

CAT II is an advanced course. Students must meet Level I requirements before enrolling.

This 32-hour 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 familiar with the scope and limitations of Airborne/Structure Borne Ultrasonic Inspection, are able to set up and calibrate equipment, interpret and evaluate results with respect to applicable codes, standards, and specifications, and organize and report inspection results.

Course content consists of:

- Advanced Theory of
 - Airborne/Structure Borne Ultrasound
 - Compressed Gas Leaks
 - Electrical
 - Mechanical
 - Valves
 - Steam Traps
 - Bearings
 - Lubrication
- Advanced Inspection Logistics
- Condition Monitoring Principals
- Best Practices of Data Collection
- Data and Sound Analysis
- Writing and Establishing Procedures
- Program Implementation
- Generating Reports
- A General, Specific, and Practical 60 question exam is given at the end of the course.

Requirements for Level II Certification

In order to achieve an official certification, one must attend certification training (32 hours of classroom training) and must pass the General, Specific and Practical examinations with a combined score of 80% or better. Documentation of education or experience must be maintained annually. Hearing acuity must meet the minimum requirement of one ear of less than 25 dBHL at 500 Hz to 4 kHz (with or without aid.) Hearing acuity examinations must be documented annually. Documented experience signed by a supervisor or superior for 6 months additionally of the Level I experience of 6 months, for a cumulative 12 months' experience to qualify for official certification of Level II.

Candidate Must Haves

Each Candidate for Level II certification of Airborne/Structure Borne Ultrasound should:

- Be Proficient with their ultrasonic device
- Be Proficient with collecting data in the field
- Should have basic computer skills (i.e. Word, Excel, Email)
- Basic Working Knowledge of Level I Material of Airborne/Structure Borne Ultrasound

Each Candidate for Level II Certification of Airborne/Structure Borne Ultrasound must bring:

- A Working Laptop with Admin rights for software install and input/export of data through usb/card reader slots
- UE Systems' Latest Version of Ultratrend DMS software installed
- UE Systems' Latest Version UE Spectralyzer Software installed

Airborne/Structure Borne Level II Course Outlook

MONDAY (8hrs)

ASNT SNT-TC-1A, ISO 18436-8, UEQ-TC-1A

Sound Theory and Condition Monitoring

Ultrasound Theory, Low Frequency versus High Frequency, Sound Characteristics, Acoustic Impedance, Reflection, Absorption, Scattering, Attenuation, Inverse Distance Law; Sources of Ultrasound;

Definitions of Frequency, Decibel, Sensitivity;

Deeper Understanding of Heterodyning, Time Wave Form, FFT – Fast Fourier Transform

Decibel vs FFT/Time Wave Form

Condition Monitoring

Principals of Conditioning Monitoring;

Thermography, Vibration Analysis, Oil Analysis, Motor Circuit Analysis;

The P-F Curve;

Equipment Condition and Times;

Understanding Cost;

Ultrasound in Condition Monitoring;

Best Practices of Condition Monitoring

Following Procedure, Timelines, Criticality Analysis, Failure Mode Analysis, Route Building, Repeatability

Ultrasonic Equipment

Equipment, Transducers, Heterodyning, Frequency Tuning;

Airborne Ultrasound Equipment, Displays and Basic Operation, Modules, Dedicated Monitors

Tone Generator;

Adjusting the Sensitivity of the Equipment, Checking Sensitivity of Equipment;

Data Management Software, Spectral Analysis Software;

Practical Quiz of Day's Lessons

Tuesday (8 hrs)

Data Collection

Best Practices of Data Collection, Data Collection with Airborne Structure Borne Ultrasound;

Compressed Gas

Leak Inspection, Leak Inspection Strategies, SAFETY, Pressure & Vacuum Leaks, Procedure,

Compressed Air Leak Survey, Reporting; Hands on Practice of Cost Analysis and Reporting

Electrical

Electrical Inspection, Analyzing Corona, Analyzing Tracking, Discharge Points of Tracking,

Discharge Points of Arcing, Loose Vibrating Components, Performing Inspection, Establishing a

Procedure, Important Considerations, Troubleshooting/Base line Procedures, Trending

Procedures;

Hands on Practice of Analysis of different Electrical Anomalies;
Practical Quiz of Day's Lessons

Wednesday (8 hrs.)

Valves

Cavitation in Valves, Flashing in Valves, Write the Procedure, Reporting;

Steam Trap Inspection

Steam Trap Function, Type of Traps, Mechanical Trap, Inverted Bucket Trap, Float Trap

Float and Thermostatic Trap, Thermostatic Traps, Metal Expansion Traps, Balance Pressure

Bellows, Bi-Metallic Trap, Thermodynamic Traps;

Reasons Why Steam Traps Fail; Steam Trap Inspection; Safety;

Hands on Practice with software of Steam Trap Analysis and Reporting

Practical Quiz of Day's Lessons

Thursday (8 hrs.)

Bearing Inspection

Bearing Dynamics, What is a Bearing? Bearing Failure Mechanisms, Bearing Inspection,

Mechanical Testing Best Practices, Inspection Methods, Mechanical Inspection Trending

Recommended Procedure for Ultrasonic Analysis and Lubrication of Bearings

Basic Lubrication Principles, Lubrication with Ultrasound, Proper Steps Using Ultrasound to

Lubricate, Over Lubrication, Lubrication Procedures, Mechanical Inspection Safety Tips;

Hydraulic Inspection;

Pumps and Cavitation;

Gear Boxes and Using a Time Wave Form Spectral Analysis;

Hands on Practice of DMS Route Building;

Hands on Practice of UE Spectralyzer analyzing mechanical faults;

Hands on Practice of Generating Reports;

Practical Quiz of Day's Lessons

Friday (4 hrs.)

Review of Weeks Material for Final (45min)

2-hour Final Examination (80 multiple choice questions)

Catagory 2 Course Dates 2023 - England

Rotherham, UK – 6th - 10th February 2023

Rotherham, UK – 8th - 12th May 2023

Rotherham, UK – 19th - 23rd June 2023

Rotherham, UK – 10th - 14th July 2023

Rotherham, UK – 18th - 22nd September 2023

Rotherham, UK – 30th October - 3rd November 2023

Contact

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