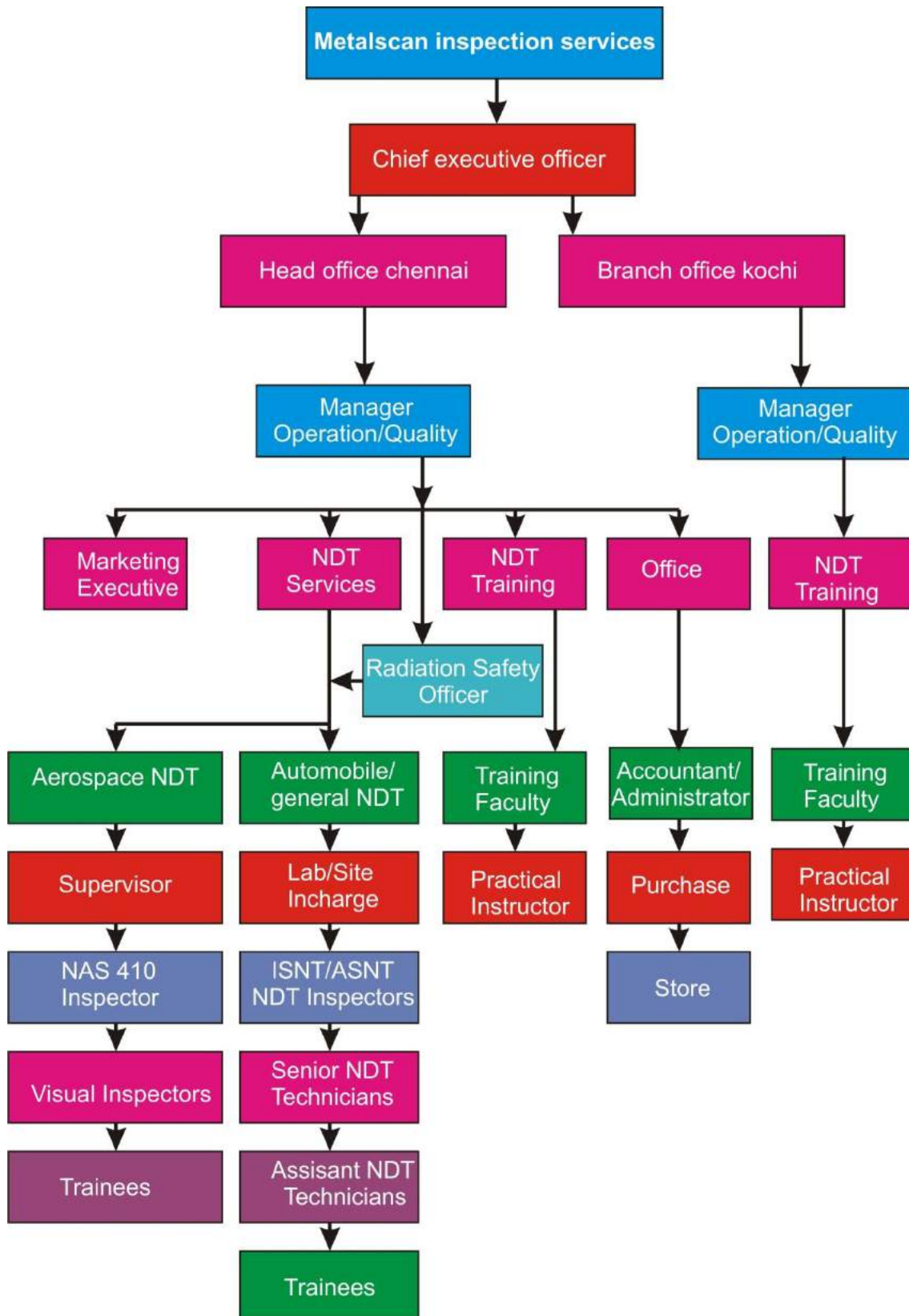
We have our offices at Chennai, Tamil Nadu and Kochin, Kerala. NDT service division operates from our base in Chennai. This facility is approved by BARC / AERB (Bhabha Atomic Research Centre) for the use of X-ray equipment and Gamma ray equipment for radiographic testing. In addition to that our laboratory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



ORGANIZATION CHART





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.



QA/QC CERTIFICATION

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.

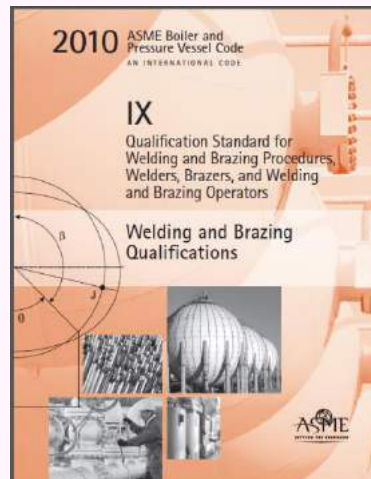
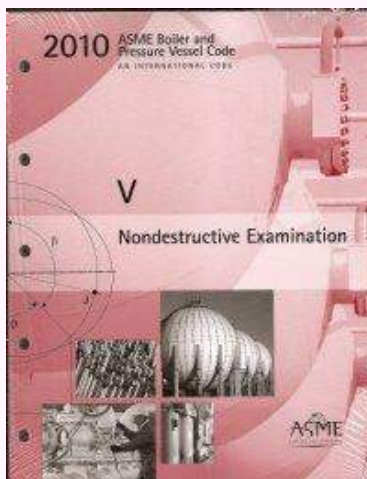
- NDT has to be performed in accordance with ASME Sec V
- Welding Related Activities in Accordance with ASME Sec IX
- Coating Activities in accordance with standards of SSPC

MUSCAT

1. **SR. QA ENGINEER / QA ENGINEER** B.E/B.TECH- Mech/Metallurgy + IRCA Lead Auditor Min. 12 yrs in quality management in construction industry.
2. **QC INSPECTOR - MULTIDISCIPLINE** B.E/B.Tech /DIP. Mech/ Metallurgy + CSWIP 3.2 or AWS SCWI + BGAS Gr. 2 + ASNT L-II in RT, MT, UT, PT / Min. 8 years experience in quality control/inspection in construction industry
3. **QC INSPECTOR - WELDING** B.E / B.Tch/Dip.Mech/Metallurgy + CSWIP 3.1 or AWS CWI+ ASNT L-II in RT, MT, UT, PT minimum 8 years experience in quality control/welding inspection in construction industry
4. **QC INSPECTOR - PAINTING** B.E/B.TECH /Dip.MECH/Metallurgy+ BGAS Gr.2 or NACE eqvt. 8 yrs in quality control/painting inspection in construction industry.
5. **QC INSPECTOR - CIVIL** B.E/B.TECH /Dip- CIVIL ENGG. 8 yrs in quality control / inspection in construction industry. Exp. concrete work, earth works, structural steel works, road works, tank pads& bunds and general civil activities.
6. **QC INSPECTOR - INSTRUMENTATION** B.S / B.E/B.Tech – electronics / Instrumentation Engg min. 8 yrs exp in quality control/inspection in construction industry. knowledge in electronic and pneumatic eqpt, analogue & digital control systems, relay/solid state logic systems, transmitters, control valves, etc.

Sl. No. 1 to 6 must knowledge in codes/standards, materials, welding NDE, painting, ISO etc. exp. in audits required able to manage a team of engineers/inspectors. Onshore oil & Gas construction or Petrochemical or fertilizer industry is preferred. Suitable candidates please forward your details CV by email/ courier on or before 06.04.05. CLIENTS INTERVIEW WILL BE VERY SHORTLY.

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ABOUT OUR TRAINING PROGRAMME

Metalscan Inspection Services offers constructive courses at reasonable rates for fresh engineering graduates / diploma holders to develop career 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 uses 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 method. 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 in quality control department. The major activities are:

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

There are international certifications in welding inspection, NDT and coating inspection. Most of these certifications cost more than 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 been 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 Dual 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
Evaluation of Defects
Preparation of test reports



LIST OF EQUIPMENT

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