

**Power Transmission &  
Distribution Networks**



## A GENERAL INTRODUCTION

We started as a Canadian consultancy company, founded in 1973, Whose name changed to GNEC Later in 1983, and now we are the most continuously operating engineering firm in Iran and the Middle-East. It's been more than four decades since we started working with this new name in different fields of the Energy Industry, in Engineering and Consultancy projects, and we have proved to be the most successful and well-known company in IRAN. With more than 1000 experts, we provide clients with various engineering, management, procurement and construction services in the fields of Power Transmission Lines and Substations, Distribution, Networks, Water and Wastewater, Dam and Hydropower, Irrigation and Drainage, Renewable Energies & Energy Optimization, Gas, Steam and Combined Cycle Power Plants, and Oil, Gas and Petroleum.



## OUR EXPERIENCES

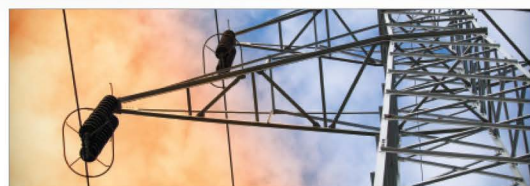
We have already provided services for:

- More than 27,000 Km of power transmission lines and many distribution networks from 33kV to 400kV.
- More than 820 substations in all voltage levels from 33kV to 400kV.
- More than 60,000 MW of power plants.
- More than 310 projects in dams, water transmission lines, irrigation, drainage, hydropower plants and about 500 km of water & wastewater network.
- More than 3000 km of gas transmission lines and several fuel storage tanks.
- More than 100 renewable energy plants and energy management projects with a wide variety of services.



## OUR SERVICES

- Design and engineering services
- Project review, project management, construction control and supervision
- Conceptual, preliminary and detailed design
- Consultancy services and economic studies
- Management of contract (MC)
- Feasibility studies, EIA, ESIA, HSE, and RAP
- Surveying and geotechnical investigations and engineering
- Engineering, procurement and construction (EPC) services
- Electricity grid and access studies and reliability improvement



## BUSINESS EXPANSION

Our area of activities has always been expanding by adding new businesses fields such as Hydro structures in 1994, Oil & Gas in 2002, renewable energies in 2005 and continue to grow by entering into exporting engineering services, and participating in EPC, BOO and BOT projects.

Business Growth During the Years

2011  
2008  
2007  
2005  
2002  
2000  
1999  
1997  
1995  
1993  
1975  
1973

Steam power plants, Transmission lines and Substations, Hydro Structures, Electricity Distribution, Combined and Gas Power Plant, Power Plant Industries, Oil and Gas, MC projects, Renewable Energies, Engineering Services Export, EPC, **BOO and BOT Projects**



Steam power plants, Transmission lines and Substations, Hydro Structures, Electricity Distribution, Combined and Gas Power Plant, Power Plant Industries, Oil and Gas, MC projects, Renewable Energies, Engineering Services Export, **EPC Projects**



Steam power plants, Transmission lines and Substations, Hydro Structures, Electricity Distribution, Combined and Gas Power Plant, Power Plant Industries, Oil and Gas, MC projects, Renewable Energies, **Engineering Services Export**



Steam power plants, Transmission lines and Substations, Hydro Structures, Electricity Distribution, Combined and Gas Power Plant, Power Plant Industries, Oil and Gas, MC projects, **Renewable Energies**



Steam power plants, Transmission lines and Substations, Hydro Structures, Electricity Distribution, Combined and Gas Power Plant, Power Plant Industries, **Oil and Gas and MC projects**



Steam power plants, Transmission lines and Substations, Hydro Structures, Electricity Distribution, Combined and Gas Power Plant, **Power Plant Industries**



Steam power plants, Transmission lines and Substations, Hydro Structures, Electricity Distribution, Gas and **Combined Cycle Power Plant**



Steam power plants, Transmission lines and Substations, Hydro Structures, Electricity Distribution, **Gas Power Plant**



Steam power plants, Transmission lines and Substations, Hydro Structures, **Electricity Distribution**



Steam power plants, Transmission and Substationss, **Hydro Structures**



Steam power plants, **Transmission Lines and Substations**



**Steam power plants**





# Certificates

ISO 9001



ISO 14001



ISO 45001



HSE-MS



ISO 10015



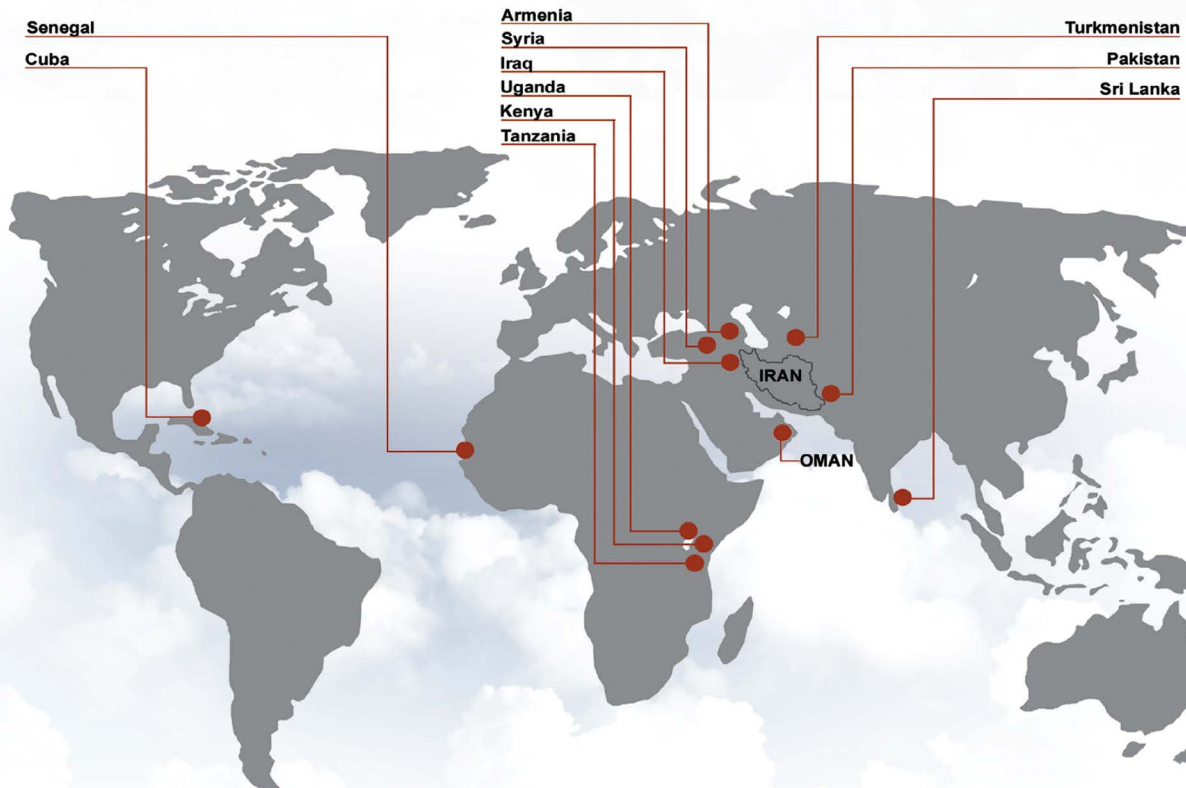
EFQM



ISO 10006



## GNEC Area of Activity



ABOUT US



# POWER TRANSMISSION LINES, DISTRIBUTION NETWORKS

## Overview

In the revolutionary era of energy resources where renewable energies have found them back to the history of mankind, interconnection of generation plants and consumers through a reliable and environmentally friendly transmission system has become more vital.

Our main concern in GNEC is to provide our clients with the optimum design solutions coupled with a wide range of managerial, Consulting and engineering services from feasibility step to implementation. To provide these services, we utilize our most skilled engineers, who have experience of presenting such services, in more than 27000 kilometers of high voltage power transmission lines, numerous distribution grid development and design projects and a complete range of feasibility and system studies.



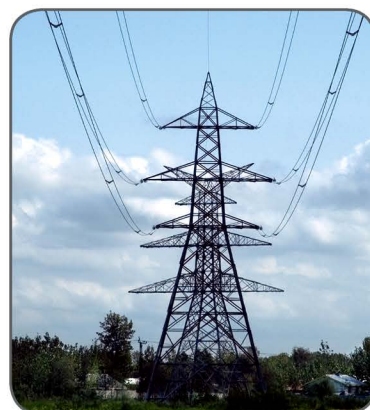
## FIELD OF ACTIVITIES

- Overhead transmission lines from low voltage to extra high voltage
- Underground cable projects
- Optical ground wire projects
- Power System Studies and Analysis
- Industrial Distribution Systems
- Distribution Network Design and Optimization
- Smart Grid Systems
- Electrical traction systems
- Financial and Economic Feasibility Studies
- Surveying
- Geo Technical Studies



## SERVICES

- Network Analysis and Studies and Defining the Best Techno Economical Scenario
- Factory and Site Acceptance Tests of Equipment and works
- Master Plan Studies for Power Networks
- Distribution Networks Load Balance, Load Flow, Fault and Service Restoration Analysis
- Electric Loss Reduction Studies of Distribution Networks
- Electric Tariff Studies
- Basic, Conceptual and Detailed Engineering Design of Transmission and Distribution Networks
- Optimum Route Selection of Transmission and Distribution Lines
- Topographic Route Survey of Transmission and Distribution Lines and Preparation of Plan and Profile Drawings
- Detailed Structure and Foundation Design
- Mechanical and Electrical Design and Tower Spotting
- Preparation of Technical Specifications of Equipment
- Preparation of Technical Provisions for Construction
- Preparation of Commercial Tender Documents
- Assisting Clients in Procurement Management and Tender Stage
- Supervision of Factory Acceptance Tests of Equipment
- Project Management and Construction & Commissioning Supervision
- Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP)
- Assisting Clients in Contract Administration and Closure
- Management Contracting (MC) of EPC Projects





## Highlighted Projects

### Provision of Project Management Consultancy Services for Construction of Kidunda Dam Project

The Kidunda dam project is one of priority projects under the Dar es Salaam Special Program for improvement of water supply in Dar es Salaam and parts of Coast region.

The Kidunda dam project will include four major project components:

- 1) Water reservoir (dam)
- 2) Hydro power plant to generate 20 megawatts hydro power
- 3) Construction of 101 km 66 kV and 33 kV Power Transmission and Distribution lines to transmit power from Kidunda to Chalinze substation, and**
- 4) The access road from Kidunda to Ngerengere approx. 75km.

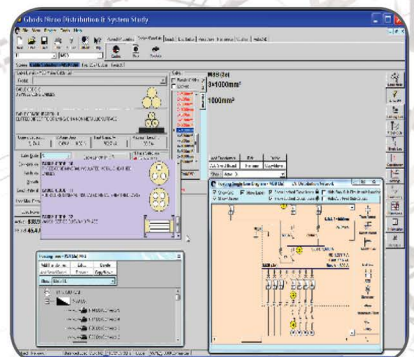


### Consultancy Services for Supervision and Project Management of Opuyo-Moroto 132kV Power Transmission Line and Associated LV Reticulations

Installation and commissioning of approximately **160 km 132kV transmission** line backbone from the existing Opuyo 132/33kV substation to the proposed new 132/33kV-50MVA substation at Moroto town, **527 kms of 33kV Distribution lines**, and **82 kms of Low Voltage (LV) network** in 26 villages.

### Consultancy Services for System Studies and Preparation of Master Plan for Distribution Network and Electrical Protection Settings of Shiraz Refinery

- Data gathering of desired network;
- Determining secondary voltage level for network connection of Shiraz oil refining company
- Proposing optimal structure for transformer connection
- Modeling generation and distribution network of shiraz refinery considering 2 scenarios
- Load Flow Study, Power Factor Compensation study, Short Circuit Study, Motor Starting Study, Transient and Stability Study, Optimal Protection and Coordination Study
- Technical analysis of existing electrical system and proposing optimal structure and reformative actions
- Studies after purchasing the new generator
- Providing reports and required outputs for PMS system design.





### Consultancy Services for Engineering Design and Supervision of Tobene – Touba – Kaolack 225 & 30kV Power Transmission Project

Construction and commissioning of:

- 113 km (Tobene-Touba) 225kV Transmission Line;
- 72 km (Touba-Kaolack ) 225kV Transmission Line;
- 60 kms of (Loop of Touba) 30kV Distribution Lines;



### Consultancy Services for Engineering, Procurement, and Construction Supervision of Rural Electrification Project 8

Establishment of power electricity network for **1000 villages** and extension of **3500 villages** through installation and commissioning of **7500 km medium (33kV) & low voltage (0.4 kV) distribution lines.**



### Consultancy Services for Engineering Design, Site Supervision and Project Management of Golpaygan – Shahid Abbaspour - Godarlandar 400kV Overhead Transmission Line

Installation and commissioning of approximately **260 km of 400kV Double Circuit Overhead Transmission Line** connecting Shahid Abbaspour and Godarlandar Power Plants to the National Grid, traversing the most mountainous areas of Isfahan, Chaharmahal and Bakhtiari ,and Khuzestan provinces.



### Consultancy Services for Feasibility Study, ESIA and RAP, Engineering Design, Supervision, and Project Management of Azerbaijan Power Transmission Project

The project consisted of eight different lots:

**Lot 1: Construction of approximately 160 km Single Circuit 400 KV Overhead Transmission Line for connection of Sahand Power Plants to Orumieh Power plant.**

**Lot 2: Construction of an 11 km 230 KV Cable Transmission Line for connection of Central Tabriz GIS substation to Shafa substation.**

Lot 3: Construction of Sarab 230/63/20 kV Substation

Lot 4: Construction of Ardabil II 230/63/20 kV Substation

Lot 5: Construction of Guermi 230/63/20 kV Substation

Lot 6: Construction of Golmankhaneh 230/132/20 kV Substation

Lot 7: Construction of Khalkhal 230/63/20 kV Substation

Lot 8: Construction of Central Tabriz 230/132/20 kV Substation.





**Consultancy Services for Engineering Design, Site Supervision and Project Management of Karun 3 – Karun 4 400kV Overhead Transmission Line**

Installation and commissioning of approximately **51 km of 400kV Single Circuit Overhead Transmission Line** from Karun-3 Power Plant 400kV Substation to Karun-4 400kV Substation.



**Consultancy Services for Engineering Design, Supervision and Project Management of Firuzkuh 400 kV Interconnection Line**

Project Management, Consultancy Services, Engineering Design, Site Supervision for Supply, Construction, Erection, Testing and Commissioning of Firuzkuh 400 kV Interconnections.



**Consultancy Services for Feasibility Study, ESIA and RAP, Engineering Design, Supervision and Project Management of Golgohar Mining Plant Power Transmission Project**

**Construction and commissioning of:**

- **10 km, 400kV Transmission Line;**
- **25km, 230kV Transmission Line;**
- Goharan 400/33 kV Substation;
- Jahan Foolad 400/33 kV Substation;
- Iron & Steel 400/230 kV Substation;
- Gohar Zanin & Parvaresh 230/33 kV Substations.

**Consultancy Services for Engineering Design, Site Supervision and Project Management of Kahnooj-Jiroft 400kV Overhead Transmission Line**

Installation and commissioning of approximately **90 km of 400kV Single Circuit Overhead Transmission Line** from Kahnooj 400/230 kV Substation to Jirof 400/132kV Substation.



**Consultancy Services for Engineering Design, Supervision and Project Management of 230 & 63 kV QC Transmission Line in Gilan**

Installation and commissioning of Rasht - Chaboksar, 230 & 63 kV Quadruple Circuit Transmission Line.



**Consultancy Services for Engineering Design, Supervision and Project Management of Tabriz-Soufian 132 kV Transmission Line**

Installation and commissioning of Tabriz - Soufian 132 kV Double Circuit Overhead Line using prefabricated Concrete Pole.





# References

## Diversified Experience in Transmission and Distribution Networks, System Studies and Analysis

Finish Date	Assignment Name	Name of Client & Country of Assignment	Scope of Services
<b>Overseas Projects</b>			
2021	Opuyo-Moroto 132kV Power Transmission Line and Associated LV Reticulations	Uganda Electricity Transmission Company Limited (UETCL) Uganda	Consultancy, Management of Project, Engineering Design and Site Supervision
2014	Rural Electrification Project 8	Ceylon Electricity Board (CEB) Sri Lanka	Consultancy Services for Engineering and Site Supervision
2009	Tobene – Touba – Kaolack 30 & 225kV Power Transmission Project	Senegal Electricity Company (SENELEC) Senegal	Consultancy Services for Engineering and Site Supervision
<b>Domestic Projects</b>			
2024	Integrated Electricity Master Program Projects	National Iranian Copper Industries Company (NICICO) Iran	Consultancy Services for Feasibility and System Studies, ESIA and RAP, Engineering Design, Site Supervision and Project Management
2024	NGL3100 Power Supply Program	Oil Industries Engineering and Construction (OIEC Group) Iran	Consultancy Services for Feasibility and System Studies, ESIA and RAP, Engineering Design, Site Supervision and Project Management
2023	Electrification of Goureh-Jask Crude Oil Pipeline Program	Petroleum Engineering and Development Company (PEDEC) Iran	Consultancy Services for Feasibility and System Studies, ESIA and RAP, Engineering Design, Site Supervision and Project Management
2023	Network Studies and Electrical Protection Settings of Shiraz Airport	Iran Airports & Air Navigation Company Iran	Consultancy Services for Network Studies and Electrical Protection Settings
2023	Master Plan for Distribution Network and Electrical Protection Settings of Shiraz Refinery	Shiraz Oil Refining Company Iran	Consultancy Services for System Studies and Preparation of Master Plan
2020	Azerbaijan Power Transmission Project	Azerbaijan Regional Electric Company Iran	Consultancy Services for Feasibility Study, ESIA and RAP, Engineering Design, Supervision, and Project Management
2020	Network Study and Feasibility of Islanding Operation and Short Circuit Level of Power Plants in South Pars Region	Pars Oil and Gas Company Iran	Consultancy Services for Network Study
2019	Master Plan for MV Power Distribution Network of Yazd Province (Yazd & Mehriz)	Yazd Distribution network Company Iran	Consultancy Services for System Studies and Preparation of Master Plan
2019	Electrical System Review and Restoration and Protection of Tehran Wastewater Refinery Electrical System	Tehran Wastewater Refinery Company Iran	Consultancy Services for Electrical System Review and Restoration and Protection
2019	Master Plan for MV Power Distribution Network of Chaharmahal and Bakhtiari Province (Shahrekord, Ben & Saman)	Chaharmahal-bakhtiari Distribution network Company Iran	Consultancy Services for System Studies and Preparation of Master Plan
2019	Lamerd Combined Cycle Power Plant to National Power Grid 400kV Overhead Transmission Line	Ghadir Energy Investment Company Iran	Consultancy Services for Engineering Design, Site Supervision and Project Management
2019	Operational and Maintenance of Bakhtar Grid	Bakhtar Regional Electric Company Markazi, Hamadan, Lorestan Provinces Iran	Site Supervision and Project Management
2019	Kahnoot-Jiroft 400kV Overhead Transmission Line	Kerman Regional Electric Co. Iran	Consultancy Services for Engineering Design, Site Supervision and Project Management
2016	Golgozar Mining Plant Power Transmission Project	Golgozar Mining and Industrial Co. Iran	Consultancy Services for Feasibility Study, ESIA and RAP, Engineering Design, Supervision and Project Management
2016	Vardavard - Pardis 400 kV Overhead Transmission Line	Omran Pardis New Town Company Iran	Consultancy Services for Engineering Design, Site Supervision and Project Management
2015	Firuzkuh 400 kV Interconnection Lines	Tehran Regional Electric Company	Consultancy Services for Engineering Design, Site Supervision and Project Management
2014	Khuzestan 230 ,132 and 400 kV Interconnection Lines	Khuzestan Regional Electric Company	Consultancy Services for Engineering Design, Site Supervision and Project Management
2014	Minoodar 400 kV Interconnection Lines	Zanjan Regional Electric Company	Consultancy Services for Engineering Design, Site Supervision and Project Management



**We Promote Reliability, Quality, Cooperation and Competency**



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