

SERVICE A — Process Design (Front-End Focused)

A1. Concept Process Design

Purpose: Early feasibility and decision support

Deliverables

- Block Flow Diagram (BFD)
- Preliminary Process Flow Diagram (PFD)
- Design basis & assumptions

Excludes

- Vendor datasheets
- Detailed mechanical design

A2. Basic Process Design

Purpose: Pre-FEED / technical definition

Deliverables

- Final PFD
- Stream tables
- Equipment list with sizing basis

Excludes

- Detailed equipment design
- EPC deliverables unless explicitly scoped

A3. P&ID Development / Technical Review

Purpose: Design clarity and risk reduction

Deliverables

- P&IDs (new or redline review)
- Control intent inputs

Excludes

- Full control philosophy unless separately scoped

SERVICE B — Process Simulation & Optimization

B1. Steady-State Simulation

Tools: Aspen Plus, DWSIM

Deliverables

- Mass & energy balances
- Sensitivity analysis
- Design-ready conclusions

B2. Optimization Studies

Purpose: Decision-driven comparison

Deliverables

- Objective-based scenarios
- Trade-off analysis
- Recommendation memo

B3. Advanced / Dynamic Modeling (Premium)

Tools: MATLAB, Simulink, AMESim

Use cases

- Transient behavior
- Control interaction
- R&D and innovation

SERVICE C — CFD & Multiphysics Analysis

C1. CFD Feasibility & Insight Studies

Tools: ANSYS Fluent, STAR-CCM+

Deliverables

- Physics-based insight
- Design recommendations

Note: Visualization is secondary to engineering conclusions.

SERVICE D — Independent Engineering Review (Owner's Engineer)

D1. Design Verification & Risk Review

Review PFDs, P&IDs, simulations, vendor packages

Written technical opinion

D2. Owner's Engineer Support (Retainer / Phase-Based)

Technical representation

Decision support

Contractor interface

SERVICE E — Specialized R&D & Innovation (Selective)

Accepted only for high-impact, technically challenging projects at premium terms.