Structural Steel Design – Pipe Rack, Shelters, Pipe Supports, Platforms and Ladders Training

Description

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Steel is the most used construction material in the USA for industrial buildings, high-rise towers, bridges and other structures. It competes with reinforced concrete in the world because of its many favorable characteristics including high strength, high stiffness, ductility and toughness, speed of erection, competitive cost, etc. Its use in the Middle East region has been mostly confined to industrial plants, offshore structures and warehouses. The lower construction time and it can be used as a temporary structure make it competitive than the concrete structure.

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 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.

Course Objective

- This course is intended to overview modern procedures for the design and erection of structural steel buildings especially for oil and gas industry.
- This course will increase the knowledge and assist in using new tools for designing and construction the steel structure for new project or modify the existing one.
- The interaction between concrete and steel will be defined. The anchor bolts, machine skid design, construction and installation will be discussed theoretically and practically.
- For those engineers with limited practical experience the course will illustration of real design and construction issues that may assist the designer to conceive of a structural steel system that is safe, economical and constructible.
- The rule of thumb to check the steel structure or to modify the deck in case of offshore and onshore structures.

- The course will be started from the basics to ensure the full participation of all attendees.

Course Outline

- Introduction
- The case for steel use in construction.
- Structure system
- The comparison between different structure system
- Define the appraise, select and define step in steel structure projects
- Available steel grades and sections.
- Codes of practice for design, evolution from allowable stress to LRFD and limit state design.
- Preparing SOR and BOD
- Codes and standards Philosophy
- Selection of structural systems
- Rigidly connected frames
- Plane trusses
- Space trusses
- Design of tension members
- Design of compression members.
- Design of Beams
- Design of Beam-Columns
- Different types of temporary support
- Bolted connections design
- Welded connections design
- Fabrication and erection of steel connection
- New methods for connecting steel to Concrete.
- Anchor bolt design
- Types of different soil
- Choose suitable foundation based on soil type
- The required simple test to identify the soil
- Foundation under reciprocating and centrifugal machine
- Dynamic analysis calculation for steel skid
- Using CFRP in Steel structure
- Fabrication and erection of CFRP
- Design of composite beams.
- Design of composite columns
- Design of composite slabs
- Preparation of fabrication and erection shop-drawings
- Specifying structural steel