

# Eddy Current Testing

Level I - 40 hours  
Training Course Outline

## SCOPE

This course prepares a candidate to Perform Surface Eddy Current Inspection and

- Perform Specific Calibrations
- Specific NDT
- Specific Evaluations for Accept or Reject Determinations according to written Instructions
- Record Results

## TRAINING

Training material is presented in modules that are followed by quizzes

## PERSONNEL CERTIFICATION

ASNT SNT-TC-1A

NAS 410

Training, experience and examination requirements

Training Requirements

- Recommended Course Outline
- Training Hours
- Practicals
- Quizzes and examinations

## DISCONTINUITIES

- Types of Discontinuities: Inherent, Processing and Service
- Inherent: related to solidification of metal
- Primary Processing Discontinuities: Rolling, Forging, Drawing, Extruding
- Secondary Processing Discontinuities: Grinding, Heat Treating, Machining, Welding, Plating
- Service Discontinuities: Erosion, Wear, Fatigue, Corrosion, Creep

### Module 1: Electricity

- Voltage, Current and Resistance
- Ohm's Law
- Inductance
- Impedance

### Module 2: Magnetism

- Magnetism
- B-H Curve
- Permeability

### Module 3: Electromagnetism

- Faraday's Law

- Lenz's Law
- Mutual Inductance

#### **Module 4: Introduction to Eddy Current Generation**

- Generation of Eddy Currents
- Impedance changes by Eddy Currents

#### **Module 5: Eddy Current Properties**

- Depth of Penetration
- Effect of frequency, conductivity and Permeability

#### **Module 6 – Impedance Plane – Surface Inspection**

- Conductivity Curve
- Lift Off Curve
- Permeability

#### **Module 7: Instrumentation**

- Impedance Displays
- Strip Charts
- Absolute and Differential Modes
- Portable Surface Inspection Equipment

#### **Module 8: Eddy Current Probes**

- Surface Probes
- Encircling Probes
- Tubing Probes

#### **Module 9: Surface Inspection**

- Probe Selection
- Frequency Selection
- Setting the Display
- Edge Effect

#### **Module 10: Test and Material Variables**

- Frequency
- Filtering
- Suppression of Permeability variations

#### **SPECIFIC TRAINING**

- Surface ECT Procedure
- ASTM E-426

#### **PRACTICAL TRAINING**

- Setting up the Instrument
- Selection of Frequency

- Calibrations
- Test on Various Samples
- Prepare test Report

## **EXAMINATIONS**

- General
- Specific
- Practical Tests

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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