

## Who we are?

TIW is an NDT training & service provider organization located in Trichy, India providing complete solution for NDT training & inspection

We conduct training for PCN Level I, II & III in the following methods

- PCN – Phased Array Ultrasonic Testing (PAUT)
- PCN- Time of Flight Diffraction (ToFD)
- PCN - Ultrasonic Testing 3.1 & 3.2
- PCN UT – 3.8 & 3.9 (Nozzles & Node)
- PCN - Magnetic Particle Testing (only Level I & II)
- PCN - Liquid/dye Penetrant Testing (only Level I & II)
- PCN - Radiographic Film Interpretation (only Level II)

## How to Book Your Training Course

To book a training course, simply call [+91 9043322221](tel:+919043322221) and we will be happy to discuss your requirements with you. If necessary, we can provide advice on which type of training and certification is appropriate for you or your company. Enquiries may also be made via email to [admin@tiw.co.in](mailto:admin@tiw.co.in) or by visiting us on the web at [www.tiw.co.in](http://www.tiw.co.in)

On confirmation of the booking, we will send to you an application form which must be completed and returned to us in order to confirm the booking process. Training courses will be conducted on a weekly basis at our Trichy Training and Examination Centre

## Contact Us

### TRICHY INSTITUTE FOR WELDING

Andal Nagar-Ariyamangalam-Rice mill bus Stop- Trichy-India

**Landmark:** Reliance Market

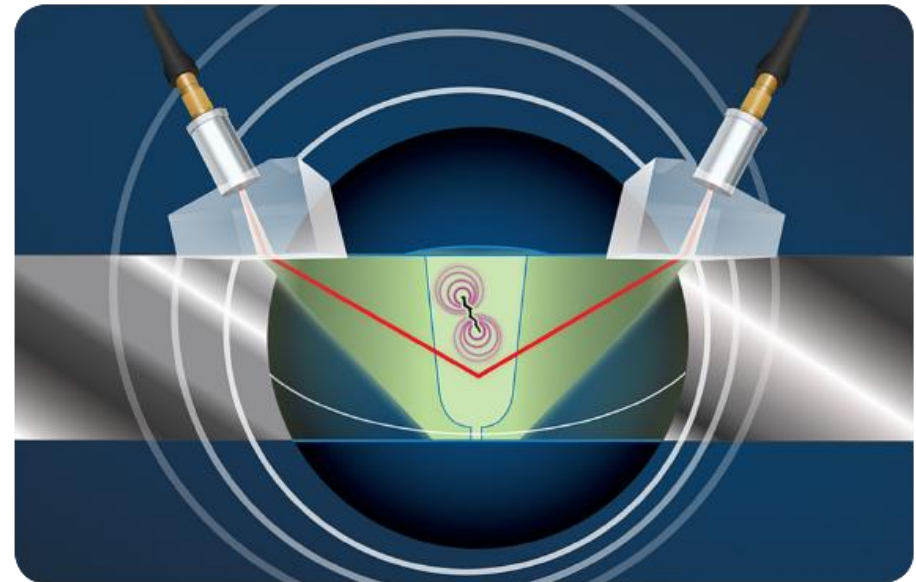
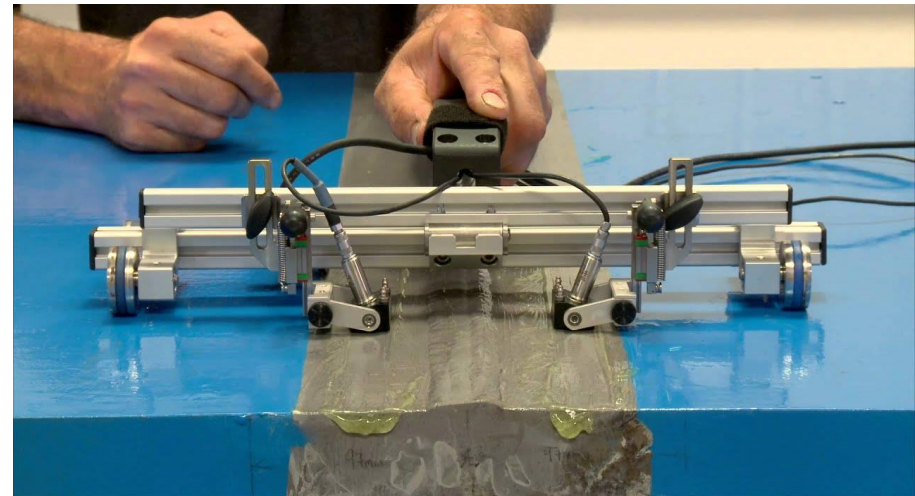
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## Time of Flight Diffraction (ToFD) Course Curriculum

# What is ToFD Ultrasonic Testing?

Time of Flight Diffraction is an Ultrasonic technique developed originally to improve the sizing accuracy of flaws previously detected by other means. Early applications of the technique advanced from solely sizing flaws to applications relying on TOFD for principal detection means, this pioneering technology resulted in major flaws being missed due to poor application and a general lack of understanding by persons operating the equipment.

## About the course

### PCN Level 1 & 2

This course is designed to provide the participants, a better understanding about theory and application of time-of-flight diffraction. This TOFD welds course provides detailed information on the inspection of ferritic steel welds by the ultrasonic time of flight method. Suitable for personnel with existing UT Certification in welds, and recognized by PCN, providing excellent preparation for the Level 1 and 2 examinations.

### PCN Level 3

This guidance course is aimed at the PCN Level 3 requirements for ToFD practitioners. The main objective of the course is to make candidates fully aware of the scope of the examination and level of knowledge required. It will also enable candidates to identify their weak subject areas. Advice will be given on any further tuition required.

# Qualification Requirements

## Training Hours

Level 1	Level 2	Level 3
40 Hrs	40 Hrs	40 Hrs
Direct access to Level 2 requires the total hours shown in table for Levels 1 and 2		

## Experience

Level 1	Level 2	Level 3
3 months	9 months	36 months
Note-1: For Level 2 certification, the intent is that work experience consists of time as a Level 1. If the individual is being qualified directly to Level 2, with no time at Level 1, the experience shall consist of the sum of the times required for Level 1 and Level 2. No reduction in the period of experience shall be allowed		
Note-2: Industrial NDT experience in the appropriate sector may be acquired either prior to or following success in the qualification examination.		

## Documents to be submitted for Examination

- PSL 57-A Initial Examination application
- PSL 30- Log of Experience
- PSL 44-Vision Requirements (which has to be certified by a registered medical practitioner)
- CP-27 code of ethics
- PCN ID (wallet or e-certificate) -only for existing PCN certificate holders
- PCN UT level II/III Certificate copy
- One govt approved identity card (example: Passport/voter ID /Aadhaar Card)

# Course Content

## PCN Level 1

- ❖ Ultrasonic theory
- ❖ Theory of diffracted ultrasonic waves
- ❖ Digitization principles
- ❖ Hardware utilized in TOFD
- ❖ Calibration/setting up of equipment
- ❖ Extensive practical element
- ❖ Analysis software
- ❖ Analysis and interpretation
- ❖ Reporting
- ❖ Relevant standards/PCN documentation

## ❖ PCN Level 2

- ❖ History, Background & Other Techniques of Ultrasound
- ❖ Basic Principle, Advantages, Dis-Advantages & Limitation of Tofd
- ❖ Techniques & Calculations
- ❖ Data Acquisition System Hardware's
- ❖ Software & Design of Tofd Inspection
- ❖ Errors
- ❖ Data Analysis
- ❖ Software Parameters
- ❖ System checks

# Learning Outcomes

## PCN Level 1

Successful candidate will be able to

- ❖ Set up equipment- Perform the ToFD tests;
- ❖ Record and classify the results of the tests according to written criteria and Report the results

## PCN Level 2

Successful candidate will be able to

- ❖ Select the UT TOFD technique for the test method to be used
- ❖ Define the limitations of application of the testing method
- ❖ Translate NDT codes, standards, specifications and procedures into NDT instructions adapted to the actual working conditions
- ❖ Set up and verify equipment settings
- ❖ Perform and supervise tests
- ❖ Interpret and evaluate results according to applicable standards, codes, specifications or procedures;
- ❖ Prepare UT TOFD written instructions
- ❖ Carry out and supervise all tasks at or below level 2
- ❖ Provide guidance for personnel at or below level 2 and
- ❖ Report the results of UT TOFD test

## PCN Level 3

Successful candidate will be able to

- ❖ Establish, review for editorial and technical correctness and validate NDT instructions and procedures
- ❖ Designate the particular test methods, techniques and procedures to be used;
- ❖ Within the scope and limitations of any certification held, carry out all tasks at all levels

## What to bring?

- ❖ Scientific calculator
- ❖ coveralls/Lab coat if possible
- ❖ Safety boots are mandatory in practical areas
- ❖ PCN Candidates: PCN wallet card or other form of photographic identification

## Special Note

- ❖ TIW reserves the right to disqualify the participants from certification program when the personnel is found that they he/she shall not meet the PCN requirements
- ❖ Participants are not allowed to use their own equipment / laptop during the training and examination. TIW provides candidate with ultrasonic Flaw detector for practical inspection and other accessories needed for practical.
- ❖ Follow professional dress code during the entire training and examination.
- ❖ Once when enrolled for course, TIW customer care people will send joining instructions through mail and enough information shall be communicated through telephonic call.

## Other information about Training & Examination

Training program comprises of daily assessment after completion of each chapter and the participants are required to get above 70% marks. Based on daily assessment exams, candidate is awarded with successful completion of training.

Then the participants are required to undergo examination which consists of specific and practical examination. Candidate has to obtain a minimum of 70% in each examination to get certified as level 1/2/3.

This certificate is valid for 5 years from the date of certification. The certificate has to be renewed as per PCN requirements.