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COURSE BROCHURE

Marine Structures Inspection, Repair and Rehabilitation Training Course

14 – 18 March 2027
Muscat

Marine Structures Inspection, Repair and Rehabilitation Training Course

Ref: 1026_38779 **Date:** 14 – 18 March 2027 **Location:** Muscat **Fees:** 6500 GBP

Marine Structures Inspection, Repair and Rehabilitation is a 1-week training course for marine structural engineers, port maintenance managers and contractors, built around a costed rehabilitation scheme for an ageing quay, jetty or pile group. Ports are keeping berths in service far beyond their original design life while vessels grow larger, so sound condition evidence now decides where scarce repair budgets go. Jupiter Prime Training delivers this course on marine structures inspection, repair and rehabilitation.

Why Marine Structures Inspection, Repair and Rehabilitation Matters Now

Three forces shape waterfront assets today: chloride attack and accelerated low water corrosion eating into concrete decks and steel piles, berth operators demanding higher crane and mooring loads, and asset owners asking for evidence before releasing capital. Early tracking lets a port schedule patch repairs, pile jackets and anode retrofits during planned closures. One that waits faces emergency load restrictions, lost berth windows and far deeper reconstruction. The course rests on established practice for diving and remotely operated inspection, structural condition rating, concrete repair principles and cathodic protection design, described in general terms.

Who Gains Most from Marine Structures Inspection, Repair and Rehabilitation

- Engineers responsible for structural assessment of quay walls, jetties and dolphins
- Maintenance leads responsible for berth availability and annual repair budgets
- Contractors responsible for executing underwater and splash zone repairs
- Inspection coordinators responsible for diver and survey vessel campaigns
- Asset planners responsible for ranking terminals for capital renewal

A port authority or terminal operator gains most when its engineering, maintenance and contracting staff attend together and agree one condition rating language.

Marine Structures Inspection, Repair and Rehabilitation Capabilities

Participants move from a cracked pile cap to a defended repair scope.

- Specify an underwater and topside inspection campaign — berth operators planning closures
- Assess concrete and steel deterioration mechanisms from field evidence — structural engineers
- Apply a condition rating scale to quays, jetties and piles — asset planners
- Weigh patch repair, encasement, jacketing and replacement options — maintenance leads
- Calculate anode demand for a sacrificial cathodic protection retrofit — corrosion contractors

- Build a phased rehabilitation scheme with residual life estimates — capital budget holders

Key Marine Structures Inspection, Repair and Rehabilitation Terms

- Splash zone — the band of a structure wetted by waves and tides, where oxygen and chlorides drive the fastest corrosion.
- Accelerated low water corrosion — rapid localised pitting of steel piles just below low tide, often linked to microbial activity.
- Condition rating — a graded score describing the severity and extent of defects on a structural element.
- Chloride threshold — the chloride content at rebar depth above which reinforcement corrosion is expected to start.
- Sacrificial anode — a block of more active metal fixed to steel so that it corrodes instead of the pile.
- Pile jacket — a fabric or steel form around a damaged pile, filled with grout or epoxy to restore section.

Marine Structures Inspection, Repair and Rehabilitation Day by Day

Day 1: Deterioration of Waterfront Structures

- Quay Wall, Jetty and Dolphin Structural Forms — Inspection Access Planning
- Chloride Ingress and Carbonation Mechanisms — Concrete Cover Priorities
- Steel Pile Corrosion Zones and Section Loss — Load Capacity Concerns
- Abrasion, Impact and Scour Damage Patterns — Fender and Toe Decisions
- As-Built Records and Previous Survey Reports — Baseline Evidence Gaps

Day 2: Underwater and Topside Inspection

- Diver Visual and Tactile Inspection Levels — Survey Scope Selection
- Ultrasonic Thickness Gauging of Steel Piles — Remaining Section Estimates
- Cover Meter, Half-Cell and Chloride Sampling — Reinforcement Risk Mapping
- Remotely Operated Vehicle and Multibeam Surveys — Diver Exposure Reduction
- Inspection Records, Photographs and Defect Logs — Traceable Findings

Day 3: Condition Rating and Residual Life

- Element-Level Condition Rating Scales — Consistent Defect Scoring
- Structural Capacity Checks With Measured Section Loss — Berth Load Limits
- Deterioration Rate Models for Concrete and Steel — Residual Life Forecasts
- Risk Ranking of Berths and Elements — Repair Sequencing
- Operational Restrictions and Temporary Measures — Berth Availability Trade-Offs

Day 4: Concrete Repair, Steel Repair and Cathodic Protection

- Hydrodemolition, Patch Repair and Sprayed Concrete — Deck Soffit Remedies
- Pile Encasement, Jacketing and Underwater Grouts — Splash Zone Restoration
- Steel Plating, Welding and Coating Systems — Section Restoration Choices
- Sacrificial Anode and Impressed Current Systems — Corrosion Control Selection
- Anode Demand and Potential Survey Criteria — Protection Verification

Day 5: Practising the Rehabilitation Scheme

- Inspection Campaign Specification for a Case Jetty — Survey Brief
- Condition Rating of Case Quay Elements — Priority Element List
- Repair Option Appraisal by Whole-Life Cost — Preferred Remedy
- Repair Method Statements and Quality Hold Points — Contractor Oversight
- Phased Rehabilitation Scheme With Closure Plan — Capital Request

Applying Marine Structures Inspection, Repair and Rehabilitation After the Course

- Re-score one berth with the element condition rating scale and flag the elements needing urgent thickness gauging.
- Draft an anode retrofit check for one steel pile group, using a potential survey to confirm present protection.

Marine Structures Inspection, Repair and Rehabilitation Questions FAQ

What is marine structures inspection, repair and rehabilitation, and why does it matter now?

It is the discipline of finding, rating and fixing deterioration in quays, jetties and piles. It matters now because berths serve larger vessels and heavier cranes long after their design life, so repair spending must follow evidence.

Which roles gain most from marine structures inspection, repair and rehabilitation?

Structural engineers, port maintenance leads and repair contractors gain most. Shared rating and repair language shortens the path from survey finding to approved work order.

How does marine structures inspection, repair and rehabilitation differ from a coastal engineering course?

It focuses on existing berth structures rather than new shore protection design. It covers defects, condition scores, repair methods and anodes on assets already in service.

What do you bring back from marine structures inspection, repair and rehabilitation?

You bring back a phased rehabilitation scheme for a case structure. It links inspection findings and condition ratings to chosen repair and cathodic protection methods.

Marine Structures Inspection, Repair and Rehabilitation: The Way Forward

The rehabilitation scheme first informs which berth elements are repaired in the next planned closure. Maintenance leads use it to book divers and contractors, engineers use it to set load limits, and asset planners use it to bid for capital. After the first repair season, revisit the deterioration rates assumed, as measured section loss often reorders later phases.