



موننکو ایران
Monenco Iran

Infrastructure Division



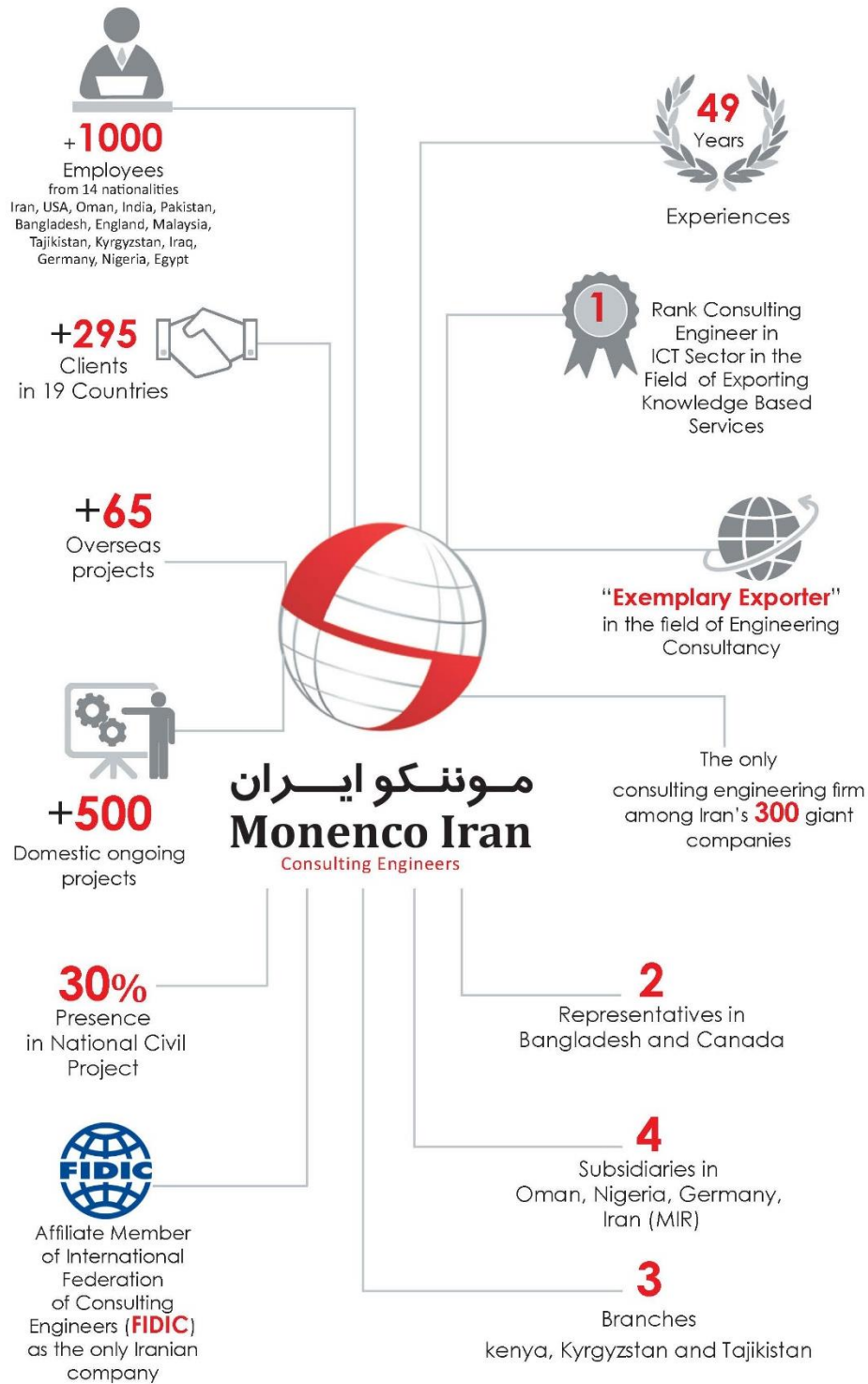
Railway & Subway
Department

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Monenco Iran at a Glance

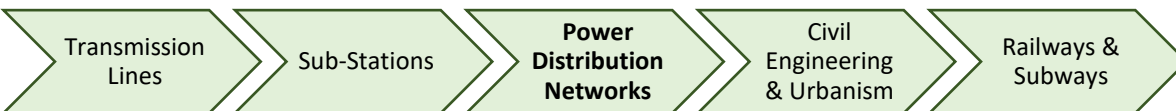


Infrastructure Deputy



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The Division of Infrastructure handles projects in energy and power industries. So far, this division has designed, consulted and supervised +/- 500 kV HVDC system, more than 23'000 km Transmission Lines up to 765 kV and Hot Line OPGW and more than 45'000 MVA Substations from 33 kV up to 500 kV and 95 master plan, street light planning & distribution network loss reduction studies, 19 projects in supervision of capital and mechanization projects, 210 kilometer metro and railway line, 40 kilometer railway electrification, 2 metro system lines design, 30 subway stations and 34 km High Way as well as an International Terminal and Airside in Airport.



Railway & Subway

By developing technical knowledge in new fields and also in order to be in line with the needs of infrastructure projects in the field of Subway, Urban Railway and Subway Stations in Iran, Monenco Iran has expanded its services and entered into the mentioned fields. Through the technical and engineering capabilities of Monenco Iran, its foreign partners, experienced qualified engineers and using modern technologies, the company renders high quality consulting and engineering services in different projects in mega cities and capital of Iran. Some typical fields of expertise are:

- Architectural, civil, mechanical and electrical design of metro stations,
- Railway earthwork and pavement studies and design,
- Design of subway stations by underground excavation method,
- Metro system design.

The Railway & Subway department, based on its experiences in mechanical, electrical, civil, structure, SCADA & telecommunication fields has been involved in highway projects and long tunnels along with earning capability to present consultancy services for Intelligent Traffic System (ITS) of Highways.



Transmission and sub-transmission Lines

Power Transmission Lines Department offers consultancy, engineering and Supervision services in all stages of Transmission Lines projects including overhead lines, underground cables, OPGW, ADSS and Detail Design with economic studies. In addition, using the latest version of software such as PLS-CADD, PLS-Tower and PLS-Pole, also latest methods such as intelligent GIS system for selecting the best routes and surveying via (LiDAR) system enable it to reach the optimum design in the projects.



Power Distribution Networks

Distribution Networks Department is in charge of offering consultancy, engineering and supervision services in all fields of power distribution industry including comprehensive and master plans of electrification, loss reduction, network system studies, reliability and power quality improvement, protection coordination and street lighting planning based on international standards and latest versions of software such as CYMDIST, CYMTCC, DIgSILENT, CALCULUX, DIALux, ETAP and GIS base applications.



Transmission and sub-transmission substations

The transmission and sub-transmission substations Department is equipped to deal with all necessary aspects of engineering and construction supervision as well as asset management and PM (Preventive Maintenance) of HV and MV substations in electricity industry and other industries such as petrochemical plants. Substation engineering covers Detail Design with economic studies, design of the HV and LV parts, as well as control systems, auxiliary services, and civil & structural design; these designs are fully accomplished based on structural 3D design software. Consultancy of the projects also falls within the area of expertise. Power system studies, consultancy for asset management, consultancy for project management, economic studies and Preparing Financial and economic Justification Reports etc. are other services proposed by this department.



Civil & Structures

Monenco Iran offers Civil services for industrial facilities based on its experience in different fields of design and consultancy in past years. This department provides consultancy and engineering services for industrial, commercial, residential buildings and civil parts of the Transmission Lines, High Voltage Substations, and Dispatching Centers. In addition, civil department has been involved in Airport projects such as construction of terminal and airside. Civil & Structure department has been honored to participate in Test Engine Cell projects which are an unusual structure with different usage. Besides, Ergonomic Control Centers and Green Buildings are included in Civil & Structures Department design expertise.



Railway & Subway Department



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The Department of Railway & Subway has an extensive presence in railway tracks, electric railways, high-speed railways, architecture, structure, initial supporting systems, electrical and mechanical design of subway stations and tunnels, ventilation, sewage systems, firefighting, overhead catenary systems, traction systems, switchgears, upstream substations, protection systems, cable sizing, fire announcement systems, SCADA and etc.

The importance of Railway & subway for public transportation, reducing traffic and pollution and speeding up the passenger transportation is extremely noticeable. In this case the role of a consulting engineering firm in accomplishing transportation plans and application of technologies is remarkable.

As an important, better to say vital, required infrastructure, both intercity and urban railway transportation system in the countries has a high growth rate. In North America, Europe, China and India it's a common sight to see dozens or even hundreds of rail cars moving along the thousands of miles of track in both urban and rural areas. In many countries including the United States, Canada, and Japan, the railways are used for sight-seeing tours of the country, with many tourists spending their whole vacation on a train.

Due to railway importance, Monenco Iran decided to enter this field in 2007 and has the honor to work with 7 domestic clients in 12 projects. Railway & Subway Department of Monenco Iran is equipped with experts who are leading in all fields of railway engineering. Considering our professional team, Railway & Subway Department of Monenco Iran is able to play the role of a high-level consultant company to fulfill industries' needs.



Fields of Expertise

A brief explanation of the department main fields of expertise is presented here.

***Feasibility studies and site selection:**

- Traffic studies,
- Surveying geographical and urban facilities,
- Subway stations site selection.

***Architecture:**

- Internal and external architectural basic and detail design of stations,
- Architectural basic and detail design of entrance galleries, passages and side buildings.

***Civil:**

- Basic and detail design of retaining structure,
- Basic and detail design of central body,
- Basic and detail design of entrance galleries,
- Basic and detail design of side buildings.

***Pavement and earthwork:**

- Basic and detail design of Pavement,
- Deciding the type and technical specification of track for main and station lines, warehouse and loading places,
- Deciding technical specification of traverse,
- Deciding technical specification of rail fastener,
- Deciding technical specification of points,
- Basic and detail design of earthwork,
- Deciding the technical specification of materials, excavation and backfill operations and ballast.

***Electrical and Mechanical:**

- Electrical and mechanical basic and detail design of stations.



***Metro system:**

- Studies of supplying power to metro and railway lines,
- Basic and detail design of OCS and third rail,
- Basic and detail design of bulk substations,
- Basic and detail design of traction substations,
- Basic and detail design of stations substations,
- Basic and detail design of upstream sub transmission substations,
- Basic and detail design of stations air conditioning,
- Basic and detail design of tunnels air conditioning,
- Air conditioning and smoke disposal 1D and 3D simulation,
- Basic and detail design of elevators and escalators in stations,
- Basic design and design review of BMS and SCADA systems,
- Basic design and design review of signaling system,
- Basic design and design review of communication system,
- PSD studies,
- Studies of rolling stock,
- Basic and detail design of depots,
- Basic design and design review of fire alarm system,
- Basic design and design review of firefighting system.



Selected Projects

✓ Electrification studies of Tehran – Hamadan – Sanandaj railway

- Project required services

- Technical and economic analysis of electrification of the route
- Checking the required modifications of pavement, earthwork, tunnels and bridges in case of route electrification
- Checking the required modifications of stations in case of route electrification
- Etrax Simulation, power supply design including medium voltage substations, switching substations, station substations, traction substations and overhead catenary system
- SCADA system design
- Required fleet specifications
- Preparing investment packages for financing
- Preparing tender documents for selecting the contractors

- Client

Construction and Development of Transportation Infrastructures Company



Consultancy & Engineering Services for Special Equipment of the Shiraz Urban Railway, Line 2 including Power Supply, HVAC and Equipment Simulation

- **Project required services**
 - Simulation, primary design review, power supply equipment design, air condition and smoke disposal in tunnels and stations, providing tender document and selection of contractors.
 - Power demand studying for all 6 lines of Shiraz Urban Railway.
 - Consultancy & engineering of mechanical and electrical installation for Phase 1 of Shiraz Urban Railway, Line 2
 - Consultancy & engineering of leakage cable for line 2 and initial radio system for Phase 1 of Line 2, Shiraz Urban Railway.

- **Client**

Shiraz Urban Railway Organization



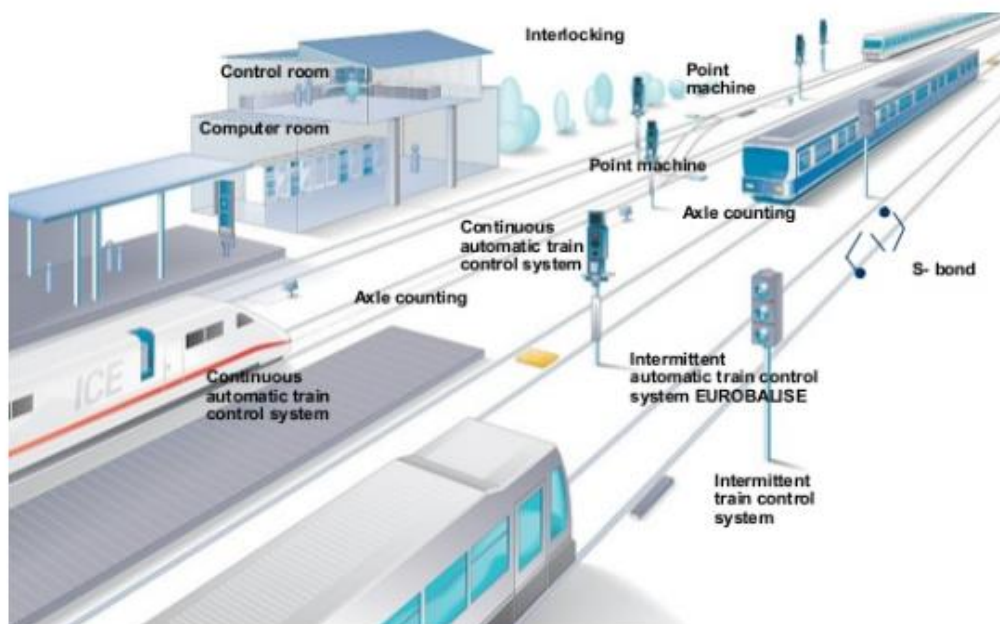
✓ **Consultancy & Engineering Services for AFC, Communication, Signaling, BMS, Scada, Fire alarm and Firefighting Systems of Shiraz Urban Railway, Line 2**

- **Project required services**

- AFC system basic design
- AFC system detail design review
- Communication system basic design
- Communication system detail design review
- Signaling system basic design
- Signaling system detail design review
- BMS and SCADA basic design
- BMS and SCADA detail design review
- Fire alarm and firefighting system design
- Cost estimation
- Tender documentation

- **Client**

Shiraz Urban Railway Organization



- ✓ **Detail design of G3 metro station, along with the gallery from G3 to K2, 3rd line of Tehran Urban and Suburban Railway Company**

Worth mentioning that the line is under operation and the design should be so that makes no disturbance and stop in line operation.

- **Project required services**

- Architecture design
- Retaining structure design
- Central core design
- Mechanical installation design
- Electrical installation design
- Fire alarm design
- Telecommunication and signaling design
- AFC design
- Cost estimation
- Tender documentation

- **Client**

Tehran Urban and Suburban Railway Company



✓ **Consultancy & Design Services for Implementation Power Supply System at Line A in Qom metro**

- **Project required services**

- Third rail
- LPS and TPS transformers
- Power rectifiers
- DC switchgears
- 20 KV switchgears
- UPS and charger
- MV cables
- DC cables
- Switching substation
- Station substation
- Traction substation
- PSCADA
- Stray current monitoring
- Stinger system

- **Client**

Abtaban Engineering Company



✓ **Consultancy and site Supervision Services for Construction & Installation of Metro System Equipment at Shiraz 2nd Metro Line**

- **Project required services**

- Planning, determining the method of performance & project progress control services
- Engineering services
- Command services
- Coordination & provisional hand over services
- Quality control services
- Evaluation the control of payment & expenses, legal affairs of contract services
- Maintenance and operation manuals, final hand over services

- **Client**

Shiraz Urban Railway Organization (SURO)



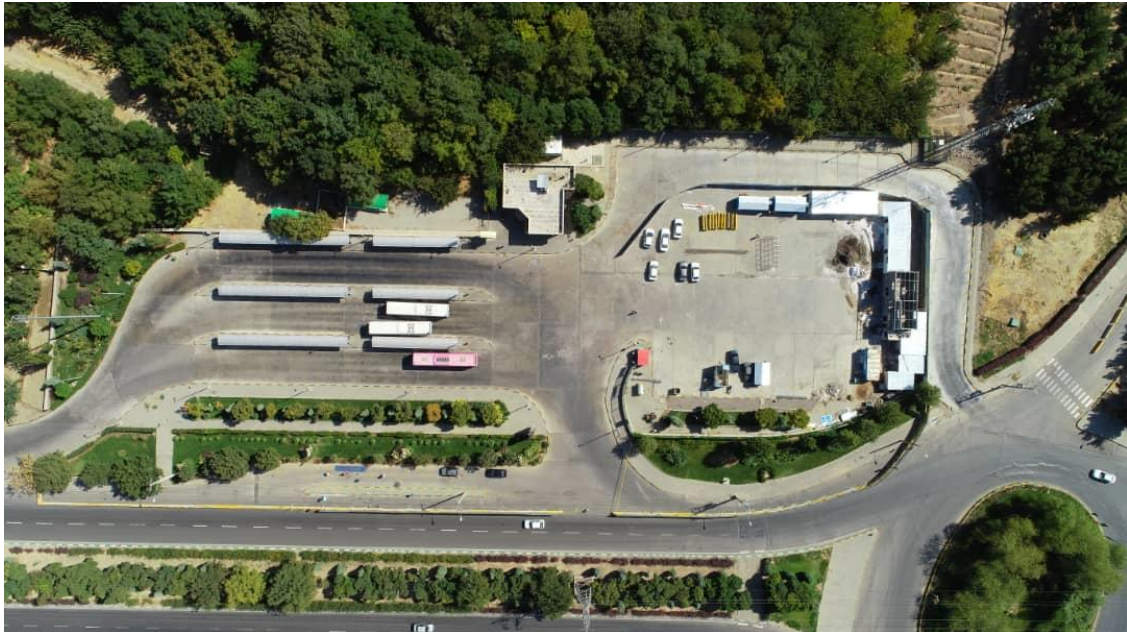
✓ **Site Supervision Services for Construction of X3 Station at Line 3 in Mashhad Urban Railway Corporation**

- **Project required services**

- Site Supervision services in the pre-implementation period
- Monthly Site supervision services during implementation
- Site Supervision services for non-predictable matters during implementation
- Site Supervision services for the post-implementation period
- Technical support services

- **Client**

Mashhad Urban Railway Corporation



✓ **Consultancy Services for Joveyn (Neghab) - Esfarayen - Bojnurd Railway
- North Khorasan Province, Iran**

- **Project required services**

- Consultancy
- Site supervision
- Track, bridge, tunnel, pavement, control and signaling, mapping, architecture, structure, electrical and mechanical design review
- Cost estimation control
- Legal and contractual advice
- HSE requirements
- Project control

- **Client**

Construction and Development of Transportation Infrastructures
Company



✓ **Design Services for Construction of Abouzar and Sadjadieh Stations (Line3), Mashhad – Khorasan Razavi Province, Iran**

- **Project required services**
 - Architecture design
 - Retaining structure design
 - Central body design
 - Mechanical installation design
 - Electrical installation design
 - Fire alarm design
 - Telecommunication design
 - Cost estimation
 - Tender documentation
- **Client**
Mashhad Urban Railway Corporation



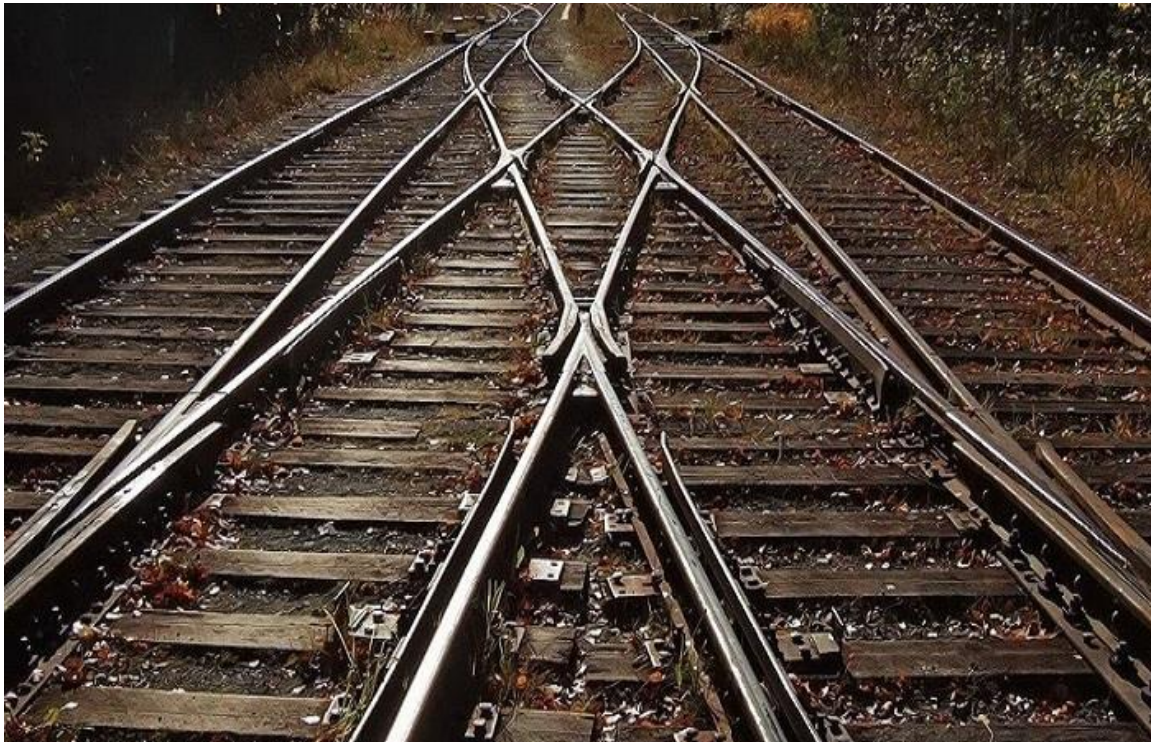
✓ **Consultancy & Engineering Services for connecting Garmsar Special Economic Zone to National Railway - Phase 1**

- **Project required services**

- Railway track primary design
- Earthwork primary design
- Pavement primary design
- Tunnel primary design
- Bridge primary design
- Station building primary design
- Primary cost estimation

- **Client**

Garmsar Special Economic Zone Management Company



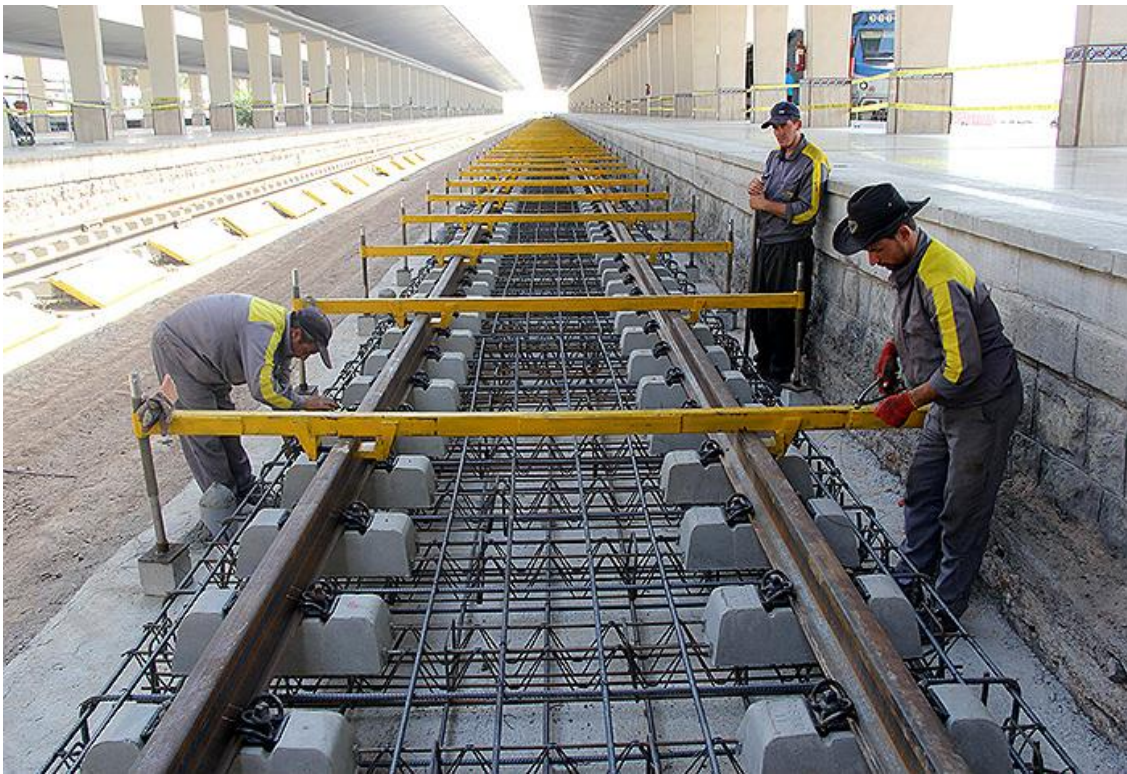
✓ **Consultancy & Engineering Services for connecting Garmsar Special Economic Zone to National Railways - Phase 2**

- **Project required services**

- Railway track design
- Earthwork design
- Pavement design
- Tunnel design
- Bridge design
- Station building design
- cost estimation
- Tender documentation

- **Client**

Garmsar Special Economic Zone Management Company



✓ **Consultancy & Supervision Services for Construction Tehran - Shomal Freeway (part 1) - Mechanical and Electrical works**

- **Project required services**
 - Consultancy
 - Site supervision
 - Ventilation system design
 - Firefighting system design
 - Mechanical installation design for Ancillary buildings
 - Intelligent transportation system design review
 - Tunnel SCADA design review
 - Tunnel control concept design review
 - Tunnel lighting design
 - Road lighting design
 - Electrical load flow calculation
 - Substation locating
 - Cable calculation for electrical loads
 - Cable route design
- **Client**
TEHRAN-SHOMAL Freeway Company



✓ **Consultancy Services for Closing Rest of Supply Contracts Equipment, Installation and Commissioning for Phase 1 of Line1 and Imam Hossein Station**

- **Project required services**

- Consultancy
- Site supervision
- Invoice control
- As-built control
- Contractor delay justification control
- Legal and contractual advice

- **Client**

Shiraz Urban Railway Organization



✓ **Consultancy Services for Construction of 63 kV, Cables trench for sixth line of Tehran metro**

- **Project required services**

- Basic Design
- Detail Design
- Site supervision
- Project monitoring
- Project management

- **Client**

Tehran Urban & Suburban Railway Operation Company



✓ **Consultancy Services for Shiraz Urban Railway, First Line, Vakil Station**

- **Project required services**

- Architecture design
- Initial retaining structure design
- Central core design
- Mechanical installation design
- Electrical installation design
- Signaling and telecommunications design
- BMS and SCADA
- Cost estimation
- Tender documentation
- Consultancy
- Site supervision

- **Client**

Shiraz Urban Railway Organization



✓ **Consultancy Services of the Shiraz Urban Railway, Phase 2 including Architecture and Structure, Pavement Equipment, Special and General Equipment and Facilities of Tunnel and Stations.**

- **Project required services**

- Consultancy
- Site supervision
- Architecture design review
- Retaining structure design review
- Central core design review
- Mechanical installation design review
- Electrical installation design review
- Signaling and telecommunications design review
- BMS and SCADA design review
- Cost estimation
- Tender documentation

- **Client**

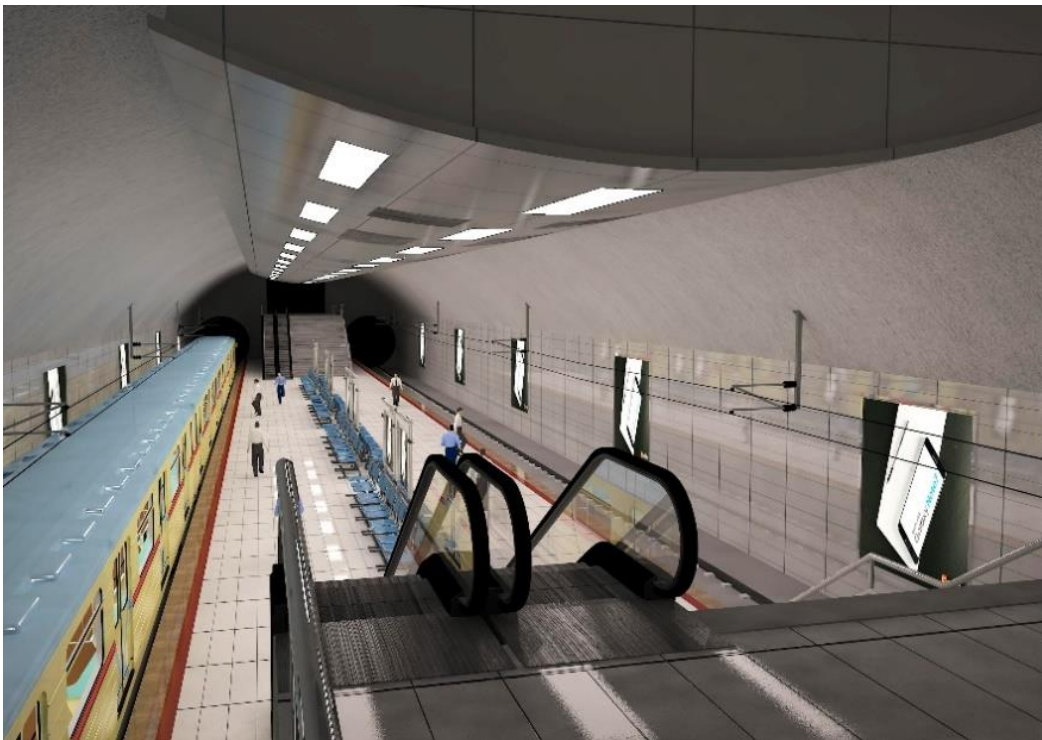
Shiraz Urban Railway Organization



✓ **Design Services, Station S14, Line 2, Tabriz Urban Railway**

- **Project required services**
 - Architecture design
 - Retaining structure design
 - Central core design
 - Mechanical installation design
 - Electrical installation design
 - Fire alarm design
 - Telecommunication design
 - Cost estimation
 - Tender documentation
- **Client**

Tabriz Urban Railway Organization



✓ **Engineering Service for Metro 63 kV Substations Connection to the Electricity Network**

- **Project required services**

- Data gathering of Tehran Regional Electricity Transmission and Supply network including line information, transformers, generators and reactive power compensators and other required information
- Collection of load and consumption information of national grid and Tehran regional electricity grid
- Attend meetings with Tehran Electricity Planning Bureau and receive full database of Tehran Electricity Network
- Conducting load distribution studies to evaluate the network status in the study area
- Determination of possible network problems in the study area
- Investigation of different scenarios of connecting 63 KV substations to the national grid
- Conducting load distribution studies in normal and emergency outage scenarios in different scenarios and selecting technical acceptable scenarios
- Technical and economic comparison between eligible designs in previous paragraph
- Determine the specification of the best plan for connecting 63 kV subway stations to the national grid
- Provide comprehensive report on getting substations connection permissions
- Tender documentation

- **Client**

Tehran Urban & Suburban Railway Co.



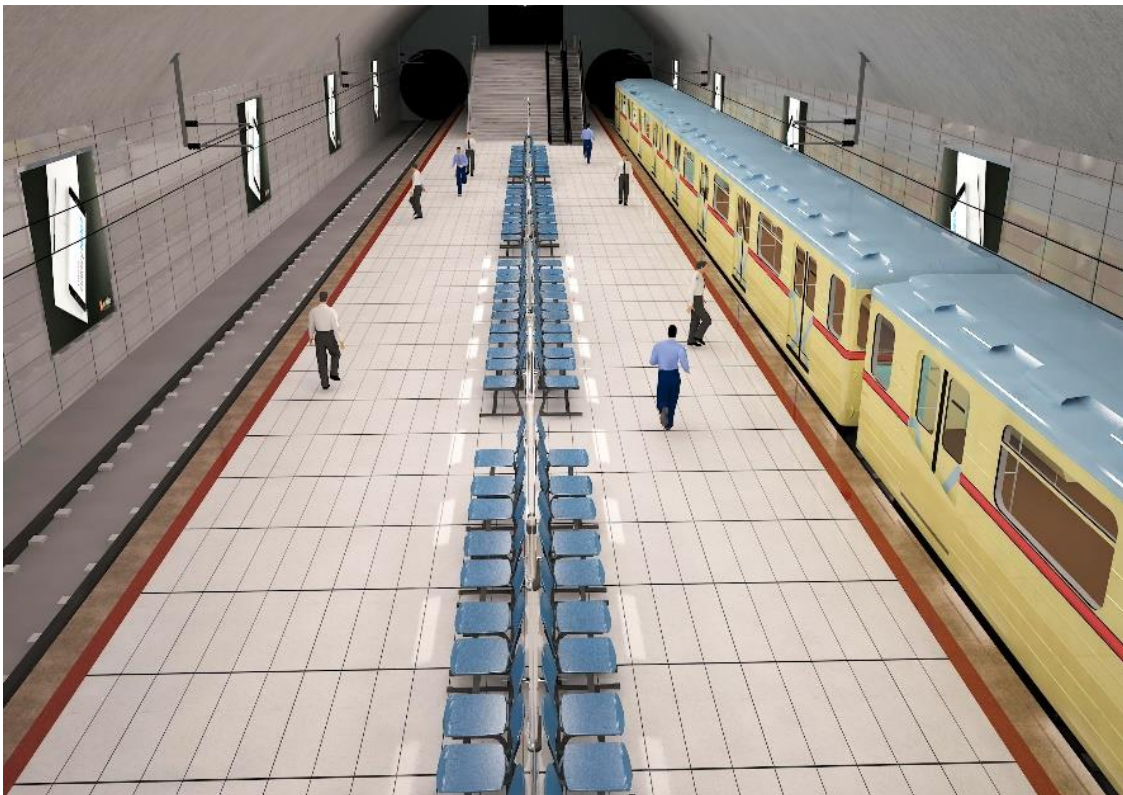
Engineering and Consultancy Services of Main Sub-stations, Line 7, Tehran Urban Railway

- **Project required services**
 - Consultancy services and designing of 63/20 kV GIS-DCS substation at north 7-line of Tehran subway and its associated cable joints.
 - Supervision on construction of 63/20 kV GIS-DCS substation at north 7-line of Tehran subway.
 - Consultancy services and designing of 63/20 kV GIS-DCS substation at east 7-line of Tehran subway and its associated cable joints.
 - Supervision on construction of 63/20 kV GIS-DCS substation at east 7-line of Tehran subway.
- **Client**
Tehran Urban and Suburban Railway operation Company



✓ **Design Services, Stations S09, S10, Line 2, Tabriz Urban Railway**

- **Project required services**
 - Architecture design
 - Retaining structure design
 - Central core design
 - Mechanical installation design
 - Electrical installation design
 - Fire alarm design
 - Telecommunication design
 - Cost estimation
 - Tender documentation
- **Client**
Tabriz Urban Railway Organization



✓ **Telecommunication Comprehensive Plan of the Islamic Republic of Iran Railway Company**

- **Project required services**

- Study the current telecommunication system in Islamic Republic of Iran Railways
- Basic and detail design of following subsystems:
 - CCTV
 - Network architecture
 - SCADA and Monitoring
 - F&G
 - Central control traffic related software

- **Client**

The Islamic Republic of Iran Railway Company



✓ **Consultancy services of Stations 4 and 9, Line 1, Shiraz Urban Railway**

- **Project required services**

Consultancy services providing by MONENCO includes engineering and supervision in all sides of the project i.e. architecture, civil, mechanical, and electrical, signaling and telecommunication systems and all services relating to the tender, contractor selection, etc.

- **Client**

Shiraz Urban and Suburban Railway operation Company



✓ **Engineering and Consultancy Services of Tehran - Mashhad Electric Railway**

- **Project required services**

- Document and technical specification control provided by foreign consultant and comparing them to tender documents.
- Document and technical specification control provided by consortium members and comparing them to tender documents.
- Document and technical proposal supervision.
- Analyzing of financial proposal if requested by client.
- Providing EMC evaluation documents.
- Providing reliability analysis (RAMS)
- Transmission network studies by considering effective parameters in electrification of Tehran - Mashhad railway and providing reports based on templates in tender documents.

- **Client**

MAPNA Group



✓ **Engineering and Consultancy Services of SCADA and Interfaces, Line 5, Tehran Urban Railway.**

- Project required services

- 1 - Receiving and collecting information from the employer, site visits, reviews and basic design
 - 1 - 1 - Gathering maps and center information available from client
 - 1 - 2 - Gathering maps and substations information covered from client
 - 1 - 3 - Visiting the center and gathering needed information
 - 1 - 4 - Visiting the substations covered and gathering needed information
 - 1 - 5 - Investigation of LPS Monitoring in Control Center and Equipment Required
 - 1 - 6 - Investigation of the current status of channel device equipment in terms of SCADA and telecommunication problems
 - 1 - 7 - Providing a basic layout of the SCADA dispatching system
 - 1 - 8 - Presentation of the design of covered substations terminals
 - 1 - 9 - Determination of entry and exit points of substations and design of interfaces of covered substations system
 - 1 - 10 - Providing a plan to update channel device equipment to resolve SCADA or telecommunications problems
 - 1 - 11 - Estimation of equipment needed for dispatch center section
 - 1 - 12 - Estimation of equipment required for terminals and substation interfaces
 - 1 - 13 - Estimation project workload
- 2 - Estimating project budget and costs
 - 2 - 1 - Determine the costs of detailed engineering, purchase of equipment, transportation, insurance and project implementation guarantees
 - 2 - 2 - Cost of installation, documentation, training, testing and commissioning
 - 2 - 3 - Estimating the cost of troubleshooting channel device equipment
- 3 - Detailed design, technical specifications and tender documentation
 - 3 - 1 - Hardware Specifications
 - 3 - 2 - Software Specifications
 - 3 - 3 - Providing technical specifications for the channel device



- 3 - 4 - Technical information tables
- 3 - 5 - Cost comparison tables, benefits, advantages and disadvantages of system design based on existing technologies (RTU, PLC, Network and DCS)
- 3 - 6 - List of material (LOM)
- 3 - 7 - List of prices (LOP)
- 3 - 8 - Commercial tender documents (Letter of invitation, instructions to bidders, contract agreement and required attachments)
- 3 - 9 - Preparing schedule plan
- 4 - Bidding, technical and financial qualification and contract preparation
 - 4 - 1 - Bidding
 - 4 - 2 - Responding to questions from participants during the deadline
 - 4 - 3 - Pre-Qualification
 - 4 - 4 - Technical and financial qualification
 - 4 - 5 - Conducting contract negotiations
 - 4 - 6 - Contract preparation
- **Client**
Tehran Urban and Suburban Railway operation Company

