



Project Controls for Capital Projects

Potential PDH: 24

Description:

This course addresses Project Controls principles and practices as they relate to providing Project Leaders and key stakeholders the information they need to support project success for upstream, midstream, and downstream energy projects. The focus of the course is using project controls effectively to manage engineering / procurement / construction, improve project profitability, make schedule, and deliver a quality and safe project. Upon completion of this course, the participant will understand the critical success factors for cost estimating, scheduling, and progress measurement and be able to utilize these best practices to effectively manage their project.

Participants will understand all of the steps necessary to develop and implement an effective project controls plan. Project controls activities throughout the entire project life cycle (FEED, engineering, construction) are addressed. In particular, participants will learn the steps that a Project Leader should take during each stage of the project life cycle to effectively manage their project and their contractor.

The course is taught using a combination of instruction, facilitated discussion, and hands-on exercises using a "real world" case study example. The exercises will include both individual and group activities that will provide each participant with a hands-on application of the principles and practices discussed throughout the course.

Outline:

You will learn:

- The elements of a robust cost estimate plan.
- Methods to develop early and mid life cycle project cost estimates.
- The critical role that project controls plays in developing a well-planned and executable project for both cost and schedule.
- The role that project definition, scope management, contracting strategy, project execution, procurement, etc. play in impacting project controls and the methods used to measure progress.
- Critical progress measurement metrics using earned value or "value of work done" so that stakeholders understand the potential to meet project cost and schedule.
- The different estimate classes and the deliverables required to support each type of estimate.
- The different schedule levels and when is it appropriate to use each level.
- How to develop an estimate basis and schedule basis and why they are critical to developing an achievable cost estimate and schedule.
- How to develop a robust Project Controls Plan and associated staff with roles and



responsibilities to support the plan.

- How to effectively manage project changes and understand the impact on overall cost and schedule.
- Challenges and issues associated with forecasting final project cost and final project completion using progress measurement or earned value.
- How the use of Monte Carlo simulation applied to cost and schedule can reveal problems with cost and schedule.
- How to use Project Controls to mitigate any potential construction contractor claims.
- The key role that Project Controls plays in effectively managing field labor productivity.

Course Content:

- The business case for Project Controls and how it drives project success.
- Key roles that Project Controls should assume on a capital project to support project success and the Project Manager.
- Planning for Project Controls including establishing a project controls organization as well as roles / responsibilities.
- Use a schedule and cost basis to facilitate cost and schedule development and to communicate to all stakeholders the challenges and issues with forecasting costs and schedules.
- Different methodologies to develop cost estimates during the early phases of a project as well as prior to project funding approval.
- Key deliverables necessary during each project phase to develop cost estimates and project schedules.
- How to use the project controls organization and baseline deliverables to manage project change management and support a successful project.
- Use simple probabilistic risk analysis and a risk register to determine schedule and cost contingency.
- Use Monte Carlo simulation to establish realistic cost and schedule contingency.
- Use “Value of Work Done” or Earned Value to measure engineering and construction progress and address performance issues before they become unmanageable.
- Use earned value to forecast final project cost and estimated completion date.
- The role of Project Controls in the field and how they support the construction manager.
- Methods to manage the contractor and avoid construction claims.

Topics Not Covered:

- Detailed cost estimating methodology

Who Should Attend:

This course addresses the special requirements associated with project controls for project professionals. It is intended for Project Managers, Project Engineers, Project Team members, Project



Controls professionals, Planner/Schedulers, and Project Discipline Team Leads.

Subject Matter Expert (SME):

Pieter 'Pete' Luan is a seasoned expert with over 30 years of experience in management consulting, project management, and project consulting within the petrochemical and energy industries. He has served as a project consultant on major initiatives, including three petrochemical megaprojects totaling \$15 billion and a \$6 billion refinery expansion, where he led peer reviews, gate-clearing processes, and constructability and execution planning sessions. Pete has collaborated with senior management to enhance the predictability of brownfield projects, focusing on front-end planning, risk management, contracting strategies, and governance to ensure project success.

As a dedicated educator and leader, Pete has developed and delivered courses on project controls, risk management, and project delivery systems. He has also facilitated workshops on enterprise capital risks, executive alignment, and project governance. Holding both Bachelor's and Master's degrees in Mechanical Engineering from **Rice University**, Pete combines technical expertise with practical experience to help professionals optimize project outcomes, improve performance metrics, and mitigate risks effectively.