ENGINEERING STAFF COLLEGE OF INDIA

Autonomous Organ of The Institution of Engineers (India)
(IMS [ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO 45001:2018],
ISO/IEC 17025:2017 Certified, AICTE & CEA Recognized Institution)
Old Bombay Road, Gachibowli, Hyderabad – 500 032. Telangana, India

Management and Technology Division

Hybrid (Offline & Online) Classroom Continuous Professional Development Programme on

NDT Level II Certification on Dye Penetrant Testing (DPT) and Magnetic Particle Inspection (MPI)

(In accordance with ASNT Document No.: SNT-TC-1A 2020)

Dates: 07 – 11 July 2025 at ESCI Campus, Hyderabad

INTRODUCTION

Non-destructive tests are main tools in manufacturing, fabrication, in-service inspections, and overhaul operations of Systems to ensure product integrity and reliability. They are also meant for controlling manufacturing processes, lowering cost of production and to maintain a uniform quality level. In Construction activities, NDT ensures the quality of materials employed, during the fabrication it helps in ascertaining various joining processes, while during in-service tests of product or systems, NDT inspections ensure that the products in use continue to have the necessary integrity to ensure their usefulness and the safety.

Dye Penetrant Inspection (DPI), also called Liquid Penetrant Inspection (LPI) or Penetrant Testing (PT) Inspection (LPI) or Dye Penetrant Testing (PT). This non-destructive testing technique is a cost-effective method used to locate surface breaking flaws such as cracks, porosity, laps, seams and other surface discontinuities. This procedure covers the liquid penetrant examination by solvent removable penetrant process using color contrast technique for detecting surface discontinuities of base metal & weldment required by the applicable code & PO specifications.

In Magnetic Particle Testing one or more magnetic fields are used to locate surface and near-surface discontinuities in ferromagnetic materials. The magnetic field can be applied with a permanent magnet or an electromagnet. When the magnetic field encounters a discontinuity transverse to the direction of the magnetic field, the flux lines produce a magnetic flux leakage field of their own. Because magnetic flux lines don't travel well in air, when very fine coloured ferromagnetic particles ("magnetic particles") are applied to the surface of the part, the particles will be drawn into the discontinuity, reducing the air gap and producing a visible indication on the surface of the part. The magnetic particles may be a dry powder or suspended in a liquid solution, and they may be coloured with a visible dye or a fluorescent dye that fluoresces under an ultraviolet ("black") light.

COURSE OBJECTIVE

The objective of this programme is to impart in depth theoretical as well as practical training to the participants so that they can understand the concept and usefulness of the test and enable them to employ the test correctly on various situations in their profession and draw correct conclusion. Certification of NDT techniques are issued on successful passing of the exam in the respective methods as per the ASNT recommended practice SNT- TC-1A-2020.

COURSE COVERAGE

The following course content will be detailed during the training programme:

Dye Penetrant Testing

- Principle, Scope and purpose of DPT
- Advantages and disadvantages of DPT
- Summary of Test methods and Water washable penetrants
- Different Materials to be examined
- Preparation of materials for DPT
- Inspection and Examination
    - Temperature limitation
    - Dwell time for different materials
    - Excess penetrant removal
    - Developer application
    - Lighting conditions
    - Interpretation and Evolutions of Indications
- Controls and Safety
- Post cleaning
- Characteristics of water washable fluorescent penetrant tests
- Dye penetrant testing acceptance criteria
- Different Standards for DPT

Magnetic Particle Testing

- Magnetization Techniques
- Inspection Mediums
- Indication Classification
- Test Equipment's and Accessories
- Demagnetization
- Various quality checks of MPT equipment(s)
- Evaluation of Test Equipment
- Prepare test report for acceptance/rejection as per standard
- Merits and Demerits of MPT
- Codes, standards and Procedures

METHODOLOGY

Methodology of the programme includes class room Sessions with Lecture/discussion with audio visual aid, benched marked practices if any, video shows, Chalk & Talk sessions, group discussions, case studies, debates, sharing of experiences, etc. All the sessions will be interactive demanding active participation from all the members. Case Method of Instructions will be the main method of knowledge facilitation.

TARGET PARTICIPANTS

This is an excellent course for NDT professionals who must have Level II training in order to qualify for certification as well as facility personnel who are responsible for or to oversee the application of testing or Quality Control/Quality Assurance. Target participants mentioned here is only indicative. Nominating Authorities at their discretion may suitably nominate the participants.

RESOURCE PERSONS

The Faculty consists of experts from the Industry, Research establishments and Academia besides ESCI.

BENEFITS TO THE PARTICIPANTS

- A **Level II Technician** can calibrate, perform tests without supervision and make test assessments when required.
- It will provide platform to discuss on issues/problems individuals facing on LPT and MPT and arriving at solutions. They will also get practical exposure on finer issues related to application and best practices for the test will be imparted.

PROGRAMME DIRECTOR

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PROGRAMME DATES & TIMINGS

Dates: 07 – 11 July 2025

Timings : On the first day Registration will commence at **09:00 Hrs**. On all other days the programme timings will be from **09:45-17:15 Hrs** with breaks in between for tea and lunch.

COURSE FEE:

Rs.27,000/- (Rupees Twenty Seven Thousand only) per Participant + GST@18% Extra. Fee includes, course material, course kit, twin-sharing/single AC accommodation as per availability, breakfast, lunch, dinner, tea / coffee and snacks during the actual days of training programme.

Online: WebEx platform
Rs. 15,000 /- (Rupees Fifteen Thousand only) per participant + GST@18% Extra.

DISCOUNTS

- **Non-Residential Fee:** 10% discount on course fee is allowed for non-residential participants.
- **Group Discount:** Additional 10% discount for three or more participants if sponsored by the same organization.

Note: GST Nil for Central Govt. Departments (like DRDO, DGQA & Govt. Departments).

PAN Card No AAATT3439Q; GST No. 36AAATT3439Q1ZV. **H.S. No. 999293** (Under commercial training or coaching services – clause 65(105) (ZZC) of Finance act – 1994).

Programme fee is to be paid in in favor of **"THE INSTITUTION OF ENGINEERS (INDIA) – ENGINEERING STAFF COLLEGE OF INDIA"** in the form of demand draft payable at Hyderabad. Alternatively, the payment may be made by Electronic Fund Transfer (EFT) to ESCI - **SB A/c No.0432104000039631 with The IDBI Bank Ltd., Gachibowli Branch, Plot No. 2-53/2, JNIBF, IIIT Junction, Gachibowli, Hyderabad-500032 by RTG's/ NIFT / IFSC Code No: IBKL0000432.** While using EFT method of payment, please ensure to communicate us your company name, our Invoice reference and programme title.

CERTIFICATION

A Certificate of participation will be awarded to each participant on conclusion of the programme.

GENERAL INSTRUCTIONS:

- ESCI encourages participants to present case studies from their respective organizations.
- ESCI provides complimentary accommodation and boarding to the participants one day before commencement (Check-in 1200 h) and one day after conclusion (Check-out 1200 h) of the programme duration. Overstay charges will be applicable as per ESCI rules (subject to availability of accommodation).
- Well-developed Information Centre and Internet facilities are available to the participants free of cost.