Advanced Steel Structure Design & Construction For Oil & Gas & Petrochemical Industry Training program

Introduction:

Steel and reinforced concrete structures are the most used in industrial sector special in oil and gas field for onshore and offshore. Therefore, the basis of design for concrete and steel structures will be discussed in scope of codes concept. So ACI, BS, AISC, UBC, ASCE will be discussed in scope of practical wise to use the suitable to serve our business safety and operability.

Design of steel structures has widely been based on the Allowable Stress Design based on the AISC. Many designers and fabricators still use the old allowable stress techniques. The more recent LRFD code of the AISC offer more rational and economical procedures for the design of steel structures so we will be discussed the two methods. The design steps of reinforced concrete structure elements will be discussed from ACI and BS codes. All the case studies will be related to oil and gas business to give the attendees the ability to design and to review the design for reinforced concrete structure and associated work.

The petroleum industry is interesting in modify the structure in case of offshore structures topsides or in the on shore facilities to carry more load or add more machine so the management of change must be considered and important taking into consideration the time and cost of shutdown factor.

Who Should Attend?

Construction Engineers, Senior Construction Engineers, Design Structural Engineers, Supervision Engineer, Planners, Construction Supervisors, Construction General Supervisors, Construction Project Managers, Engineering Technologists, Supervision Engineer, Inspection Engineers, Civil Inspectors, Foremen

Course Objectives:

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

- Have an overview of modern and effective procedures for the design for steel structures and reinforced concrete structures for oil and gas industry
- Learn about calculations for reinforced concrete and steel structure element which use in oil and gas industry as pipe rack and frame structures in plant process

- Increase the knowledge and assist in using new tools for designing and reviewing the design for new project or modify the existing one
- Define the interaction between concrete and steel
- Discuss the anchor bolts, machine skid design, construction and installation
- Illustrate real design issues that may assist the designer to provide concrete and steel a structural steel that is safe, economical and constructible

Course Outline:

- Introduction
- The fundamental of concrete technology
- Fundamental of steel structures
- Basic concept of concrete and steel design
- Effect of different loads on the building
- Earthquake, wind load effect
- Ballast load for control buildings
- Loads affect pipe rack, static equipment and tanks foundations
- Comparison between different structure systems
- Principal, limitations for different codes in concrete (ACI, BS codes)
- Define the appraise, select and define step in structure projects
- Main features for LRFD in concrete and steel
- Codes of practice for design, evolution from allowable stress to LRFD and limit state design
- Codes and standards Philosophy
- Principal of concrete design and precaution
- Different slab types
- Design of slab, beam and columns
- Basis of design steel tanks ring beam
- Pipeline support design
- Design of foundation under machines
- Precaution in foundation design
- Checklist to review the design
- Selection of suitable structural systems for multistory building
- Selection of steel structural systems
- Rigidly connected frames
- Plane trusses
- Space trusses
- Design of tension members
- Design of compression members
- Design of beams
- Design of beam-columns
- Case study for design crane track girder

- Bolted connections design
- Welded connections design
- Fabrication and erection of steel connection
- Base plate design
- Anchor bolt design
- New methods for connecting steel to concrete