



**Ultra-Tek**



## **UE Systems Course Description: Level I**

Conforming to the classroom requirement of ASNT Recommended Practice, SNT-TC-1A, the course offers 32 hours of instruction with a written examination. This is a comprehensive classroom course in which the theory, principles and practices of Airborne Ultrasound Technology are taught. Instructors for this course have been selected for their outstanding comprehension, experience and technical expertise in the field of nondestructive testing and of Airborne Ultrasound. The course was designed by a committee of experts, some of whom were responsible for pioneering and developing the technology. The Level I and Level II course program is developed and maintained by an ASNT Level III.

### **Outline of Some of the Topics of Basic Course, Level I:**

**Day 1:** Certification requirements for Level I, Level II and Level III reviewed, Theory Of Sound, Basic Physics of Ultrasound, Concepts of Amplitude, Velocity, Wave Modes, Ultrasound Wave Transmission 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.

**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, computing energy savings, recording and reporting survey results.

**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, 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, Low Voltage Inspection Techniques. Contact approach, Mechanical Inspection overview, Valves, Compressor inspection, hydraulic valves,

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Document Reference	C:\Users\lan\Desktop\Ultra-Tek\UE Systems\Training\UE Systems Level I Ultrasound Certification Training (5 day course).doc		



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## **UE Systems Course Description: Level I**

**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, Generic Trouble Shooting Methods, Generic Trending Methods, 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**

**Day 5: Review of Airborne Ultrasound Technology, Applications and Methods, Practical Experience Review, and General, Specific and Practical Examination**

### **Who Should Attend This Course?**

Inspectors seeking to advance their knowledge in Airborne Ultrasound Inspection, Supervisors, Energy Auditors, Service Company personnel who perform PDM, energy audits or leak detection for their clients. Service personnel who desire to demonstrate technical and inspection proficiency to their clients. Level I certified inspectors in order to advance to Level II certification. Inspectors who wish to be able to transfer their certification from one employer to another.

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