

Ultrasonic Testing: A-Scan Thickness

Level II Limited 24 hours

Training Course Outline

The Level II Limited for UT Thickness was added in the 2006 edition of SNT-TC-1A. This Limited certification for A-Scan Thickness measurement is included in Section 6.3.1C of SNT-TC-1A 2006.

There is no prerequisite to take this class

SCOPE

This course introduces the basic principles of ultrasonics and prepares the candidate for Thickness Measurement using the A-Scan

This course prepares a candidate to

- Perform Specific Calibrations
- Specific NDT
- Record Results

TRAINING

Training Material is presented in Modules followed by Quizzes

CERTIFICATION MODULE

Personnel Certification

MODULE 1: MANUFACTURING DISCONTINUITIES

- Types of Discontinuities :- Inherent, Processing and Service
- Casting Discontinuities :- Hot Tear, Cold Shut, Porosity, Shrinkage
- Primary Processing Discontinuities including discontinuities in Rolling, Forging, Drawing, Extruding
- Secondary Processing Discontinuities including discontinuities in Grinding, Heat Treating, Machining, Welding, Plating
- Service Discontinuities:- Erosion, Wear, Fatigue, Corrosion, Creep, Hydrogen Attack

MODULE 2: WAVE MODES

- Time Period and Frequency
- Wavelength
- Wave Modes including Longitudinal, Shear, Surface and Lamb Waves
- Velocity of Waves
- Calculation of Velocity
- Factors Affecting Velocity - Temperature, Stress

MODULE 3: ACOUSTIC IMPEDANCE

- Acoustic Impedance
- Calculation of Acoustic Impedance
- Reflection and Transmission Coefficients
- Transmission through a layer

MODULE 4: PIEZOELECTRIC TRANSDUCER

- Wave Interference: Constructive and Destructive
- Sound Field
- Near Field
- Far Field
- Beam Spread

MODULE 5: ATTENUATION

- Sound Attenuation
- Causes for Attenuation
- Attenuation Measurement
- Calculation of Amplification
- Laboratory - Measurement of Attenuation

MODULE 6: THICKNESS MEASUREMENT

- Test Modes
- Thickness Measurement
- Thickness Measurement Frequency
- Screen Calibration
- Problems
- Laboratory - Thickness measurement, Corrosion Mapping

PRACTICALS

- Velocity measurement
- Thickness Measurement
- Thickness Scanning
- Plates
- Tubes
- Corroded samples
- Bolt Inspection
- Laminated Plates

TRAINING PROGRAM EXAMINATIONS

General

Specific

Practical

Candidates must score a minimum of 70 % in each test and a minimum of 80% average for all the three tests.

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