


<b>DOCUMENT NAME</b>	<b>Course Curriculum</b>					
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## **ROYAL TECH TRAINING & CONSULTANCY**

Method & Level	Ultrasonic Testing – Level 3
Course Duration - Days & Hours	4 Days - 40Hrs * (duration depends on the gap analysis)
Revision & Updated on	Rev 1- Updated on 17-1-22

### **PCN Level 3- Ultrasonic Testing**

**Duration: 4days (40 Hours)**

#### **Course Overview:**

The course is designed to provide guidance for preparing UT LEVEL 3 examination as per PCN requirements for welds sector. The aim of this course is to ensure candidates understand the scope of the examination, theory concepts and procedure requirements as per CP 25. On arrival, Mock test on the method is conducted and gap analysis report is prepared based on the outcome of mock test. This will also enable candidates to identify their weak subject areas. Training duration is decided based on the weak areas and candidate requirement.

#### **Course content**

1. Basics of NDT, classifications of NDT, History of ultrasonics' & Physics of Sound, classification of sounds
2. velocity and dispersion-Isotropic and anisotropic materials-Parameters-Modes of Ultrasound, behaviour of sound at interface, impedance, couplant, snells law, angles
3. Behaviour of sound in material- attenuation losses, near field, far field, Area amplitude distance relations
4. Generation of Ultrasound-Probe-Properties- Piezo Electrical Crystals- Factors Affecting Selection of a piezoelectric transducer-Pulse Characteristic - Types of resolutions -Probe Parts-classification and Construction- Temperature and the speed of sound- high temperature testing
5. Equipment- components- control systems- Data Display- A, B, C Scan- Digitisation- PRF
6. Techniques- Pulse echo- straight, Delay, focussed, Dual, angle beam, tandem, delta, Pitch catch, straddle, phased array, guided waves, immersion, Advance Ultrasonic testing techniques
7. Blocks- AAC, DAC, ASTM, V1, V2, IOW, Reference blocks- Equipment, probe performance checks, DAC, Transferer correction, DGS
8. Inspection – Parent metal, sizing techniques- mathematics, weld inspection, sizing techniques
9. Indication interpretation & recording techniques
10. Understanding Specifications, procedures, techniques, Analysis of codes, standards, Procedure writing
11. Daily assessment and End of course examinations

#### **Course objective**

- 1) Understanding the physics, fundamental of ultrasound, probe models, techniques and its applications
- 2) Understanding the importance of near field, equipment , display views & its applications
- 3) understanding calibrations, inspections , technique selection, planning
- 4) Duties and Responsibilities of an certified UT Level 3
- 5) Demonstrating the ability and competence to evaluate, interpret results in terms of standards, codes, specifications
- 6) Understanding the various product forms and its inspection methodology with UT
- 7) Selection of parameters, techniques and its implementation as per the equipment
- 8) Establishing the procedure, acceptance criteria when not available and guidance to all levels
- 9) calibration and validation process
- 10) Meet the syllabus requirements for PCN Level 3 as per PCN GEN Appendix C1

#### **Eligibility & Experience:**

- 1) 36 months experience in UT required in order gaining full qualification.
- 2) PCN UT Level 2 or any BINDT recognised UT Level 2 qualification is mandatory to be eligible for UT Level 3 exam.