

COGNITION
INTEGRATED ENGINEERING SOLUTIONS



ENGINEERING SMARTER SOLUTIONS FOR A BETTER TOMORROW

WHO WE ARE —

At Cognition IES Pvt. Ltd., we are shaping the future of engineering with a commitment to precision, innovation, and client-focused solutions. Established in 2023, we specialize in delivering comprehensive engineering services that drive efficiency, safety, and sustainability across various industries.

Engineering Excellence Across Multiple Domains

We offer cutting-edge solutions in Process, Mechanical, Piping, Structural, Electrical, and Instrumentation Engineering, along with specialized expertise in Modular Package Design, Reverse Engineering, Piping Stress Analysis, and Procurement Support. Our multidisciplinary approach ensures seamless project execution, from conceptualization to final implementation.

At Cognition IES, we are committed to delivering engineering excellence that transforms industries and drives sustainable growth.

Our Email — info@cognitionies.com



GLOBAL PRESENCE

India and USA



50+

Skilled Engineers



65+ YEARS

Combined Leadership
Expertise



ISO 9001:2015

Certified



100% ON-TIME

Delivery Rate

OPTIMIZING PROCESSES FOR MAXIMUM EFFICIENCY

At Cognition, we specialize in process engineering solutions that enhance efficiency, optimize workflows, and improve overall operational performance. With deep **Vertical Expertise** in industry-specific processes and strong **Horizontal Expertise** in engineering methodologies, we help businesses streamline production, reduce costs, and maximize resource utilization.

VERTICAL EXPERTISE



OIL & GAS



ENERGY & UTILITY



PHARMACEUTICAL & BIOTECH



CEMENT & CONSTRUCTION MATERIALS



FOOD & BEVERAGE



WATER & WASTE-WATER TREATMENT



CHEMICALS & PETROCHEMICALS



RENEWABLE ENERGY



AGRICULTURE & AGRO-PROCESSING



TEXTILE & APPAREL



FMCG & CONSUMER GOODS



PULP & PAPER

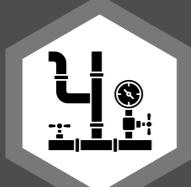
HORIZONTAL EXPERTISE



PROCESS & SAFETY ENGINEERING



PIPING ENGINEERING



PIPING STRESS ANALYSIS



MECHANICAL ENGINEERING



ELECTRICAL ENGINEERING



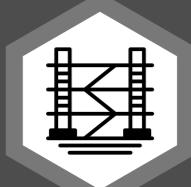
REVERSE ENGINEERING



INSTRUMENTATION ENGINEERING



CIVIL ENGINEERING



STRUCTURAL ENGINEERING



MODULAR PACKAGE

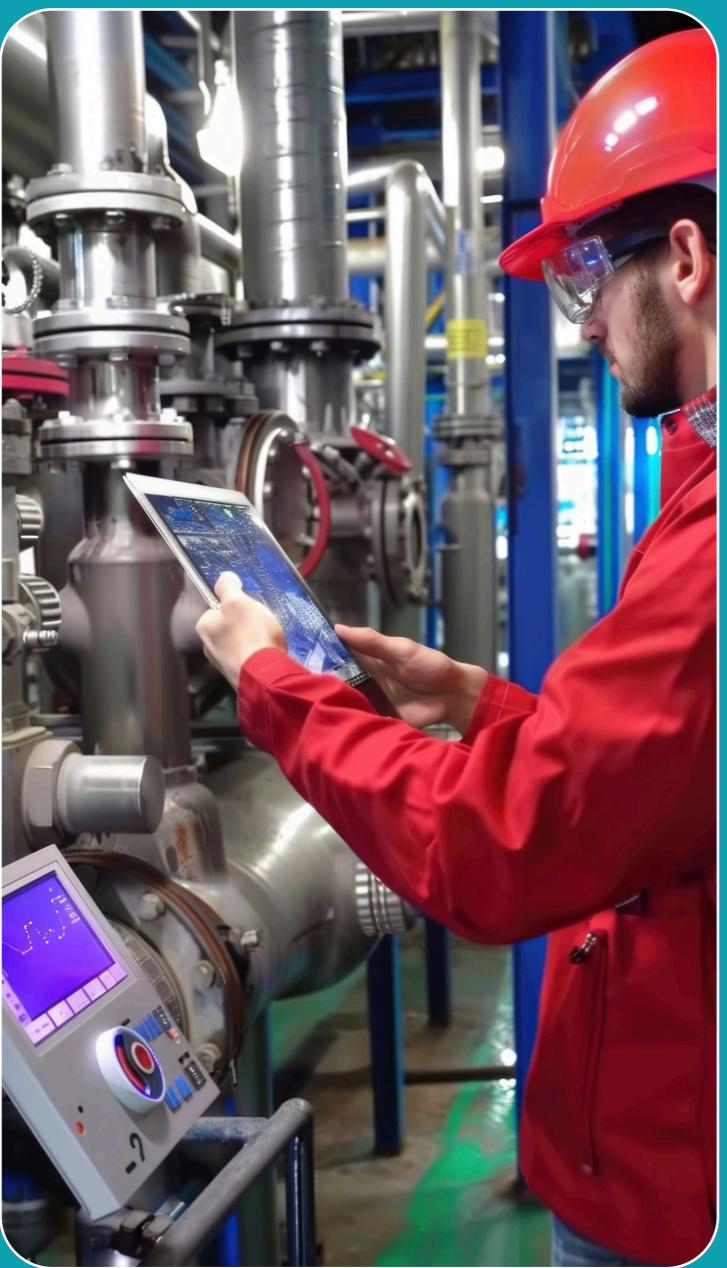


PROCUREMENT SUPPORT

By integrating advanced technologies, automation, and data-driven strategies, we design and implement scalable solutions tailored to industry needs. Cognition is committed to driving continuous improvement, ensuring businesses achieve higher productivity, sustainability, and long-term success.

WHAT WE OFFER..!

1. PROCESS & SAFETY ENGINEERING



Pre-Bid Engineering / FEED

- ✓ Preliminary P&ID
- ✓ Hydraulic Analysis
- ✓ Mass & Energy Balance
- ✓ Utility Consumption Summary
- ✓ Pipeline Sizing & Line List Development
- ✓ Piping Service Index
- ✓ Bill of Quantities (BOQ)
- ✓ Preliminary Thermal Design for HE

Safety & Risk Assessment (Safety Studies)

- ✓ HAZOP
- ✓ SIL
- ✓ HAZID
- ✓ QRA

Process Design & Optimization

- ✓ Pressure Safety Valve (PSV) Sizing
- ✓ HE Design & Thermal Rating
- ✓ Efficiency Assessment
- ✓ Process Optimization
- ✓ Utility Consumption Optimization
- ✓ Distribution Network Hydraulics and Surge Analysis

Revalidation & Retrofitting - Process Design

- ✓ Process Equipment Reassessment
- ✓ Hydraulics Pipeline Review
- ✓ Hydraulics Pump System Re-evaluation

2. PIPING ENGINEERING

Piping Layout & Design

- ✓ Overall & Unit Plot Plans
- ✓ Equipment Layout & GA Drawings
- ✓ Piping Layout & GA Drawings
- ✓ Piping Isometric Drawings
- ✓ Line List / Line Schedule
- ✓ Piping Support Design & Load Calculations
- ✓ Nozzle Orientation, Spool, Special Supports & Platform Design Drawings

Material & Specification Management

- ✓ Piping MTO & BOM
- ✓ Insulation, Painting, & Material Spec.
- ✓ Specialty Items List
- ✓ Valve & Piping Special Component Data Sheets

Analysis & Modeling

- ✓ Piping Stress Analysis
- ✓ 3D Modeling & Simulation
- ✓ As-Built Documentation & Updates



3. PIPING STRESS ANALYSIS



Types of Piping Stress Analysis

- ✓ Finite Element Analysis (FEA)
- ✓ Surge & Slug Flow Analysis
- ✓ Fatigue & Creep Assessment
- ✓ Displacement & Deflection Studies
- ✓ Occasional Load Analysis (Wind & Seismic)
- ✓ Sustained / Longitudinal Stress Evaluation
- ✓ Piping Flexibility & Support Optimization
- ✓ Elastic & Plastic Stress Analysis

Engineering Calculations & Validations

- ✓ Trunnion Support Load Check
- ✓ Upheaval & Buckling Analysis
- ✓ Weld Strength Evaluation
- ✓ U-Bolt Load Calculations
- ✓ Collapse & Structural Stability
- ✓ Flange Integrity Analysis (NC-3685.3 & API Standards)

4. MECHANICAL ENGINEERING

Equipment Drawings & Detailing

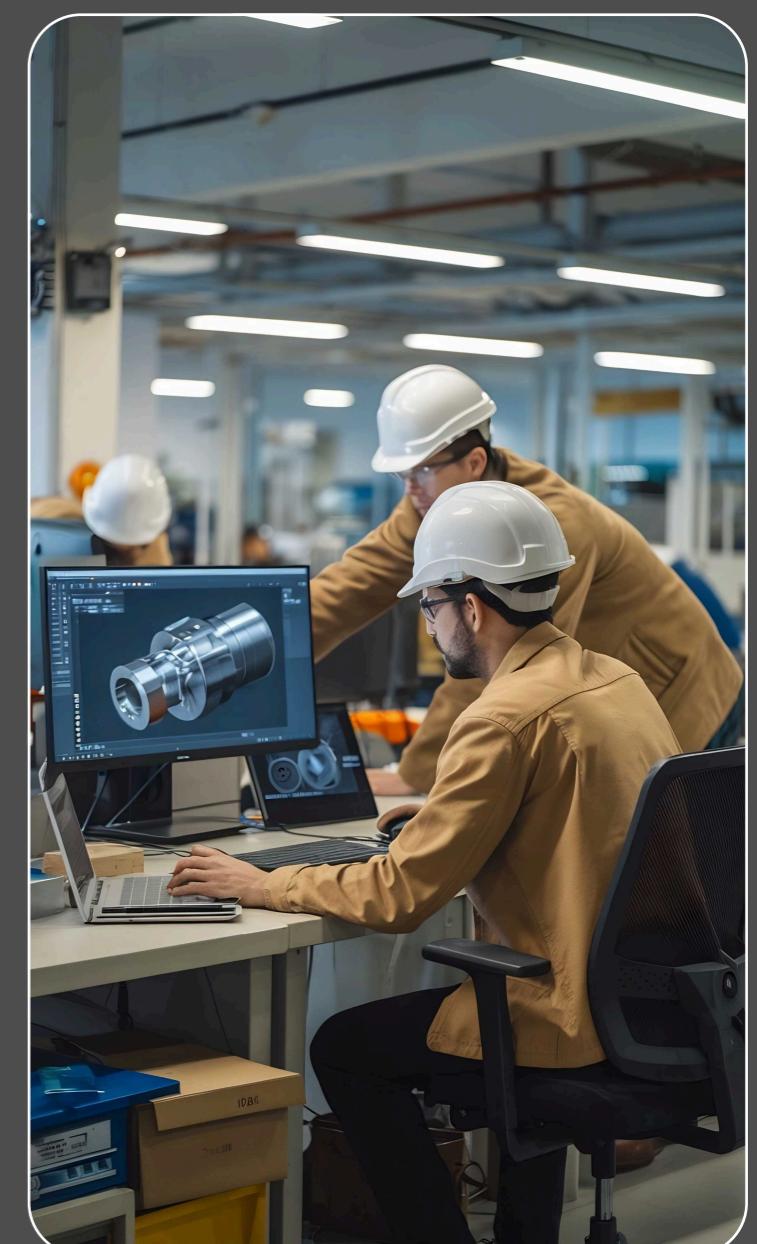
- ✓ Equipment List & Mechanical Datasheets
- ✓ Mechanical Schematic Diagrams
- ✓ Equipment Layout & Arrangement Drawings
- ✓ Fatigue & Failure Analysis (FEA)
- ✓ GA Drawings for Equipment
- ✓ Nozzle & Manhole Detail Drawings
- ✓ Equipment & Pipe Support Drawings
- ✓ Ladder & Platform Support Drawings
- ✓ Tray Support & Welded Internal Details
- ✓ Tube Bundle Detailing for Shell & Tube HE
- ✓ 3D Modeling & Visualization
- ✓ Material Take-Off (MTO) & Bill of Materials (BOM)

Static & Rotating Equipment

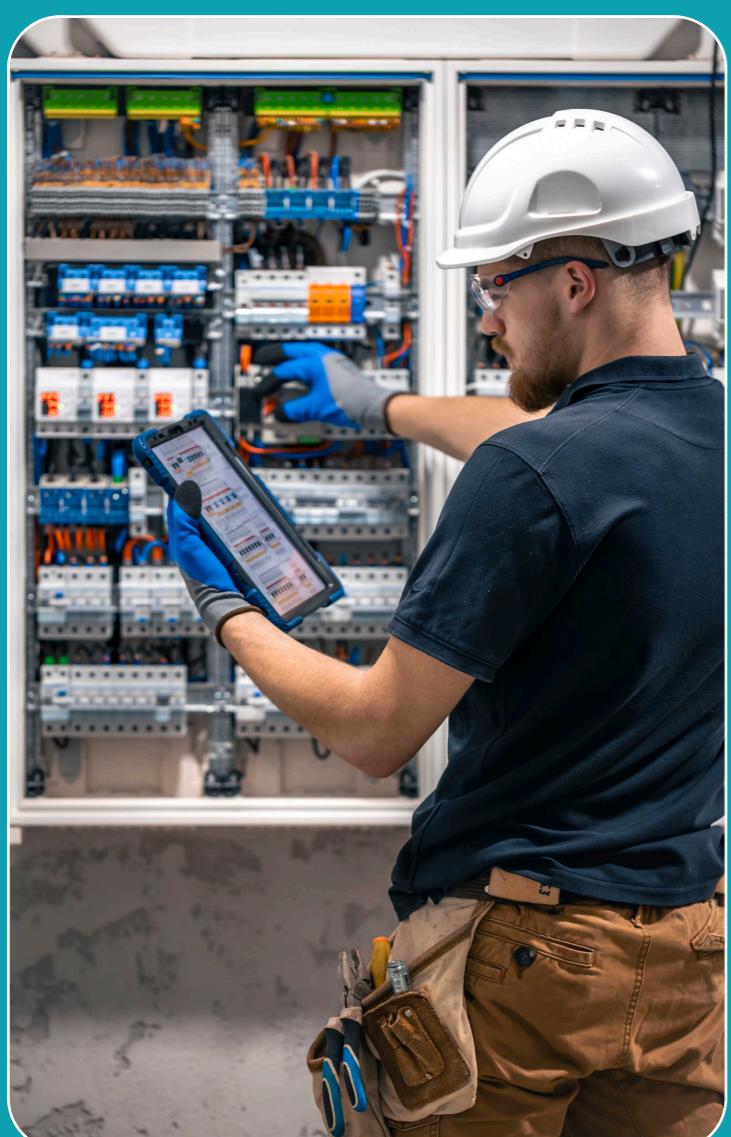
- ✓ Pressure Vessels
- ✓ Columns & Towers
- ✓ Heat Exchangers
- ✓ Storage Tanks
- ✓ Dryers & Cooling Towers
- ✓ Pumps & Pumping Systems
- ✓ Air & Gas Compressors System

HVAC System Design & Engineering

- ✓ HVAC System Design Basis
- ✓ Heat Load Calculation
- ✓ Ducting Layout & Routing
- ✓ Duct Fabrication Drawings



5. ELECTRICAL ENGINEERING



Basic Engineering

- ✓ Electrical Design Basis
- ✓ Preliminary Load List & Equipment Sizing

Detailed Engineering

- ✓ Electrical Equipment Specifications & Datasheets
- ✓ Final Single Line Diagram (SLD)
- ✓ Electrical Equipment & Components Layouts
- ✓ Earthing System Design & Layouts
- ✓ HV/LV Power Cable Sizing & Routing
- ✓ Cable, Illumination & Lightning Protection Layouts
- ✓ Detailed Load List & Feeder Lists for Switchgear, MCCs, DBs
- ✓ Preliminary Single Line Diagram (SLD)
- ✓ Main Equipment & Switchgear Layouts
- ✓ Plant Intercommunication System
- ✓ Power & Control Cable Listings
- ✓ Electrical Bill of Materials (BOM)
- ✓ Erection Tender Preparation
- ✓ As-Built Drawings & Documentation
- ✓ Relay Setting Schedules & Protection Coordination Charts

6. REVERSE ENGINEERING

Advanced Scanning & Data Capture

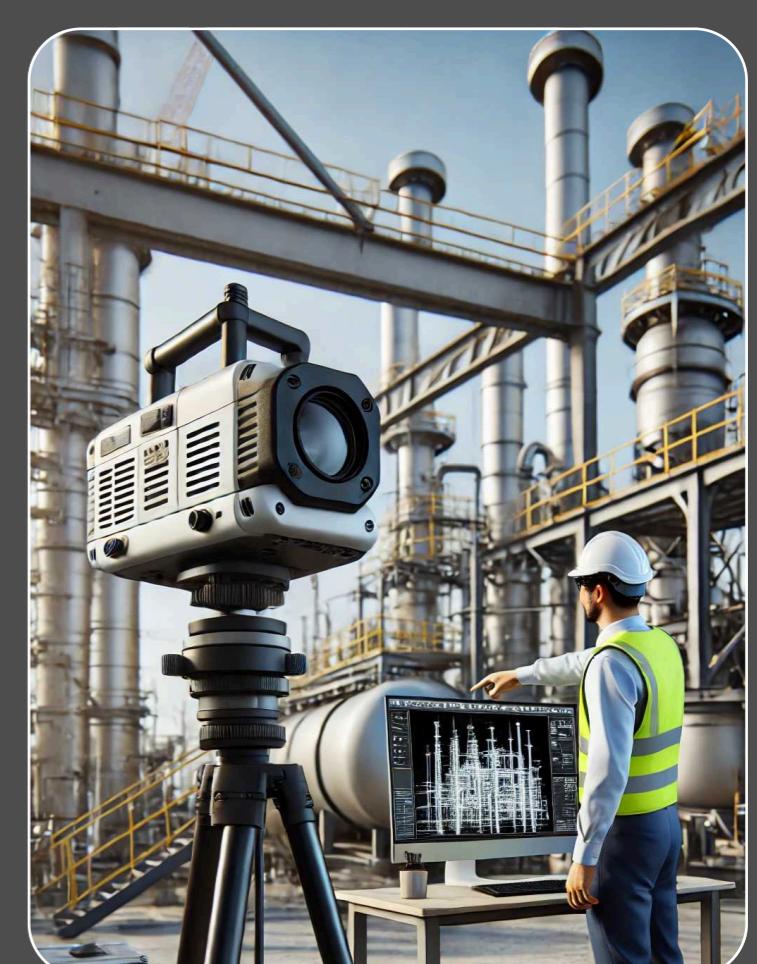
- ✓ High-Precision Laser Scanning for Existing Plants & Equipment
- ✓ Creating Accurate 3D Laser Models from Scanned Point Cloud Data
- ✓ Supported File Formats: .pptx, .pcg, .xyz, .dwg, .dgn, .rvt, .fls, .ifd, .lfd, .rcp

Deliverables & Final Outputs

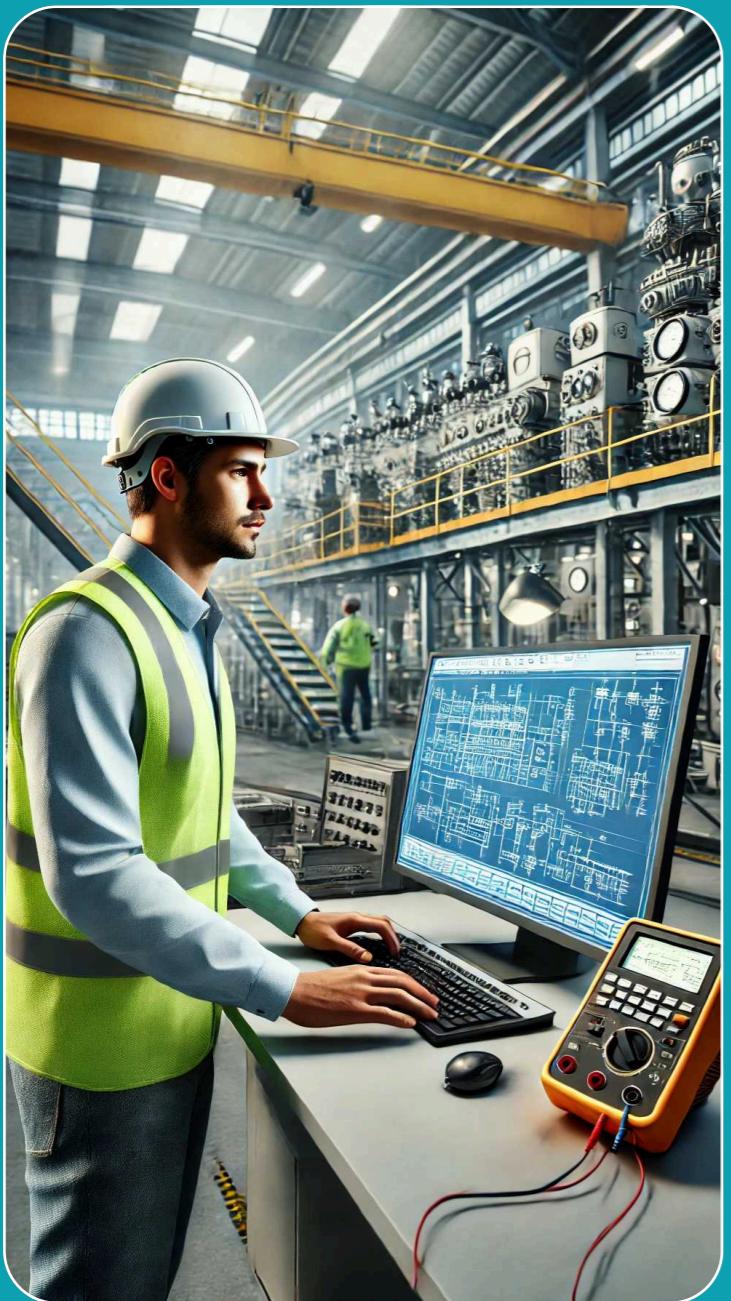
- ✓ Extraction & Submission of Detailed Engineering Drawings & Reports
- ✓ Integration of Reverse Engineered Models into Existing Design Workflows
- ✓ P&ID/Engineering data As-Built Verification

3D Modeling & Data Translation

- ✓ Converting As-Built Data into Millimeter-Accurate 3D CAD Models
- ✓ Generating Dumb Models from Laser Scans
- ✓ Transforming Dumb Models into Intelligent Models



7. INSTRUMENTATION ENGINEERING



Basic Engineering

- ✓ Instrumentation Design Basis
- ✓ I/O List
- ✓ Instrument Cable Block Diagram
- ✓ Instrument Installation Details

- ✓ Preliminary Instrument List / Index
- ✓ Instrument Process Datasheets
- ✓ Hook-Up Drawings
- ✓ Process Optimization

Detailed Engineering

- ✓ Final Instrumentation Design Basis
- ✓ Instrument Location Layout
- ✓ Instrument Index & Specification Datasheets
- ✓ DCS Control Room Layout
- ✓ I/O List & Cause-Effect Diagram/List
- ✓ Cable Tray Routing & Layout
- ✓ Hook-Up Drawings & Erection Hardware MTO

- ✓ Cable Tray & Fittings MTO
- ✓ Instrument Installation Details
- ✓ Junction Box Grouping
- ✓ Instrument Cable Schedule and Wiring Diagram
- ✓ Instrument Termination Drawings
- ✓ As-Built Drawings & Documentation

8. CIVIL ENGINEERING

Site Development & Infrastructure

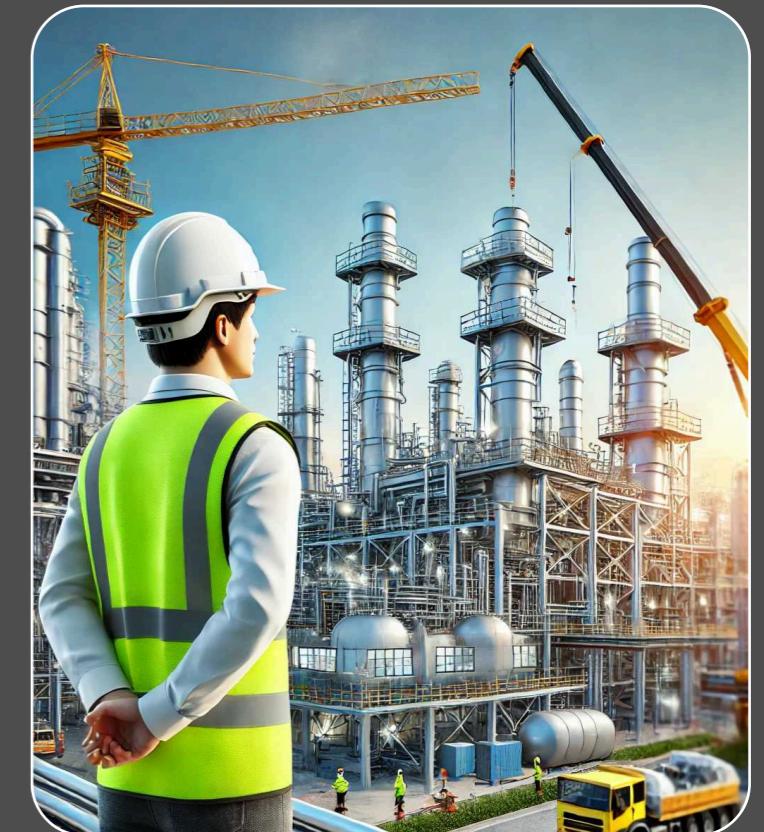
- ✓ Site Preparation, Grading, and Fencing
- ✓ Underground Utilities, Valve Pits, Duct Banks, and Culverts
- ✓ Drainage, Roads, and Paving Layouts

Foundation Engineering

- ✓ Equipment Foundations – Static & Dynamic Analysis
- ✓ Foundation Layouts & Design Reports

Industrial & Commercial Building Design

- ✓ Admin Buildings, Canteens, Utility Blocks, and Non-Plant Structures



9. STRUCTURAL ENGINEERING



Specialized Structural Engineering

- ✓ Hot Oil Heater Supporting Structures
- ✓ Waste Heat Recovery Units (WHRU)
- ✓ Reactor Structures & FPSO Modules
- ✓ Technological Structures & Heavy Industrial Frameworks

Structural Detailing

- ✓ GA, Erection, and Fabrication Drawings
- ✓ Pipe Supports, Pipe Racks, Shelters, Platforms, Crossovers, and Sleepers

Structural Stress Analysis

- ✓ Barge Transport & Offshore Load Handling
- ✓ Dropped Object Impact Studies
- ✓ Transit & Survival Load Assessments
- ✓ Fire, Blast, and Fatigue Conditions
- ✓ In-Place Analysis
(Operating, Damage, Extreme Scenarios)

Transportation & Lifting Engineering

- ✓ Lifting Analysis, Reports & Drawings
- ✓ Structural Integrity Assessments

10. MODULAR PACKAGE ENGINEERING

Modular Skid Design & Engineering

- ✓ 3D Modeling of Skid Package Design
- ✓ Fabrication Isometric Drawings
- ✓ Monorail Calculations
- ✓ MTO & BOM Preparation
- ✓ Structural Steel Calculations
(Including Anchor/Foundation Loads)
- ✓ E&I Skid Engineering (Cable Tray, Junction Box, Small-Bore Containment, etc.)
- ✓ 2D General Arrangement Drawings
- ✓ Detailed Structural Fabrication Drawings
- ✓ Lifting Lug Design & Details
- ✓ Piping & Structural Stress Analysis Reports
- ✓ Weight & COG Calculation for Lifting Arrangement
- ✓ Lifting Arrangement Drawings and Calculations

Process Skid Packages We Handle

- ✓ Custody Transfer Skids
- ✓ Heat Exchanger Skids
- ✓ High-Pressure Systems
- ✓ Fuel Oil Unloading & Transfer Skids
- ✓ Corrosion Inhibitor Skids
- ✓ Chemical Process Skids
(Metering, Injection, Dosing, Feeding, Transport, Blending, Extraction & Filtration)



11. PROCUREMENT SUPPORT



Inquiry & Vendor Management

- ✓ Preparation of Inquiry Specifications for Equipment, E&I, Piping, C&S
- ✓ Floating Inquiries & Managing Vendor Communication
- ✓ Development of Approved Vendor Lists

Vendor Evaluation & Coordination

- ✓ Evaluation of Vendor Offers & Comparison Reports
- ✓ Preparation of Technical Queries (TQ) & Clarifications
- ✓ Vendor Coordination & Follow-Ups

Review & Implementation

- ✓ Review & Approval of Vendor Drawings
- ✓ Integration & Implementation of Vendor Data into Engineering



SOFTWARE STACK

3D SOFTWARE



2D SOFTWARE



ANALYSIS SOFTWARE



MISCELLANEOUS SOFTWARE



BUSINESS ENGAGEMENT MODEL

MODEL 1

FIXED PRICE MODEL

A predetermined cost is set for a well-defined project scope and deliverables, with payment milestones agreed upon upfront.

- 🕒 BUDGET PREDICTABILITY
- 🕒 MINIMAL CLIENT SUPERVISION
- 🕒 NO COST OVERRUNS.

MODEL 2

TIME AND MATERIAL (T&M) MODEL

Payment is based on actual hours worked and materials used, allowing flexibility to adapt the scope during the project.

- 🕒 HIGH FLEXIBILITY
- 🕒 TRANSPARENCY IN COST
- 🕒 IDEAL FOR EVOLVING OR COMPLEX PROJECTS

MODEL 3

DEDICATED TEAM MODEL

A team of engineers works exclusively for the client, acting as an extension of the client's in-house team for long-term projects.

- 🕒 COMPLETE CONTROL
- 🕒 DEDICATED RESOURCES
- 🕒 BETTER ALIGNMENT WITH CLIENT PROCESSES

MODEL 4

OFFSHORE DEVELOPMENT CENTER (ODC)

A dedicated team operates from an offshore location, delivering engineering services at lower costs with 24/7 availability.

- 🕒 SIGNIFICANT COST SAVINGS
- 🕒 ACCESS TO GLOBAL TALENT
- 🕒 CONTINUOUS OPERATIONS ACROSS TIME ZONES.

MODEL 5

BUILD-OPERATE-TRANSFER (BOT) MODEL

The service provider sets up and operates a dedicated offshore team, which is later transferred to the client as a fully functional entity.

- 🕒 RISK-SHARING DURING THE INITIAL SETUP
- 🕒 SMOOTH TRANSFER OF OWNERSHIP
- 🕒 SCALABLE OPERATIONS.

MODEL 6

MANAGED SERVICES MODEL

The provider takes complete responsibility for managing a specific process, function, or system, delivering results based on SLAs.

- 🕒 REDUCED MANAGEMENT OVERHEAD
- 🕒 FOCUS ON OUTCOMES
- 🕒 PREDICTABLE PERFORMANCE

MODEL 7

PROJECT-BASED MODEL

The provider delivers a one-time project with defined milestones, deliverables, and timelines, ideal for short-term needs.

- 🕒 CLEAR OBJECTIVES
- 🕒 MINIMAL CLIENT INVOLVEMENT
- 🕒 PREDICTABLE TIMELINES

MODEL 8

HYBRID MODEL

A combination of two or more models, such as Fixed Price for defined tasks and T&M for evolving requirements, to balance control and flexibility.

- 🕒 ADAPTABLE TO PROJECT NEEDS
- 🕒 COST CONTROL
- 🕒 EFFECTIVE FOR LARGE DYNAMIC PROJECTS

ADVANTAGES OF OUR ENGAGEMENT MODEL



FLEXIBILITY



SCALABILITY



COST-EFFECTIVENESS



ACCESS TO EXPERTISE



TIME SAVINGS