NDT L2 Penetrant Testing (PT)

INTRODUCTION

PT Inspection utilizes the property of capillary action to find surface breaking discontinuities in a variety of materials. It is one of the most economical NDT methods. A (penetrant) is applied to the surface of a test piece. Liquid Penetrant Inspection uses this capillary action to allow the penetrant to enter into fissures and voids that are open to the surface. After a dwelling time, the excess penetrant is removed, any remaining penetrant in the voids will flow back out exposing the indication. There are a variety of techniques included in liquid penetrant testing available depending on the type of NDT inspection and the kind of flaws a technician is aiming to find.

PROGRAMME OBJECTIVES

This course covers the principles of Liquid Penetrant Testing and prepares a candidate to

- Select equipment to conduct test
- Setup test equipment
- Steps to conduct test
- Familiarize with codes and standards
- Interpret results with respect to applicable codes and standards
- Understand limitation of the test method
- Write test reports.

WHO SHOULD ATTEND?

- NDT Examiners
- Welding inspectors
- NDT Engineers
- Mechanical inspection Engineers
- Piping inspectors

TRAINING METHODOLOGY

This course will combine presentations with interactive practical exercises, supported by video materials, activities and case studies.

PROGRAMME SUMMARY

This course contains Level 1 and 2 material and covers the theories and practices involved with liquid penetrant inspection. Equipment, light meters, code & procedure reference, types, forms, and methods are discussed.

PROGRAMME OUTLINE

Day 1 –Dye penetrant test (PT)-General

Purpose of Liquid Penetrant Testing /Physical Principles /Wetting Ability and Contact Angle/ Capillary Action/Viscosity/Reversed Capillary Action/ Types of Dye: Type I (Fluorescent) and Type II (Visible)/Methods of Removal of excess Penetrant including Water Washable, Emulsifiers and Solvent Removable.

Day 2 –Dye penetrant test (PT)-General

BASIC STEPS
Method A - Water Washable
Method B - Lipophilic Emulsifier
Method C - Solvent Removable
Method D - Hydrophilic Emulsifier
Choice of Cleaning Method / Different Cleaning Methods including Detergent, Solvent, Alkaline, Steam, Selection of Penetrant Materials
Application of Penetrant/ Standard Temperature Limits/Dwell time

Day 3 –Dye penetrant test (PT)-General

- Application of Developers
- Types of Developers
- Developing Time
- Fluorescent Inspection
  - Minimum intensity and light meter
  - Visual Adaptation
- Visual Inspection
  - Minimum light intensity and light meter
- Post Cleaning
- Limitation of Penetrant Testing

Day 4 –Dye penetrant test (PT)-Specific

- ASME Section V, Article 6
- ASME Section VIII, Appendix 8 (Accept/Reject Criteria) Standards

Day 5 –Dye penetrant test (PT)-Practical

PRACTICAL TRAINING
Test on Flawed Samples Visible