

ADVANCED

NDT SERVICES LLP

a complete solutions for NDT





about us

We introduce our self- **ADVANCED NDT SERVICES LLP** is an independently owned and managed MANUFACTURING & NON-DESTRUCTIVE TESTING (NDT) INSPECTION SERVICES PROVIDING COMPANY based in Mumbai-India. Since 2019, Our team have many combined years of experience in the inspection and consultancy services of oil & gas, petrochemical and refinery installations, pressure vessels and storage tanks. Our testing and inspection services are available for projects worldwide.

We also manufacture various types of Calibration Block for TOFD, PAUT, Calibration Tubes for ECT, RFET, IRIS & ECT Probes, Ultrasonic Testing probes Wedges for Pipelines manual UT. (Customized Probe & wedges as per Customer's requirement), We deal with many NDT Equipment & Accessories and we also supply in-situ metallography kits, & Industrial products.



Our Services

We offer a broad range of Non-Destructive Testing and Inspection & In-situ Metallography Services, our highly skilled technicians are supported by the latest high-tech equipment which can be mobilized for work throughout the India and Overseas.

We are specialized in large scale shutdowns, outages & construction projects, where a full on-site inspection team are required. These teams will include full supervision and a host of inspection techniques and capabilities to fulfil the client's requirements.

Our Specialty in Seamless Pipe/Tubes Manual Ultrasonic Testing.

Invented customized wedges to detect the Transverse and longitudinal defects in the seamless pipes.

We have numerous Engineers are qualified by numerous certifications from CSWIP, AWS, PCN & ASNT.

Our Third-Party Inspector & Welding Inspectors can carry out onsite Inspection in various sectors.

Inspection Services & Sales

Advanced NDT	Conventional NDT
1. Eddy Current Testing-(ECT) 2. Remote Field Eddy Current Testing-(RFET) 3. Internal Rotary Inspection System-(IRIS) 4. Phased Array Ultrasonic Testing-(PAUT) 5. Time of Flight Diffraction-(TOFD) 6. Remote Visual Inspection/Boroscopy 7. Long Range Ultrasonic Testing-(LRUT) 8. Short Range Ultrasonic Testing-SRUT 9. Pulse Eddy Current Testing-(PECT)	1. Ultrasonic Flaw Detection 2. Ultrasonic Thickness Gauging 3. Magnetic Particle Testing 4. Dye Penetrant Testing 5. Hardness Testing 6. High Temperature Thickness Measurement 7. Coating Thickness Measurement 8. Visual Inspection Services 9. Post Weld Heat Treatment
Third Party Inspection	Metallography
1. Welding Engineer 2. QA/QC- Supervisors/ Engineers 3. Plant Inspectors	1. In Situ Metallography 2. Optical Emission Spectroscopy-OES 3. Positive Material Identification-PMI
NDT Products	Manufacturing
1. Ultrasonic Testing Accessories 2. All the types of NDT Products	1. Tubular Inspection Calibration Tubes. (ECT, RFT, IRIS, NFT) 2. Tubular Inspection Probes (Straight & Flexible – ECT, RFT, NFT)





MANUFACTURING & PRODUCTS



Ultrasonic Testing Probes & Wedges



Co-axial Cables



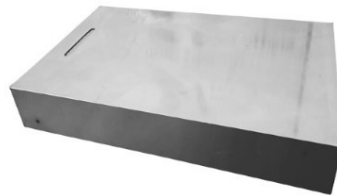
Standard Blocks -IIW-V1 & V2



Step Wedge Block



Notches Pipe Block



Calibration Block



Weld Specimen



ECT-- PROBE - Straight



ECT-RFT-NFT- Probe -Flexible



NFT-RFET-Probes

Make in India





CALIBRATION TUBES MANUFACTURING & PRODUCTS



ADVANCED NDT SERVICES LLP™ are Manufacturer of Various types of Calibration Tube & ECT Probes for tubular Inspection as per ASME Standards or equivalent or customized as per customer requirement.

Our Main Core manufacturing are ASME Standards Eddy Current Testing (ECT), Remote Field Testing (RFT) Standards, Near Field Testing (NFT), Custom Standards IRIS Standards, Calibration Tubes.

Our inventory contains ASME standards. Standards are maintained for most chillers and a large number of process heat exchangers. Current we have invented more than 30 different material specimens.

- Calibration standards may be fabricated with milling machine, lathe, or electrical discharge machine.
- Assorted alloys, diameters, wall thickness, finned, and prime surface are available.
- ECT, RFT, NFT, IRIS, and Flux Leakage standards are machined to order.
- Custom order standards will possibly ship with two (3) days if ordered and material on hand.
- Standards are maintained for most chillers and a large number of process heat exchangers.
- Calibration standards may be fabricated with milling machine, lathe, or electrical discharge machine (EDM).
- Eddy Current Testing (ECT) Remote Field Testing (RFT), Near Field Testing (NFT), IRIS, and Flux Leakage standards are machined to order.
- Custom order standards will possibly ship in two (3) days if ordered in the AM and material is on hand



If we don't have the material in stock, we can usually locate a source.

All measuring devices are Certified.

CALIBRATION STANDARDS

ASME Standards • Remote Field Testing (RFT) Standards • Near Field Testing (NFT) • Custom Standards • IRIS Standards • Flux Leakage Standards • Spiral Groove Standards • • NFT Standards • NFA Standards • MFL Standards

- Current inventory contains more than 30 different calibration standards from. 375" up to 3.0". A large assortment of alloys is available. Prime surface and low fin (integral) are included.

Our inventory contains ASME standards. ASME standards are our specialty.



CALIBRATION TUBES for ECT, ECA, RFET, MFL, IRIS, NFT Also, Exchanger for Tubular Inspection & Training Purposes.



Watch our Video Calibration Tubes Supplied on



YouTube <https://www.youtube.com/channel/UCR1V70Hu2Vu9yDjUKx2fm9g>

Make in India



POST WELD HEAT TREATMENT Control Panel

PWHT Control Panel (High Voltage)

Product Data Sheet

Model: HVP33



PWHT Control Panel (High Voltage)

Product Data Sheet

Model: HVP33



present an innovative localized Low Voltage Resistant Heating Equipment **LV75**.
It's our attempt to bring quality products for all of its respected customers. Due to this, our relentless efforts have always been rewarded in the form of brand loyalty.

The **LV75** Equipment brings you advanced capabilities to decrease the amount of time you spend on heating, and increase productivity in your operations. Offering a wide spectrum of features designed to make inspections easier, **LV75** is Rugged and versatile so you can speed heating time and maximize your investment.

Benefits of LV75

1. 12 months warranty on Step down transformers
2. Temperature controlled and guided by PID
3. Uniform heating process
4. Safe environment
5. Industrial body robust can be used onsite
6. Reduce Heating time with uniform heating
7. Temperature ranges up to +1200 degree



We assure you that you will be satisfied with its results and humbly request you to try this at your premises.
We are hoping for a better business deal with you should you need any additional support on our product line,

Please feel free to contact us

Portable In-Situ Metallography KIT

PORTABLE METALLURGICAL MICROSCOPE (MODEL HAND-O-SCOPE)



- 1. Magnification 50x to 600x. (Leather Carrying Case)**
Body: Cylindrical, complete with beam splitter and condenser lenses for illuminator.
- 2. Illuminator** Bright field, 6V- 20W, Halogen Lamp having aperture diaphragm, filter slot, bulb centering mechanism, along with solid state light intensity varrier, for use on 220/230 Volts, AC mains or LED and battery backup.
- 3. Filters** Blue and Green in metal mount.

- 4. Eyepieces:** WF10x and WF15x.
- 5. Objectives** M4x / M5x, M10x, M20x and M40X glare free, anti-reflection coated, flat field achromatic.
- 6. Guard** Metallic, to protect the Objective, for flat as well as curved surface, interchangeable to suit specific requirement
- 7. Magnetic** For clamping on flat or curved ferro magnetic material, complete with screwed type counter weight.

Along with Calibration Certificate

MICROSTRUCTURE PREPARATION UNIT (Manual).



- 1. Polisher:** Hand held having provision for adjustment of speed to suit specific requirement, complete with collate on which a Flexible Shaft having a collate fitted at 90° angle at one end, to which the Grinding wheels, Mops and Discs are fitted.
- 2. Wheels** Suitable grit grinding wheels are provided that can be fitted to the collate of the Polisher, and put to use. (2 Nos)
- 3. Mops** Specially designed of 60, 80 and 120 Grit (4 Nos. of each).

- 4. Lapping Disc** 30mm dia. specially designed, soft Rubber with provision for fitting to the collate of the Flexible shaft, on which the Paper/Cloth are pasted, and put to use. (6 Pieces)
- 5. Paper** 32mm dia. PSA backed paper 120, 220, 320, 400, 600, 800, 1000, 1200 (100 Each).
- 6. Cloth** 32mm dia. adhesive backed PC100, to be used for Alumina/Diamond Polishing. (100 Pieces)
- 7. Diamond-Paste** 5-gram Syringe of 1 Micron along with 200 ml Aerosol can Fluid (1 Each).
- 8. Replica:** Replica Kit comprising of Replicating Tape of 150 x 100 mm x 20 Nos, along with Glass Slide, Marker Pen, Double sided Tape and Tape.

UNIVERSAL ELECTROLYTIC POLISHER (Portable).



SALIENT FEATURES:

It is portable and can be used in Laboratory as well as in the Field.

- (a)** Designed for rugged use in the Industrial atmosphere.
- (b)** No spillage of Chemicals and thus maximum yield of Electrolyte.
- (c)** Microstructure is prepared in single stage operation. Automatic change mode from polishing to etching for any metals.
- (d)** The process is skill free, and single man can handle the operation, as anode connection is in-built in pen type Probe. Pen type Probe with Fluid circulation is only required.
- (e)** The operation is quick reliable and produce TRUE MICROSTRUCTURE, on variety of Metals and

Alloys.

- (f)** The operation is quick reliable and produce TRUE MICROSTRUCTURE, on variety of Metals and Alloys.
- (g)** Overhead position will also be done vertical and other difficult position is possible to electro polish for microstructure preparation.
- (h)** Variable pump speed to overcome pitting problem commonly observed in Electrolytic polishing.
- (i)** To conduct ASTM practice A-262 "A" by NDT, to certify the quality of material

INVERTED METALLURGICAL MICROSCOPE



Technical Parameter: Model AMM A02 Eyepiece WF10x/Ø18mm plan eyepiece

Objective 10X/0.25, 20X/0.40, 50X/0.65, 100X/0.80 achromatic objective (Optional) Total magnification 100X, 200X, 500X, 1000X Head Hinge type 45 degree inclined Nosepiece / Turret Four hole (inward ball positioning) / Five hole for opt purchase Focus Fine and coarse coaxial, with lock function, fine precision: 2µm Stage Size: 150 x 160 mm / 180 x 150mm, moving range: 15x15mm / Ø12 metal stage Illumination : 6V30W halogen bulb, brightness is adjustment Pupil distance: 53-75mm With aperture diaphragm and centering field diaphragm / Polarizing set Analyser can be rotatable and both polarizer and analyser can be move light path (Pull plate type) Filter Blue, green, yellow Operation Environment : Humidity: 80% for 31°C (88°F)

THIRD PARTY INSPECTION & ADVANCED NDT SERVICES



We are providing Third-Party/ Vendor Inspection Services and expediting services (Vendor Surveillance) on-site, offshore and at vendor facilities during manufacturing, Welding, coating, fabrication, installation and operational testing.

These services cover Fixed Equipment, Rotating Equipment, Instruments, (Skid Mounted Units), OCTG Products and Drilling and Completion Equipment, etc.

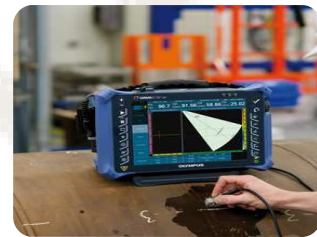
The Third-Party Inspection, i.e. Vendor Inspection Services and Commodity Inspection are used by buyers to be sure the equipment and material they have ordered have the same quality and quantity which are stated in their purchase orders.

PHASED ARRAY ULTRASONIC TESTING (PAUT)

Phased Array Ultrasonic Testing (PAUT) used for flaw detection, sizing, and imaging. PAUT technology is the ability to modify electronically the acoustic probe characteristics. The Phased Array Ultrasonic Testing (PAUT) and Time of Flight Diffraction (TOFD) technologies have made rapid changes in inspection and reliability in various industries.

These ultrasonic testing techniques are rapidly replacing conventional radiography. A major advantage in replacing RT with PAUT & TOFD is reducing the radiation risks apart from increased probability of detection (POD), production rate and better sizing of the discontinuities.)

Phased Array Ultrasonic Boiler Tube Inspection applications have become almost the norm in many areas of industry today. The benefits of this non-destructive testing technology being the ability to store a full inspection record. The visual display of combined A-Scan, B-Scan, C-Scan and S-Scan gives a simplified understanding of flaw type and associated dimensions.



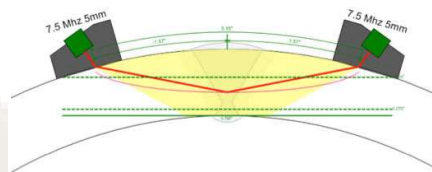
Phased Array advanced ultrasonic' s has the advantage over conventional manual ultrasonic NDT techniques because it is possible to inspect large volumes of welds and material from a fixed location. This allows otherwise difficult geometries to be inspected. Thus, the technique can be utilized for a very large variation of applications from standard butt welds in vessels and piping to more complex sweep lets, flanges, railway tracks, nozzles, turbine blades and many more.

TIME-OF-FLIGHT-DIFFRACTION (TOFD)



Time-of-flight-diffraction (TOFD) is an accurate ultrasonic method for the detection and sizing of flaws in new construction and in-service welds and components, and is also used for defect monitoring on in-service welds and components.

TOFD Technique



Schematic Drawing of TOFD Technique

TOFD employs two longitudinal waves (L-wave) angle beam transducers arranged diametrically on opposite sides straddling the weld or base material under examination. One transducer act as a transmitter of ultrasonic energy, while the other receives the returning signals. The transducer, pulsar, and amplifier characteristics are selected to generate a broad distribution of energy allowing for full weld coverage with single scans. An electronic encoder records the probes position along the weld during the scan which enables a real time display and recording of the digital images.

Defect detection is identified when there is a diffraction of the ultrasonic wave from the tip(s) of the defect(s). Measurement of the time-of-flight of the pulse allows the depth of a defect tip to be calculated using the TOFD technique. This allows the NDT technician to size the indications to determine acceptance or rejection per the applicable code and/or client specification.

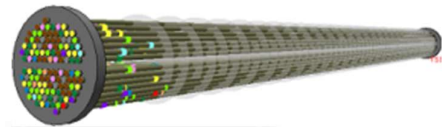
For specific applications and limitations, please contact our Technical Team @ info@antserv.com

TUBULAR INSPECTION SERVICES (IRIS, RFET, ECT, NFL)

Tube Inspections have been carried out by ADVANCED NDT SERVICES LLP personnel for the, Petrochemical and Power Generation.

We specialize in Eddy Current and Ultrasonic techniques for both ferrous and non-ferrous tubing. Our line of techniques includes:

- Remote Field Technology (RFT- Ferrous Tubing);
- Near Field Testing (NFT – Fin Fans)
- Eddy Current Testing (ECT- Non-ferrous Tubing);
- Internal Rotary Inspection System (IRIS-Ultrasonic Testing all materials).
- Surface Eddy Current



HEAT EXCHANGER INSPECTION

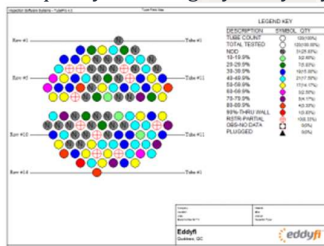
Scheduled shutdowns present an opportunity for planned inspection programs which enable continued operation of critical plant equipment by minimizing unexpected failures. Prior to deciding which techniques are most suitable for your needs the following items should be considered: number of tubes to be inspected; cleanliness of tubes and time available for inspection.

Eddy Current Testing (ECT): This is the most common technique utilized for the inspection of non-ferrous tubing, the technology is very reliable and can determine tube condition in relation to general wall reduction and the presence of local defects such as pitting and cracking with a high probability of detection when using the correct probes. Standard inspection technique for smooth tubing utilizes two separate channels for data acquisition; Absolute (wall reduction) and Differential (local defects). When inspecting finned tubing (chillers) an A/C probe is used to reduce noise associated with fins. Detailed analysis can be performed using software tools which can determine location of defects in relation to ID/OD of tube wall by Phase Analysis from depth curves which are generated from calibration standard. Software tools also allowing for mixing of baffle signature to evaluate flaws hidden behind baffle supports

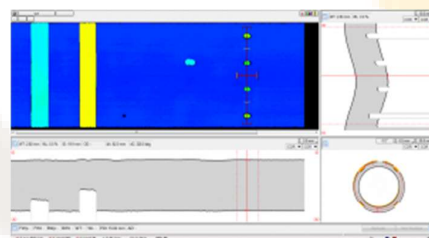
Remote Field Testing (RFT): This is a fast-reliable screening tool for the condition assessment of ferrous tubing (carbon steel, ferritic stainless steel and Duplex). Works typically at very low frequencies (100 Hz to 1 kHz) and very high signal gains (> 80 dB) can inspect up to 12 mm (1/2 in.) of carbon steel pipe. Typically, two channels are used for examination, Absolute for wall thinning and Differential for localized defects RFT is very good at wall thinning measurement but less performing to pitting (as compared to ECT). To improve inspection results it is always advised to perform cleaning of the internal bore of tubes with some form of water jet lancing tool.

IRIS – Internal Rotary Inspection System: This is an ultrasonic technique for condition assessment of tubing of all materials with a tube wall thickness greater than 1mm. The technology can precisely measure remaining wall thickness from corrosion, erosion, pitting and wear associated with baffle supports. However, it requires a very high standard of cleaning and is a much slower technique than the ECT or RFT test methods. It is not possible to detect cracking with IRIS. The system uses a rotating turbine head with a transducer sending a single into tube wall via an angular mirror. The image displayed can be seen as a B-Scan (Cross-sectional view) and also in a C-Scan (Development of Longitudinal axis of tube).

Allow the experts at ADVANCED NDT SERVICES LLP (ANS) develop an inspection solution for your company, we can provide the Answer to obtaining the information you require to continue the safe operation of your plant equipment. Our team has over 15 years' experience in delivering advanced ultrasonic technology in the field, prior to their acceptance into construction codes as standard practices. We aim for quality and integrity every day.



Detailed Reports



IRIS Technique



Our Team During Inspection

REMOTE VISUAL INSPECTION (Borescope/Videoscope)



Borescope are used for visual inspection work where the area to be inspected is inaccessible by other means. Similar devices for use inside the human body are referred to as endoscopes.

Borescope are mostly used in non-destructive testing techniques for recognizing defects or imperfections



SRUT – Short Range Ultrasonic Testing



SRUT – Short Range Ultrasonic: we provide Short Range Ultrasonic Testing (SRUT) which can be used for tank floor inspection vessel inspection for detection of corrosion CUI detection for piping or corrosion on under pipe support. Guided Wave is a technique which uses low frequency sound waves to flood thin wall material and then reflect back at interfaces such as cracking or corrosion/pitting. The guided wave technique is to be used as a screening tool only as remaining wall thickness measurements cannot be achieved. However, reflection distance can be measured with precise accuracy.

LRUT-Long-Range Ultrasonic Testing



LRUT – Long Range Ultrasonic Testing: we offer Long Range Ultrasonic Testing – LRUT has been employed for screening piping systems above ground as a result of the high production coverage rates as opposed to manual techniques, but it still remains the only reliable technique for screening pipe systems underground or underwater where access is often limited or very costly to gain access for manual contact techniques. The technology continues to be improved and the number of applications utilizing this system has greatly expanded.

LRUT -Long Range UT

LRUT – Long Range Ultrasonic Testing: the technology operates by placement of an array of probes placed in a belt, circumferentially wrapped around the pipe being inspected. The system then generates ultrasonic guided waves longitudinally down the length of pipe, distance covered by the ultrasonic waves is dependent on a number of factors related to pipe coating, branch connections, fittings and above ground or buried locations. The system can inspect both directions from each inspection location and therefore can maximise production.

PULSED EDDY CURRENT TESTING (PECT)



Pulsed Eddy Current Testing (PECT) is an inspection technique used for corrosion under insulation (CUI) screening on carbon steel structures as pipes, vessels, tanks and spherical tank legs without the need of contact with the steel surface. PECT is a static technique able to measure spot percentage variations in steel thickness through any non-conductive and non-magnetic material between the sensor and steel surface such as air, insulation material, concrete, plastics, coatings, paint, sea water, marine growth, deposits, oil, etc.

PECT is a comparative technique where the percentage variations measured on the specimen are compared with a calibration value which is always assumed to be the full wall thickness.

IN-SITU METALLOGRAPHY

Field metallographic procedures are performed “on location” or in the “field” on components that are too large to bring to the metallographic laboratory. Generally, these components are still being used in service or must be returned to service and cannot be destructively sectioned or physically altered. Field Metallography is also called **in situ Metallography** and it is sometimes called **non-destructive Metallography**.



The major application areas are power plants, petroleum and natural gas pipelines, and welding quality inspection for metal constructions...etc.

In situ metallographic work must be performed on-site without damaging the components. This means that portable metallographic instruments for **grinding, polishing, and etching procedures** are required.

We also Sell: In - situ Metallography Kits & Consumables

POSITIVE MATERIAL IDENTIFICATION (PMI)

Positive Material Identification (PMI) also referred as Material Verification, is an NDT method used to identify metal alloy element compositions with a portable x-ray fluorescence alloy analyser.



PMI is performed on ferrous and non-ferrous metallic materials including welds, weld overlays, castings, forgings, valves and components, pipe, fittings, machined parts, pressure vessels, structural steel, and on components requiring certification to NACE MR0175.

Surface preparation and cleanliness are essential when performing PMI, as the depth of penetration for element analysis is minimal. Analysers have a margin of error for element composition in low percentages that may vary depending on the activity of the equipment's radioactive source. PMI analysers are limited to identifying only those alloys that are listed in

the manufacturer's analyser library, and should not be performed on material in excess of 200°F unless specialized equipment and techniques are used. X-ray fluorescence analysers are unable to detect carbon, sulphur and phosphorus.

OPTICAL EMISSION SPECTROSCOPY

Portable optical emission spectroscopy (OES), also known as Spark Testing, is a method of positive material identification (PMI).



History shows numerous industrial incidents have occurred as a result of the inadvertent substitution of materials in piping systems, fittings, flanges, gaskets, bolting materials and other components. OES techniques can be implemented as a stand-alone program or as part of an API 578 Program to identify potentially rogue materials in high-risk systems to prevent catastrophic failures

What is OES ?

OES involves applying electrical energy in the form of an arc generated between the electrode and metal sample in an argon atmosphere, where vaporized atoms are brought to a high energy state and light is emitted. The excited atoms and ions have a characteristic emission spectral line for each element. The light channels through photo multiplying detectors which measure the presence and intensity of each element of the spectrum to perform a quantitative analysis of the elements. A wide range of elements can

be detected using this method of chemical analysis

Post Weld Heat Treatment



Welding is an essential part of operating and maintaining assets in the petroleum (upstream, midstream, downstream) and chemical processing industries. While it has many useful applications, the welding process can inadvertently weaken equipment by imparting residual stresses into a material, leading to reduced material properties.

In order to ensure the material strength of a part is retained after welding, a process known as Post Weld Heat Treatment (PWHT) is regularly performed. PWHT can be used to reduce residual stresses, as a method of hardness control, or even to enhance material strength.

CONVENTIONAL - NDT



OUR TRAINING PROGRAMME



Non-Destructive Testing (NDT), in some circles also referred to as Non-Destructive Evaluation (NDE) is an exciting and challenging career. People who choose this field understand there is a great deal of responsibility as the inspections/testing they perform directly affects the safety of others and the environment in which we live.

People in this ever growing and proactive profession work in a variety of areas and industries. You could be inspecting parts in aerospace, ground transportation, pipelines, chemical and power plants, bridges, roadways – the list goes on.

Do your Professional skills make you stand out



The use of NDT and its technology continues to grow with the desire for heightened safety and environmental awareness in concert with the demands from consumers for high quality products. Allow us to prepare you for your NDT certification in accordance with the American Society for Non-destructive Testing requirements.

ARE YOU GEARING UP TO GET YOUR NDT CERTIFICATION?

These Non-destructive Testing (NDT) courses are offered by ADVANCED NDT SERVICES. The courses are designed to prepare students to obtain their NDT certification in accordance with American Society for Non-destructive Testing (ASNT) requirements. The courses provide the classroom training required for certification. Students must also meet other ASNT requirements for practical work experience.

We also provide Practical Training for PAUT, TOFD, ECT, RFET, IRIS UT-Plate, Pipes, MT & PT
For maximum flexibility, courses are offered in the evening, while others are offered in daytime hours

We look forward to welcome your enquiries to serve you the best!



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