



COURSE CURRICULUM- ULTRASONIC TESTING LEVEL I & II

Ultrasonic testing (UT) is a family of non-destructive testing techniques based on the propagation of ultrasonic waves in the object or material tested. In most common UT applications, very short ultrasonic pulse-waves with center frequencies ranging from 0.1-15 MHz, and occasionally up to 50 MHz, are transmitted into materials to detect internal flaws or to characterize materials. A common example is ultrasonic thickness measurement, which tests the thickness of the test object, for example, to monitor pipe work corrosion. Ultrasonic testing is often performed on steel and other metals and alloys, though it can also be used on concrete, wood and composites, albeit with less resolution. It is used in many industries including steel and aluminium construction, metallurgy, manufacturing, aerospace, automotive and other transportation sectors.

About the course:

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

Experience requirements: For Level I: Minimum work experience of 3 months as Trainee.
For Level II: Minimum work experience of 9 months as Level I in Ultrasonic testing or 12 months as a trainee 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: 40 hours
PCN Level II: 80 Hours (For qualified Level I) or 120 hours (For Trainee)

Course content:

For Level I:

- Properties of Sound Waves
- Generation of Ultrasonic waves
- Interaction of ultrasound with matter and boundaries
- Types of Probes
- Test Methods
- Test Equipment
- Instrumentation
- Test Variables
- Inspection procedures
- Types of Discontinuities



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For Level II:

Introduction to NDT & its classifications
History and Physics of UT
Parameters - Types of Ultrasound
Behaviour of sound at interface
Behaviour of sound in material
Generation of Ultrasound and Probe - its properties
Equipment, controls- DATA display
Techniques
Blocks- Calibrations
Inspection, Interpretation and Evaluation
Welding technology- major weld process SMAW, SAW, TIG, MIG, FCAW etc

Learning outcomes:

- Successful candidate will be able to set up, calibrate the equipment, 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 ultrasonic testing technique.

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 UT level II. 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 UT 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 ultrasonic Flaw detector for practical inspection and other accessories needed for practical.