Motor Circuit Analysis/Insulation Assessment Course Description: Level I
This is a comprehensive course in which the theory, principles and practices of motor circuit analysis and insulation assessment are taught. It includes classroom instruction as well as hands-on training. Conforming to the classroom requirement of ASNT Recommended Practice, SNT-TC-1A, the course offers 32 hours of instruction with a written examination.

Course Outline:
Day 1:
- Brief overview of electrical terms and definitions
- Electromagnetic theory
- AC motor theory and construction
- Types of AC motors
- Insulation systems
- Motor failure modes and mechanisms
- Applicable ANSI/IEEE/EASA/NEMA test standards and pass/fail criteria

Day 2:
- Off-line test methods
- Low voltage winding tests: inductance, impedance, capacitance and Rotor Influence Check (RIC)
- Voltage drop test
- Insulation resistance and polarization index
- Tan Delta and tip up
- Over voltage hipot
- Impulse
- Partial discharge
- Core loss
- Test sequence and recommended test voltages

Day 3:
- Equipment overview
- Software overview
- Creation of databases, Test IDs and Motor IDs
- Creation of routes
- Performing field tests
- Analysis of test data
- Generating test reports and trending
- Hands-on testing of an AC motor

Day 4:
- Troubleshooting methods
- Synchronous motors
- DC motors
- Hands-on testing of a DC motor
- Non rotating equipment
- Brief introduction to on-line testing
- Bearing arcing
- Confirming problems using complementary technologies
- Safety considerations
- Working with a motor repair shop
- Motor storage
- Review of MCA/Insulation Assessment technology, applications and methods
- Examination for certification

Who Should Attend This Course?

Electrical inspectors seeking to advance their knowledge in predictive testing and troubleshooting of electric motors, cables, controls and fixed assets. Service personnel who desire to demonstrate technical and inspection proficiency to their clients.

Requirements for Level I Certification
In order to achieve an official certification, classroom training meeting the requirements of SNT-TC-1A must be completed along with successfully passing the General, Specific and Practical examinations with a score of 80% or better.