

preprocessinc

Chemical Engineering for Entrepreneurs

Front End Loading Definitions

Front End Loading (FEL) – Front End Loading (FEL) is a work flow to insure organized and progressively detailed project definition and development. It is commonly also known as FEED or Front End Engineering Development. The work flows are pillars of the World Class Manufacturing methodology and standards.

Typical Activities

- Idea Generation Chalk Talks
- Option Analysis and Debates
- War Room Brainstorming
- Vendor Investigation, Explorations and Qualification
- Laboratory Analysis, Material Characterization and Test Method Development
- Proof of Principle Mock Ups, Model Building and Simulations
- Data Mining, Compilation and Information Casting

Work Products

FEL1 – Opportunity Development: Define the opportunity, resources and performance requirements.

- Deliverables:
1. Performance Objectives
 2. Technology Application and Strategy Assessment
 3. Comparative Summary Benchmarks and Best Practices
 4. Approval Milestone Schedule
 5. Estimated Capital and Operating Expense (\pm 30-100%)

In the form of: The Project Pitch Deck

FEL2 – Scope Development: Develop multiple alternatives that meet the business opportunities and objectives.

- Deliverables:
1. Basic Conceptual Engineering
 2. Technical Studies
 3. Resource Planning Framework
 4. Flowsheets with Mass and Energy Balance (PFDs) and (MEB)
 5. Project Conceptual Schedule
 6. Estimated Capital and Operating Expense (\pm 20-50 %)

In the form of: The Development Report

FEL3 – Execution Development: Develop documents incorporating site-specific conditions and a plan for execution.

- Deliverables:
1. Piping & Instrumentation Diagrams (P&ID)
 2. Layouts and General Arrangements
 3. Equipment Specifications
 4. Procurement Work Flow
 5. Scope of Work
 6. Operationalization Plan
 7. Resource-Loaded Schedule
 8. Authorization-Grade Estimate (\pm 10%)

In the form of: A Basis of Design

Basis of Design (BOD) – An approved BOD and the accompanying approved Authorization For Expenditure (AFE) moves the project into the execution phase. The detailed engineering effort against is now driven as per the Basis of Design.