

Concrete Structure Designing for Industrial Projects, Training program

Introduction:

Reinforced concrete structures are widely used in industrial sector, especially in the onshore oil and gas fields. In industrial projects, the structure design applications are different than normal housing projects taught in educational/engineering institutions. This course will fill the gap between the academic knowledge and the professionalism for industrial project design in general, and specifically for oil & gas and power generation projects.

The basis of design for concrete structure for strength, serviceability and robustness is considered in the course. ACI, BS, UBC and ASCE codes will also be covered to enable the participants choose suitable design method to serve business safety and operability. The probability of failure, specifically in ACI and BS, will be discussed and the key steps in design and review design will be illustrated.

This course will feature:

- The dynamic analysis and design for concrete in the industrial plant
- Industry practice in the structure design
- Integration between different disciplines in designing
- Review of different codes and standards
- The importance of construction and maintenance
- Effect of sustainable design to enhance project investment lifecycle

Who Should Attend?

Construction Engineers, Senior Construction Engineers, Construction Supervisors, Construction General Supervisors, Construction Project Managers, Engineering Technologists, Supervision Engineer, Inspection Engineers, Civil Inspectors, Foremen, Design Structural Engineers, Planners, Structural Engineers, Material Specialists, Quality Control and Quality Assurance Experts, Architects, Supervision Engineers, Team Leaders, Site Officers and Managers, Mechanical Engineers, Technical Professionals, Field Production Supervisor, Operation Engineers, Clients Representatives, Junior or Senior level Civil and Structure Engineers who need to have in-depth knowledge about the structural engineering activities and how to co-operate in the design phase.

Course Objectives:

By the end of this course, delegates will be able to know about:

- New project or modify the existing one.
- Knowledge on the design of foundation under all types of vibrating equipment, and the blast design of buildings
- An overview of modern and effective procedures for the design of reinforced concrete structures in the oil & gas industry
- Knowledge on calculation for reinforced concrete elements used in the oil & gas industry
- Increase the knowledge and assist in using new tools for designing and reviewing the design for An illustration of real design issues that may assist the designer to provide concrete structure that is safe, economical and constructible
- The rule of thumb to check the concrete design with associated check list

Course Outline:

- The fundamentals of concrete technology
- Basic concept of concrete design
- Main features for ACI and BS for concrete design
- Effects of different loads on the building
- Earthquake, wind load effect
- Loads affect pipe rack, static equipment and tanks foundations
- Principles, limitations for different codes in concrete (ACI, BS codes, European Code)
- Codes and standards Philosophy
- Principles of concrete design and precaution
- Different structure systems
- Different slab types
- The way to use the suitable structure system
- Design of slab, beam and columns
- Loads applied in horizontal vessel (Separators)
- Design of vessel foundation
- Loads applied in heaters
- Design of heater foundations
- Ring beam design for circular tank
- Design of foundation under tower
- Pipeline support design
- Checklist to review the design
- Soil investigation
- Shallow foundation design philosophy
- Pile foundation design philosophy

- Anchor bolt design
- Foundation under machines design
- Checklist to review foundation under rotating equipment
- Precaution in design foundation under vibrating machines
- Design blast resistance building such as control room
- Control room layout and configuration
- Pipe rack configuration
- Pipe rack design
- Retaining walls design principals
- Load and forced in retaining walls
- Retaining walls design checks
- Design for reinforced concrete liquid tanks
- Structure system for concrete tanks
- Circular and rectangular tank
- Maintenance and repair in concrete structure
- Integrity and maintenance management system principles