

PRE-PROJECT PLANNING

For industrial processing facilities, developing a concept into engineering documents and ultimately through construction and commissioning can be partitioned into six milestone driven steps. The first three steps are referred to as Front End Loading (FEL) Phases. Followed by Detailed Engineering, Construction & Procurement and Commissioning. This article will discuss these sequential engineering and construction steps and how they are used to create a successful, fiscally responsible project.

FEL 1, 2, 3

The Front End Loading (FEL) Phases are defined as steps to develop strategic information to address risk during a time when the ability to create design changes is high but the cost is relatively low. The scope of each phase can be tailored to meet the specific needs of each project.

FEL 1 - Develop Project Ideas, Define Alternatives

The main tasks of FEL 1 are to define and explore alternatives for the process and equipment, and define capacities, material and energy balance for those process alternatives. Generally speaking the deliverables should be to develop basic process flow alternatives, develop basic general arrangements, establish data analysis spreadsheets and review major

FEL 2 - Evaluate & “Measure” the Alternatives

Tasks associated with FEL 2 include preliminary geotechnical exploration, understanding site conditions, refine the general arrangements, and obtain major equipment quotes. The deliverables include detailed process flows, the geotechnical report and engineer plan drawings.

FEL 3 - Alternatives Selected - Define the Facility

Now we can define the facility by developing a full site plan, understanding equipment reliability, sizing electrical equipment, creating a line list for piping and producing Piping & Instrumentation Drawings (P&ID). FEL 3 deliverables consist of detailed process flows with P&ID and piping drawings, hazard analysis reports and an Opinion of Probable Cost (OPC).

THE FINAL 3

Projects that move beyond the FEL 3 stage are now ready for Detailed Engineering drawings for Bidding and Construction.

Construction phase services include fulfilling requests for information, reviewing shop drawings and the procurement specifications.

The final step in the project is the Engineer's commissioning services, rate acceptances, verification of process safety devices and final inspections and punch lists.

Project Planning - As Simple As 1, 2, 3

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