

Course Brochure

# Professional Diploma in Marine & Industrial Inspection

CERTIFIED

**Professional Course  
Certification**



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# Professional Diploma in Marine & Industrial Inspection - PDMII

This course caters to marine and other heavy industries.

Despite all the talk about renewable and non-conventional energy sources, global studies show that fossil fuels such as petroleum products, coal and natural gas will continue to be one of the largest industries in India and the world for the next 50 years. As a result, this sector is still going to continue as one of the leading economic drivers and job providers for skilled youngsters.

Likewise, 90% of all resources and products in this world are transported and distributed across the seas through ships and other marine vessels. The maritime industry consists of almost everything connected to the sea or waterways throughout the world, especially concerning navigation, shipping, and marine engineering. This is a multi-billion dollar industry that has a direct impact on much of our everyday lives.

A marine technical inspector plays a major role in ship-building, ship repairing, and ship conversion projects. From the initial procurement process to the final launching of the ships, the marine technical inspector is the ultimate authority to ensure that the job done is as per the defined codes and quality standards.

The Professional Diploma in Marine & Industrial Inspection course is primarily designed to support and fast-track the skill development of those candidates aspiring to become professionals in the inspection of infrastructure quality in both of the aforementioned industries.

Its highly relevant and practical-oriented contents are intended to prepare and qualify those who are planning to become Technicians, Supervisors, Inspectors, Designers, Engineers, or Managers in Quality Assurance and Quality Control in the design, construction, and maintenance of marine and general industrial infrastructure, with a special emphasis on the oil and gas sector.

However, the universal know-how that this course provides to a candidate can also be applied across a range of other industries in such diverse fields as railways, automotive, aviation, aerospace, power plants, public infrastructure construction, manufacturing, nuclear plants, and fabrication shops, just to name a few.

Even though there are many career paths available in these industries, becoming a marine and industrial inspection professional is one of the least expensive, quickest, and most chosen options available to fresh as well as experienced candidates.

## Program Outcomes

- An overall program certificate from Bureau Veritas Professional Certification
- 6 additional certificates as per American Society of Non Destructive Testing (ASNT) norms for each technique in Non Destructive Testing (NDT) methods
- Enormous amount of practical knowledge
- Great build-up of confidence to face an interview board

## What do you achieve from this course?

Even if you are a fresh candidate, this course will give you the confidence, in-depth knowledge and hands-on skill set that helps you to be identified as an experienced professional to the interview board.

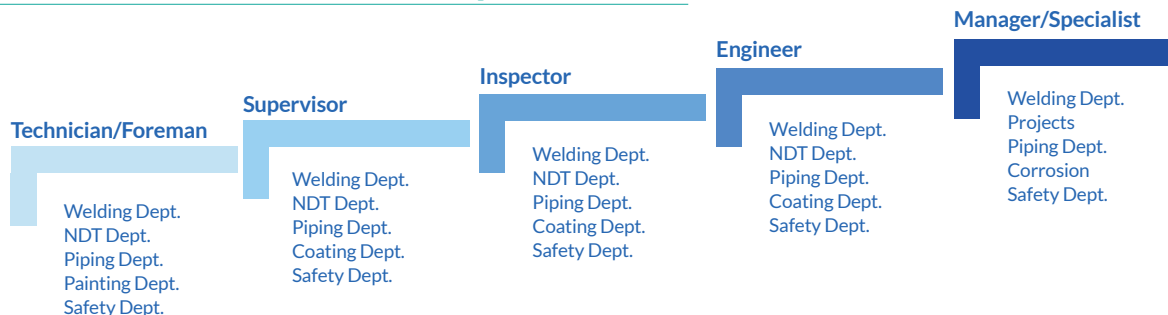
## What makes this course unique?

- Qualified, certified and experienced faculty members who are currently active in the inspection field
- In-depth knowledge imparted with many hands-on practical classes.
- On-site work and practical sessions at our own factories and projects of our clients
- State of the art climate controlled classrooms and labs.
- Vast collection of equipment, gauges, instruments and specimens in our labs.
- Multiple certifications including that for Non Destructive Testing(NDT) techniques.
- Interview training and placement assistance.

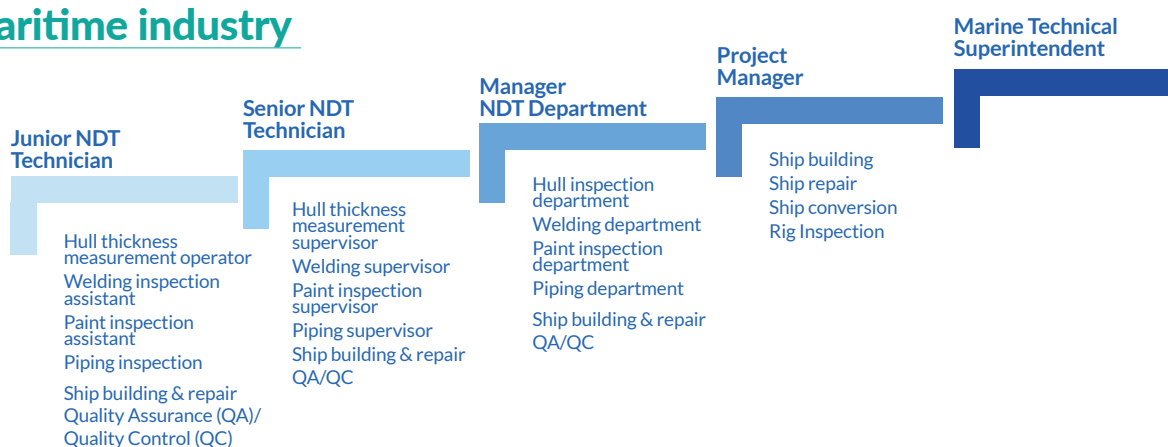


# Career Pathways for PDMII Students

## In petrochemical & other heavy industries



## In maritime industry



CERTIFIED

**Professional Course  
Certification**



**SHAPING A WORLD OF  
TRUST BY ENSURING  
RESPONSIBLE PROGRESS**

## Course Certification

**BUREAU VERITAS** (based at Neuilly, France) - the world leader in testing, inspection and certification - has conducted an assessment of this course to evaluate its content and management system to assure the authenticity and quality of this certification. Therefore it is highly respected in the industry, and graduates are in high demand due to their expertise, skills and qualification. The course covers various topics including quality assurance, quality control & safety. It is delivered through a combination of classroom lectures, practical training and on site projects. Upon completion of the course it is ensured that students will have the necessary knowledge and skills to conduct inspections, audits and surveys as well as to provide expert advice on compliance, safety and quality issues in the marine and industrial sectors.

## Placement Assistance

Our parent organization, Blastline group of companies founded 3 decades ago, with a current global turn over of around 300 crores, enjoys a large clientele in the heavy industry sectors in India and abroad.

Similarly, our associate company Marino Navale Consultancy Pvt. Ltd., also have hundreds of clients across India and abroad.

The combined backing of both the companies is quite formidable and it certainly helps us in placing most of our students and provide an effective launch pad for their inspection careers.



**MARINO NAVALE**  
**CONSULTANCY PVT. LTD.**

# About Blastline India



Blastline India Pvt. Ltd., consists of a group of business entities catering to every need of the anti-corrosion industry in India. We also operate in Saudi Arabia, Kuwait, Qatar, Bahrain, UAE, UK and USA through factories and offices that are associated as our sister concerns.

Led by a dynamic management team, Blastline India Pvt. Ltd., has been able to adapt to the changing needs of the industry, and has forayed into all related niche areas like production and export of machines, accessories, abrasives, and other specialized equipment and instruments used in the anti-corrosion industry. It is also involved in major contract works in India and abroad as well as imports, exports and distribution of high quality coating equipments, systems, and instruments.

# About Blastline Institute



The Blastline Institute was originally established in 2006 to mould professionals in industrial-grade anti-corrosion applications. However, its gamut of training programs was later expanded to include international certifications in Welding and Coating Inspection as well as Non-Destructive Testing (NDT) and other courses in the oil and gas sector.

We have corporate partnerships, training affiliations or grading compatibility with renowned international organizations such as:



The Welding Institute,  
Cambridge, UK



American Society for  
Non-Destructive Testing, USA



Association for Materials  
Protection and Performance, USA

Our Institute is also an authorized Training and Examination Center in the "Painting and Coating" skill sector affiliated to Paints and Coatings Skill Council (PCSC) - a body constituted by the Government of India under the Ministry of Skill Development and Entrepreneurship.

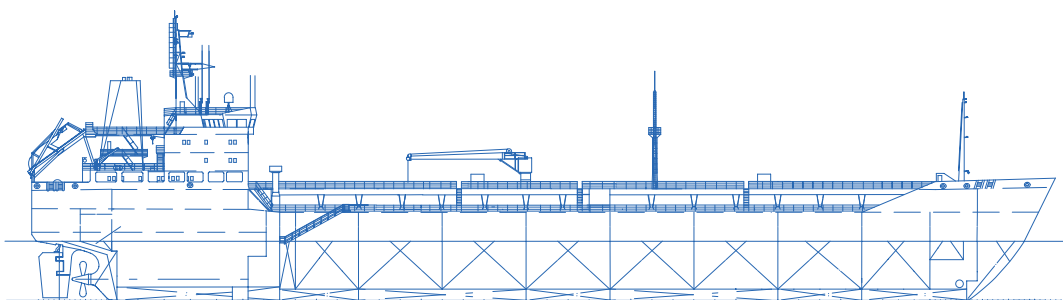


# About Marino Navale



Marino Navale was founded in 2008 by professionals who have been in the global marine inspection industry for many year. The company is currently active as a marine designing consultancy and technical services provider specialized in UT gauging, non destructive testing, rope access solutions, project management in India and abroad.

Our mission is to provide clients with specialized technical & consulting services in the marine and offshore industries, from planning to the completion of solutions. We apply advanced methods and technologies with a highly skilled professional team of dedicated Engineers, Naval Architects, Trainers and Rope Access Technicians. Hands on practical experience of more than 25 years makes our team members exceptional in their services.





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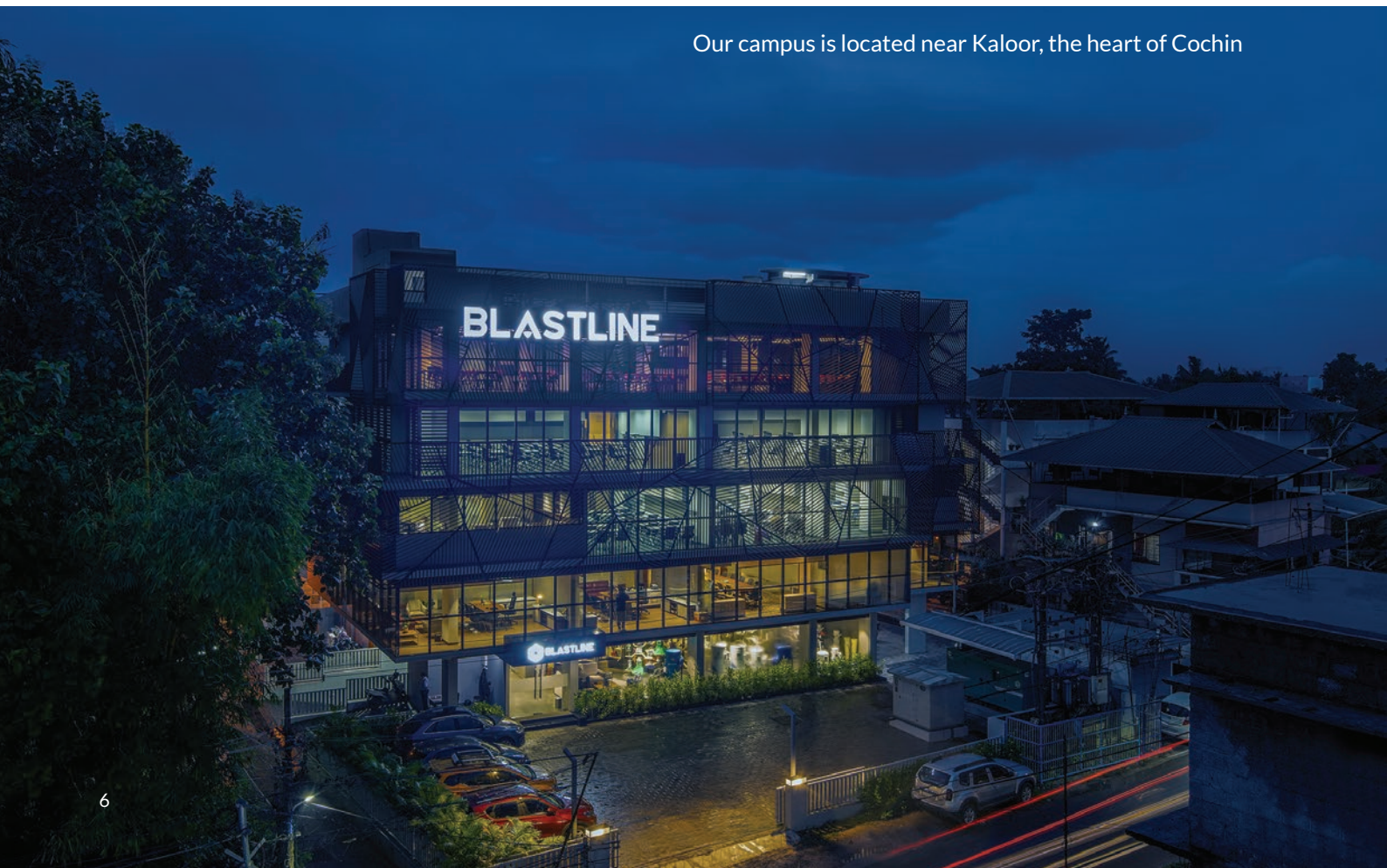
Joint Venture of  
**Blastline Institute & Marino Navale**

Blastline Institute, with a reputation of 14 years, having delivered world-class training and certifications like Certification Scheme for Personnel (CSWIP - for welding Inspector) & British Gas Approval Scheme (BGAS for coating inspector) as the authorized training representative of world renowned organization such as The Welding Institute (TWI), Cambridge, has now joined hands with Marino Navale Consultancy Pvt. Ltd., a company having vast experience in the field of marine inspection across India and overseas.

The joint venture came about as a result of identifying a huge gap between the demand and supply of well trained inspection personnel in the marine industry. As a result, our students stand to benefit from both the training expertise and placement history of Blastline Institute in heavy industries as well as the new placement potential generated by Marino Navale Consultancy Pvt. Ltd., in the marine field.



Our campus is located near Kaloor, the heart of Cochin





# Course Overview

This course is designed in a modular format with credit points granted at completion of each stage and the candidate will be expected to gain a total of 180 credits before he could be certified as a full-fledged QA/QC Professional Diploma holder. To attain the listed credit points, the student will have to score minimum passmark in each of those modules.

Module No	Module Description*	Total Training Days***	Credit Points
<b>General Quality Assurance/Quality Control (QA/QC) Modules</b>			
1	Introduction to Heavy Industries	4	7
2	Welding and Piping Inspection and Documentation	14	16
3	Painting Inspection and Documentation	8	10
4	Welding Procedure Specification(WPS)/ Welding Procedure Qualification Record (WPQR)	4	10
5	Isometric Drawings	10	10
<b>Non Destructive Testing (NDT) Modules</b>			
6	Non Destructive Testing (NDT)		
6A	Visual Testing (VT)	3	7
6B	Dye Penetrant Testing (PT)	3	8
6C	Magnetic Particle Testing (MT)	3	8
6D	Ultrasonic Testing (UT)	4	8
6E	Radiographic Testing (RT) & Radiographic Test Film Interpretation (RTFI)	7	10
7	Advanced NDT Methods	1	4
<b>Marine Modules</b>			
8	Introduction to Maritime Industry	3	10
9	Shipbuilding, repair, conversion standards, classification societies and various rules	13	15
10	Marine structures, drawings familiarization and Computer Aided Drawing (CAD)	8	18
11	Thickness measurements for ship fitness compliance	13	18
12	Marine NDT and Welding Inspection	7	9
13	Other Marine Specialized Inspections	4	7
14	Marine and Offshore Safety	4	7
15	Involvement in projects & On-site Performance	6	18
15A	Days dedicated for Assessments + Study Break	11	Nil
15B	Placement Grooming & Orientation	-	Nil
<b>Total</b>		130	200

\* Some modules are also available as a separate certified courses (Terms and Conditions apply).

\*\* Practical will include visits to our own factory shop floors and mini ship repair yards

\*\*\* Including weekend holidays the whole course will last for 6 calendar months.

## Course Duration

6 Calendar Months

## Eligibility Criteria

- Diploma or B. Tech with at least one mechanical engineering subject from a recognized university/board

Accommodation: Institute can assist you in finding suitable accommodation near the campus.



# General QA/QC Modules

## Introduction to Heavy Industries

### Module 1

#### Course Contents:

- Introduction to Refineries and Power Plants
- Introduction to Piping Structures, Pressure Vessels, Storage Tanks
- Basics of Static and Rotary Equipments
- Welding and Cutting Process
- Metallurgy
- Heat Treatments
- Duties of Welding Inspector
- Pressure Testing Equipments
- Corrosion and Painting
- Site Safety and Site Auditing
- Destructive Testing
- Reference Codes and Standards
- Interview Facing Skills

## Welding and Piping Inspection & Documentation

### Module 2

#### Course Contents:

- Preparation of Test Package
- How to Read P & ID and Isometric Drawings
- Review of Test Package
- Preparation of QC Documents
- Preparation of Piping Punch List After Line Check
- Preparation of Reinstatement Reports
- Preparation of Inspection Test Plan (ITP)
- Review of Specification (Reference Code: American Society of Mechanical Engineers - ASME B31.3)
- Review of Welding Procedure Specification (WPS) (ASME Section IX)
- Piping Material Classification
- Fabrication Procedure
- Flange Tightening Procedure
- Post Weld Heat Treatment Procedure
- Pressure Test Procedure
- How to Check Welding Parameters (Current, Voltage, Travel Speed, Heat Input)

## Painting Inspection & Documentation

### Module 3

#### Course Contents:

- Course Contents:
- Review of Standards
- Specification Review, Product Data Sheet & Safety Data Sheet
- Practical (Dry Film Thickness Measurement - Electromagnetic, Banana Gauge, Eddy Current, Pig, Ultrasonic Thickness (UT), Surface Profile)
- Measurement - Replica Tape, Surface Profile Gauge, Electronic Profile Gauge)
- Salt Analysis - Bresle Test, Sleeve Test, Chloride/Sulfate/Nitrate (CSN) Test
- pH Test - pH Paper, Electronic pH Meter

# Welding Procedure Specification/ Welding Procedure Qualification Record

## Module 4

The Welding Procedure Specification (WPS) is a written document that provides direction to the welder or welding operator for making production welds in accordance with certain code requirements.

The purpose of the qualification of a WPS is to determine that the weldments proposed for a given construction project are capable of providing the required properties for their intended application.

Welding procedure qualification establishes the properties of the weldments, not the skill of the welder or welding operator. The Welding Procedure Qualification Record (WPQR) documents are what occurred while welding the test sample, and the test results of the same, which were made as per the WPS explained above.



In performance qualification, the basic criterion established for welder qualification is to determine the welder's ability to deposit sound weld. The purpose of the performance qualification test for the welding operator is to determine the welding operator's ability to operate the welding equipment.

This course trains a student on how to draw up a WPS document for a given project, as well as methods of evaluation, and documentation (WPQR) for approval of a weld sample (coupon) created based on the given WPS.

# General Piping & Isometric Drawings

## Module 5

Piping drawings are basically the schematic representations that define functional relationships in a piping or pipeline system. For designing process or power piping, mostly four types of piping drawings are developed:

### 1. General Arrangement Drawing (GAD)

General Arrangement drawings are produced for specific mechanical equipment and it presents all major dimensions in two-dimensional views that show a plan(top) with elevations(side) and sectional drawings with piping dimensions and details including line numbers, size, specification, the direction of flow, etc.

### 2. Process Flow Diagrams (PFD)

A PFD is an un-scaled drawing or schematic which describes the process of transferring fluids inside the piping.

### 3. Piping and Instrumentation Diagram (P & ID)

It is a single line schematic drawing that includes all equipment instruments and controls, major valves and line sizes with pipe specifications. It is the first important document that controls the activity of all other related



engineering groups.

### 4. Plot Plan Layout

A plot plan layout is produced by the piping designer which shows schematic of the whole site with boundaries, roads, buildings, plant areas, equipment layouts, utility runs and other constructions of the existing project etc. at a properly defined scale. So it gives an overview of the entire plant.



# Non Destructive Testing

## NDT - Modules

NDT consists of a number of non-invasive techniques to determine the integrity of a material, component or a structure or quantitatively measure some characteristic of an object.

Simply put, it is “testing without doing harm to the object being tested”. To name a few typical applications of NDT: Flaw detection; leak detection; location determination; dimensional measurements; structural and micro-structure characterization; estimation of mechanical & physical properties; stress and dynamic response measurements; material sorting, etc.



### The American Society for Nondestructive Testing (ASNT)

ASNT was the pioneer in the field of training and certification for NDT personnel, right from the early days of the industry. Blastline Institute is a corporate partner of ASNT with the Membership No: 187973.

Among various certification levels of ASNT, the most sought-after one is ASNT Level 2 which enables a person to set up and calibrate the testing equipment, conduct the inspection according to codes and standards, and compile work instructions for a team of technicians. They are also authorized to report, interpret, evaluate and document testing results. They can also supervise and train Level 1 technicians. In addition to testing methods, they will be familiar with applicable codes and standards and will have some knowledge of the manufacture and service of tested products.

Blastline Institute follows the NDT Level-2 Training in accordance with SNT-TC-1A standards and practices published by ASNT.

Some of the most popular testing methods are:

- **Visual Testing**
- **Dye Penetrant Testing**
- **Magnetic Particle Testing**
- **Ultrasonic Testing**
- **Radiographic Testing**

Successful and consistent application of NDT techniques depends heavily on appropriate training, experience and integrity. Personnel involved in the application of industrial NDT methods and interpretation of results should be certified, and in some industrial sectors, certification is enforced by law or by applied codes and standards.

**All NDT modules consist of theory & practical.**

## Visual Testing (VT)

### Module 6A

Visual Testing (or Inspection) course is ideal for inspection engineers, technicians, NDT operators or surveyors who require knowledge of scientific visual inspection techniques, an understanding of likely problem areas, and an appreciation of this inspection methodology. This course outlines the factors influencing visual inspection, explains the importance of visual inspection in NDT among NDT methods, and enables candidates to utilize a range of visual inspection equipment.

## Dye Penetrant Testing (PT)

### Module 6B

A discontinuity or flaw is defined as an interruption in the normal configuration of a component. If a discontinuity or flaw will interfere with a component's usefulness, it is then called a defect.

Dye (or Liquid) Penetrant Testing is used to reveal those discontinuities, cracks or flaws which are open to the surface. Discontinuities which are sub-surface will require an alternate NDT method for detection like Radiography or Ultrasonic Testing. Liquid Penetrant and Magnetic Particle Testing are most commonly used to detect surface discontinuities.

## Magnetic Particle Testing (MT)

### Module 6C

Magnetic particle inspection is a non-destructive testing process designated to detecting defects /discontinuities invisible to the naked eye located on surfaces and in shallow subsurfaces up to 2 mm deep.

The objective of magnetic particle testing is to create a magnetic field above the defect and to detect the defect by presence of a flux leakage field. Magnetic particle inspection is used for detecting defects (discontinuities in surfaces and shallow subsurfaces) in ferromagnetic materials.

## Ultrasonic Testing (UT)

### Module 6D

Ultrasonic Testing is a versatile non-destructive evaluation method that uses high frequency sound beams to help detect internal discontinuities in a wide range of materials, including metals, plastics and composites. It is widely used for testing welds, forgings, bars/billets, tubing, and tanks for corrosion.

## Radiographic Testing (RT) & Radiographic Test Film Interpretation (RTFI)

### Module 6E

Also called industrial radiography, RT is a NDT method of inspecting materials for hidden flaws by using short wavelength electromagnetic radiation to penetrate various materials.

Since the amount of radiation emerging from the opposite side of the material can be detected and measured, variations in the amount (or intensity) of radiation is used to determine the thickness, composition, and defects of various materials.

## Advanced NDT Methods

### Module 7

#### Course Contents:

- Phased Array Ultrasonic Testing
- Time of Flight Diffraction (TOFD)
- Eddy Current Testing
- Near Field Testing
- Thermography Infrared Imaging
- Real time Radiography
- Vibration Analysis (VA)



# Marine Modules

Maritime is almost everything connected to the sea or waterways throughout the world, especially in relation to navigation, shipping and marine engineering. The industry has a direct impact on much of our everyday lives.

Shipping has long been the major form of transportation, as well as an essential communication link connecting coastal cities, countries and continents. Next to rail transportation, water transportation is economically and environmentally the most efficient way to travel or transport merchandise; and, nowadays, around 90% of world trade is carried by the international shipping industry.

Our faculties with over 25 years of professional experience in national and international shipyards help candidates to specialize in marine technical inspection.

The shipbuilding industry has ties to many other industries, such as marine engineering, offshore industries, and defense. Shipbuilding consists of the production of large, mainly ocean-going vessels for either merchant or military use.

All ships need maintenance and repairs. Many repair and maintenance operations can be performed at sea or by the crew in port. Complicated or large-scale repairs might require the ship to be removed from commercial operation. Classification Society supervision is required for most large-scale repairs, particularly those carried out in a ship repair yard.

Converting, upgrading, or re-purposing existing ships to perform a new role is often less expensive and more time-efficient than designing and building an entirely new asset. However, major conversions and refits are complex and challenging projects that require careful evaluation, planning, and execution.

Prompt inspection is required in ship building, repair, and conversion to meet the quality and safety requirements.

Following modules of this diploma course provides you accurate knowledge and practical techniques to integrate in to the marine inspection sector.

## Introduction to Maritime Industry

### Module 8

#### Course Contents

- Maritime Organizations
- Importance of Marine Inspection
- Type of Ships
- Type of Offshore Structures
- Type of Drilling Units
- Type of Offshore Storage Units

## Shipbuilding, Repair, Conversion Standards, Classification Societies and Various Rules

### Module 9

#### Course Contents

- Ship Building Procedure
- Ship Repair Procedure
- Ship Conversion Procedure
- International Association of Classification Societies (IACS) Standards
- International Maritime Organization (IMO) Rules
- International Convention for the Safety of Life at Sea (SOLAS) Rules
- About Classification Society
- Classification Society Rules
- Estimation

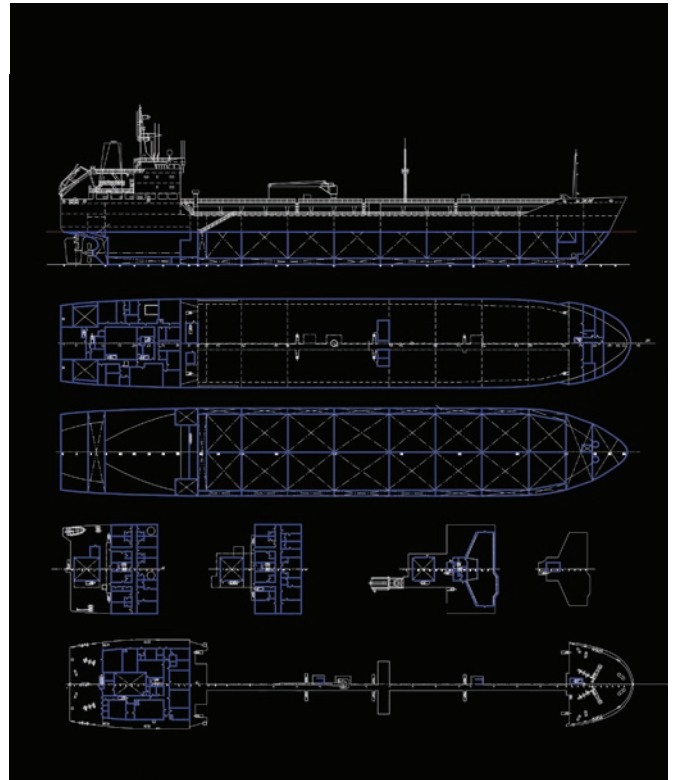


# Marine Structures, Drawings Familiarization and CAD

## Module 10

### Course Contents:

- Basic Naval Architecture
- Types of Marine Structures
- Types of Offshore Structures
- General Arrangement Plan
- Shell Expansion
- Transverse Girth Belt
- Longitudinal Structure
- Transverse Structure
- Double Bottom Structure
- Basics of Computer Aided Drawing (CAD)
- Short Keys for CAD
- Practical's In CAD

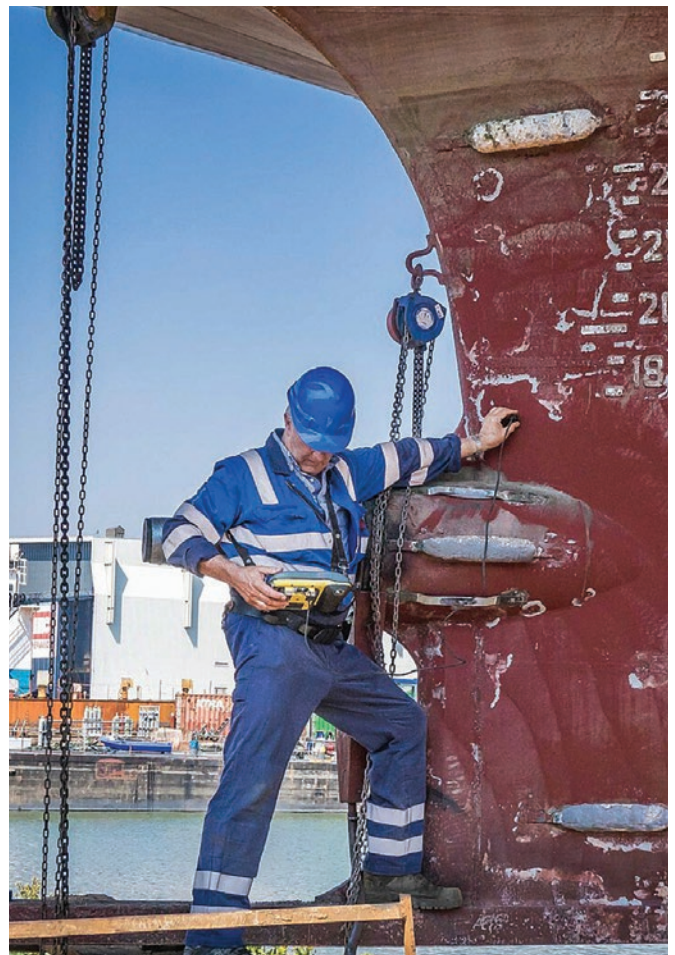


# Thickness Measurement For Ship Compliance

## Module 11

### Course Contents:

- Basics of Ultrasonics
- Ultrasonic Equipment Familiarization
- Class Surveys
- Class Survey Rules
- Thickness Measurement Procedure
- International Association of Classification Societies (IACS) Thickness Measurement (TM) Software Familiarization
- Steel Renewal Estimation
- Practical





# Marine NDT and Welding Inspection

## Module 12

### Course Contents:

- NDT Application in Marine & Offshore Industry
- Class Rules
- Marine NDT Procedure
- Acceptance Standards & Codes
- Practical
- Welding in Marine Structures
- Weld Defects In Ship Building / Repair & Conversion
- Welding Codes Marine and Offshore Industries
- Responsibilities of a Welding Inspector
- Responsibilities of a QA & QC Inspector
- Practical



# Other Marine Specialised Inspections

## Module 13

### Course Contents:

- Bunkering Survey
- Basics of Cargo Gear Inspection
- Container Inspection
- Pre Purchase Survey



# Marine & Offshore Safety

## Module 14

### Course Contents:

- Ship Safety
- Offshore Safety
- Shipyard Safety
- Cardiopulmonary Resuscitation (CPR) Demo



# Our Infrastructure

Our institute is located inside Blastline India's corporate headquarters - A five-story, 27,000 sq. ft. facility located in the heart of the city of Cochin

## Our Academic facilities include:

- 4 classrooms equipped with wifi, projector screens, and smart boards
- Two online examination halls with the capacity for 75 simultaneous test takers



- Two state-of-the-art laboratories to provide thorough NDT inspection training and certifications
- A library consisting of a vast collection of reference books pertaining to the Coatings and Welding Industry – including publications from Society for Protective Coatings (SSPC), National Association of Corrosion Engineers (NACE), Norwegian Professional Council for Education and Certification of Inspectors of Surface Treatment (FROSIO), Occupational Safety and Health Administration (OSHA), ASME etc.
- A cafeteria, equipped with live-cooking facilities, with the capacity to seat up to 100 pax.



# Practical Orientation

We also offer hands-on training for blasting, painting and welding in our Blast Room and Paint Spray Booth facility located in Edayar, Kochi. Our practical training courses cover basics about surface preparation, equipment design and equipment set-up. We provide the necessary Personal protective equipment (PPE), machinery and accessories to effectively learn the ins and outs of blasting and painting. Trade tests can be conducted in our facility for blasters, painters, welders and QC inspectors.

To get knowledge about maritime inspection, students will have the opportunity to visit mini-shipyards in Cochin. Visitors are required to wear PPE when visiting manufacturing shop floors and mini-shipyards.

## Our training facilities include

- Blast Rooms • Paint Booths • Welding Booths,
- On-campus Refinery Scale Model • On-Site Training at Production shop floors & mini shipyards

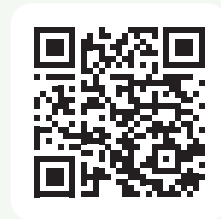
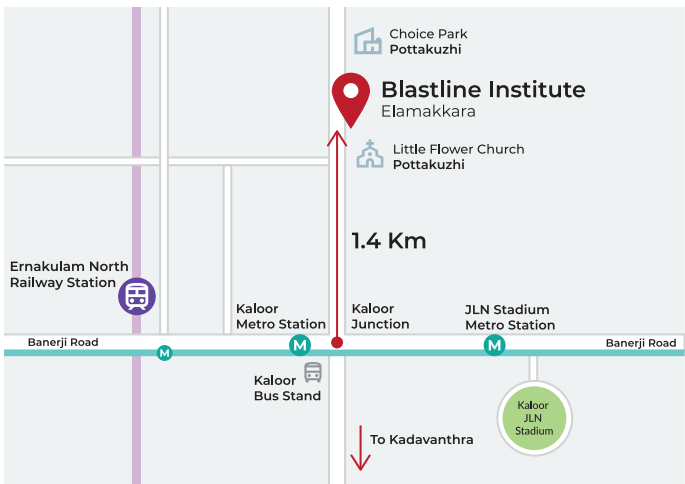


# On Site Training





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