An Intensive 5 Day Training Course

Building Preventive Maintenance

10 - 14 Sep 2017, Muscat

This course is Designed, Developed, and will be Delivered under ISO Quality Standards
Why Choose this Training Course?

This training course presents the methods of inspection and evaluation of buildings and diagnosis and reason of concrete deterioration or the corrosion of the steel bars to develop preventive maintenance program. The causes of structure deterioration will be discussed and topics will concentrate on the reasons of corrosion and new protection methods to the steel bars.

The training course illustrates the preventive maintenance strategy, its target and plan in scope of economic point of view in this course and the background of the new software used in the area of maintenance management system. Risk based inspection techniques will be presented in scope of likelihood of building failure, consequences of failure and the building risk matrix.

This PetroKnowledge course will also introduce the ways of repair for different concrete structure elements and presents the precaution, materials and other resources needed for each type of repair. The design of CFRP for strengthening will be presented and the way of using steel sections in repair. The rehabilitation and maintenance strategies will be discussed in scope of recent technique of risk based inspection and structure reliability.

This training course will feature:

- The importance of inspection and testing activity
- Applying the inspection and testing in many construction areas
- Focusing on practical and theoretical ways of inspection
- How to integrate new inspection technique into the work domain

Who is this Training Course for?

This PetroKnowledge course is suitable to a wide range of professionals:

- Architects
- Engineers
- Practicing Building Construction Inspectors
- Project Engineers
- Technicians and Technologists involved with building maintenance

This training course will also benefit owners, contractors and building owners, who wish to become more effective by better understanding the requirements for assessment, inspections and repair for concrete structure.

How Will this Training Course be Presented?

This training course will utilise a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. The daily workshops will be highly interactive and participative. The illustration will also feature videos and photos.
DAILY AGENDA

Day One: Building Assessment

Competency Description: As an engineer, you need to know the factors affect the concrete durability and the way of inspection.

Key behaviours
- Understand the change in design and code with times
- Understand the codes design principal
- Understand RC reliability
- Inspection technique

Topics to be covered
- Introduction to mature structure
- Codes and standard deficiency
- Inspection and evaluate the buildings
- Methods of Inspection
- Visual inspection criteria
- Inspect the building using a new techniques
- Using ultrasonic and infrared for inspection.
- Evaluate the building risk
- Diagnoses the reason of deterioration
- Workshop: Define the cracks types
- Workshop: cracks in administration building

Day Two: Problems in Design, Materials and Construction

Competency Description: As an engineer, you need to know the corrosion phenomena and ways of protection and the concrete materials and its deficiency.

Key behaviours
- Understand the corrosion phenomena
- Understand the design, materials and construction pitfalls affect structure integrity
- Understand the concrete construction ways

Topics to be covered
- Concrete materials problems
- Construction ways affect concrete durability
- Design error affect structure integrity
- Corrosion and protection of steel structure in concrete
- Protection of reinforcing bars
- Define the method of repair
- Videos presenting a repair methods
- From inspection and analysis predict the structure life time
Day Three: Properties of Protective Coating

Competency Description: As an engineer, you need to know the ways of steel structure Quality Control on site.

Key behaviours

- Understand the repair methods
- Understand the materials used in repair
- Understand the protective coating characteristics.

Topics to be covered

- Precaution during repair
- Selecting the materials repair
- Step by step repair procedure
- Methods of protection
- Cathodic protection
- Comparison between different type of protection.
  - Evaluate the current protective coating
  - Types of protective coating
  - Properties of each type
  - Precautions in using the coating

Day Four: Methods of Repair - The Cracked Structure / Corrosion

Competency Description: As an engineer, you need to know the ways of soil investigation and Architectural work inspection.

Key behaviours

- Understand the methods of repair
- Understand the polymers and its behaviour
- Understand the differences between different cracks
- Understand using hot rolled steel section for repair

Topics to be covered

- Types of cracks in R. C. structures
- Comparison between different cracks
- Reasons for each type
- Methods of repair and prevent for each type.
- Materials using to repair corroded structure
- Methods of repair
- Using polymer bonding materials
- Types of polymer
- Properties of these materials
- Ways of using steel sections in repair
- CFRP applications

Day Five: Maintenance Strategy

Competency Description: The types of maintenance strategy and benefit from preventive maintenance.

Key behaviours

- Understand the preventive maintenance approach
- Understand the types of maintenance
- Understand the RBI technique

Topics to be covered

- Likelihood of building failure
- Define consequences of failure
- Provide risk matrix
- Risk based inspection (RBI)
- Maintenance plan and strategy
- Maintenance plan based economic cost
- Preparing priority lists
- Software for maintenance strategy
- Case study

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COURSE DATES, VENUES AND FEES

<table>
<thead>
<tr>
<th>Date</th>
<th>Venue</th>
<th>Fee</th>
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<tbody>
<tr>
<td>10 - 14 Sep 2017</td>
<td>Muscat</td>
<td>$4,500</td>
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This fee is inclusive of Documentation, Lunch and Refreshments

Please use BLOCK CAPITALS to fill in this form. It is important that you read carefully through all information before starting to complete the form.

REGISTRATION DETAILS

Family Name: ____________________________ First Name (Mr./Ms.): ____________________________
Position: ____________________________ Company: ____________________________
Mailing Address: ________________________________________________________________________________
Telephone: ___________ Mobile: ___________ Fax: ___________ Email: ___________

AUTHORISATION

Authorisation By: ________________________________________________________________________________
Position: ____________________________ Company: ____________________________
Mailing Address: ________________________________________________________________________________
Telephone: ___________ Mobile: ___________ Fax: ___________ Email: ___________

IN-HOUSE TRAINING

Maximize your training budget and have several members of your staff, who require specific training, to attend with the advantage of not incurring additional travel costs when attending a ‘public’ training courses & seminars.

Would you like a PetroKnowledge training course delivered at a time or location to suit you? Would you like PetroKnowledge to tailor a course from our comprehensive library of programmes? Or would you like us to create an entirely new, bespoke course to suit the exact needs of your organisation?

Working in partnership with our clients, PetroKnowledge provides an enjoyable, creative learning experience that enables participants to develop their skills and knowledge. We can deliver not only generic, off-the-shelf courses from our extensive learning portfolio, but we can provide tailored as well as bespoke learning on any aspect of skill development or knowledge. Our in-house courses are conducted by the same expert trainers who conduct PetroKnowledge public courses so you can be assured they will fulfill the learning objective of any organisation.
BOOKING TERMS & CONDITIONS

Booking
• Bookings for courses can be made via our website (petroknowledge.com) or by contacting our Registration Desk on +971 2 5577389 or at reg@petroknowledge.com
• For on-line bookings, please select the course that you require and click on the “Register Now” button, following the instructions step by step
• Upon receipt of booking in order, enrollment on the respective training course will be confirmed by Registration Team with all necessary documentation

Invoicing and Payment
• Our fees include course presentation, relevant materials, physical & digital documentation, lunch and refreshments served during entire training. Accommodation charges are not included in the course fees
• Course fees are payable upon booking unless a valid, authorized Purchase Order is provided and accepted
• Invoices will be sent via email/courier to the ID/name and address provided
• We prefer to have the fees payment in our account before the start of training course. However, if your company has a different payment policy, the same should inform us in advance
• The currency of fees is in US Dollars (USD). Payments can be made in USD or UAE local currency AED (Arab Emirates Dirhams) either by Bank Transfer or by Credit Card. Our Bank Account details will be provided on the Invoice
• Please note that we do accept payment by cash, in USD or AED, only for the last minute bookings

Cancellation of Courses
• It may be necessary for PetroKnowledge to amend or cancel any course, course times, instructors, dates or published fees due to unforeseen circumstances and we reserve the right for such changes
• Any amendments will be advised before the course start date and any bookings already paid in full will not be subject to increased fees

Cancellation by Client
• Once you have completed your booking, received your confirmation of enrollment and a dated payment Invoice, you are deemed to have a contract with PetroKnowledge. You reserve the right to cancel this contract given the below terms
• All cancellations must be received in writing at reg@petroknowledge.com and info@petroknowledge.com at least 14 days prior to the training
• After the cancellation period has expired, consideration may be given, on a case to case basis, if a registered delegate nominates a substitute on the same course, shifts to next session of the course or moves to a new course
• For a cancellation request made on or before the statutory 14 day cancellation period, a refund may be given or a credit note issued which can be used against future course fees
• A 25% administration fee (of the total course fee at the time of booking) will be charged for any cancellations made outside of the statutory cancellation period

Attendance Certificate
• The daily course schedule should be accurately followed to ensure undeterred implementation of our training
• All delegates, who participated in their course throughout, will receive the Certificate of Completion on the last day
• Please report any foreseeable absences to a PetroKnowledge representative or to your sponsors directly
• An absence of three (3) or more sessions of the course will invalidate your eligibility for the Certificate of Completion