

NAHAL SANAT PASSARGAD (NSP) PORTFOLIO

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.

SUSTAINABLE AND AUTHENTIC ENGINEERING SOLUTIONS

N S P

Nahal Sanat Pasargad

N

Nature Friendly

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+

S

Sustainable

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P

Productive Engineering

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, facilities, 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):

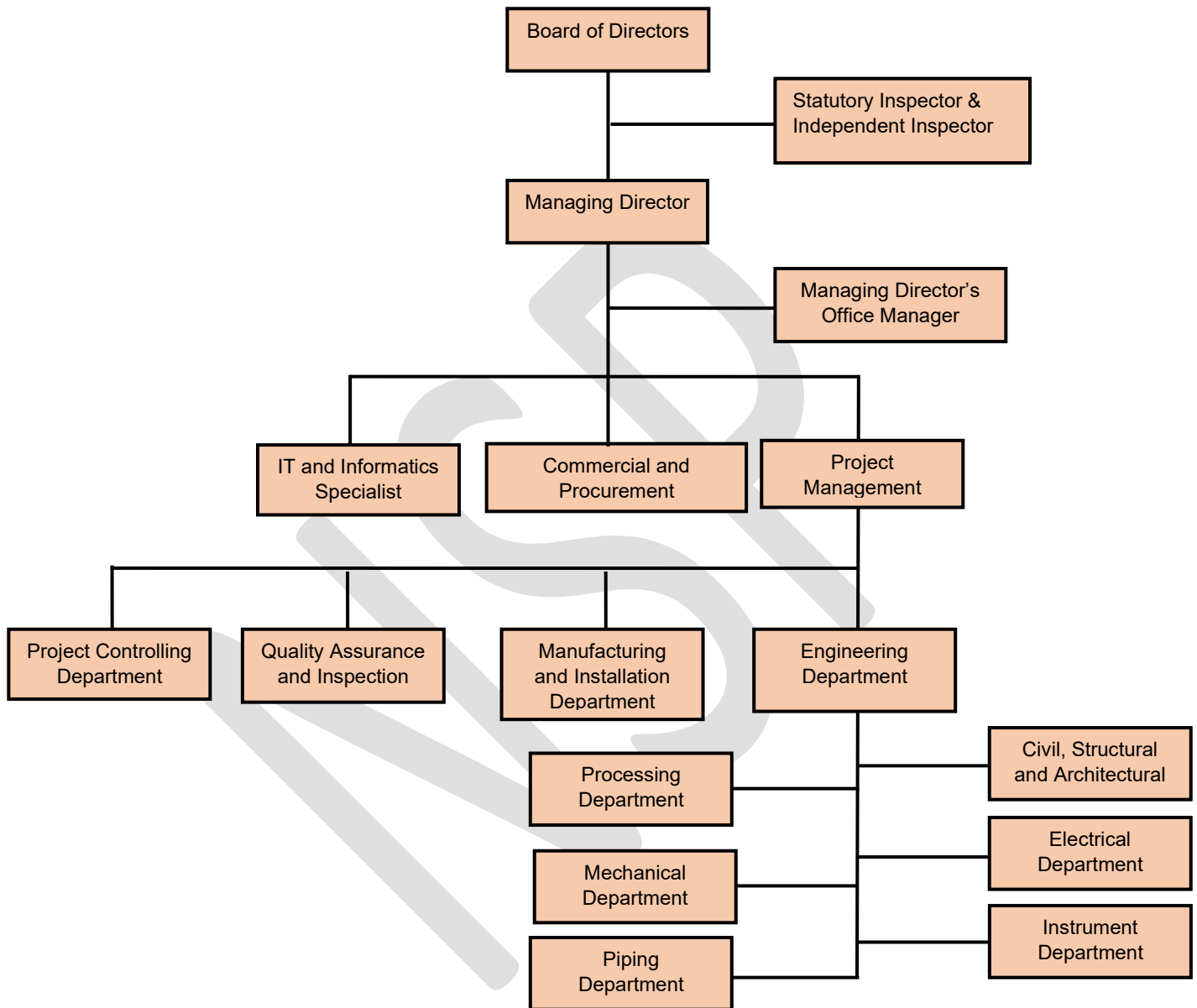
- Ensuring the quality assurance schemes of the quality control department are implemented and monitoring.
- Ensuring corrective measures (in case of non-compliances) and preventative measures (to avoid future non-compliances) are implemented. Furthermore, following-up to ensure these corrective and 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 customer dissatisfaction.
- 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.

- ### General Engineering Activities:

- [illegible]

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.

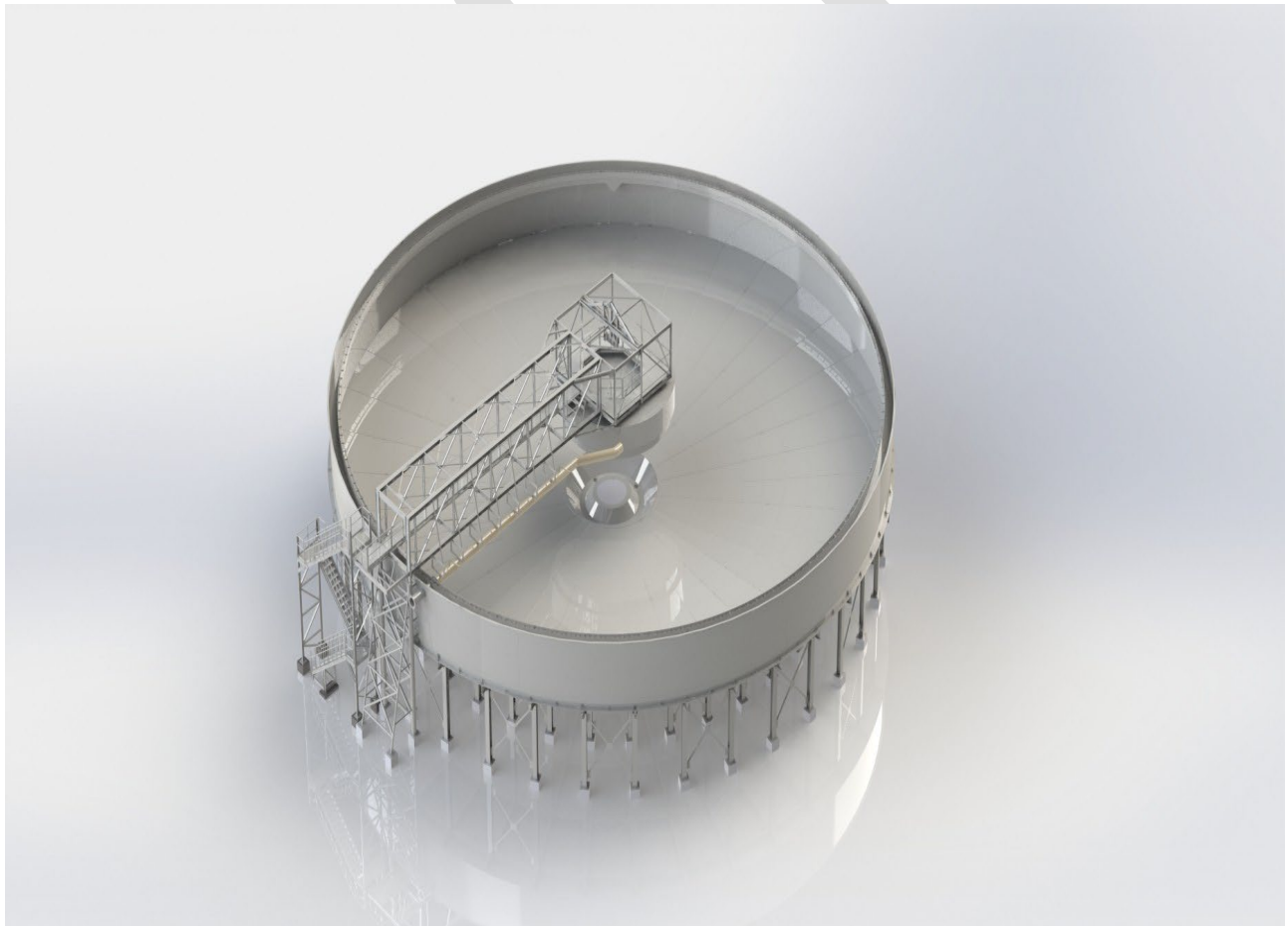


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Technical Inspection Services:

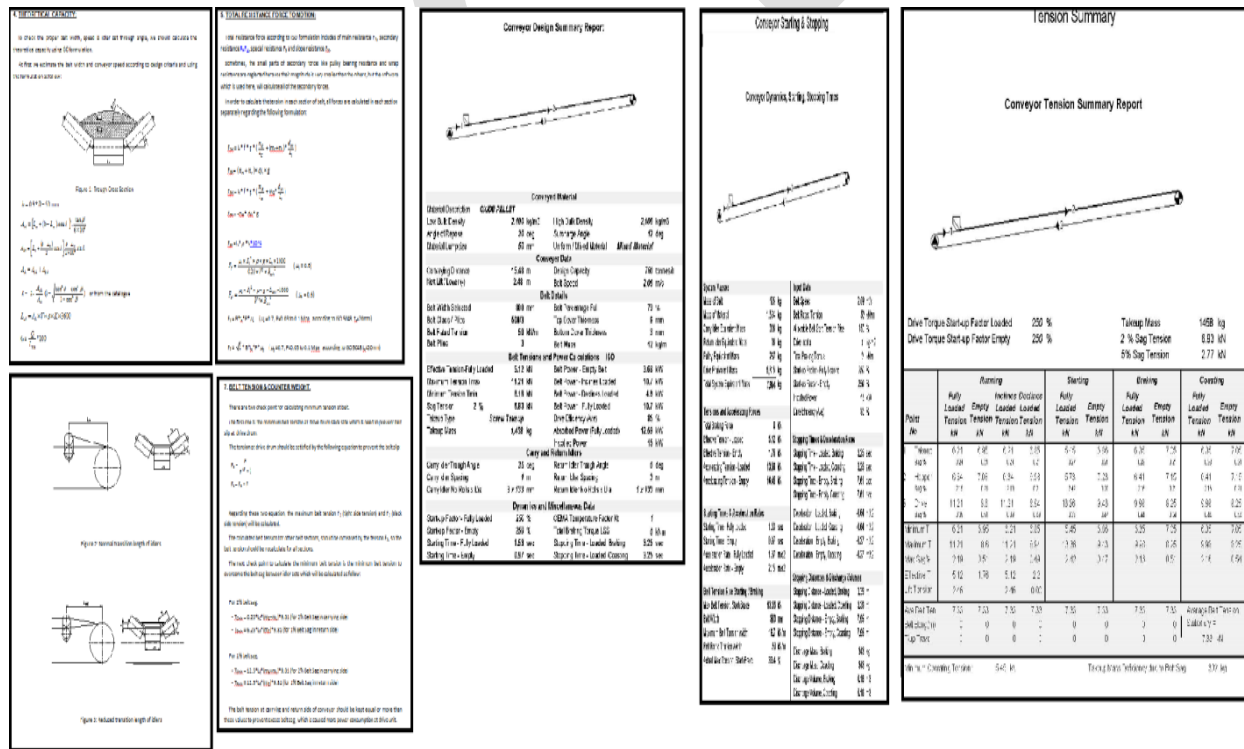
- Reviewing “Quality Control Plans” of manufacturers and providing corrective feedbacks.
- Technical assessment of the equipment based on the approved “Quality Control Plan”.
- Providing technical feedback to manufacturers.



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

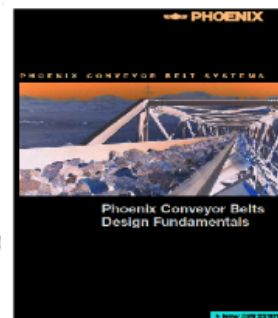
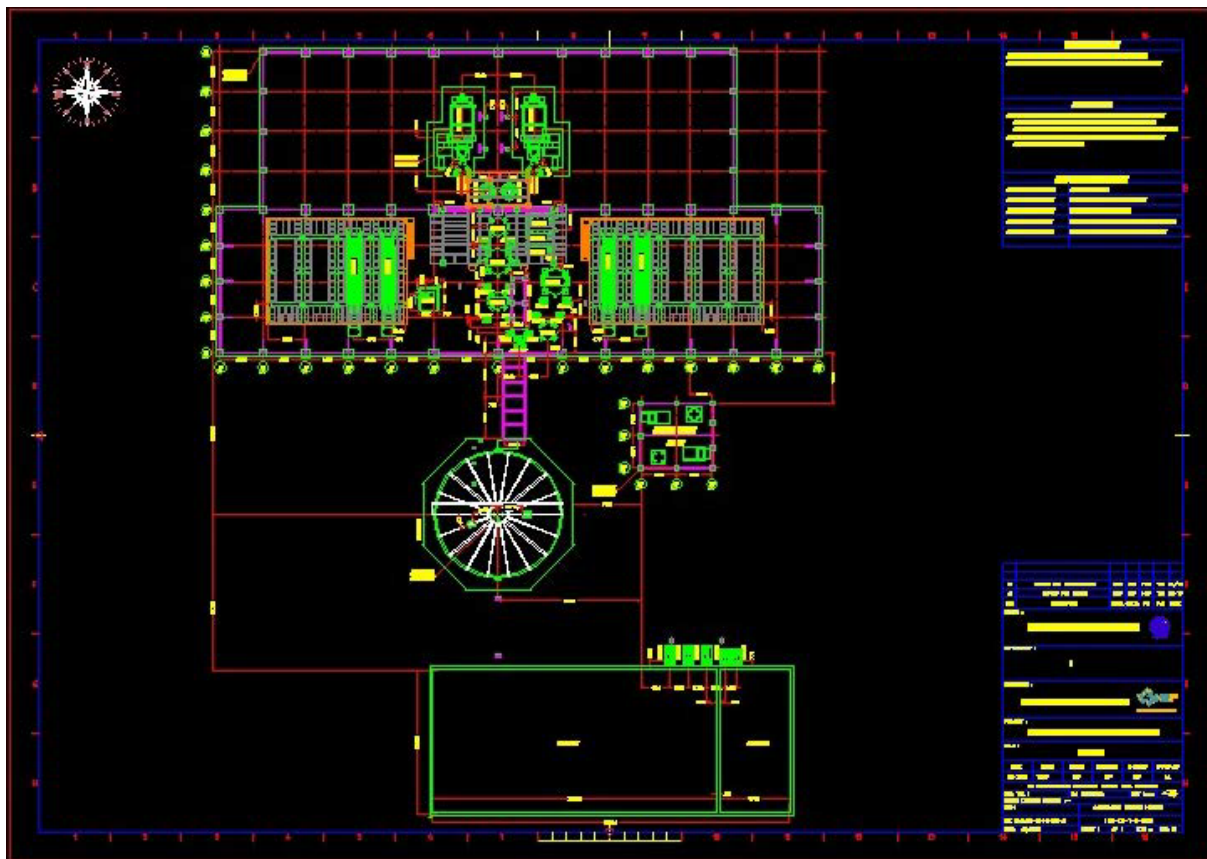
Tension Summary



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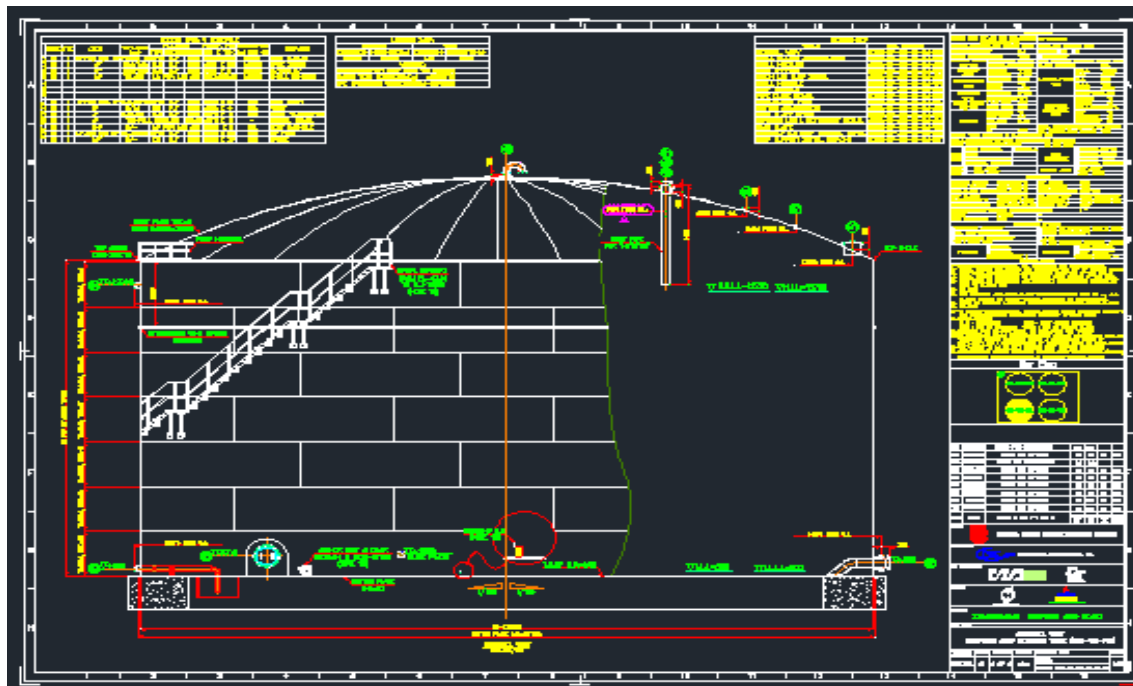
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An Example of equipment general arrangement drawing

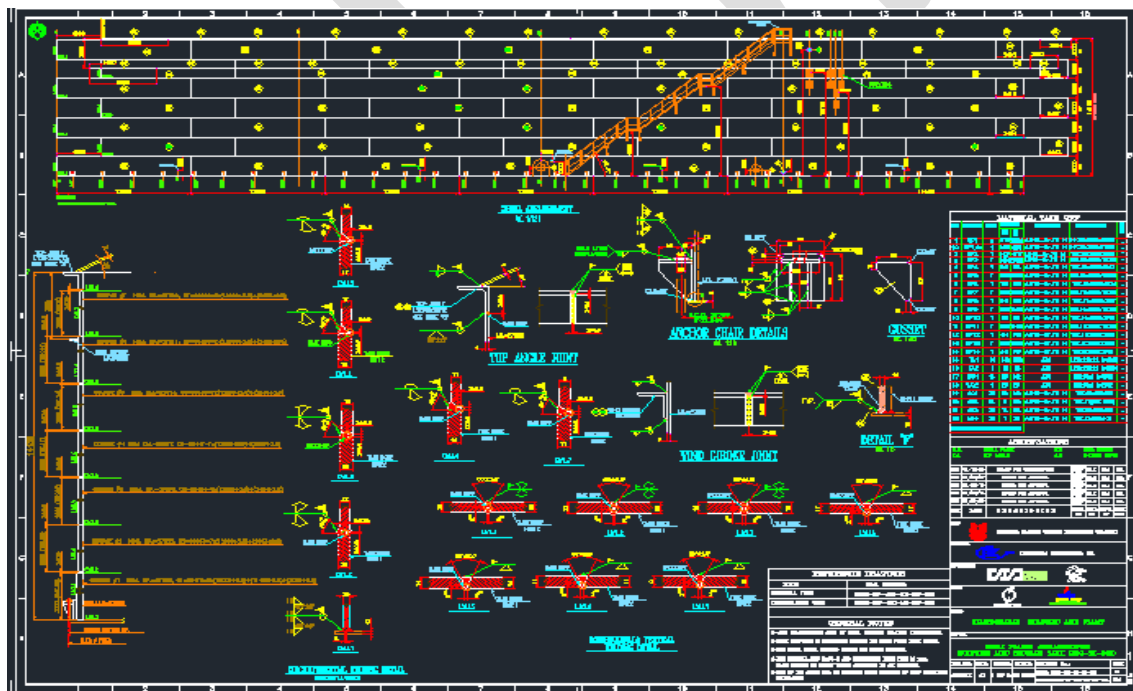




An example of storage tank layout drawing



Examples of storage tank detailed drawing



Piping and 3D-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.

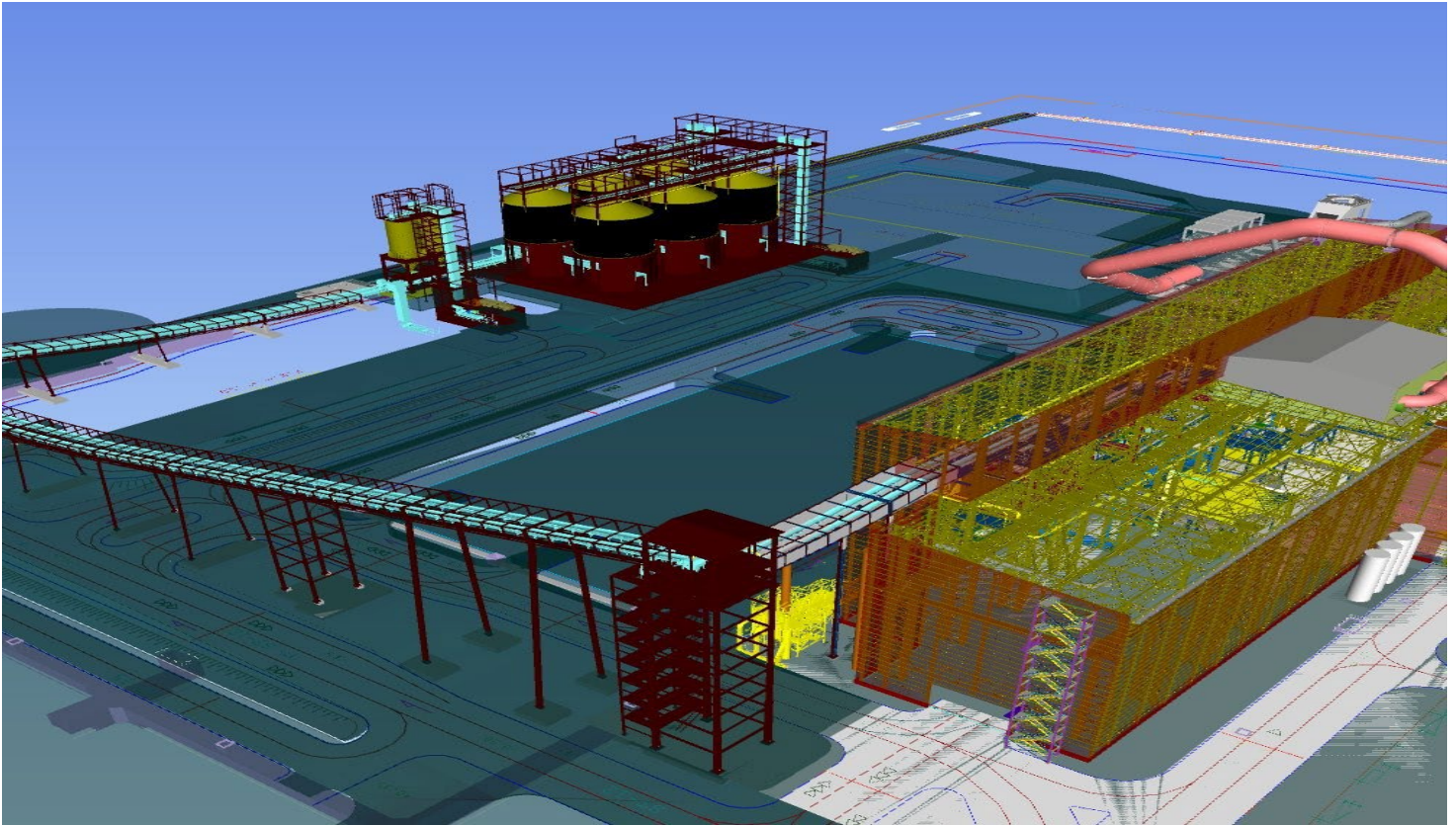
Once structures and equipment are modelled, modelling of piping systems commence. These are reviewed and approved through joint meetings with clients, operational and procurement teams upon completion at 30%, 60% and 90%.

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.

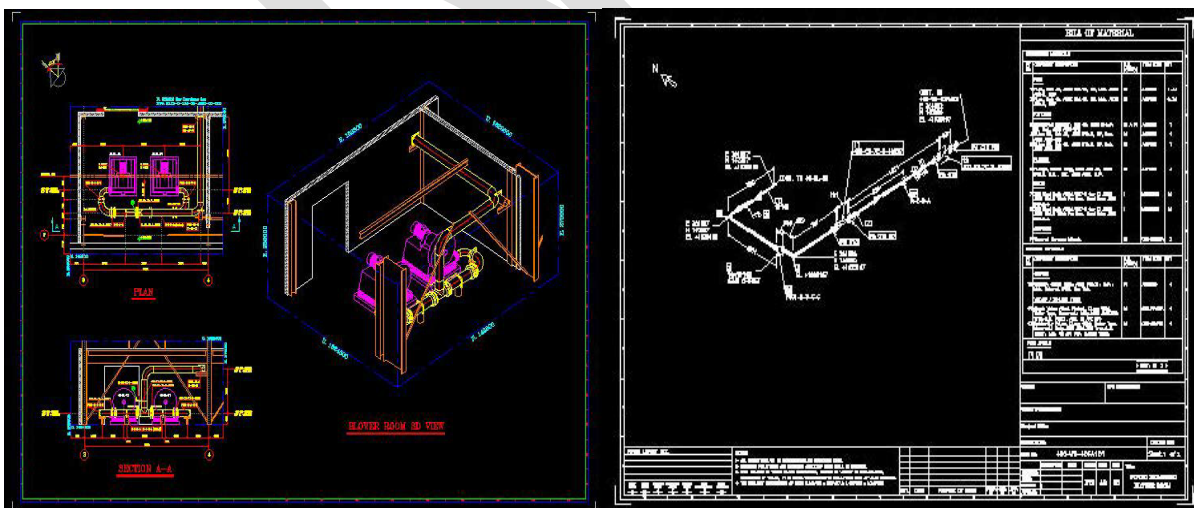
Upon 90% completion phase detailed pipe drawings and documents provided are:

- 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:

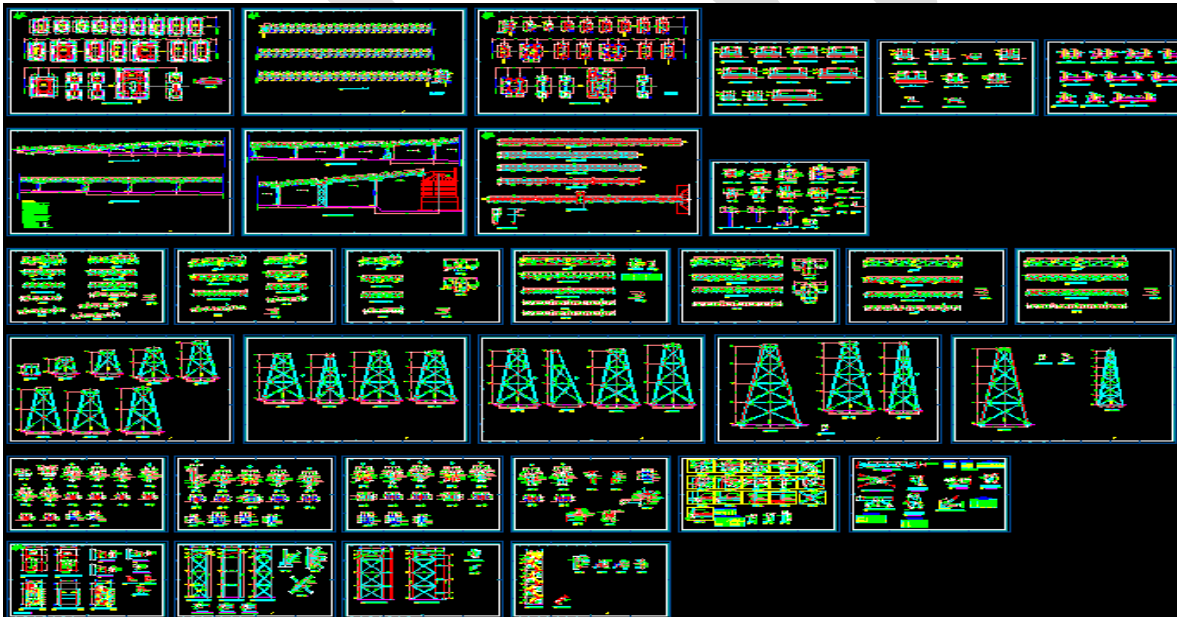
- Assissting the inspection unit to prepare QCP.
- General overview of Shop drawings to ensure overall geometrical compliance with

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.
- Assisting 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



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- 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

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

Project Name: PASARGAD Phase II Iron Smelting Material Handling System

Client: Zob Ahan-e PASARGAD

Contract Type: Engineering Services

Location: Shiraz - Fars / Iran

Contract Date: March 2017

About Project:

Zob Ahan-e PASARGAD company has been established with the aim of creating a complete steelmaking complex from the stage of receiving iron ore from the mine to the production of all kinds of alloy steels in Fars province in the vicinity of Shiraz city.

The technology used in sponge iron units is MIDREX technology, which is able to charge hot sponge iron to the melting furnace by applying the latest technological changes.

NSP Company has been responsible for designing the Material Handling system of the Phase-II Iron smelting plant of this complex.

General Description of NSP Services:

- *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.*

Jahan Nemov Zanjan iron ore beneficiation project

Project Name: Jahan Nemov Zanjan Iron Ore Beneficiation Project

Client: Jahan Nemov Company

Contract Type: Engineering Services

Location: Zanjan - Zanjan / Iran

Contract Date: October 2018

About Project:

Jahan Nemo Company was established in 1362 in Tehran by the private sector as a special stock. During a decade of mining activities, this company now owns active metal mines in Zanjan and Yazd provinces. NSP Company has been responsible for designing and engineering a new circuit for crushing, granulation and dewatering of waste related to iron ore at basic & detail engineering phases.

General Description of NSP Services:

- *Feasibility studies of LAYOUT, PFD AND P&ID designs.*
- *Basic Instructions documentation for Piping, Cabling & Structure design.*
- *Plot Plan & General Arrangement drawings Preparation.*
- *Equipment List Preparation.*
- *Piping & 3D Modeling Basic design Criteria & Specifications.*
- *Mechanical Design Criteria & Specifications.*
- *Control Philosophy preparation.*
- *Detail Design of all Civil, Structure, Piping, Cabling and HVAC.*
- *Datasheet preparation for main equipment.*
- *PDMS 3D Modeling of whole plant.*

Update and improvement of Sangan Iron Ore Complex safety systems

Project Name: Update & Improvement of Safety Systems of Sangan Plant
Client: Me'yar Sanat Khavarmianeh Engineering Company (MEMSECO)
Contract Type: Engineering Services
Location: Khaf - Khorasan / Iran
Contract Date: November 2019
About Project:

Sangan Steel Mining Industries Company was established with the aim of sustainably producing the pellets required by Mobarakeh Steel Complex. Currently, the company's pellet and concentrate production units are in operation with a nominal capacity of 5 MTPY.

NSP Company has cooperated as a consultant to MEMSECO by checking 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.

General Description of NSP Services:

- *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.*

Designing material handling systems for Kharameh pelletizing factory

Project Name: Kharameh Pellet. Plant Material Handling System

Client: Fakoor Meghnatis Spadana Company (FMS)

Contract Type: Engineering Services

Location: Kharameh - Fars / Iran

Contract Date: May 2021

About Project:

With the aim of creating added value in the mining sector and preventing the sale of raw iron ore, Kharameh Company was established with the initial mission of designing, constructing, and operating a pelletizing plant with an annual capacity of 2.5 MTPY. NSP Company has cooperated as a consultant to FMS by Performing all material handling system engineering and related detailed detail design drawings and documents.

General Description of NSP Services:

- *Preparation of Basic calculations and simulations.*
- *Preparation of Technical specifications and datasheets.*
- *Belt Conveyors detail drawings and documents.*
- *Preparation of related Civil & Structure detail design drawings and documents.*
- *Preparation of B.O.M. for all mechanical and Structural items.*

Desulphurization system design for Ilam Petrochemical Complex

Project Name: Desulphurization system design for Ilam Petrochemical Plant

Client: Norahan Sanaye

Contract Type: Engineering Services

Location: Ilam - Ilam / Iran

Contract Date: February 2021

About Project:

In order to refine the gas from the Tang Bijar and Kaman Kooh gas fields located in Ilam province, Ilam Gas Refinery Plant constructed.

NSP Company has cooperated as a consultant to Norahan company by Preliminary engineering design review and performing multi-disciplinary desulfurization detailed design engineering, procurement engineering services, engineering coordination and correspondence with foreign technologist.

General Description of NSP Services:

- 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 foreign technologist, manufacturers, domestic handling and technical coordination.*

Desulphurization Material Handling System design and construction for Ilam Petrochemical Complex

Project Name: MHS design & construction for SSU & SRP Units of Ilam Complex

Client: Norahan Sanaye

Contract Type: Engineering, Procurement & Construction Services

Location: Ilam - Ilam / Iran

Contract Date: April 2021

About Project:

In order to refine the gas from the Tang Bijar and Kaman Kooh gas fields located in Ilam province, Ilam Gas Refinery Plant constructed.

NSP Company has cooperated as a contractor to Norahan company by design, procurement services, construction and installation supervision for Material Handling Systems of SSU and SRP units.

General Description of NSP Services:

- *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.*

Desulphurization Steel Structure construction for Ilam Petrochemical Complex

Project Name: Construction of Steel Structure for SSU & SRP Units of Ilam Complex
Client: Norahan Sanaye
Contract Type: Construction Services
Location: Ilam - Ilam / Iran
Contract Date: July 2020
About Project:

In order to refine the gas from the Tang Bijar and Kaman Kooh gas fields located in Ilam province, Ilam Gas Refinery Plant constructed. NSP Company has cooperated as a contractor to Norahan company by construction and installation supervision for Steel Structures of SSU and SRP units.

General Description of NSP Services:

- *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.*

Inspection and quality assurance of all equipment of Ilam
Petrochemical Complex

Project Name: Inspection and QC services for SSU & SRP Units of Ilam Complex

Client: Norahan Sanaye

Contract Type: Inspection & QC Services

Location: Ilam - Ilam / Iran

Contract Date: December 2020

About Project:

In order to refine the gas from the Tang Bijar and Kaman Kooh gas fields located in Ilam province, Ilam Gas Refinery Plant constructed.

NSP Company has cooperated as a consultant to Norahan company by doing Technical Inspection and quality assurance services of all steel structures and mechanical equipment.

General Description of NSP Services:

- *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.*



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- *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.*

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Bid Boland Dehumidification and Pressure Increasing facilities of MAROON 3 & Ramshir

Project Name: MHS Engineering Service for Dehumidification and Pressure Increasing facilities of MAROON 3

Client: Norahan Sanaye

Contract Type: Engineering Services

Location: Bid Boland - Khuzestan / Iran

Contract Date: June 2022

About Project:

Bidbland gas refinery is located 32 km west of Behbahan, 18 km north of Aghajari and 35 km southeast of Omidie city in Khuzestan province, whose shares belong to Persian Gulf Petrochemical Industries. The design of this refinery was first made in order to refine sour gases with oil from the Aghajari oil field and to export output products abroad, and the initial building includes 5 gas refining units with a capacity of 240 million cubic feet per day, for each unit and can be expanded up to 9 units. The project started in 1968 and was put into operation in December 1969.

NSP Company, as an associate engineering consultant of NORAHAN Industries Company, is responsible for designing the structure and architecture of non-industrial buildings, related mechanical and electrical facilities, along with the design of the foundation and mechanical design of firefighting water tanks of Maroon 3 Dehumidification unit and the construction of Maron 5 and Ramshir Dehumidification and pressure increasing units.

General Description of NSP Services:

- *Performing Basic Engineering and Detail Engineering services including the following items:*
- *Architectural design of structures and electrical and mechanical facilities for security buildings, communications, clinics, security, repair shops, chemical warehouses and parking lots.*
- *Lighting calculations.*
- *Performing HVAC calculations.*
- *Design of firefighting water tanks.*
- *Preparing a list of mechanical equipment.*
- *Drawing preparation for the design and construction of steel structures and related foundations.*
- *Preparation and production of electrical drawings and documents.*
- *Preparation of details and purchase list of all items.*

Material Handling System (Basic design) for Kavir Steel Making Plant

Project Name: KAVIR SMP Material Handling System (Basic Design)

Client: Alvand Technic

Contract Type: Engineering Services

Location: Isfahan - Isfahan / Iran

Contract Date: March 2022

About Project:

As the largest rebar producer in the IRAN, the KAVIR steel complex is the largest producer of coiled rebars used in a wide range of downstream industries in Iran. Relying on the its Iranian experts and without using any external knowledge, KAVIR Steel Complex has been able to produce new steel products in all cases, including 40 different steel grades and more than 450 different steel products.

NSP Company has the task of performing Basic Engineering and design services for Belt Conveyors, Chutes, Silos, Elevators, steel structures and foundations related to Material Handling system of the KAVIR Steel Making Complex.

General Description of NSP Services:

- *Preparation of Basic drawings and related Inquiry documents for all Material Handling System items and equipment.*
- *Elevators Basic drawings and documents preparation.*
- *Silos Basic drawings and documents preparation.*
- *Belt Conveyors Basic drawings and documents preparation.*
- *Chutes Basic drawings and documents preparation.*
- *Civil and Structure Basic drawings and documents preparation.*



- *Instrument & Control drawings and documents preparation.*
- *Performing the basic engineering services of the dust collector system and related ducting.*
- *Dust collection system Ducting drawings and related sizing calculations.*
- *Production and finalization of P&IDs for Material Handling system and related Dust Collection System.*
- *Piping arrangements drawings preparation along with all related piping documents such as Isometrics, Supporting, ...*
- *3D modeling of the entire Material Handling System and dust collectors.*

Material Handling System for Noorin Steel Making Plant

Project Name: NOORIN SMP Material Handling System

Client: Alvand Technic

Contract Type: Engineering Services

Location: Abhar - Zanzan / Iran

Contract Date: September 2021

About Project:

Noorin Steel Complex is located in Abhar city at Zanzan province in IRAN.

NSP Company has the task of performing Basic Engineering and Detail design services for Belt Conveyors, Chutes, Silos, Elevators, steel structures and foundations related to Material Handling system of the Noorin Steel Making Complex.

At the next stage, NSP perform the De-Dusting system and related dust collection engineering services of material handling system.

General Description of NSP Services:

- *Preparation of drawings and related Inquiry documents for all Material Handling System items and equipment.*
- *Elevators drawings and documents preparation.*
- *Silos drawings and documents preparation.*
- *Belt Conveyors drawings and documents preparation.*
- *Chutes drawings and documents preparation.*
- *Civil and Structure drawings and documents preparation.*
- *Instrument & Control drawings and documents preparation.*
- *Performing the basic engineering services of the dust collector system and related ducting.*

- *Dust collection system Ducting drawings and related sizing calculations.*
- *Production and finalization of P&IDs for Material Handling system and related Dust Collection System.*
- *Piping arrangements drawings preparation along with all related piping documents such as Isometrics, Supporting, ...*
- *3D modeling of the entire Material Handling System and dust collectors.*

Material Handling System for SARMAD Direct Reduction Plant

Project Name: SARMAD DRI Material Handling System

Client: ASRAR Steel Co.

Contract Type: Engineering Services

Location: Abarkooh - Yazd / Iran

Contract Date: June 2022

About Project:

Sarmad Abarkooh Iron and Steel Company was established in 2011 with the aim of developing steel industries and cooperating in the production chain completion programs.

Sarmad iron and steel factory is located in Yazd province; its location *in the center of Iran, access to the main roads of the country and also the absence of a similar factory within a radius of 100 km have made Sarmad Iron and Steel able to meet the needs of the products for neighbor provinces*

NSP Company, as a co-consultant of Asrar Steel Engineering Company, has been responsible for designing the Material Handling system of the Direct Reduction Plant of this complex.

General Description of NSP Services:

- *Checking QCTM/QCP equipment construction.*
- *Mechanical Design Criteria preparation.*
- *Preparation of MHS Layout & Sections.*
- *Wagon Tippler Station document and drawings preparation.*
- *Boom Type Stacker document and drawings preparation.*
- *Truck Unloading System document and drawings preparation.*
- *Oxide Screens document and drawings preparation.*



- *U/G Charging Hopper document and drawings preparation.*
- *Lime Coating document and drawings preparation.*
- *MHS Erection Manual for Mechanical parts document preparation.*
- *STD Parts document and drawings preparation for different belts with different width.*
- *Preparation of drawings and related Inquiry documents for all Material Handling System items and equipment.*
- *Pocket Belt Conveyor document and drawings preparation.*
- *Elevators drawings and documents preparation.*
- *Silos drawings and documents preparation.*
- *Chutes drawings and documents preparation.*
- *Civil and Structure drawings and documents preparation.*
- *Performing the basic engineering services of the dust collector system and related ducting.*
- *Dust collection system Ducting drawings and related sizing calculations.*

Material Handling System (Detail design) for Kavir Steel Making Plant

Project Name: KAVIR SMP Material Handling System (Detail Design)

Client: Dejpad Sanat Sazeh

Contract Type: Engineering Services

Location: Isfahan - Isfahan / Iran

Contract Date: February 2024

About Project:

As the largest rebar producer in the IRAN, the KAVIR steel complex is the largest producer of coiled rebars used in a wide range of downstream industries in Iran. Relying on the its Iranian experts and without using any external knowledge, KAVIR Steel Complex has been able to produce new steel products in all cases, including 40 different steel grades and more than 450 different steel products.

After designing the basic engineering phase in 2022 by NSP and based on the trust and satisfaction of the main Client (Kavir Steel Company), NSP was introduced to main EPC contractor of the project (Dejpad Sanat) in order to perform the detailed engineering services for conveyors, chutes, and silos related to the Material Handling System.

General Description of NSP Services:

- *Preparation of Detail drawings and related Inquiry documents for all Material Handling System items and equipment.*
- *Elevators Detail drawings and documents preparation.*
- *Silos Detail drawings and documents preparation.*
- *Belt Conveyors Detail drawings and documents preparation.*
- *Chutes Detail drawings and documents preparation.*

Material Handling System (Detail design) for Tebinbulak Concentration Plan (Uzbekistan)

Project Name: Tebinbulak Material Handling System
Client: Kian Madan Pars (KMP)
Contract Type: Engineering Services
Location: Karauzyak - Karatau / Uzbekistan
Contract Date: December 2023
About Project:

Tebinbulak Mining and Smelting Complex is a direct reduction electric arc furnace (DRI-EAF) steel making plant under construction in Karatau, Karauzyak region of Uzbekistan.

The development phase of this plant also includes the production of iron concentrate with an input capacity of 3 MTPY, which is being designed and engineered by ENTER Engineering; ENTER, using Iranian experts, has assigned the basic and detailed engineering of the dry area of the project (from crushing to the mill inlet) to KMP Company.

NSP has been responsible for performing all mechanical calculations related to the project's Material Handling system, along with the basic design of the dust collector system and the detailed design of the structural systems, piping and 3D-Modeling of the project.

General Description of NSP Services:

- *Preparation of Plant Layout (Plot Plan) from Primary Crusher to Sag Mill feed area.*
- *Performing basic calculations and design of Over Land Conveyor (about 380 m length).*



- *Preparation of equipment arrangement drawings for all units.*
- *Performing Basic calculations and engineering for Dust Collection System of MHS Area.*
- *Dust collection system Ducting drawings and related sizing calculations.*
- *Performing basic design for all Hydraulic and Lubrication system piping for crushing area.*
- *Preparation of 3D-Modeling for all equipment, conveyors, Ducts and piping.*
- *Preparation of basic engineering drawing and documents for all mechanical units related to MHS.*
- *Preparation of Basic Bill of material (BOM) documents for piping and mechanical items.*

Anjerd Copper Concentration Project (Engineering Services)

Project Name: Anjerd Copper Concentration Project

Client: Kavoshgaran (KCE)

Contract Type: Engineering Services

Location: Ahar – East Azerbaijan / Iran

Contract Date: May 2024

About Project:

The Anjerd copper mine and concentrate factory was started in 2012 by the efforts of the Mehrasal Group. The first phase of the project (30,000 TPY Copper Concentrate) was put into operation with the support and investment of Mehrasal Company at the 2019.

Currently, the factory expansion plan is underway to produce 300,000 TPY copper concentrate with an input soil of 10.5 MTPY.

The basic and detailed design of this plan was entrusted to KCE and with the support of renowned Chinese manufacturers (such as CITIC).

NSP company has been responsible for reviewing designs and updating the process data based on the equipment purchased by the employer, as well as designing the complete process circuit and dewatering of the project based on its huge experiences at Iron and Copper concentration projects via its good engineering team and human resources.

General Description of NSP Services:

- *Conceptual Design review.*
- *Data gathering for all equipment and systems which was purchased by the client.*



- *Recalculate and redesign of process flow system based on purchased equipment and systems*
- *Preparation of Mass Balance Calculations*
- *Re-design of Process flow diagrams (PFD) and improvement of related utility systems (Such as cooling System, Ball Charging, Product Storage System & etc.).*
- *Preparation of Process Philosophy Documents and related I&C (Instrument and Control) Documents.*
- *Updating and improving the equipment arrangement in production building.*
- *Performing basic calculations and basic design for Stockpile Material Handling Systems.*
- *Preparation of detail design engineering for all foundations and steel structures related to buildings and main equipment.*
- *Preparation of basic and detail design for Dewatering System.*
- *Preparation of Piping & Ducting drawings.*
- *Preparation of Cabling documents and drawings.*
- *Preparation of Safety and Fire Fighting System document and drawings.*
- *Preparation of complete 3D-Modeling for plant.*

Bagh Khoshk Copper Concentration Project (Conceptual Design)

Project Name: Bagh Khosh copper Concentration Project

Client: Fanavaran Parsian (FAP)

Contract Type: Engineering Services

Location: Sirjan – Kerman / Iran

Contract Date: January 2025

About Project:

The Bagh Khoshk Copper mines is located 35 kilometers northeast of Sirjan in Kerman province. Kani Kavesh Artaghdar Company (Client) plans to build a factory with a feed capacity of 1 MTPY and a final product of 10,000 TPY of 22% copper concentrate in this area.

NSP Company, through its human resources, the use of the best Iranian experts, and the accumulation of knowledge in basic and detailed design of iron and copper concentrate projects, has been responsible for conducting Feasibility Studies of the project, in addition to preparing a conceptual engineering package and process calculations.

General Description of NSP Services:

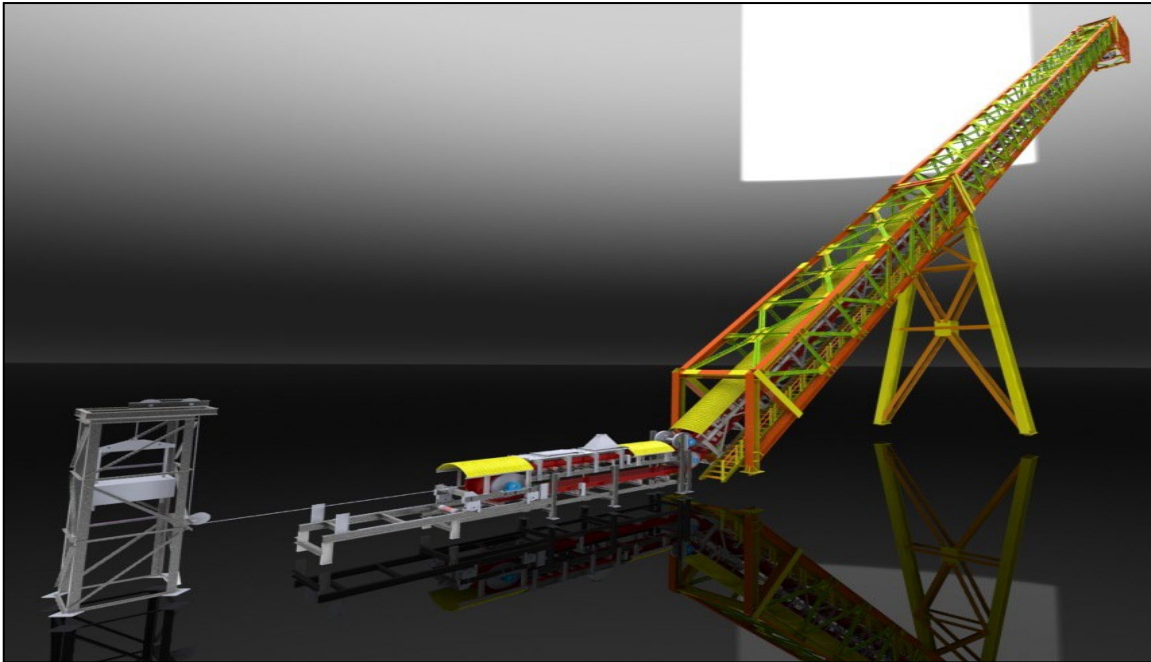
- *Performing Feasibility Studies and best capacity determination of the project*
- *Preparation of FPS and Go/No Go decision report.*
- *Preparation of Mass Balance Calculations and equipment Sizing*
- *Preparation of Process Flow Diagram (PFD)*
- *Preparation of utility Consumption List*
- *Preparation of Preliminary Plant Layout*



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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.



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65m tall intermediate DRI silo structures



Screen and belts preceding and succeeding DRI silo structures



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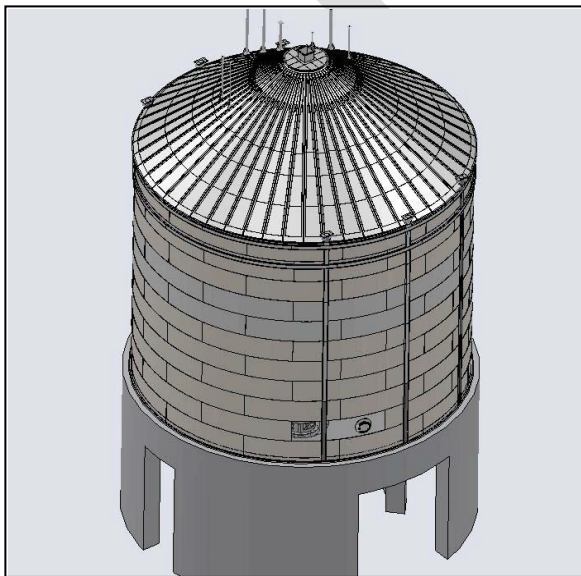
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12000 Ton sponge iron storage tank



**12000 Ton sponge iron storage tank
foundation**



**12000 Ton sponge iron storage tank-
engineering model**

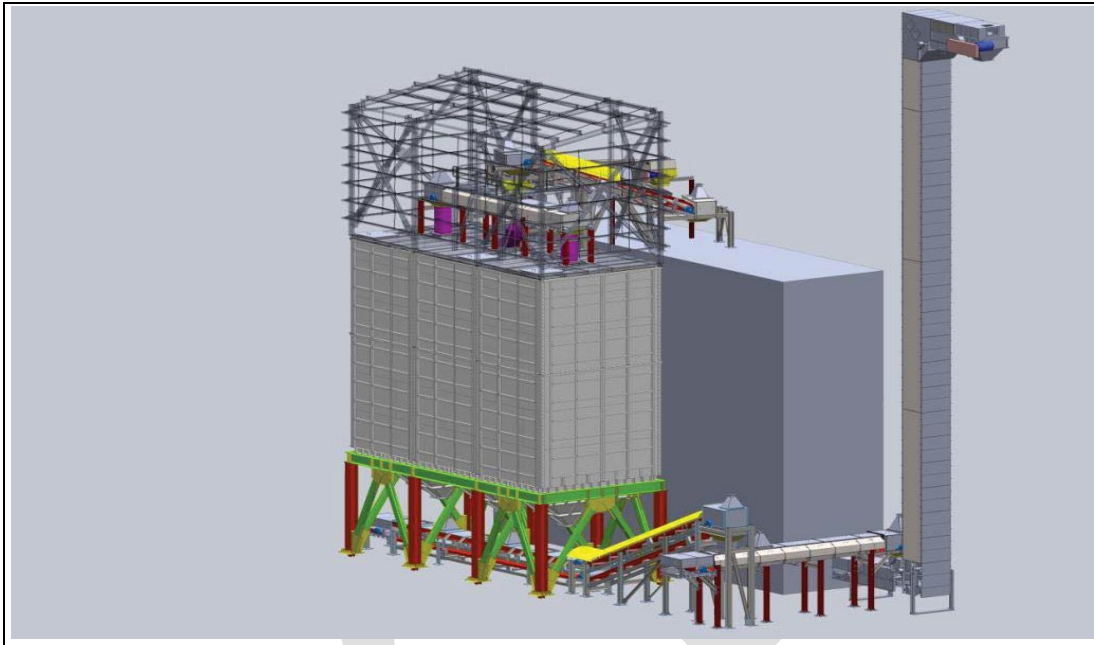


12000 Ton sponge iron storage tank



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Electric Arc Furnace (EAF) Storage tanks and material handling-Engineering model



Electric Arc Furnace (EAF) Storage tanks and material handling implementation



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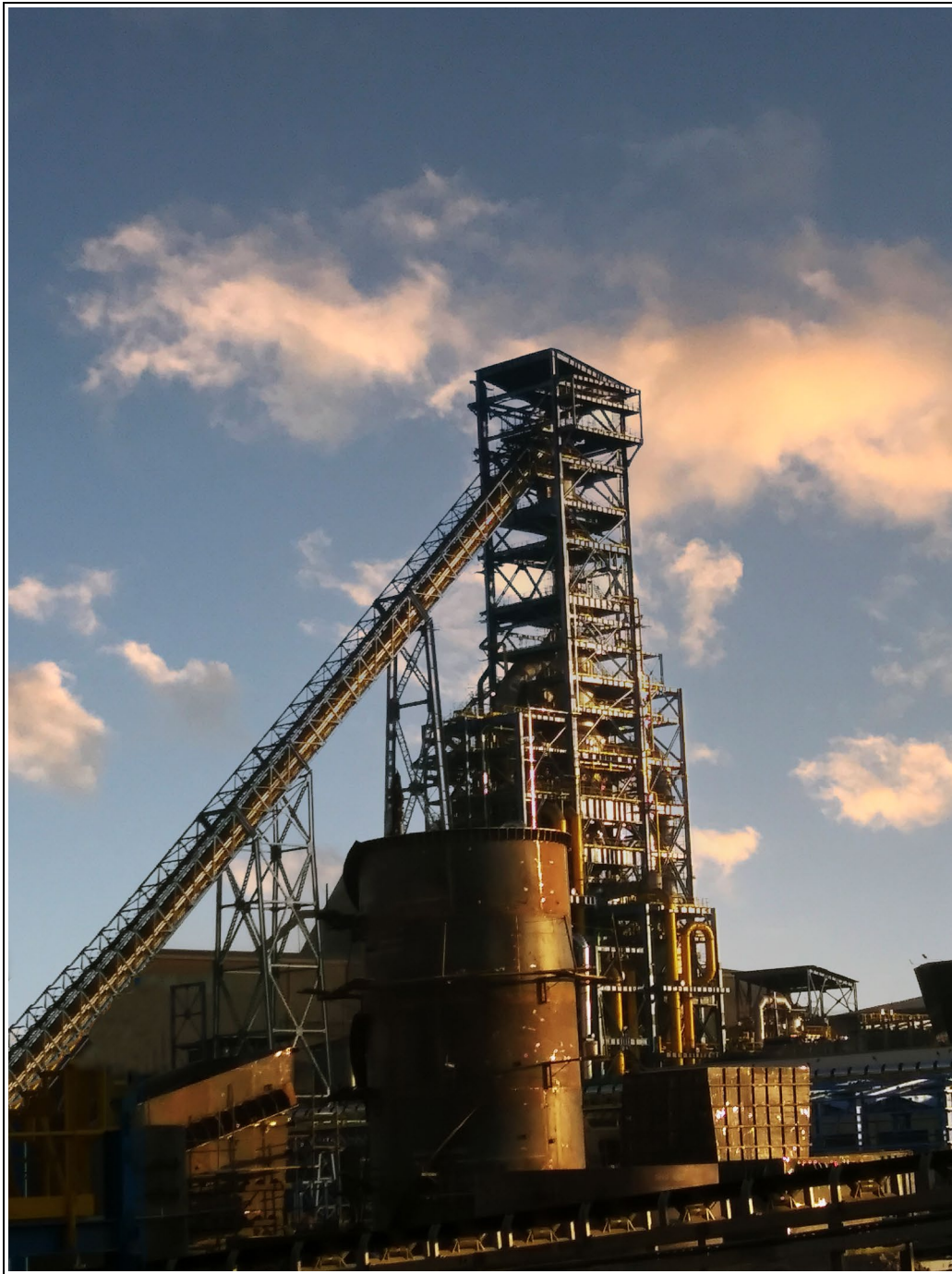


Inside Steel Making Hall - Material Handling System Structure



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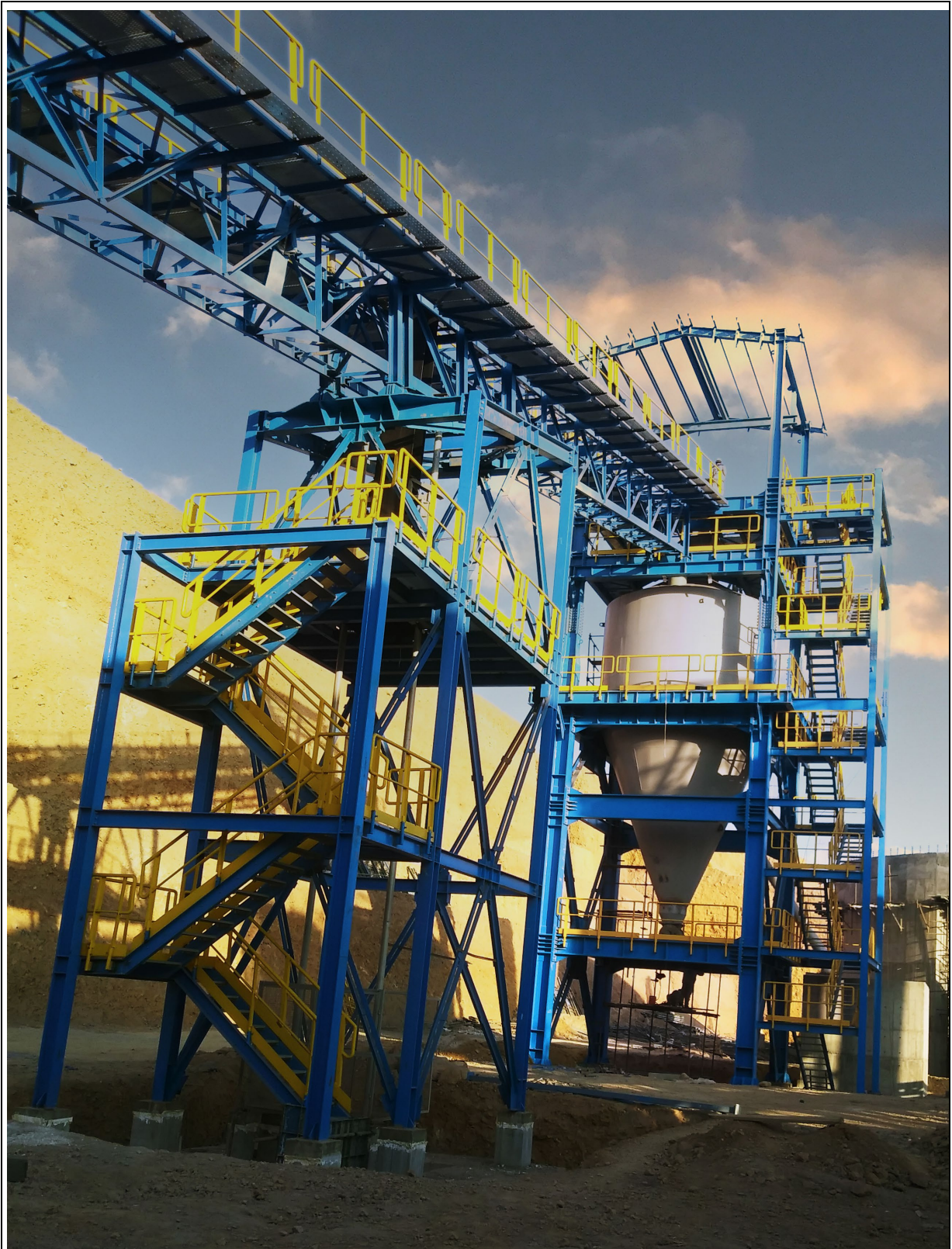
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