



STRUCTURAL STEEL DESIGN



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INTRODUCTION

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 favourable 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, BS and EC3 will be discussed. Many designers and fabricators still use the old allowable stress techniques. The course will present ASD and LRFD approach. The petroleum industry is interesting in modify the structure in the on shore facilities to carry more load or add more machine so the integrity management of change must be considered and important. The composite section design and FRP will be presented in the course. The pushover analysis will be discussed to define the structure probability of failure for industrial structure. All examples will be related to oil and gas projects in conjunction with the specification for most oil and gas companies worldwide.

This training course will feature:

It provides case studies on petroleum industry

- The codes and standard with technical practice in this field
- The new trend of integrity management system will be presented
- The design of steel structure under reciprocating and centrifugal machines
- The capability of review The engineering and pitfalls in construction
- The pushover structure analysis technique

OBJECTIVES

The attendees will be familiar with the steel structure design overview:

- The loads apply on The structure in oil and gas plants and petrochemical
- The modern technique on The risk based inspection for maintenance plan
- familiar with the pipe rack design or review the design
- design of the steel structure under machines
- Using composite section in strengthen and repair

TRAINING METHODOLOGY

The training methodology is interactive with group exercises and is suitable for all employees involved in functions management. The pace and level of the training workshop is customized to the understanding of the delegates. Ongoing back-up and support is available after the training on request to the supplier, and the training course is also available for in-house presentation as well as for "Competency Transfer."



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WHO SHOULD ATTEND?

This training course is suitable to a wide range of professionals Civil engineers who are interesting in learning about steel design may attend the course.

- Design structural engineers
- Supervision engineer
- Planners
- Steel fabricator
- Construction engineers

COURSE OUTLINE

Day One: Introduction

Competency Description: As an engineer you need to know the main element of steel structure design.

Key Behaviours:

- Understand the steps of design for steel structure
- Understand the different steel structure system
- Understand the codes and standards

Topics to be covered:

- Introduction
- Pre-Assessment
- 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.
- The loads effect on the industrial structures
- Preparing SOR and BOD
- Codes and standards



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Day Two: Steel Member Design

Competency Description: As an engineer you need to know the design of the main element of the steel structure.

Key Behaviours:

- Understand the behaviour of steel members
- Understand the steel structure system
- Understand the rule of thumb steel section design

Topics to be covered:

- 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

Day Three: Connection Design

Competency Description: As a structural engineer you need to know the ways of defining the loads on the steel structure in industrial structures and to know the connection design.

Key Behaviours:

- Understand the loads calculation for pipe rack
- Understand the types of connection
- Understand the overview the differences between the NDE methods

Topics to be covered:

- Applied load on the Pipe rack
- Design of the crane track girder
- Design of steel deck under vibrating machine
- Bolted connections design
- Example of bolted connection
- Welded connections design
- Example of bolted connection



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Day Four: Steel Construction and Maintenance

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

Key Behaviours:

- Understand the construction steps
- Understand the ways of QC for steel structure
- Understand the design of anchor bolts
- Using FRP in hotclimate

Topics to be covered:

- Fabrication and erection of steel connection
- New methods for connecting steel to Concrete.
- Wind bracing design
- Anchor bolt design
- Dynamic analysis calculation for steel skid
- Using FRP in Steel structure
- Fabrication and erection of FRP

Day Five: Architectural Work Inspection Guidelines

Competency Description: As an engineer you need to know the composite section design and the relation between sustainable design and integrity management system.

Key Behaviours:

- Understand the design of composite section
- Understand the IMS for steel structure
- Understand the overview about the sustainable structure

Topics to be covered:

- Design of composite beams.
- Design of composite columns
- Design of composite slabs
- Preparation of fabrication and erection shop-drawings
- Specifying structural steel
- Maintenance plan by risk based inspection technique



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CONNECT WITH US:

Hotel Accommodation

Hotel Accommodation is not included in the Registration Fee. A reduced corporate rate and a limited number of rooms are available for attendees wishing to stay at the hotel venue. Please make your request for accommodation at least one week prior to the commencement of the course.

Event Disclaimer

We reserve the right to cancel or postpone a course or related event, change venue, substitution of the Instructor and alter the course content at our sole discretion. If this occurs, our responsibility is limited to a refund of any registration fee(s) already paid. We are not responsible for airline tickets, hotels costs, other tickets or payments, or any similar fee penalties or related or unrelated losses, costs and/ or expenses registrant may incur or have incurred as a result of any trip cancellations or changes.

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You must notify the Registrar of cancellations at least one week before a scheduled course in order to be eligible for a credit. If you cannot attend, you may send a replacement from your organisation at no charge. There is a \$250 handling charge for all cancellations or rescheduling. We reserve the right to cancel a course due to low enrollment. All registrants will be notified in advance and a full refund will be provided upon request.

4 Ways to Register

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