Projacs
an egis company
بروجاكس للتدريب والتطوير
Projacs Training and Development

Introduction to Project Engineering

A Member of:
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Introduction

Oil and Gas projects, and industrial construction projects in general, go through a number of phases. The first phases (such as Identify, Assess, Select and partially Define) are devoted to "Value Identification", while the remaining phases (Define, Execute and Operate) are devoted to "Value Realization". Phase gates are used to effectively manage the phase deliverables and take the required decisions on whether projects should be continued, modified, postponed or cancelled.

Project Engineering starts with the Concept Engineering, establishing the Basis for Design (BFD), Front End Engineering and Design (FEED) and Project Specification forming one of the bases of the decisions taken in phase gates. The more developed the project engineering the more detailed is scope definition and the accuracy of schedule and cost estimates.

Typically, after the tenders are let, the bids are evaluated and the EPC contractor is selected, the detailed design and engineering is performed by the EPC contractor, but still need to be reviewed and consented by the Client.

This course shall cover the Project Engineering activities throughout the project–life-cycle (Especially in FEL Phases) as well as the related support services such as Value Improvement Practices (VIP), project planning and cost estimating.

Objectives

By the end of this course practitioners shall be able to:

- Understand the project-life-cycle phases in oil and gas and other construction projects
- Understand the different procurement strategies (Traditional EPC, FEED/EPC, FEED/EPCM, FEED/EP, EP only) that may impact the responsibilities for project engineering
- Understand the main roles, responsibilities tools and techniques for Concept Engineering
- Learn how to prepare and review the Basis for Design
- Understand the main roles, responsibilities tools and techniques for Front End Engineering and Design (FEED) and Project Specification
- Learn how to perform Design review, constructability review
- Understand the Value Improvement Practices (VIP) and its relation to project engineering
- Learn how to consider Risk and Opportunity Management
- Understand the preparation steps and content of a Project Execution Planning (PEP)
- Learn the Project Services such as scheduling and cost estimating and the development of different schedule levels and cost estimate classes during the project

Who Should Attend?

- Project Managers and Front End staff and Project Managers
- Project Engineers and Project Services Engineers
- Project Assurance Engineers and QA/QC staff
- Contracting and Procurement Staff
- Project services staff (planners, estimators, etc)

Course Outline

DAY 1:

- Introduction a Course Opening
- **Course Pre-Assessment**
- Project-life Cycle (overall activities in each phase):
    - The Identify phase
    - The Assess phase
    - The Select phase
    - The Define phase
    - The Execute phase
    - The Operate phase
    - Value identification versus value realisation
- Gating system and the decisions taken in each gate
- Different project delivery methods and procurement strategies
    - Traditional separate EPC
    - FEED/EPC,
    - FEED/EPCM,
    - FEED/EP,
    - EP only
- Selecting the appropriate project delivery methods
- The five key activities required for successful Project Delivery:
    - Front End Loading.
    - Project Execution Planning.
    - Risk and Opportunity Management (TECOP).
    - Operational Readiness and Assurance.
    - Management of Change.
- Different departments / department involved in the project delivery:
    - Asset departments
    - Engineering team
    - Support team
    - Procurement team
    - Operation team
    - Etc
- **Workshop: Selection of Project Procurement Strategy**

DAY 2:

- What is involved in Concept Engineering:
- Concept Engineering in Identify:
  - Project Initiation Note
  - Decision-Based Roadmap
  - Risk and Opportunity Management plan
  - Stakeholder Engagement Plan
- Concept Engineering in Asses:
  - Feasibility Study Report
  - Map of "solution space"
  - Stakeholder Engagement Plan (update)
  - Ranked Decision Criteria/ Value Drivers
- Concept Engineering in Select:
  - Field Development Plan
  - Concept Selection Report (CSR)
  - ALARP Demonstration
  - Execution and Contracting Strategy
  - Preliminary PEP
  - Level 2 Cost Estimate and Schedule
- Basis for Design
- Total cost of ownership (life-cycle-costing)
- Close-out of the Select Phase
- **Value Engineering Workshop: Information phase, Functional Analysis Phase, Speculation phase, Evaluation Phase, Development Phase and Presentation Phase (According to SAVE International Procedures)**

DAY 3:

- Activities of the Front End Engineering and Design (FEED) and Project Specification
- Constructability Review
- Updated Project Execution Plan (PEP)
- Basic Design Package
- Tender Management Plan / Tendering Procedures
- HAZOP study
- Class 3 Cost Estimate,
- Detailed Schedule and Updated Budget
- Project Risk Management Plan
- Contractor Detailed Engineering
- Management of Change
- Project Commissioning procedures
- Project Control Procedures
  - Cost Control
  - Schedule Control

  - Risk Monitoring and Control
  - Inspection Plans / Contractor Quality plans
- Review of Detailed Engineering Package
- Final Detailed Engineering Package
- **Workshop: Checklist of a sample drawing and specs list**

DAY 4:

- Detailed Review of Project Services:
  - Project Planning and Scheduling: CPM Analysis from A to Z
  - **Workshop: CPM Example for a small structure**
  - Risk Planning, Assessment, Treatment, Monitoring and Control

DAY 5:

- Detailed Review of Project Services:
  - Cost Estimating Classification System According to AACE
  - Cost Estimating Tools and Techniques for Conceptual and Detailed Estimating
  - Project Schedule and Control Using Earned Value
- **Post Course Assessment**
- Course Closure

Training Method

- Pre-assessment
- Live group instruction
- Use of real-world examples, case studies and exercises
- Interactive participation and discussion
- Power point presentation, LCD and flip chart
- Group activities and tests
- Each participant receives a binder containing a copy of the presentation
- slides and handouts
- Post-assessment

Program Support

This program is supported by interactive discussions, role-play, and case studies and highlight the techniques available to the participants.

Schedule

The course agenda will be as follows:

- Technical Session 08:30 – 10:00 am
- Coffee Break 10:00 – 10:15 am
- Technical Session 10:15 – 11:30 noon
- Coffee Break 11:30 – 11:45 am
- Technical Session 11:45 – 01:00 pm
- Lunch 01:00 – 02:00 pm
- Technical Session 02:00 - 03.45 pm

Course Fees

$3,200 per participants

Special discounted rate for PDO $2,500 per participants