

## 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, 3.8 & 3.9
- PCN - Magnetic Particle Testing
- PCN - Liquid/dye Penetrant Testing
- 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

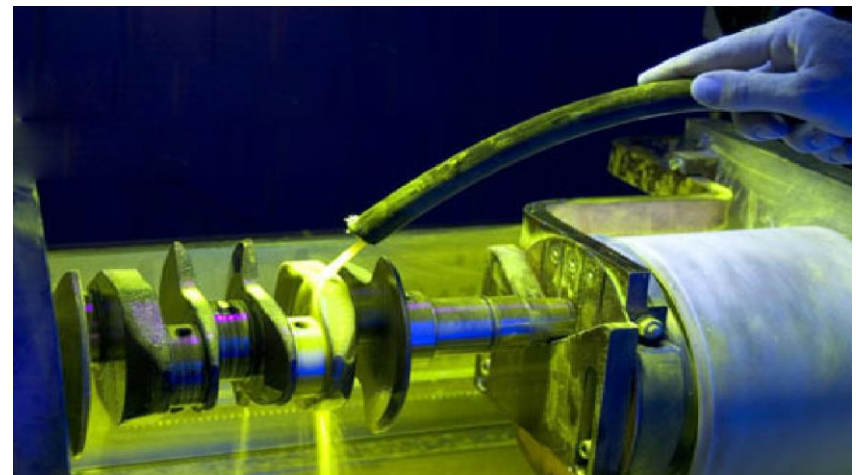
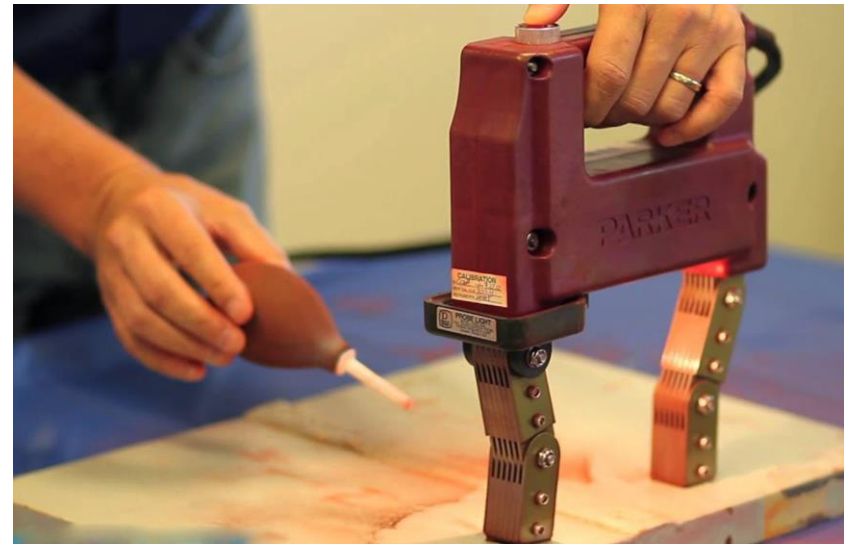
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## Magnetic Particle Testing Course Curriculum

# What is Magnetic Particle Testing?

Magnetic particle Inspection (MPI) is a non-destructive testing (NDT) process for detecting surface and shallow subsurface discontinuities in ferromagnetic materials such as iron, nickel, cobalt, and some of their alloys. Test part can be magnetized by direct or indirect magnetization. Direct magnetization occurs when the electric current is passed through the test object and a magnetic field is formed in the material. Indirect magnetization occurs when no electric current is passed through the test object, but a magnetic field is applied from an outside source. The magnetic lines of force are perpendicular to the direction of the electric current, which may be either alternating current (AC) or some form of direct current (DC) (rectified AC). The presence of a surface or subsurface discontinuity in the material allows the magnetic flux to leak, since air cannot support as much magnetic field per unit volume as metals. To identify a leak, ferrous particles, either dry or in a wet suspension, are applied to a part. These are attracted to an area of flux leakage and form what is known as an indication, which is evaluated to determine its nature, cause, and course of action, if any.

## About the course

### PCN Level 1 & 2

This course is designed to provide the participants, a better understanding about theory and application of MPI in welds, to train them and qualify them as PCN Level I or II in Magnetic Particle Testing.

### PCN Level 3

This guidance course is aimed at the PCN Level 3 requirements for Magnetic Testing 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 Days

Level 1	Level 2	Level 3
3 Days	2 Days	4 Days
Direct access to Level 2 or 3 requires the total days shown in table for Levels 1 and 2 or Levels 1, 2 and 3.		

## Experience

Level 1	Level 2	Level 3
15 Days	45 Days	240 Days
Note-1: For Level 2 certification, the intent is that work experience consists of period as a Level 1. If the individual is being qualified directly to Level 2, with no period at Level 1, the experience shall consist of the sum of the periods required for Level 1 and Level 2. No reduction in the period of experience shall be allowed. Note-2: for level 1 and 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 MT level I/II Certificate copy (If applicable)
- One govt approved identity card (example: Passport/voter ID /Aadhaar Card)

# Course Content

## PCN Level 1

- ❖ Basic of Magnetism
- ❖ Magnetization Techniques
- ❖ Inspection Mediums & Inspection Techniques
- ❖ Indication Classification
- ❖ Test Equipments and Accessories
- ❖ Demagnetization
- ❖ Types of Discontinuities.

## PCN Level 2

- ❖ Basics of NDT & Basic of Magnetism
- ❖ Magnetization Techniques
- ❖ Inspection Mediums & Inspection Techniques
- ❖ Indication Classification
- ❖ Test Equipments and Accessories
- ❖ Demagnetization
- ❖ Indication- interpretation and Recording
- ❖ Product technology- Discontinuities in Casting, Forging, Wrought & Forming process
- ❖ Understanding of codes
- ❖ Welding technology- major weld process SMAW, SAW, TIG, MIG, FCAW etc

# Learning Outcomes

## PCN Level 1

Successful candidate will be able to

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

## 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/e-certificate 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 theory, practical and NDT instruction writing element (only for level 2) 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.

## Supplementary Examination

- ❖ Candidates holding certification in one product sector who wish to add another single sector will be required to pass a further practical examination comprising the testing of 3 samples selected by the examiner as representative of the single sector sought.
- ❖ Candidates should note that this will result in 2 separate certificates being held and will need to be maintained separately.
- ❖ Candidates holding certification in one product sector who apply for certification in the multisector (all product sectors) will be required to pass a further practical examination comprising the testing of three samples selected by the examiner as representative of the additional sectors sought.
- ❖ Level two candidates attempting supplementary examination will not be required to produce a written instruction. Candidates who wish to add another category to their existing certification/scope will be required to pass a further practical exam testing samples within the existing sector selected from the new category/scope sought (i.e., portable or fixed)