



UE Systems Level-1 Certification Course in Airborne & Structure Borne Ultrasound [ASNT SNT-TC-1A, ISO 18436-8, UEQ-TC-1A]

Course Overview

Conforming to the classroom requirement of ASNT Recommended Practice, the course is designed to meet the intent of SNT-TC-1A and is in accordance with ISO 18436-8.

Students successfully completing this course are now familiar with the scope and limitations of Airborne-Structure Borne Ultrasonic Inspection, are able to set up and configure equipment, interpret and evaluate results with respect to applicable codes, standards, specifications, and report on inspection results.

Course content consists of advanced theory, inspection logistics, practical monitoring, data collection, data and sound analysis, writing procedures and generating reports. A General, Specific, and Practical test is given at the end of the course.

This is a comprehensive classroom course in which the theory, principles and practices of Airborne-Structure Borne Ultrasound Technology are taught and was designed by a committee of experts, including some responsible for pioneering and developing the technology. Our Level I and Level II courses were developed, and compliance maintained, with the continued oversight of an ASNT Level III Certified Trainer.

Schedule Overview [ASNT SNT-TC-1A, ISO 18436-8, UEQ-TC-1A]

Day 1

Certification requirements for Level I, Level II and Level III reviewed
Theory of Sound: Basic Physics of Sound Propagation, Concepts of Amplitude, Velocity, Wave Modes, Ultrasound Wave Transmission Characteristics and Effects
Effectiveness of Airborne Ultrasound, Typical Applications Overview, Technology Integration
Equipment/Instrument Overview
ASTM Standard Test Methods
Overview of Recording and Reporting Inspection Results
Practical Quiz of Day 1 Material

Day 2

Leak Detection: Concepts of Leak Detection, Fluids Defined, Leak Rates, Acoustic Properties of a Leak, Types of Leaks, Leak Strategies
Leak Detection Methods: Pressure, Vacuum, Ultrasonic Sound Generation, Liquid Leak Amplification, Gross- to-Fine Method, Leak Confirmation Methods
Working in Noisy Environments, Shielding Techniques
Inspecting Heat Exchangers, Boilers, Condensers
Compressed Air Leak Survey:
Determining CFM loss, calculating energy savings, recording and reporting survey results
Practical Quiz of Day 2 Material

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Day 3

Electrical Inspection:

Safety Considerations, Overview of Types of Electrical Equipment, Voltages Defined Acoustic Effects Versus Heat Generated Defects, Integration of Ultrasound and Infrared Methods

Data analysis for identifying Corona, Arcing, Tracking and Mechanical Vibrations

Detection Methods for High Voltage Equipment:

Overview of Equipment for High Voltage Inspection, Detection Methods, Confirmation Methods, Substation Inspection

Radio Frequency Interference, Television Frequency Interference

Detection Methods for Low Voltage Inspection: Techniques, Contact Approach, Mechanical Inspection

Valves, Compressor Inspection, Hydraulic Valves

Practical Quiz of Day 3 Material

Day 4

Steam Trap Inspection:

Steam Applications, Steam Trap types, Acoustic properties, Inspection Techniques, Recording and reporting

Mechanical Inspection:

Considerations of Ultrasonic Generation, Strategies of Mechanical Inspection, Review of Proactive and Predictive Maintenance Concepts

Troubleshooting Methods Overview

Trending Methods Overview

Inspection of Compressors, Gears, Pumps, Motors & Fans

Isolating Sound Sources

Bearing Inspection:

Trending Concepts, Condition-Based Lubrication, Lubrication Starvation, Over-Lubrication, Levels of Failure Monitoring, Data Logging and Sound Recording methods, Connecting to Recording Devices

Vibration Meters and Computers

Sound Spectral Analysis, Recording and Reporting Results

DMS Software Overview and Route Generation

Practical Quiz of Day 4 Material

Day 5

Review of Airborne Ultrasound Technology, Applications and Methods

Practical Experience Review

General, Specific and Practical Examination

Who Should Attend This Course?

Condition Monitoring Technicians, Coordinators, Analysts, Specialists, Engineers & Supervisors
Reliability Technicians, Advisors, Specialists, Engineers & Supervisors
Electrical Technicians, HV Electricians & Supervisors
Lubrication Technicians, **Rotating Equipment** Specialists, **Conveyor Systems** Specialists,
NDT Technicians, **Vibration** Technicians & Analysts,
Asset Health Technicians & Advisors,
Mechanical Technicians & Engineers

In General:

Inspectors seeking to advance their knowledge in Airborne Ultrasound Inspection.

Energy Auditors or Service Company personnel who perform PDM, energy audits or leak detection that wish to demonstrate technical and inspection proficiency to their clients.

Those seeking to advance to Level II Certification.

Inspectors wishing to transfer their certification from one region to another.

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