



COURSE CURRICULUM- PENETRANT TESTING LEVEL I & II

Penetrant Testing (PT), also called Liquid Penetrant Inspection (LPI) or Liquid Penetrant Testing (PT), is a widely applied and low-cost inspection method used to locate surface-breaking defects in all non-porous materials (metals, plastics, or ceramics). For applications where a greater sensitivity to smaller defects is required, the fluorescent penetrant method is preferred. The Penetrant may be applied to all non-ferrous materials and ferrous materials, but for inspection of ferrous components magnetic-particle inspection may be preferred for its subsurface detection capability. Commonly, DPI is used to detect cracks, surface porosity, lack of penetration in welds and defects resulting from in-service conditions (e.g. fatigue cracks of components or welds) in castings, forgings, and welding surface defects.

About the course:

This course is designed to provide the participants, a better understanding about theory and application of penetrant inspection in welds, to train them and qualify them as PCN Level I or II in penetrant testing.

Experience requirements: For Level I: Minimum work experience of 1 month as Trainee.

For Level II: Minimum work experience of 3 months as Level I in Penetrant testing or 4 months as a trainee involved in penetrant testing is a mandatory requirement to appear for examination and certification.

Vision requirements: Vision requirements as per PSL-44 (<http://www.bindt.org/downloads/psl44.pdf>)

Last date for registration: One week prior to the commencement of the course (subject to availability)

Training Hours: PCN Level I: 16 hours
PCN Level II: 24 Hours (For qualified Level I) or 40 hours (For Trainee)

Course content:

Level I course outline

- Basics of penetrant testing,
- Penetrant groups
- Pre-cleaning methods
- Penetrant testing methods and techniques
- Types of developers
- Inspection procedures
- Sensitivity & resolution checking of test systems
- Types of discontinuities



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Level II course outline:

Basics of NDT
History & Physics of PT
Basic steps & cleaning methods
Penetrant & Emulsifiers
Developers
Techniques & Equipments
Maintenance- Quality control check
Indication- interpretation and Recording
Product technology- Discontinuities in Casting, Forging, Wrought & Forming process
Understanding of codes
Welding technology- major weld process SMAW, SAW, TIG, MIG, FCAW etc

Learning outcomes:

- Successful candidate will be able to perform the test, interpret and evaluate the results as per applicable procedure or codes and standards.
- The candidate will be trained to inspect, interpret, organize and report the testing results using different penetrant testing techniques

Examination and validity: Training program comprises of daily assessment after completion of each chapter and the participants are required to get above 70% marks. Based on daily assessment exams, candidate is awarded with successful completion of training. Then the participants are required to undergo examination which consists of specific and practical examination. Candidate has to obtain a minimum of 70% in each examination to get certified as PCN PT level I or II (As appropriate). This certificate is valid for 5 years from the date of certification. The certificate has to be renewed as per PCN requirements.

Documents to be submitted for registration:

1. PSL 57-A Initial Examination application
2. PSL 30- Log of Experience
3. PSL 44-Vision Requirements (which has to be certified by a registered medical practitioner)
4. PCN Wallet card copy
5. PCN PT level I Certificate copy(If applicable)

Note:

1. TIW reserves the right to disqualify the participants from certification program when the personnel is found that they he/she shall not meet the PCN requirements
2. Participants are not allowed to use their own equipment during the training and examination. TIW provides candidate with consumables and other accessories needed for practical inspection.