NAHAL SANAT PASSARGAD (NSP) PORTFOLIO

NAHAL SANAT PASARGAD
PRIVATE SECTOR
ENGINEERING FIRM 483697

www.Nahalsanat.com

Last Updated 2023

About Us

Nahal Sanat Pasargad (NSP) formed of the country's knowledgeable and experienced mineral processing and steel industry, provides **N**onpareil, **S**ustainable and **P**roductive engineering services with implementation of state-of-the-art design methods based on worldwide approved standards and codes of practice in mining and mineral industries to fulfil the limitations and shortcomings these markets currently face in the country.

We take pride in our accomplished, experienced and professional engineers who are the organization's main assets in fulfilling its mission of helping clients to meet their business objectives through Engineering, Procurement and Construction (EPC) method encompassing feasibility studies, project management and planning, preliminary and detailed engineering designs, equipment procurement, installation, erection and supervision services, workshop and superior supervision, commissioning and technical supports during utilization and guaranty periods to the best quality available worldwide.

SUSTINABLE AND AUTHENTIC ENGINEERING SOLUTIONS

N S P (Nahal Sanat Pasargad);

Nature Friendly

Sustainable

Productive Engineering Services

Core of our strategy

Areas of Services and Expertise

1. Engineering Services

1.1. Feasibility studies of designs

1.2. Preliminary and Basic engineering designs

1.3. Detailed engineering design

1.4. Procurement engineering

1.5. On-site Engineering Services

2. Commercial Services

2.1. Tenders and market development services

2.2. Equipment procurement

2.3. Legal and contractual services

3. Manufacturing, Installation and Commissioning Services

4. Consultation, Supervision and Contract Management Services

4.1 Project planning and control

4.2 Engineering design review services

4.3 On-site supervision services

5. Inspection and Quality Assurance Services

1. Engineering Services

Services include:

1.1. Feasibility studies of designs

Based on plant usage i.e., processing, pelletizing, direct reduction, steel making, etc. the following factors are technically and financially evaluated. Loading points, product delivery, rate and type of material, material handling control system and storage technique.

Eventually, equipment arrangement and material handling systems and buildings in factory's preliminary layout format along with system processing in PFD and P&ID documents formats are provided.

These are generally done in the following steps:

- Market research.
- Industrial unit suitable positioning and lay-out.
- Preliminary research, conceptual design, technology, and production process selection.
- Provision of preliminary arrangements of factories, industrial units, and equipment.
- Preparation of project time schedules.
- Preparation of data and financial bases of designs.
- Investment and operational costs estimation.

1.2. Preliminary and basic engineering designs

The main services offered in this field include:

- Drafting basic designs of process, instruments, and control, civil, structural, architectural, mechanical, piping, electrical, safety and environmental domains.
- Preparation of production line diagrams including BFD, PFD, P&ID basic drawings.
- Mass-energy balance calculations.
- Preparation of plant lay-out and equipment arrangements.
- Determining type, number, and dimensions of equipment.
- Equipment technical specifications and data sheets preparation.

- Preliminary engineering documents preparations in the fields of instruments and control, mechanical, piping, electrical, safety and environmental.

1.3. Detailed engineering design

NSP's main services within detailed engineering design include:

- Checking, revising, modifying, optimizing and technical and engineering approval of the preliminary design.
- Designing and preparing documents and drawings for process engineering, control, and instruments.
- Preparing and finalizing machines and equipment technical specifications and other mechanical engineering documents.
- Preparation and compilation of documents and drawings of electrical engineering, facilites, fluid, and energy transmission lines.
- Preparation of structural and architectural engineering documents and drawings.
- Preparation of documents and drawings for piping engineering, supporting and stress analysis.
- Multi-disciplinary 3D-modelling of projects.
- Preparation of bill of materials (BOM)
- Preparing procurement engineering documents.
- Designing drainage systems, fire safety systems and insulation of industrial and non-industrial buildings in durable manner with corrosion protection of corrosion prone materials if applicable.
- Preparing technical instructions for inspection services based on project's standards.
- Preparing and compiling technical instructions for commissioning, operation, maintenance of industrial units.

1.4. Procurement Engineering

- Determining inspection, control, and testing methods.
- Preparation of technical specifications.
- Preparation of technical documents for project equipment procurement.
- Supporting clients in holding inquiries and tenders and responding to the participants.
- Supporting clients throughout various stages of bids and technical bid evaluation.
- Producing manufacturing/procurement contracts for the successful bidder of the tender/inquiry.
- Revision and approval of drawings produced by manufacturers and commenting.
- Evaluation and confirmation of technical specifications of tools and various parts of the proposed equipment with that of the manufacturers and vendors contracts and commenting.
- Responding to the technical questions of manufacturers, vendors, and contractors during their contract periods.
- Researching and identifying reputable domestic manufacturers and produce approved vendors' list (AVL) with a view to reduce projects' costs.

1.5. On-site engineering services

Engineering workshop services include all civil and structural, electrical, instrument, mechanical, paint and insulation related activities carried out on-site. The engineering team by employment of experts in various engineering disciplines can respond to questions of various contractors during manufacturing and installation in SQ and TQ format. They can also address possible design shortfalls stemming from procurement and implementation changes by providing amendment drawings and engineering workshops.

Examples of design and engineering projects of NSP include direct reduction for Pasargad Steel Co., smelting material handling for Pasargad Steel Co., iron ore processing for Jahan Nemove Co., safety, and fire extinguishing systems for Sangan concentrate and desulfurization of Ilam Petrochemical Co.

2. Commercial Services

2.1. Tenders and market development

- Carrying out technical and financial justification studies for potential projects in the country's mining industry.
- Participation in EPC, MC tenders of different industries to enter different markets and grow the number of company projects.
- Participating in tenders and affirming readiness to provide the main equipment related to mining industries.
- Signing alliances with reputable national and international companies.
- Various projects' tenders cost estimation.

2.2. Equipment procurement

- Identifying accomplished contractors, manufacturers and vendors specialized in meeting the needs of various projects procurement and manufacturing.
- Supporting clients in holding tenders and responding to the participants of these tenders to identify the prevailing bidder.
- Liaising with clients in technical evaluation of recommendations of manufacturers and vendors and providing relevant report to determine the qualified successful bidder.
- Assessing the skills of various manufacturers to prepare approved vendors' list (AVL) with the view to indigenizing technology.
- Preparing national and international tendering documents and estimating projects' costs.
- Offering required services to build various equipment related to ongoing projects of the company.
- Supplying spare parts for industrial and mining factories.
- Carrying out various international trade services such as obtaining technical and financial proposals, finalizing contracts, transportation, customs clearance and delivering goods at the project's site.

2.3. Legal and contractual services

- Preparation and compilation of pre-evaluation documentations to identify qualified contractors to implement industrial projects.
- Preparation and compilation of national and international tenders to identify eligible contractors to execute projects.
- Technical- financial evaluation of contractors participating in the tenders.
- Preparation and compilation of national and international contracts.
- Offering legal and financial consultation services to clients during and after contract formation and signing.
- Preparation and compilation of legal and technical agenda in various fields related to the contract.
- Preparation and compilation of contracts for equipment and goods procurement, manufacturing and contracting.

Commercial related services of NSP are not only limited to finding and assigning various projects to the country's reputable and prosperous clients considering. NSP also offers required procurement nationally and internationally and legal and contractual related services. Some of the most prosperous commercial projects of NSP include Chah Firoozeh copper project assignment to Tanavob GC Co., Sungun lime assignment to Canymes Industrial and Mining Engineering Technical Services Company, assigning Sangan fire extinguishing systems re-design to Me'yar Sana't Khavarmiyaneh Engineering Co.

3. Manufacturing, Installation and Commissioning Services

NSP's perspective in manufacturing and implementation fields are to manage and coordinate manufacturing, installation, and implementation process through employment of skillful and specialized outsourced teams such that manufacturing and installing projects are carried out in a homogeneous and integrated manner.

In this aspect, the following is the list of services that our consultant engineers can manage and perform:

- Construction of factories outbuildings and equipment buildings.

- Soil structure evaluation through soil mechanics tests.
- Surveying and preparing topographical maps of the natural field.
- Design arrangement and execution.
- Erection of concrete and steel structures.
- Masonry and architectural projects construction.
- Landscaping.
- Installation and execution of piping, industrial valves and building services.
- Installation of ventilation, heating, and cooling systems.
- Water and steam powerplants implementation.
- Instrument and electrical facilities implementation.
- Cabling, earthing, and lighting installations.
- Engineering workshop services such as final book and drawings mark-ups and as-built drawings preparation.
- Prefabricated structures erection.
- Installation of rotating and stationary mechanical equipment.
- Electrical equipment and instrument installation.
- Storage tanks erection.
- Cold testing.
- Commissioning services.
- Pre-commissioning and hot testing.
- Testing and commissioning of mechanical equipment, electrical and instrument along with obtaining Performance certificate in compliance with manufacturers' instructions.
- Testing and commissioning of electrical equipment and instrument and obtaining Performance certificate in compliance with manufacturers' instructions.
- Service and maintenance during guaranty period.

Steel structures fabrication and erection and material handling of Ilam petrochemical holding structure for Norahan Sanaye company is one successful project example amongst many

others done by NSP within this field of service.

4. Consultation, Supervision and Contract Management Services

4.1. Project planning and control

- Managing, controlling, and executing projects and coordination between contractors and consultants to address construction issues.
- Preparation and compilation of project progress report.
- Financial planning and control of designs and their executions.
- Planning and controlling projects' commodity and execution of projects
- Planning and controlling technical documents and designs' correspondences and execution of projects.
- Document controlling, documenting and preparing technical and operational documents of projects.

4.2. Engineering designs checks

- Determining and approving codes of practice and standards and design calculation techniques.
- Monitoring engineering procedures to comply with the contract terms, conventions, and standards.
- Executive decision making about engineering tasks' modifications.
- Reviewing and validating preliminary designs.
- Detailed engineering designs revisions and validations.
- Procurement process checks and chasing suppliers to issue the required documents.
- Filing the produced drawings and technical documentations of the designs until the project completion and submitting it to the clients.

4.3 Workshop supervision

- Controlling properties, leveling and other surveying and topographical aspects of the facilities installation site.
- Supervising safe loading and transporting of equipment to the client's designated site.
- Monitoring the compliancy of coordinates with the design implemented by the

contractors.

- Projects implementations quality control to ensure compliancy with relevant standards and technical qualities specified in drawings.
- Monitoring reflection of construction drawings modifications in workshops on the original copies by contractors.
- Participating in mechanical installations completions committees, provisional and definite deliveries.
- Compiling details of additional or defective activities, cost, and quantity estimation for clients' approval based on contracts' terms and submitting to the contractors.

4.4 Superior Supervision

- Design and operational proceedings control and management and coordination between contractors and consultants to resolve operational issues.
- Inspection, revision, modification, optimization, and technical and engineering approval of the preliminary design.
- Checking, reviewing, and approving engineering workshops documents.
- Supervising during construction and procurement of facilities and equipment.
- Monthly progressive workshop reports compilation.
- Construction material and equipment procurement services upon request.
- Direct supervision of parts and equipment fabrication to ensure compliancy of these with the relevant technical specifications.
- Listing construction materials and estimating the bulk of operational activities.
- Cost estimation of operational activities and evaluating contractors' invoices.

5. Inspection and Quality Assurance Services

In the quality engineering field of service, technical foundation, references and compiled procedures of quality inspection standards and correspondences and the relevant reports of projects are reviewed.

In the quality inspection department, senior quality control specialists in various fields of engineering are responsible for inspection not only during manufacturing and installation but also during equipment procurement and supply. The inspection tasks are done based on Inspection and Tests Plan (ITP) and in compliance with approved practical procedures of the organizations and projects.

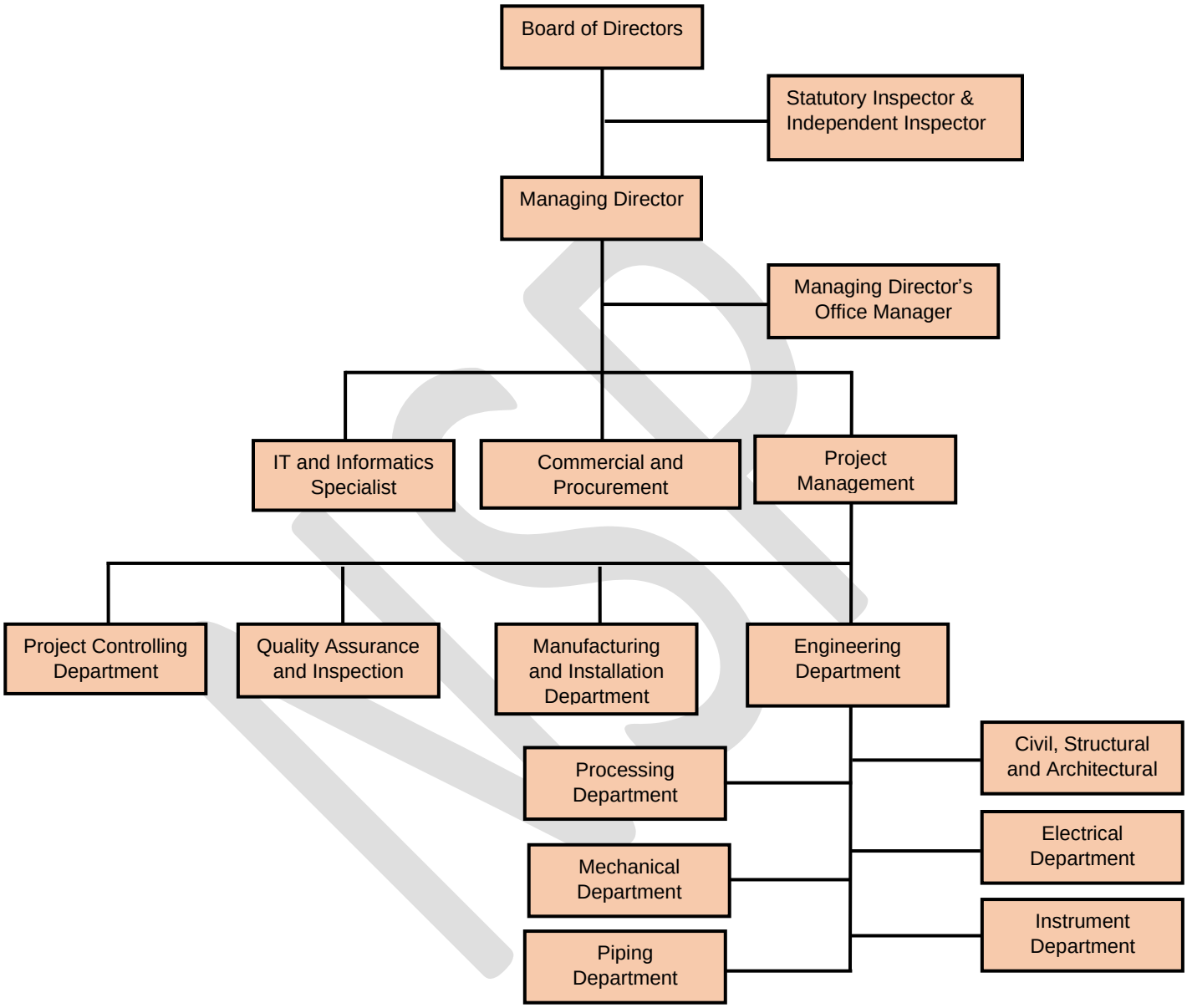
The predominant responsibilities within this area include (but not limited to):

- Ensuring the quality assurance schemes of the quality control department are implemented and monitoring.
- Ensuring corrective measures (in case of non-compliances) and preventative measures (to avoid future non-compliances) are implemented. Furthermore, following-up to ensure these corrective and preventative measures are taken place in the quality assurance department.
- Ensuring that instructions and anticipated practical methods of the quality assurance department are followed.
- Compiling quality instructions and terms and conditions for technical specifications of all available products and monitoring their implementation.
- Obtaining technical specifications and tolerance windows from the engineering units.
- Preparation of inspection instructions methods and procedures.
- Specifying the required inspection instruments.
- Approval and/or dis-approval of evaluated suppliers in the procurement department.
- Specifying and defining monitoring stations and procedures of the production line.
- Calibrating measuring instruments which can be calibrated in-house or else sending the

others along with reference measuring instruments to a reputable laboratory for calibration when calibration is due.

- Registering calibration related information of measuring instruments.
- Obtaining and archiving all the calibration related documents of the instruments and equipment that are calibrated in laboratories outside the organization.
- Transferring quality deficiencies of the products produced to the production, assembling and quality assurance accountable parties of products promptly.
- Rapid transfer of the highly deficient produced products to the quality assurance manager.
- Tracking non-compliance products upon request and in case of costumer dis-satisfaction.
- Preparation of defect root cause analysis reports of the laboratory machines to the concerning department.
- Holding team meetings to assess technical and quality issues.
- Obtaining information relevant to the input items from the procurement department and informing the control inspectors, testing the raw materials, and chasing the non-compliance reports (NCR) of the non-complied products.
- Archiving all the technical drawings and documents received from the technical department.
- Maintaining all the documents related to quality assurance of quality control.
- Attending continuous development and productivity meetings to collaborate in obtaining licenses.

Organizational Structure



Engineering Department

Major engineering services categorized based on the company's main departments are described as follows.

Processing Department

Services offered within EPC projects:

- Designing and leading laboratory and pilot studies to produce metallurgical tests report.
- Optimization of offered process cycle based on metallurgical tests report.
- Producing process documents based on the metallurgical tests report such as PFD, UFD, BFD, Mass Balance, Process Description, Process Design Criteria, Reagent Consumption List.
- Producing joint documents such as P&ID, Equipment Data Sheet, Control Philosophy, General Arrangement, Plot Plan, Utility Consumption List with the aids of mechanical, instrumental, and civil units.
- Supporting and offering required services to the engineering unit present on site (engineering workshop).
- Offering required services in pre-commissioning and commissioning periods to temporarily delivery to factories during guaranty period.

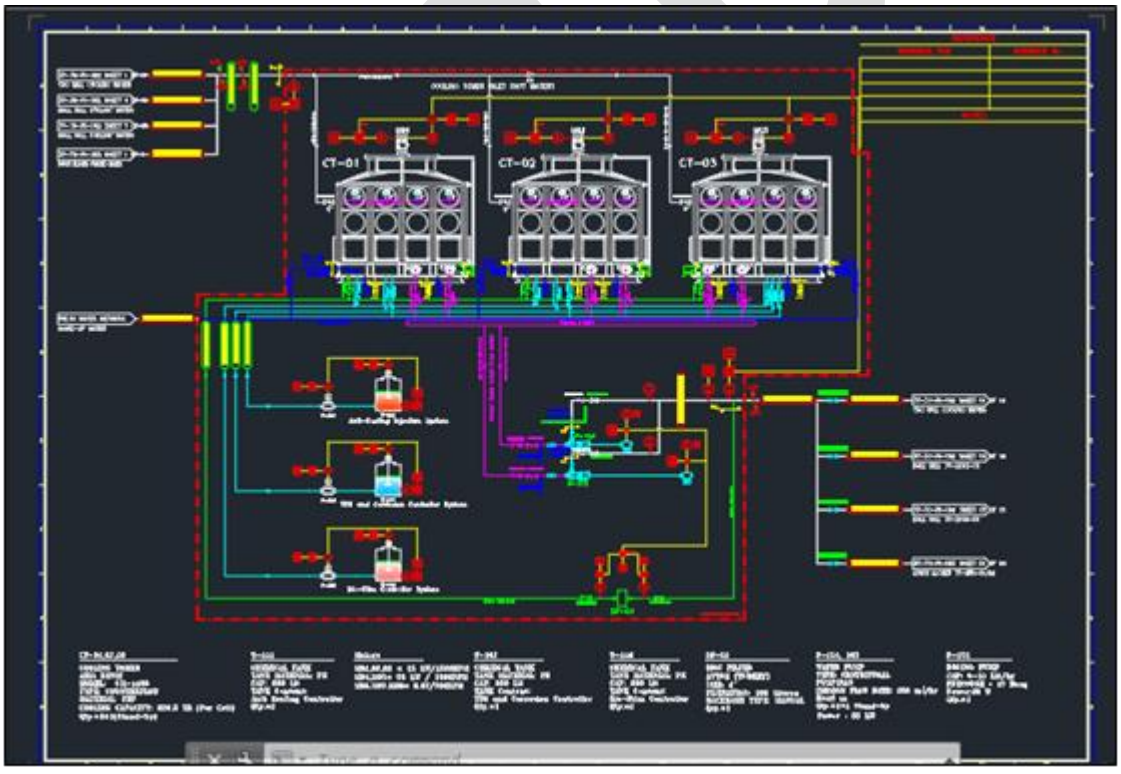
Services offered within MC and consultation projects:

- Reviewing and checking process documents such as: PFD ،UFD ،BFD ،P&ID ،mass balance ،process description ،process design criteria ،equipment data sheet ،control philosophy،general arrangement, plot plan ،metallurgical test reports, etc. produced by the contractor.
- Research and report preparation about the projects process based on client's request.
- Factory site inspection during various stages and give recommendations to improve the process.

- Supporting and offering required services to the on-site engineering unit upon request.

General Engineering Activities:

- Carrying out various laboratory testing if required.
- Sizing some equipment such as sieve, rock crusher, mills and Hydrocyclone.
- Theoretical research and data gathering in specific fields of process design.
- Offering process engineering services for research projects purposes.
- Providing engineering services required for feasibility projects.



Mechanical Department

Design specific fields include:

- Design of mechanical systems and equipment, stationary and rotating machines, atmospheric and pressure reservoirs, material handling systems, cranes, equipment package, etc.

Mechanical engineering services in EPC projects are as follows:

- Preliminary and detailed engineering services.
- Procurement engineering services.
- Technical inspection services.
- Producing fundamental documents such as Design Criteria, Technical Specifications and Conceptual Design in the following areas:
    - Stationary and rotating equipment.
    - Special equipment.
    - Material handling.
    - Dust collectors.
- 3D modelling using Solid Works software.
- Preparing factory equipment layout.
- Preparing documents and detailed drawings in all areas.
- Procurement documentation preparation.
- Preparing as-built drawing based on construction of the final design.

Procurement Engineering Services:

- Assessing tender documentations proposed by bidders.
- Final technical bid evaluations and technical gradings of the bids.
- Manufacturers' documentations review and offering technical comments during all manufacturing processes.

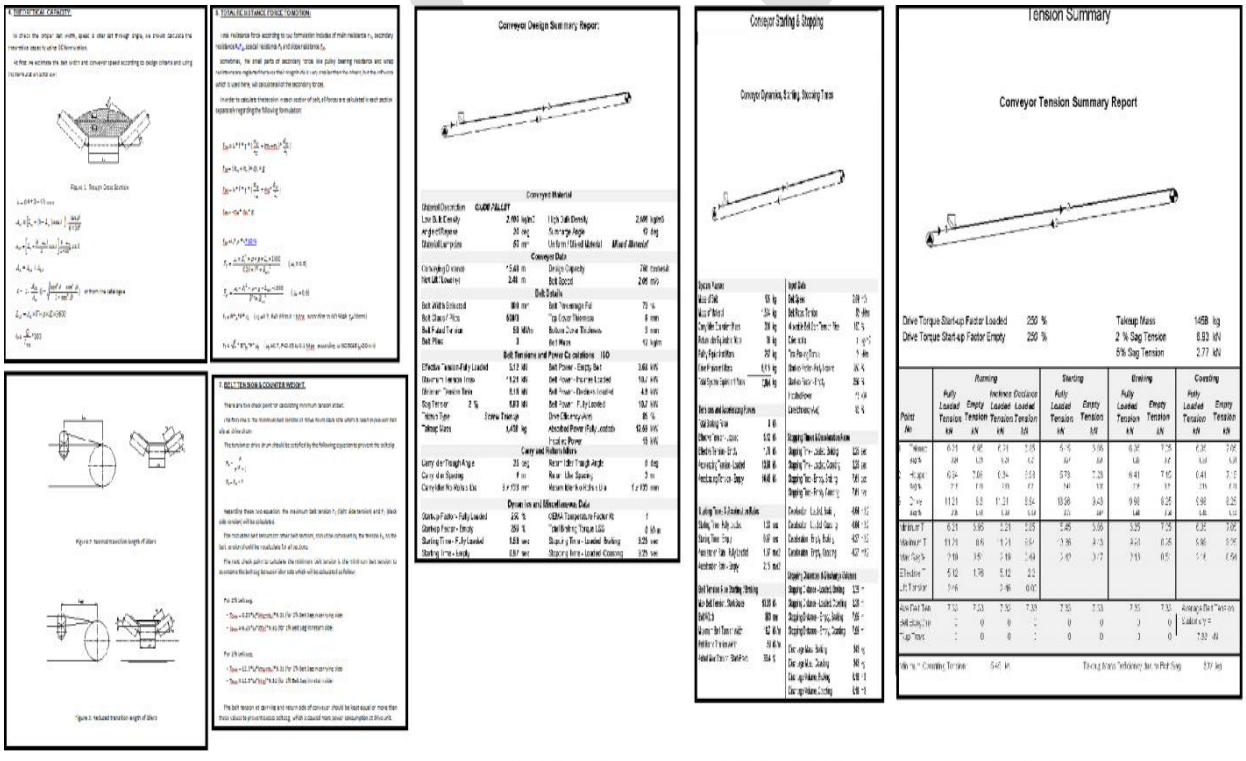
Technical Inspection Services:

- Reviewing “Quality Control Plans” of manufacturers and providing corrective feedbacks.
- Technical assessment of the equipment based on the approved “Quality Control Plan”.
- Providing technical feedback to manufacturers.

Design Review Services:

- Collecting required data (Data Gathering) for design during site visit.
- Assisting in inspection and engineering workshop to resolve manufacturing, installation and commissioning issues and boundaries.
- Describing mechanical engineering services offered in MC projects.
- Reviewing list of contractors' engineering documents to comply with the contracts and projects' requirements.
- Reviewing contractors' engineering activities schedules.
- Reviewing engineering documents such as drawings and calculation packs and files.

An example of calculation pack reviewed.



Primary Calculation

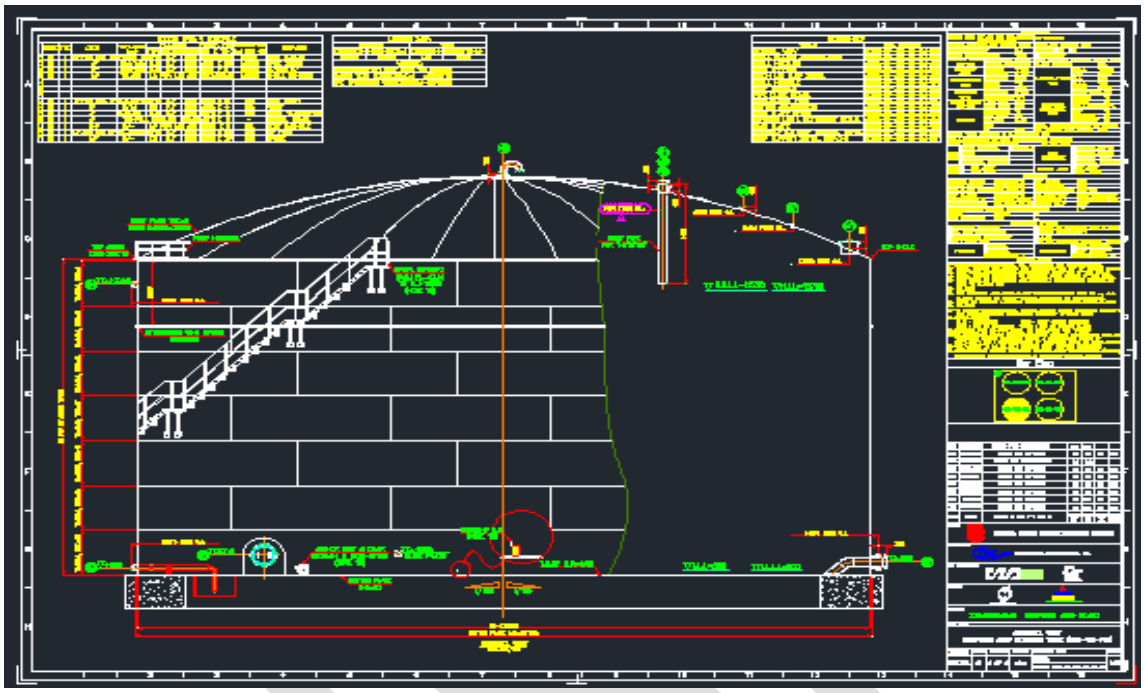
Design Summary

Start & Stopping

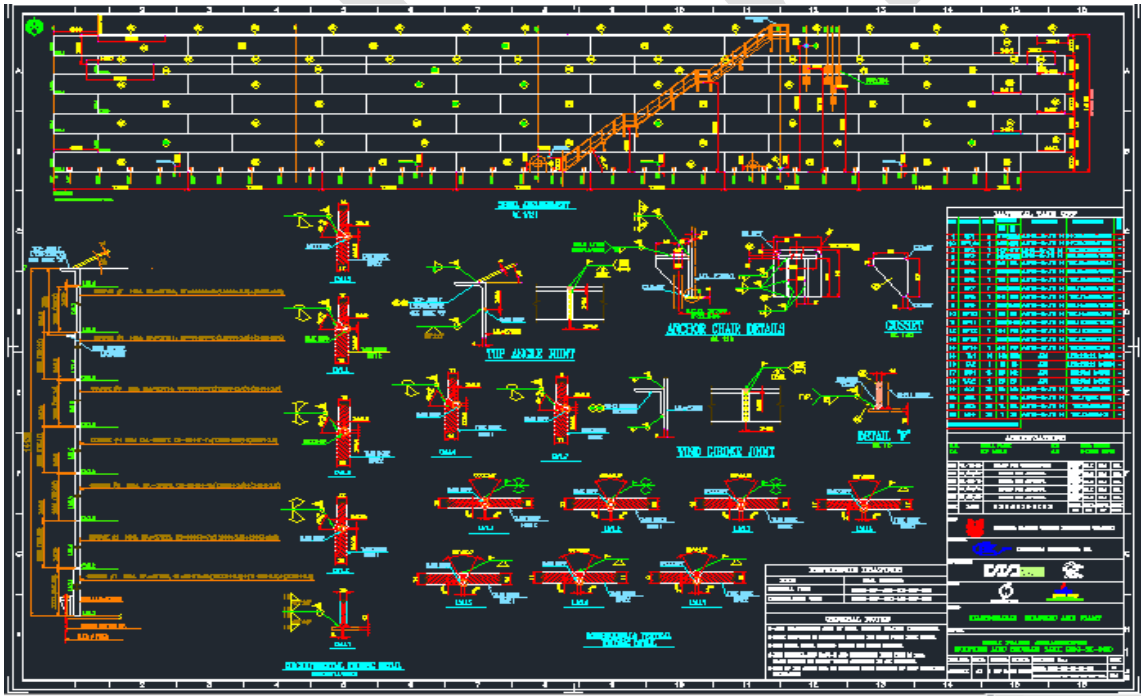
Tension Summary

An Example of equipment general arrangement drawing

An example of storage tank layout drawing



Examples of storage tank detailed drawing



Piping and Modelling Department

Design specific areas are:

- Designing fluid systems of air handling unit, cooling, and heating systems of buildings and industrial units.
- Designing fluid systems of gas transmission systems, pressure reduction stations, oxygen generator factories, air compressor facilities, hydraulic facilities, lubrication facilities, etc.
- Designing fire extinguishing, water supply and sanitary water supply and industrial waste systems
- 3D modelling of industrial projects using PDMS software.
- Designing piping systems and designating supports.
- Stress analysis of piping systems.

Preliminary engineering phase:

Piping related preliminary engineering services available upon clients' requests are material selection, calculating initial loading stemming from supporting, sizing of processing and utility lines, piping root study, piping source selection, stress analysis calculations, compiling a vast collection of insulation approaches and instructions, coverage and painting, support designations, installation, testing and commissioning of piping systems.

These services are submitted to clients for their review and approval in the following formats:

- Piping Material Specification
- Piping Design Criteria
- Pipeline Size Calculation Report
- Piping Route Study
- Piping Load Estimation Report

Detailed engineering phase:

Upon receipt of initial equipment layout and processing P&IDs, 3D modelling of equipment by use of PDMS software is carried out. In this modelling all components of the projects such as routes and access routes, landscaping and grading, sheds and buildings, equipment, conveyor belts, piping systems, route cabling are entirely reflected.

To speed up the process and adding details, structural data can be added from Tekla file (if available) into the 3D model if necessary. Equipment drawings are also capable of being added to the model through Solid Work files.

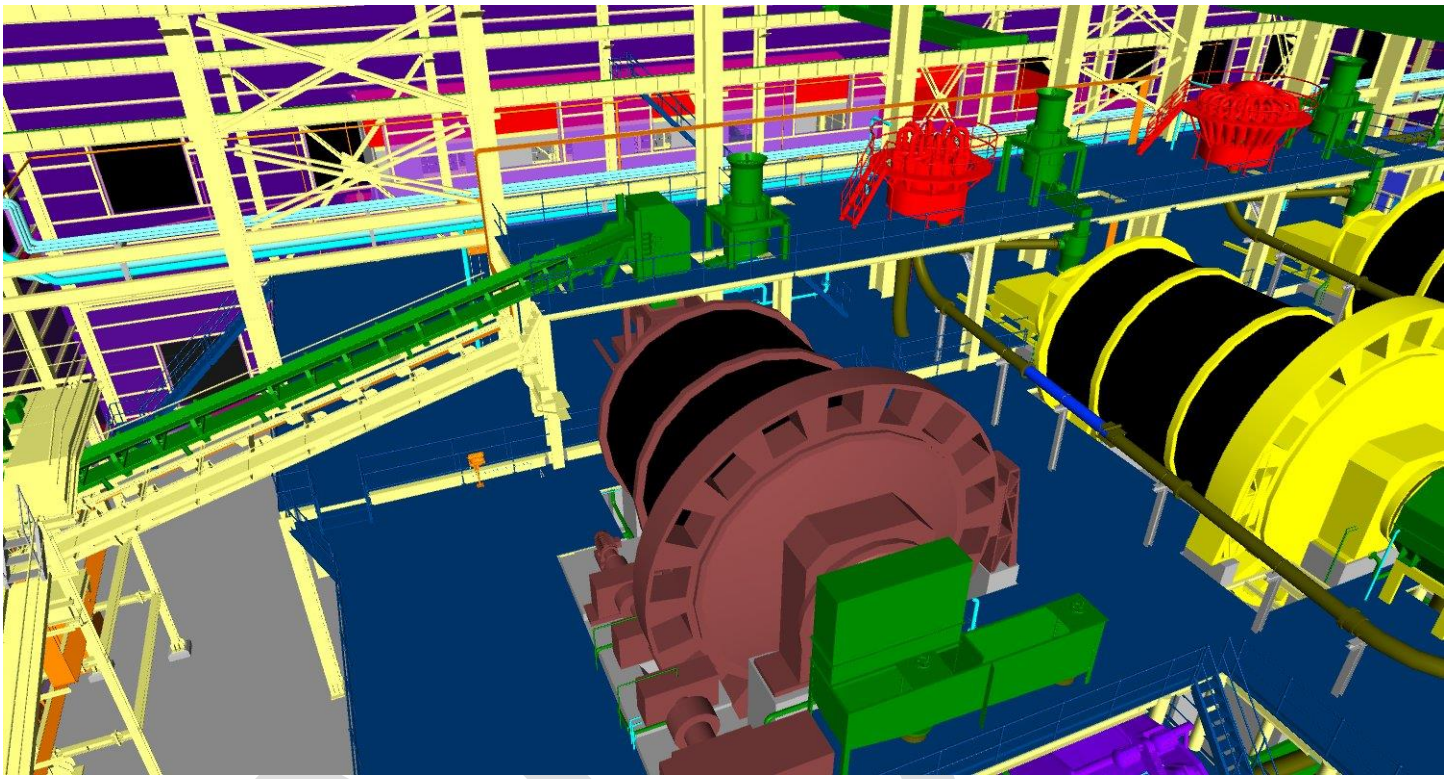
Once structures and equipment are modelled, modelling of piping systems commence. These are reviewed and approved through joint meetings with clients, operational and procurement teams upon completion at 30%, 60% and 90%.

In this phase, in case of sensitive systems, stress analysis calculations are carried out by “Caesar II” software. To calculate allowable stress of piping systems, loading is applied on the nozzles of equipment and the structure’s stability against seismic actions, snow and wind loading is analyzed. The results are presented to the client in form of stress analysis calculations pack.

Upon 90% completion phase detailed pipe drawings and documents provided are:

- Piping Arrangement Drawings.
- Piping Isometrics.
- Piping Support List / Drawings
- Piping Bill of Material
- Support Bill of Material
- Datasheet for Special Items
- Stress Analysis Report
- Piping Line List
- Manual Valve List
- Piping Support List & BOM

An example of 3D modelling work done



An example of produced drawing

Facilities and Safety Department

Our experts of the facility team, after local climate and cultural research and consultation and discussion with the client, produce facilities proposal report in “HVAC Design Criteria” format to receive the client’s considered level of welfare facilities.

In the safety field, the team produce “Safety Concept” fundamental document based on “Fire Risk Analysis (FRA Report)” comprehensive report after local data gathering, consultation with the client to select the optimized and standard fire alarm and fire extinguisher systems, extensive research about risk analysis and extinguishing scenarios

An example of FRA Table

Table 9 – Risk Rank

Risk Rank	Substation	Consequence	Likelihood	Risk (Consequence × Likelihood)
1	GRINDING & SEPARATION 1 SUBSTATION	0.82	0.78	0.64
2	GRINDING & SEPARATION 2 SUBSTATION	0.82	0.78	0.64
3	CONCENTRATE FILTERING SHOP SUBSTATION	0.66	0.52	0.34
4	GYRATORY CRUSHER SHOP SUBSTATION	0.54	0.50	0.27
5	TAILING FILTERING SHOP SUBSTATION	0.50	0.49	0.25
6	PZ1 SUBSTATION	0.46	0.47	0.22
7	ORE STOCK YARD SUBSTATION	0.43	0.49	0.21
8	LZ1 TRANSFER STATION LV SUBSTATION	0.43	0.47	0.20
9	LZ2 TRANSFER STATION 6.6KV SUBSTATION	0.43	0.47	0.20
10	PZ2 SUBSTATION	0.43	0.47	0.20

Also it can be presented as NFPA standard Risk Table:

Table 10. NFPA Risk Table

Frequent (0.85-1)				
Probable (0.7-0.85)				GRINDING 1, GRINDING 2
Occasional (0.55-0.7)				
Remote (0.4-0.55)	LZ1, LZ2, ORE, PZ2	TAILING, GYRATORY, PZ1	CONCENTRATE	
Improbable (0.3-0.4)				
	Negligible (0.28-0.46)	**Marginal (0.46-0.64)**	**Critical (0.64-0.82)**	**Catastrophic (0.82-1)**

Low Risk
Moderate Risk
High Risk

Note 1: The minimum theoretical Consequence is 0.28 and maximum 1 (Considering the grades and weights).
Note 2: The minimum theoretical Likelihood is 0.3 and maximum 1 (Considering the grades and weights).

Civil, Structural and Architectural Department

Preliminary engineering services:

- Assissting in preparation of Plot Plan as per civil requirements.
- Compiling levelling map based on the available topographical data, civil layout, estimation of volume of earthworks.
- Preparing physical planning and presenting list and areas of micro-spaces for buildings, buildings' skeletons type and structural systems selection based on architectural design.
- Preparation of basics of structural, civil and architectural designs.
- Presenting list of parameters and recommendations required because of geotechnical research.
- Road network and accesses layout and determining their longitudinal slopes, surface water disposal canals arrangement and controlling their longitudinal slopes based on the levelling map and plot plan.

Detailed engineering services:

- Preparation of phase 1 architectural drawings of buildings.
- Structural calculations of buildings.
- Presenting calculation pack and structural construction drawings
- Presenting phase 2 architectural drawings.
- Presenting construction drawings, civil calculations pack and landscaping.
- Preparing civil and structural drawings related to cabling network and instrument, piping network and sewage disposal network.
- Estimating volume of main structural and architectural items.

Procurement engineering services:

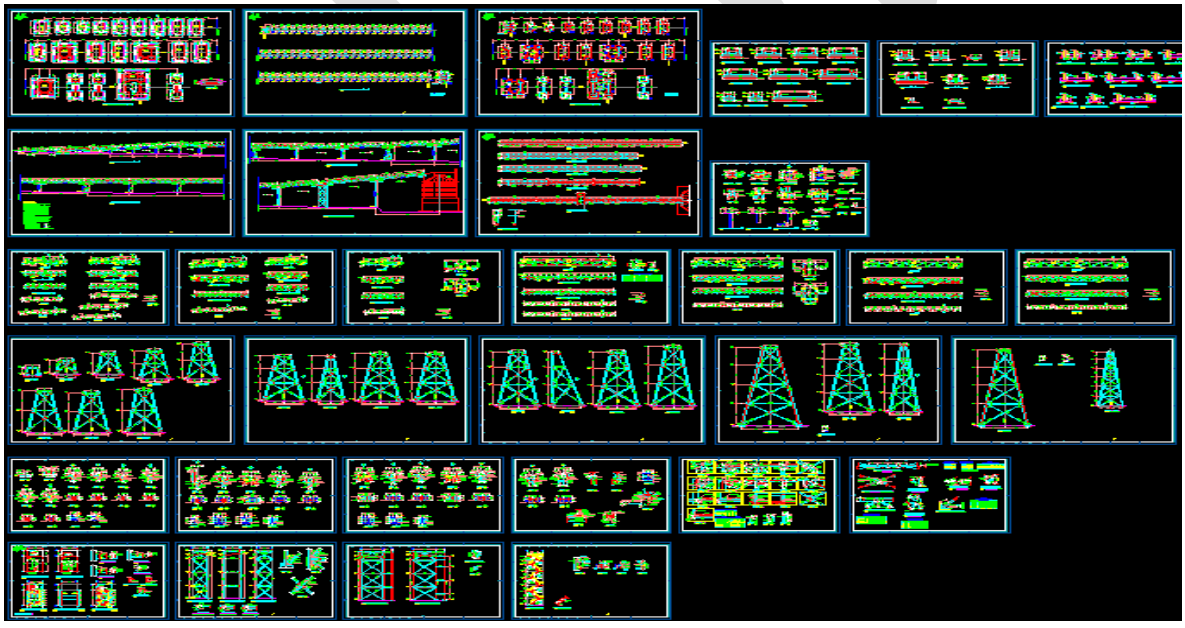
- Assissting the inspection unit to prepare QCP.
- General overview of Shop drawings to ensure overall geometrical compliance with

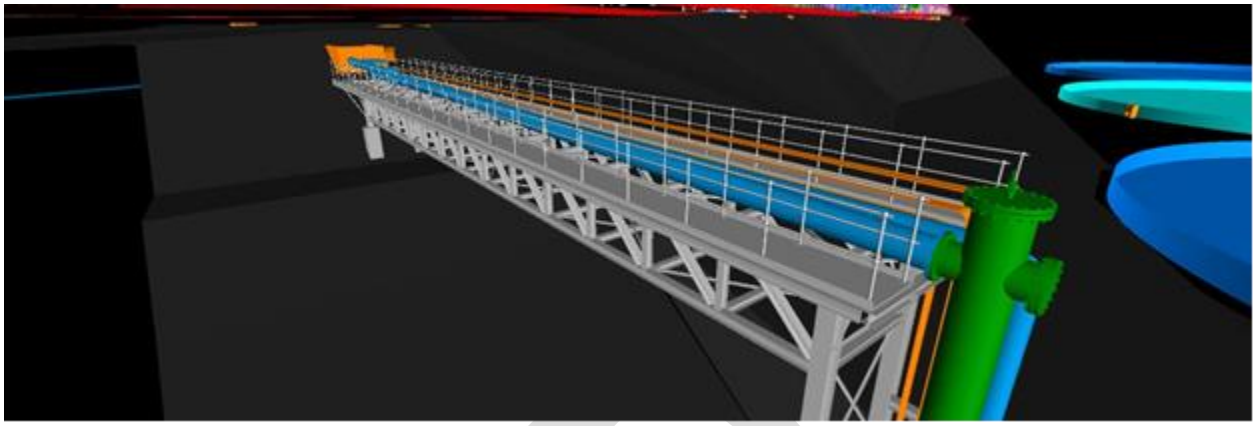
engineering drawings.

Design Review Services:

- Collecting and compiling required data for design during site visit.
- Assisting in inspection and engineering workshop to resolve manufacturing, installation and commissioning issues.
- Describing mechanical engineering services offered in MC projects.
- Reviewing list of contractors' engineering documents to comply with the contracts and projects' requirements.
- Reviewing contractors' engineering activities schedules.
- Reviewing engineering documents such as drawings and calculation packs and files.

An example of conveyor belt detailed drawing





Electrical Department

Description of electrical department services in EPC projects:

- Preliminary and detailed engineering service.
- Procurement engineering services.
- Technical inspection services.
- Estimating electrical charges of lighting and socket systems.
- Preparation of load list based on the electrical charges' summation.
- Preparing "Overall Single Line Diagram" for projects based on the load list.
- Approximate estimation of required space for electrical posts and rooms.
- Approximate designation of room and electrical posts layout in plot plan.
- Cable list preparation.
- Design criteria preparation.
- Design of buildings' electrical facilities.
- Precedence diagram.
- Preparing "Single Line Diagram" drawings for electricity distribution boards of engines and equipment (Distribution Panels and MCCs).
- Modelling "Overall Single Line Diagram" using ETAP software.
- ETAP model analysis for load flow, short circuit and engines commissioning studies, sizing the main equipment for electricity distribution systems.
- Cabling network routes drawings preparation.
- "Cable Schedule and Drum List" preparation.
- Preparing tender documents for electrical facilities and distribution systems' main equipment procurement.
- "Relay Coordination" documentations preparations.

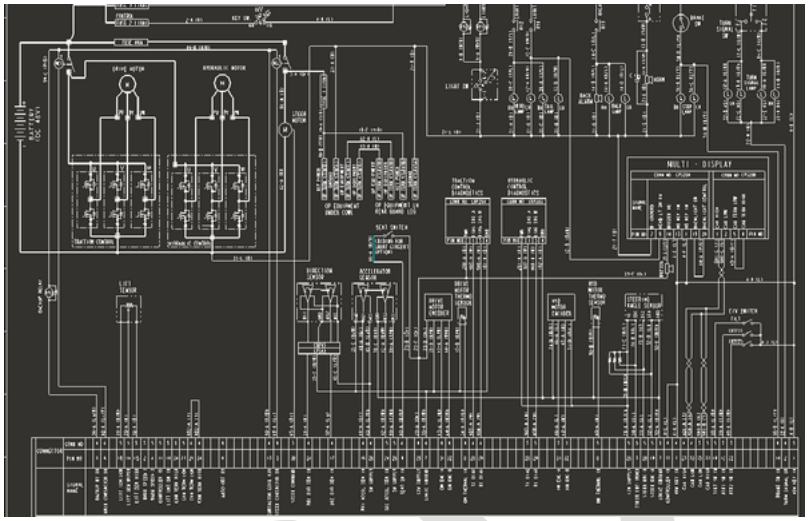
- “Diagram Termination” documentations preparations.
- Producing as-built drawings based on construction drawings.

Procurement engineering services:

- Checking electricity distribution, wiring, main equipment, and electrical facilities equipment tender documentation of bidders.
- Ultimate technical bid evaluation of bidders.
- Assisstting procurement department in transactions commissions and finalizing the manufacturers.
- Checking manufacturers documentations and presenting offering technical comments throughout the entire equipment manufacturing processes.
- Technical inspection of electrical equipment services.
- Checking manufacturers’ quality control plan and offering constructive feedbacks.
- Technical inspection of electricity distribution systems, cabling and electrical facilities equipment based on the approved quality control plan.
- Final inspection to provide transport permit once the corrective comments are incorporated.

Design Review Services:

- Collecting and compiling required data for design during site visit.
- Assisting in inspection and engineering workshop to resolve manufacturing, installation and commissioning issues.



Instrument and Control Department

Areas of specialty:

- Instrumentation
- Advanced Process Control (APC)
- Distributed Control Systems (DCS)
- Programmable Logic Controllers (PLC)
- Supervisory Control and Data Acquisition (SCADA)

Engineering documents and research phases:

- Conceptual Design
- Basic Engineering Design
- Front End Engineering Design (FFED)
- Detail Engineering Design
- Procurement Engineering
- Commissioning and Start-up Assistance
- In conceptual phase in addition to feasibility process, project efficiency is researched and preliminary design approach is produced. In preliminary engineering phase, instrument equipment and control system designs, architecture of control system for functional processing and processing functions systems are prepared and enter FEED phase. In this phase, technical specifications of instrument equipment, control system, communication network and Tele-Control are produced. This engineering phase covers the following areas:
- Control Philosophy
- Instrument List with Process Data
- Control System Equipment list
- Instrument Location Layout

- I/O List
- Control System Architecture

Detailed design phase:

- Control Valve Sizing
- Instrument Datasheet
- Control System Equipment Datasheet
- Instrument Hook-Up Diagram
- Control Loop & Wiring & Termination Diagram
- Installation Procedure

Projects

1 Material handling for Zob Ahan-e Pasargad's phase II iron smelting development project

Client	Zob Ahan-e Pasargad
Client's consultant	Aseen Foolad Engineering Firm
NSP's Role	Feasibility studies, preliminary and detailed design engineering, procurement, and inspection.
Contract Date	March 201۷

Responsibilities

- Feasibility studies of LAYOUT, PFD AND P&ID designs.
- Designing tanks with 12,000t and 450t capacities for direct reduced iron process.
- Designing Normal Belt and Side Wall Belt for direct reduced iron process.
- Lime, carbon, ferrosilicon and manganese storage tanks design.
- Preparing feeder, screen, winch, slider gate, etc. procurement documentations.
- Material handling system steel structures and foundations design.
- Material handling system construction, installation, and commissioning supervision.
- Electrical equipment and instrument procurement engineering.
- Automation and instrument design documents.
- Installation and commissioning of material handling systems electricity and instrument.

2 Jahan Nemo Zanjan iron ore beneficiation project

Client	Jahan Nemo Company

NSP's Role	Feasibility studies, preliminary and detailed design engineering and procurement.
Contract Date	October 2018
Responsibilities	- Feasibility studies of LAYOUT, PFD AND P&ID designs. - Designing Normal Belt and Side Wall Belt for direct reduced iron process. - Equipment procurement engineering and design. - Preparing ball mill, filter press, thickener, etc. procurement documentations. - Steel structures and foundation design.

3 Update and improvement of Sangan Ore Complex safety systems

Client	Me'yar Sanat Khavarmianeh engineering co.
Client's consultant	Kavoshgaran consultant engineers co.
Contract Date	November 2019
NSP's Role	Checked the existing designs and optimized these designs through extensive FRA (Fire Risk Analysis) meetings to eliminate ineffective and inefficient systems and refined designs in accordance with the national and international mandatory design standards and consequently updated safety drawings and documents which resulted in cost reduction of €1.2m for the client.
Responsibilities	- Studied all the existing documents, drawings and designs produced by the consultant engineer in detail. - Carried out FRA studies and held risk analysis and extinction meetings with all the consultants and clients team members. - Preparing drawings for the proposed changes and updating all safety drawings and documents and obtaining the client's approval.

4 Designing material handling systems for Kharameh pelletizing factory

Client	Fakoor Meghnatis
NSP's Role	Performing all material handling related detailed design engineering
Contract Date	May 2021
Responsibilities	- Material handling mechanical systems detailed design engineering - Material handling steel structures and foundations designs

5 Desulphurization system design for Ilam Petrochemical Co.

Client	Norahan Co.

Contract Date February 2021

NSP's Role Preliminary engineering design review and performing multi-disciplinary desulfurization detailed design engineering, procurement engineering services, engineering coordination and correspondence with overeas technologist.

Responsibilities

- Preliminary engineering package review
- Carrying out multi-disciplinary detailed engineering design services in structural, civil, mechanical, electrical, instrument, piping and process fields
- Comprehensive designing and preparing 3d models of the designs
- Preparing Layout and general arrangement drawings
- Preparing P&ID and PFD drawings
- Preparing drawings and documents for material storage and handling systems
- Preparing documents and drawings for structures and foundations
- Preparing documents and drawings for piping systems
- Electrification and cabling systems drawings and documents preparation
- Instrument and control systems drawings and documents preparation
- Preparing BOQ (bill of quantities) and procurement list for items of every related engineering unit
- Performing procurement engineering and preparing TBE reports and coordinating manufacturers' proposals.
- Engineering coordination with Sunup technology company
- Review of documents produced by other projects participants such

as overseas technologist, manufacturers, domestic handling and technical coordination

6 Desulphurization material handling system design and build for Ilam Petrochemical Co.

Client Norahan Co.

NSP's Role Material handling preliminary and detailed design engineering for Ilam Petrochemical desulphurization unit through EPC

Contract Date April 2021

Responsibilities

- Carried out preliminary design
- Carried out structural and mechanical detailed design
- Material handling design and 3d models' preparations
- Layout and general arrangement drawings preparations
- Preparing BOQ (bill of quantity) and procurement list for all the required items
- Procuring internal elements of material handling systems such as (conveyor) belt, (drive) pulley, screen, drum, rollick, screen, etc.
- Procuring external elements of engine gearbox and instrument
- Bulk material procurement such as plate, profile, etc.
- Manufactured elements of material handling systems such as gallery, shoots, hoppers, etc.
- Constant inspection in coordination with the client's ultimate inspector (SGS) for all internal elements procurement and manufactures

7 Ilam Petrochemical Co. steel structures construction

Client Norahan Co.

NSP's Role Design review and construction of Ilam Petrochemical steel structures weighed approximately 1000t.

Contract Date July 2020

Responsibilities

- Reviewing drawings produced in detailed engineering stage
- Producing shop drawings
- Cooperating with client in procurement of bulk materials such as plates, profiles, etc.
- Quality controlling of materials to assure quality
- Steel structures construction
- Transportation of the constructed structures to the client's construction site
- Steel structures erection supervision
- Engineering workshop services to respond to SQs and TQs
- Final delivery of the constructed structures to the client

8 Inspection and quality assurance of all equipment of Ilam Petrochemical Co. SRP units

Client Norahan Co.

NSP's Role All quality assurance related services and technical inspection of all steel structures and equipment

Contract Date December 2020

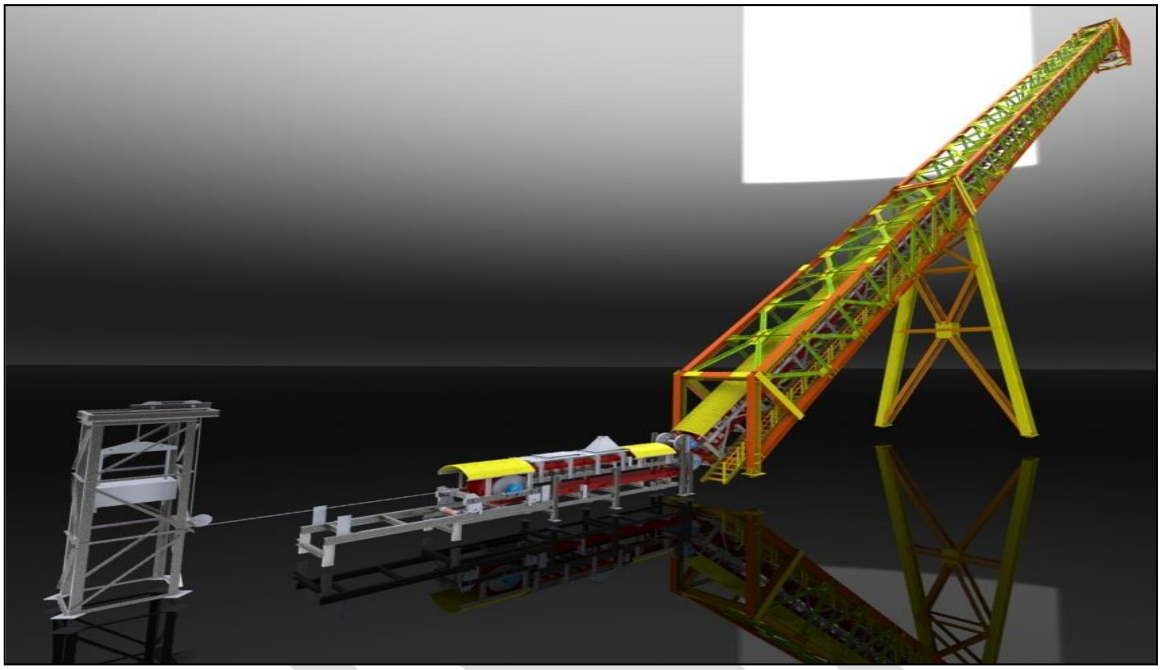
Responsibilities

- Checking QCTM/QCP equipment construction
- Supervising construction material laboratory testing and carrying out chemical and mechanical analysis of test results based on the relevant standards and code of practices.
- Inspection and supervising to assure quality of manufacturing and

manufactured equipment of manufacturers

- Participating quality control meetings of manufacturers
- Inspection implementation of destructive and non-destructive tests during manufacturing
- Checking compliancy of manufactured equipment with drawings, instructions and technical specifications of contract's subject
- Drafting inspection report and quality control forms
- Evaluation and approval of quality control licenses
- Closely monitoring device performance test
- Inspection of packaging and protection of machined surfaces prone to impacts and damages
- Checking and approving manufacturer's produced Final Book

Images of executed projects

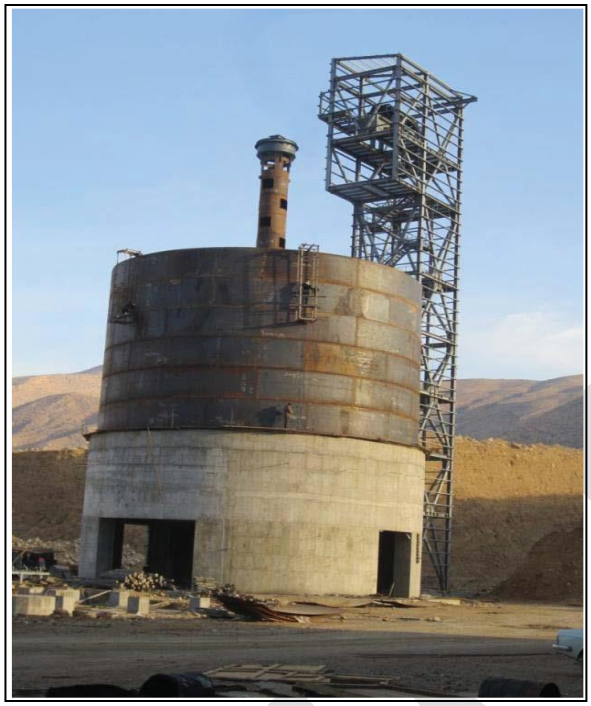


Direct reduced iron transfer sidewall belt engineering model- Pasargad Steel (iron smelting) Co.

Direct reduced iron transfer sidewall belt implementation- Pasargad Steel (iron smelting) Co.

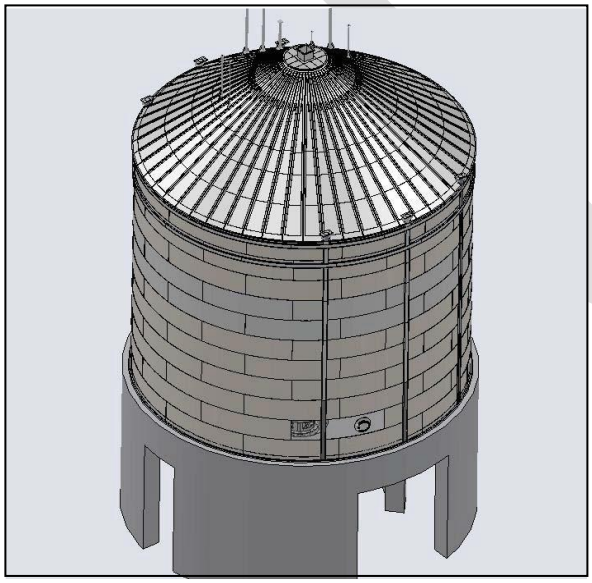
65m tall intermediate DRI silo structures

Screen and belts preceding and succeeding DRI silo structures



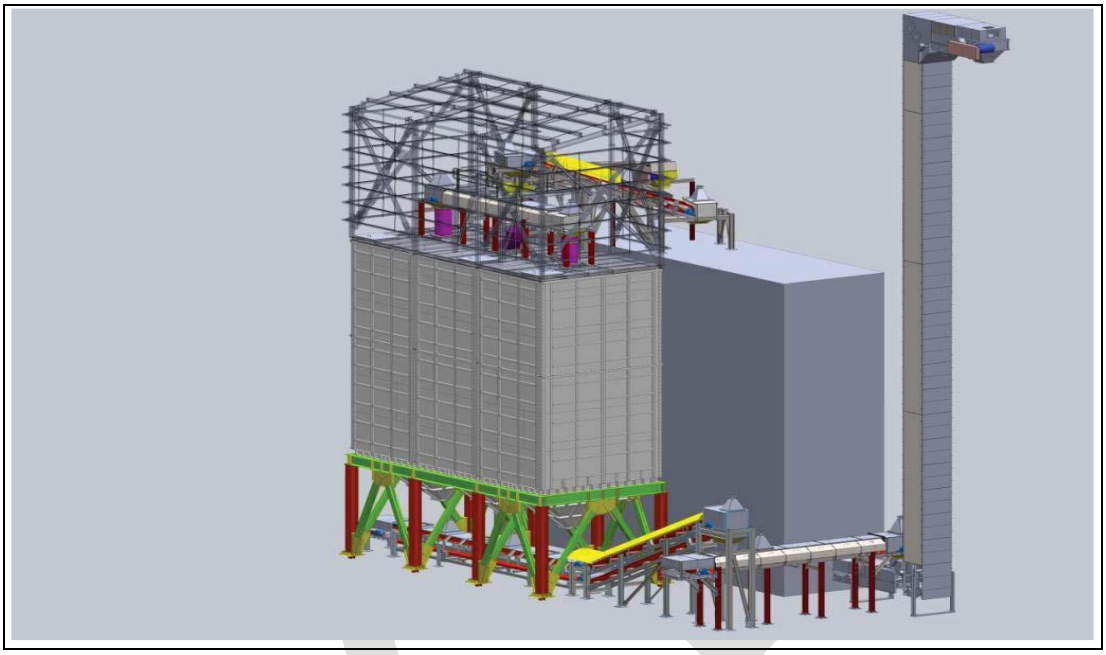
۱۲۰۰۰t sponge iron storage tank

12000t sponge iron storage tank foundation



12000t sponge iron storage tank-engineering model

12000t sponge iron storage tank



Electric arc furnace (EAF) Storage tanks and material handling-Engineering model

Electric arc furnace (EAF) Storage tanks and material handling implementation

Inside steelmaking hall -material handling system