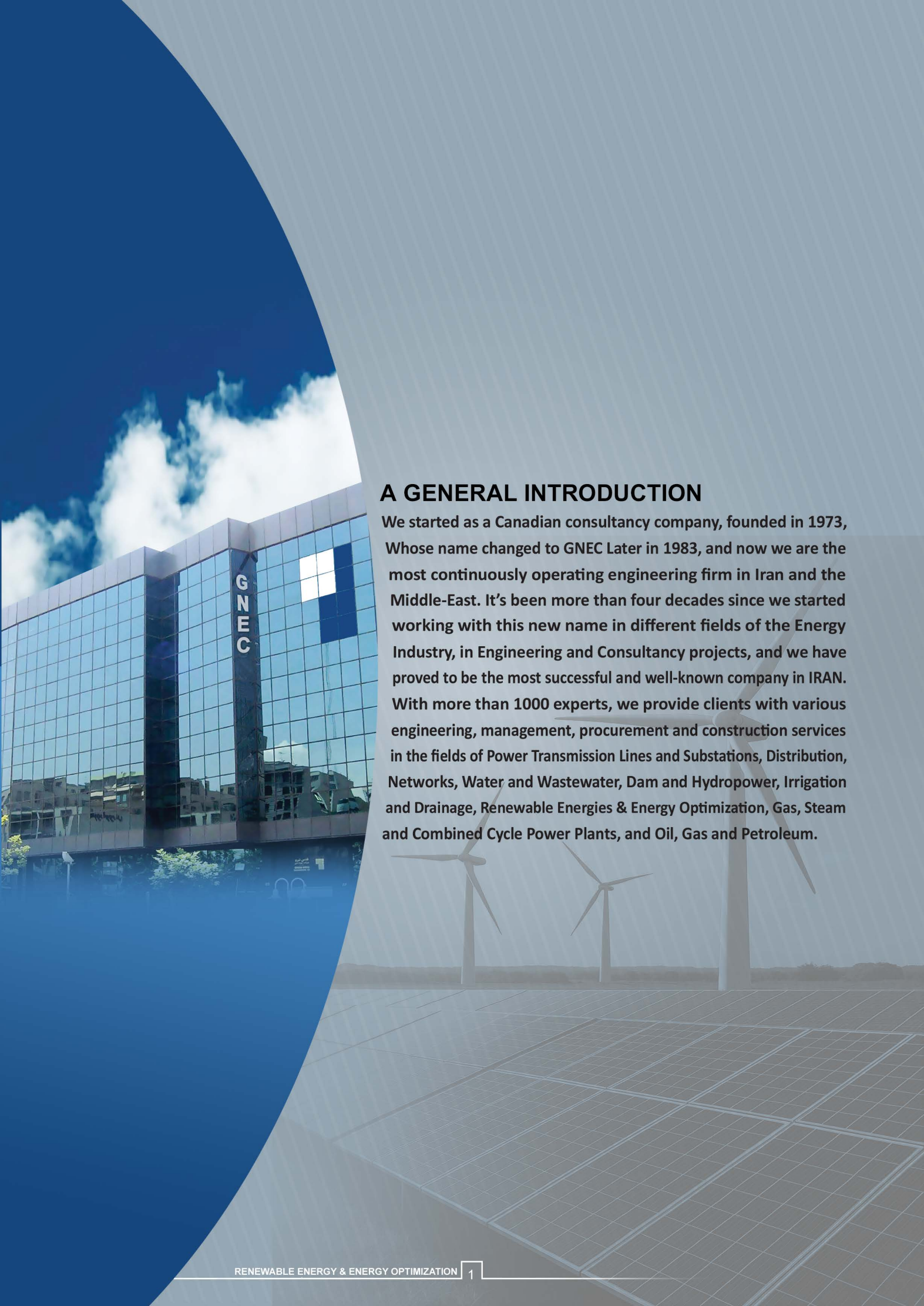




**Renewable
Energy**



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

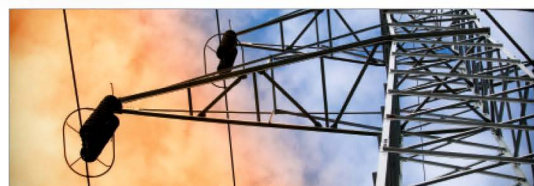
We have already provided services for:

- 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



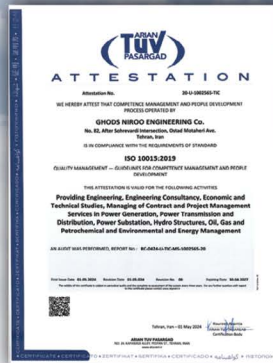
ISO 45001



HSE-MS



ISO 10015



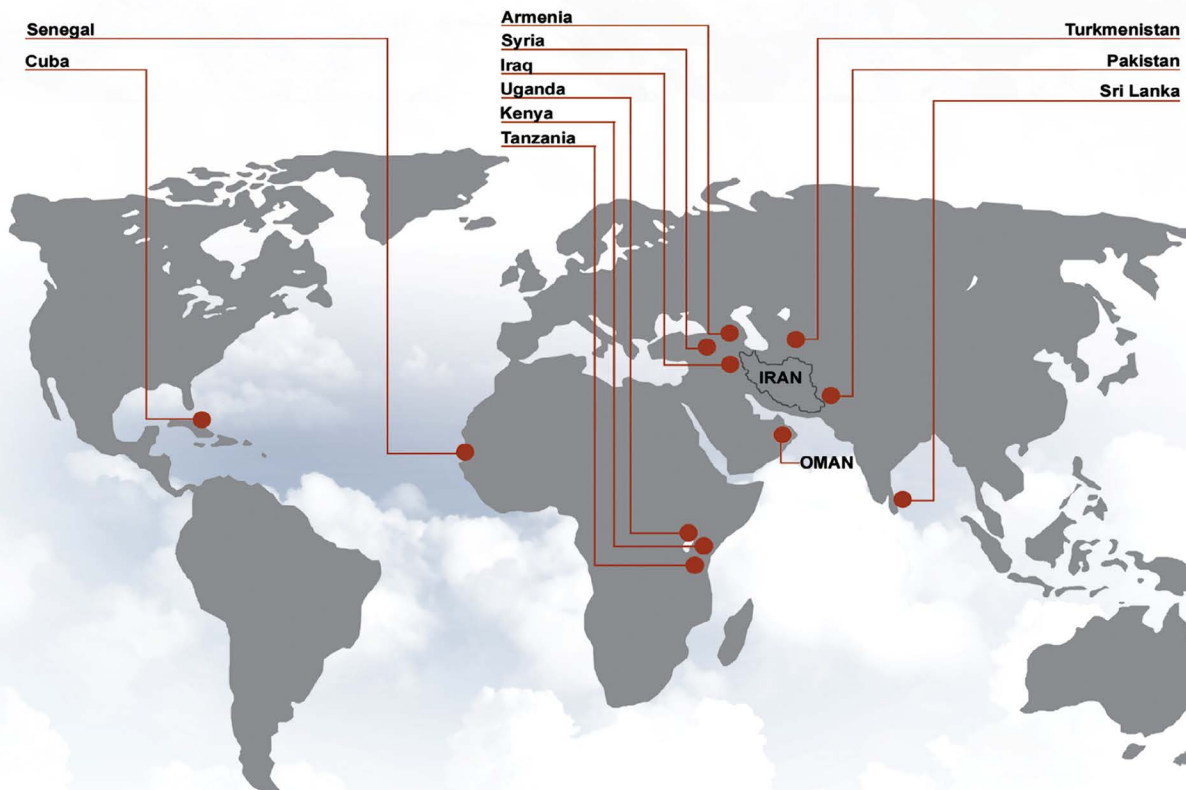
EFQM



ISO 10006



GNEC Area of Activity





RENEWABLE ENERGY AND

OVERVIEW

Founded in 2005, energy department is going to make GNEC a pioneer in renewable energy & energy optimization fields in Iran.

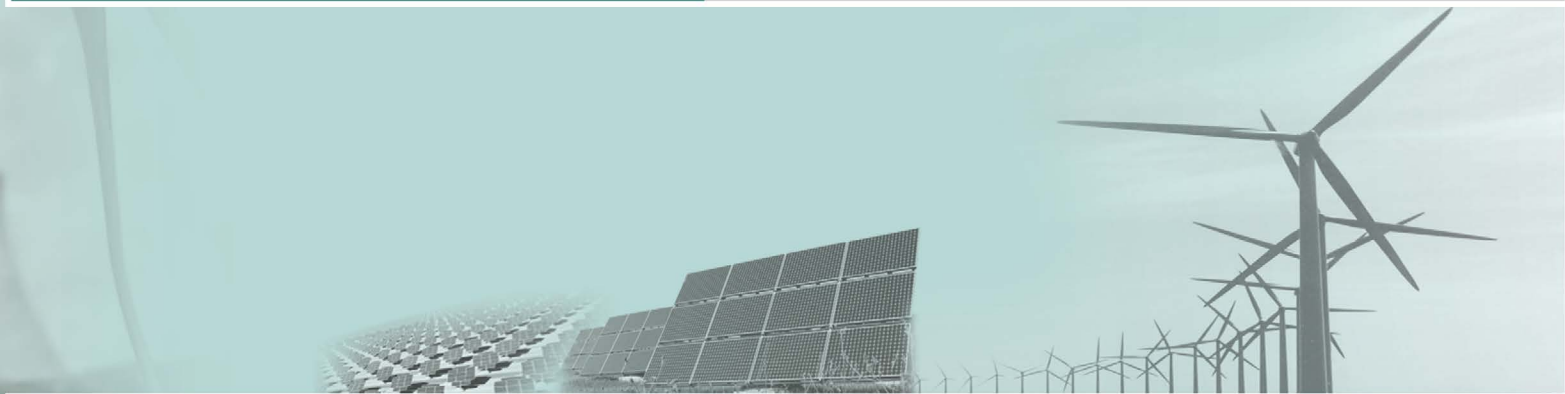
Our multi- disciplinary and experienced team provides developers, communities, industries and contractors in public and private sectors with technical, environmental, economical and planning services throughout the entire project life- cycle, from feasibility study to operation.



ENERGY OPTIMIZATION

FIELD OF ACTIVITIES

- Wind
- Solar
- Hydrogen & Fuel Cell
- Biomass
- Geothermal
- Energy Management
- CHP & CCHP
- Energy Audit
- Expansion Turbine



SERVICES

- Engineering Consultancy Services
- Supervision Services On Manufacturing, Installation And Commissioning
- Engineering, Procurement And Construction (EPC)
- Management Of Contract (MC)
- Clean Development Mechanism(CDM)
- Geographic Information System(GIS)
- Financial & Economical Studies
- Surveying



FIELD OF ACTIVITIES

Solar

- Solar Resource Assessment Services, Including On-Site Monitoring to Increase Accuracy
- Comprehensive Technical and Financial Feasibility Studies
- Modeling and Optimizing of Array Tilt Angles & PV System Performance Modeling
- System Engineering for Key PV Components (eg. Modules, Inverters, Wiring)
- Uncertainty Analysis to Support Bankable Energy Yield Predictions
- Consulting on PV Plant Performance Monitoring Systems, Project Management and Project Facilitation Services
- Array & Battery Bank Sizing Optimization for Off-Grid and Hybrid Systems
- Analysis of Various Hybrid System Configurations, Including PV, Wind & Diesel



Wind



- Wind Resource Assessment
- Feasibility Study
- Engineering design
- Environmental Assessment & Permitting
- Project Management
- Grid Connection Design
- Construction and Commissioning Supervision
- Guaranty Period Supervision

Hydrogen & Fuel Cell

- Technology transferring supervision in the field of hydrogen energy and cryogenic
- Conceptual, basic & detail design, supervision on erection and commissioning of various hydrogen generator technologies
- Study of hydrogen liquefaction and storage plant
- Conceptual, basic and detail design, supervision on erection and commissioning of hydrogen filling system
- Study of fuel cells (specially PEMFC) and equipment for fuel cell laboratory



*Environmentally Compatible Renewable Energy Systems
(Taleghan, Alborz province)*

Expansion Turbine

- Study of technical, environmental and costs
- Simulation of produced power with related process and analyzing software
- Engineering (conceptual & detail design)
- Construction & commissioning supervision



Biomass

- Feasibility study on biomass to energy
- Supervision on landfill, incineration and anaerobic digestion
- Conceptual and detail design of biomass to energy
- Preparation of EPC tender documents for waste to energy, biogas, landfill gas and gasification
- Waste management master plan study
- Construction and commissioning supervision
- Guaranty period supervision



Energy Management

- Primary evaluation, monitoring and audit of energy production and consumption
- Planning and organizing of energy management projects
- Energy purchase planning with optimum prices
- Planning for energy efficiency in design, process, buildings, equipment and ensuring optimum performance
- Energy management trailing
- Establishing ISO 50001 standard



CHP & CCHP

- Technical potential estimation
- Economic suitability study
- Identifying barriers
- Conceptual engineering
- Preliminary economic analysis
- Completing and investment-grade feasibility analysis
- Contractor selection
- Construction & commissioning supervision

Geothermal

- Geophysical surveying
- Geologic and geophysical investigations
- Design and execution of geothermal exploration and drilling programs
- Well testing
- Site geology, thermal and environmental characterization & plant sizing
- Preplanning and feasibility analysis
- Power plant installation
- District heating applications
- Hybrid ground heat exchanger design and engineering
- Construction testing and observation



Energy Auditing

- Energy audit for power plants, industrial plants and buildings
- Thermal energy audit & fired equipment analysis
- Distribution system analysis
- Process audit
- Power quality study
- Waste heat recovery solutions



Highlighted projects

Construction of 25 MW Power Plant in ANZALI port free Zone

The construction project of a 25 MW power plant for simultaneous production of electricity and heat (CHP), began in 2017 and was commissioned by the CASPIAN Power Generation Company in the ANZALI Port Free Zone. The project included the supply, installation and commissioning of 13 Units of 1948 kW gas generators of the German MTU model MTU20V4000GS along with all accessories related to the heat recovery system and BOP of the power plant, which was finally launched in 2019 and synchronized to the national electricity network.

GNEC (Energy Deputy) has worked as an engineering consultant in carrying out preliminary designs, preparing tender citations, selecting a competent contractor and a workshop monitoring device residing in the project.



Construction of 55 MW Wind Farm in KAHAK (QAZVIN Province)

The project of constructing a 55 MW wind power plant began in early 2013 with the employment of the Mapna Group in the Kahak region (TAKESTAN- QAZVIN province). This project is the first wind power plant using wind turbines made by MAPNA and includes 22 units of 2.5 MW turbines made by this company. Gradually, by the middle of 2017, all 55 MW turbines were installed and commissioned. GNEC has been in charge of superior supervision and field supervision services in this project.



55 MW Wind Farm (Kahak, Qazvin Province)

Construction of 10 MW Photovoltaic Power Plant in ARDAKAN (YAZD Province)

This project was notified to GNEC in 2017 and was completed in 2020. The most important activities are planning and controlling the project and making the necessary correspondence with the relevant authorities to renew the licenses obtained, as well as technical and economic studies for the construction of a 10 MW Photovoltaic power plant using the single axis solar tracker system. Preparation of tender documents for selection of PC contractor and engineering documents and notification to engineering contractor and review of produced documents, management of Project, Cost, procurement, construction, installation, commissioning, delivery and after-service services are the duties of GNEC in this project.



10 MW Photovoltaic Power Plant (Ardakan, Yazd Province)



References

Finish Date	Assignment Name	Country of Assignment & Name of Client	Role on the Assignment
Ongoing	Construction of 50 MW Wind Farm in Doroh (South Khorasan)	Khorasan Renewable Energy Company	<ul style="list-style-type: none"> Engineering Consultancy Services Field Supervision
Ongoing	Replacement of one Million Worn out Air Conditioners with High Efficiency air Conditioners	TAVANIR Company	<ul style="list-style-type: none"> Engineering Consultancy Services
Ongoing	Construction of 50 MW Wind Farm in Doroh (South Khorasan)	Khorasan Renewable Energy Company	<ul style="list-style-type: none"> Engineering Consultancy Services Field Supervision
Ongoing	Construction of 50 MW Wind Farm in Khaf (Khorasan Razavi)	Padideh MERVZIST Company	<ul style="list-style-type: none"> Engineering Consultancy Services Field Supervision
Ongoing	Construction of a 1 MW Livestock Biogas Power Plant	Zagros Kosar Power Plant Production and Management Company	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy Services Field Supervision
03/2021	Management of Construction Plan of 10 MW Solar Power Plant in Ardakan (Yazd)	Chadormelou Mining and Industrial Company	<ul style="list-style-type: none"> Engineering Consultancy Services Project Management
03/2020	Construction of 50 MW Wind Farm in Aqkand (Azerbaijan)	Mapna Renewable Energy Production Company	<ul style="list-style-type: none"> Field Supervision
11/2018	Construction of 25 MW Power Plant in Qom (Shokuhieh)	Dam Construction and Irrigation Facilities Company (SABIR)	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy Services
05/2018	Construction of 2000 No. of 5 kW Photovoltaic Systems	Iranian MAHTAB Charity	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy Services
09/2017	Construction of 55 MW Wind Farm in Kahak (Qazvin)	MAPNA Renewable Energy Production Company	<ul style="list-style-type: none"> Superior Supervision Field Supervision
08/2017	Construction of 50 MW Wind Farm in Pakistan Project	SUNIR (Iran PAK)	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy Services
05/2016	Energy Extraction from Shiraz Waste Water Treatment Plant Sludge	Shiraz Water and Sewerage Company	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy Services
04/2016	Construction of Landfill Power Plant in Isfahan	Isfahan Municipality	<ul style="list-style-type: none"> Design and Engineering Consultancy Services
03/2016	Construction 250 MW Wind Farm	Thermal Power Plants Holding Company	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy Services
12/2015	Installation of Photovoltaic Systems on Office Buildings	Mazandaran Regional Electricity Joint Stock Company	<ul style="list-style-type: none"> Engineering Consultancy Services Field Supervision
10/2015	Training and Implementation of Energy Management System	Hormozgan Steel Company	<ul style="list-style-type: none"> Energy Audit and Optimization
05/2015	Wind Farm Location	Iran Power Plant Investment Company (SANA)	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy services
07/2013	Construction of 10 MW Biomass Power Plant	Renewable Energy and Energy Efficiency Organization (SATBA)	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy Services and Design
01/2013	Construction of a Waste Incineration Plant in Order to Determine the Economic Conditions for MAPNA	MAPNA Group	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy Services
07/2011	Energy Audit in Be'sat Power Plant	Iran Energy Efficiency Organization (SABA)	<ul style="list-style-type: none"> Energy Optimization
05/2010	Energy Audit in Ramin, Tabriz and Lushan Power Plants	Iran Energy Efficiency Organization (SABA)	<ul style="list-style-type: none"> Supervising and Energy Audit
09/2007	Construction of Environmentally Friendly Energy Pilots at the Taleghan Site	IRAN New Energy Organization (SUNA)	<ul style="list-style-type: none"> Feasibility Study Engineering Consultancy Services Field Supervision



We Promote Reliability, Quality, Cooperation and Competency



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