


DOCUMENT NAME	Course Curriculum					
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## ROYAL TECH TRAINING & CONSULTANCY

Method & level	Time of Flight Diffraction Testing(welds)- Level 1
Course Duration - Days & Hours	5 DAYS - 40 HOURS
Revision & updated on	Rev 0- Updated on 29-4-2023

### PCN Level 1 Time of Flight Diffraction Testing

**Duration:** 5 days (40 hours) minimum duration

**Course Overview:**

This course provides the knowledge required to operate equipment and perform manual & encoded TOFD testing on welds. The course covers theoretical aspects on TOFD application, its advantages and limitations. The course also covers in depth practical aspects for application of TOFD on plate butt welds.

**Course content:**

1. Introduction, history and back ground of TOFD, advantages, limitation, applications
2. Principles of TOFD- Diffraction Process. - Basic TOFD Set-up. Types of TOFD Scan.
3. Summary of Advantages and Disadvantages of TOFD, including limitations.
4. Beam spread and its calculations, selection of angle, Frequency, number of scans, PCS
5. Basic Hardware- Digitisation, electronics of equipment, displays- Advantage of Digital Recording. -Amplitude-Sampling Rate- filtering- grey scale imaging and B-scans. -Signal Averaging, digitisation rate
6. Creation of scan plan, setup files
7. Calibrations such as velocity, wedge, PCS, optimization
8. Set up, calibration, equipment's, faults, Selection of parameters for TOFD technique on welds
9. Errors in TOFD, quality assessment and its parameters, data analysis- classifications of defects
10. Testing of specimen samples
11. Data acquisition & verification of data analysis and data auditing
12. Locating, Flaw characterization and sizing
13. Practical exercise and Daily assessment

**Course objectives:**

1. Understand the basic concepts of TOFD technique, probes, parameters, coverage.
2. Understanding Scan planning
3. Understanding equipment Electronics, digitisation
4. Calibrating using calibration blocks for weld inspection
5. Optimisations of Set up for various welds
6. Performing inspection and data collection
7. Understanding and performing analysis with various software's
8. Shall gain hands on experience in TOFD weld examination.
9. Meet the syllabus requirements for PCN Level 1 as per PCN/GEN Appendix C4

**Experience:**

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