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Message From Market

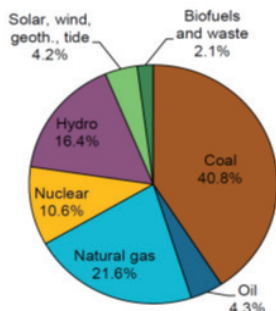
Cross Border Electricity Trading



Electricity is the world's fastest-growing form of end-use energy consumption, as it has been for many decades. Based on IEA (International Energy Agency) estimations, world net electricity generation increases from 23.8 trillion kWh in 2014 to 36.5 trillion kWh in 2040 (more than 53%).

Power systems have continued to evolve from isolated, small grids to integrated national markets and even international markets. Yet, countries have been reluctant to trade electricity across borders. Global exports of electricity are currently around 3 percent of total production. This is an anomaly in the energy sector. In comparison with electricity, roughly 64 percent of all oil produced is traded between countries.

Between 1974 and 2014, world gross electricity production increased from 6,287 TWh to 23,815 TWh, an average annual growth rate of 3.4%. In 2014, 66.7% of world electricity production was from fossil fuel generating plants. Hydroelectric plants provided 16.4%, nuclear plants 10.6%, biofuels and waste 2.1%, and geothermal, solar, wind and other sources made up the remaining 4.2%.

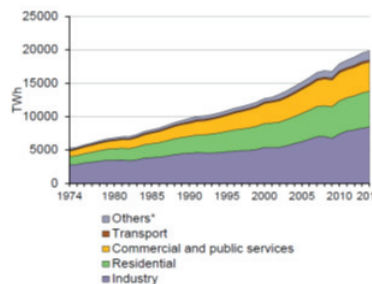


World gross electricity production, by source, 2014

The world total final electricity consumption in 2014 reached 19,841 TWh, an increase of 1.7% over 2013 figure. The average growth rate of electricity final consumption in the world since 1974 was 3.4%.

OECD (Organization for Economic Co-operation and Development) exports of electricity grew from 81 TWh in 1974 to 511 TWh in 2015, an average annual growth rate of 4.5%. Substantial trade in electricity occurs in OECD Europe. Outside of the OECD there is substantial electricity trade between Russia, Kyrgyzstan, Turkmenistan, Ukraine and other countries of the former Soviet Union. These countries export significant quantities of electricity to net importing countries such as Belarus, Moldova, and Latvia as well as to countries in central and Western Europe.

In South America, electricity produced by large hydroelectric plants in Paraguay is exported to Brazil and Argentina (in 2014, net exports from Paraguay were 41.4 TWh).



* Includes Agriculture and forestry, fishing, and other non-specified
World electricity consumption by sector, 2014

In Africa, there is significant trade in the southern portion of the continent. South Africa exports a significant amount of power to Zimbabwe. Mozambique, which has been a net electricity importer, became a net exporter in 1998 as a new hydro project came into service. In 2014, net exports of South Africa were 2.7 TWh, and net exports of Mozambique were 2.5 TWh. India imports a significant amount of electricity (5.0 TWh of net imports in 2014), a substantial part of which is produced by hydro facilities in Bhutan. Transfers of electricity between utilities in neighboring regions have been common for many years. Exchanges based on differences in national production costs between regions are an economic efficient, and fluctuations in load can be balanced by exchanges with neighboring utilities with different load profiles. Such exchanges reduce the overall reserve margins needed by diversifying the potential sources of supply. Surplus capacity in a neighboring region can result not only from simple differences in load timing, but also from differences in climate (e.g. seasonal peaks or renewable resources), economic structure, or the timing of forced and scheduled unit outages.

In its simplest terms, "electricity trading and marketing" is the buying, selling and moving of bulk electricity (from where it is produced to where it is needed).

So, this is the time of electricity trade; International trade opens up opportunities to reduce excessive reserve capacity as well as import electricity from neighboring countries that have a comparative advantage in electricity generation due to favorable resource endowments. Trade in electricity can help match energy supply with demand, purchase electricity from the market when prices are lower, and sell electricity to the market when prices are higher, bring down energy prices, mitigate against power shocks, relieve shortages, facilitate de-carbonization and provide incentives for market extension and integration.

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New Field

Gas Dispatching System



Considering the area of the country, Iran is the second owner of gas pipelines worldwide (CIA World Factbook, 2015).

This size and expansion of utility requires balancing and monitoring systems to communicate data and information to a dispatching center to manage gas flow and pressure, minimize operational imbalances and optimize the supply and consumption all over the country.

Dispatching centers are strategic infrastructures in every country comprising a unique, centrally controlled framework incorporating the entire gas chain-production, field treatment, transportation, storage, processing, and distribution (to the city entrants) with centralized information exchange and timely interactions between various parties with the purpose of guaranteeing a safe, reliable and efficient operation based on the actual demand data. All these roles are carried out through a complex technological architecture run by a telemetry network, remote data transition system and centralized acquisition, supervision and control system.

Iran national gas dispatching center which is located in Tehran and its backup in Isfahan is planned to be test launched in 2017.

Monenco Iran Consulting Engineers is in charged with consultancy, document endorsement, management and site supervision of Iran national gas dispatching system. It is worth mentioning that Monenco Iran is also Iran Electricity Grid Management Co. (IGMC) consultant and is responsible for the consultancy services, engineering and supervision on implementation of Iran national electricity dispatching center.

Sample Projects



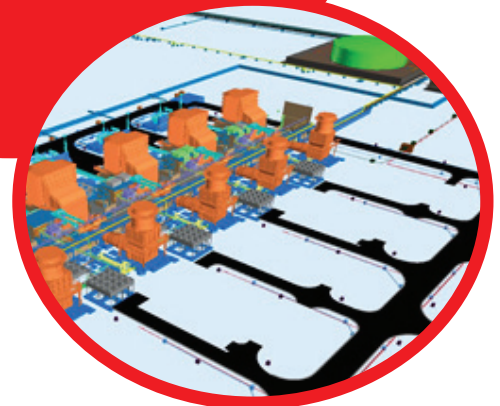
Engineering Services for Steam Portion of RUMAILA Combined Cycle Power Plant

Start Date: 2017
Client: MAPNA Group
Location: Basreh, Iraq
Capacity: 480 MW (3 STG * 160 MW)

● **Description:** The plant is located near Basreh city in Iraq province and is consisting of 3 steam portions of combined cycle power plant each consisting of one (1) HRSGs and one steam turbine generator set & main and auxiliary cooling system. For the existing simple cycle V94.2 gas turbine power plant including 6 GTG units to be converted to the combined cycle power plant for the Rumaila site.

Due to the lack of electricity generation in the southern region of Iraq, this project has a significant role in strengthening the Iraqi electricity grid.

Shamara Holding Company is the owner of the power plant and Mapna - Tose 2 is the client.



Engineering and Design Services for Bandar Abbas Combined Cycle Power Plant

Start Date: 2017
Owner: TPPH Company
Location: Bandar Abbas, Iran

● **Description:** The plant is located near Bandar Abbas city in Hormozgan province which is consist of 1 block of combined cycle power plant, with two gas turbine generator sets (F class) & two HRSGs and one steam turbine generator set (F class) & main and auxiliary cooling system & 400 kV substation for power plant. 2 GTG units will be converted to the combined cycle power plant in "2+1" configuration for Bandar Abbas site. In addition, the system of main cooling type is once trough.





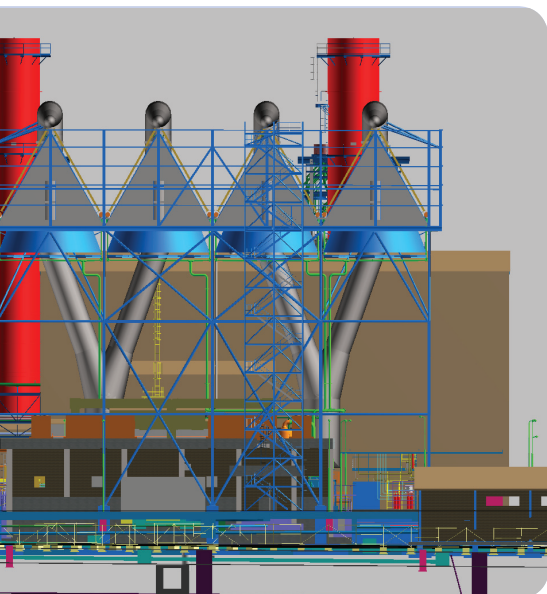
Economic Scenario in Dispatch Oman

Start Date: 2017

Client: Oman Electricity Transmission Company

Location: Oman

● **Description:** With the deepening of the electric power industry's market-oriented reform process, the electric power generation economic dispatch has gradually transformed into a market-based economic dispatch problem. The best solution to consider Security-Constrained Economic Dispatch (SCED) together with electricity market is to have real-time control with the capability to consider a significant number of generation resources and transmission network elements together with load demands. Therefore, it is essential to have a reliable and secure EMS\SCADA system which responds rapidly to system changes for maintaining power system reliability, while selecting the lowest cost generators to dispatch. In this regard, the overall performance of the system operator can be reflected by how well available generation resources are utilized to meet the demand in the most efficient manner.



Sample Projects



Consultancy Services for Supplying Equipment, Installation and Commissioning of Phase 1 of Line1 and Imam Hossein Station

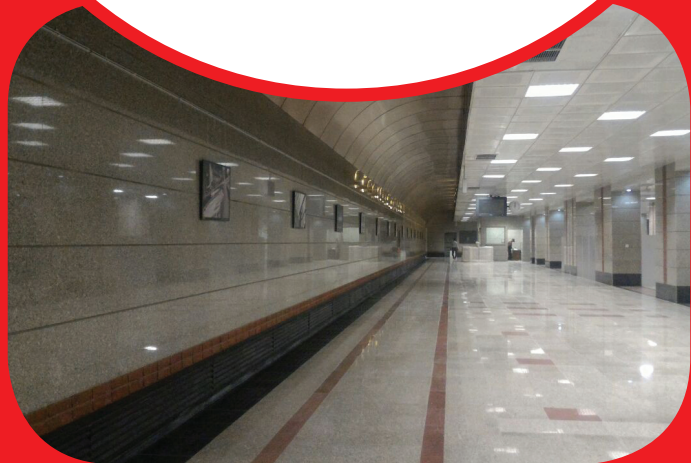
Start Date: 2017

Client: Shiraz Urban Railway Organization

Location: Shiraz - Iran

● **Description:** Line 1 Phase 1 of Shiraz Metro was put into operation in 2014 and due to problems in finalizing the projects such as technical and contractual issues, and on the other hand, considering Monenco Iran high performance in Line 1 Phase 2, the client assigned Monenco Iran as a consultant to finalize the project. In this project, Monenco Iran will review the contracts of supplying Equipment, Installation and Commissioning. The packages for finalizing contracts are as follows:

- Control and Signaling Equipment
- BMS and SCADA Equipment
- Communication Equipment
- Ventilation and Smoke Exhaust Equipment
- Electrical Equipment (including OCS, TSS, SSS)



**Top-supervision,
Monitoring of Techno-economic
Feasibility Study for Construction
of Land Based LNG Regasification
Terminals**

Start date: 2017

Client: Rupantarita Prakritik Gas Company Limited (RPGCL)

Location: Bangladesh

- **Description:** Natural gas is the only indigenous commercial energy resource in Bangladesh. Natural gas currently accounts for 72% of the commercial needs. Most of the natural gas is used in generation of electricity and production of urea fertilizer, with significant uses in industrial, commercial and domestic purpose as well as fuel for CNG operated vehicles. Gas demand is increasing sharply keeping pace with the economic development and diversified use of gas. In Bangladesh gas reserve is not increasing.



Sample Projects



**Supervision Services for 400
and 63 kV Hatef Transmission
Lines**

Start Date: 2017

Client: Esfahan Regional Electric Co

Location: Isfahan - Iran

- **Description:** The energy demand has been increased in Hatef region in Esfahan Province due to urban development and also increase in industrial activities. Therefore, it is necessary to construct the 400 kV Transmission Lines for energizing 400/63 kV Hatef substation and its 63 kV Transmission Lines in order to supply the required energy. Prior to this stage of project, Monenco Iran was responsible for engineering services of the mentioned transmission lines and at this stage for supervision services.

In This project, Monenco Iran is responsible to render following services:



- Design review
- Contract management, project progress and cost control
- Site supervision on foundation construction, tower erection and stringing
- HSE considerations
- Controlling the delivery of materials, machinery and equipment to the site
- Review As-Built documents submitted by contractor



**Engineering and Supervision
Consultancy Services for
Construction of 1400 MW
Hormozgan (Sirik) Thermal
Power Plant (4*350 MW)**

Start Date: 2016

**Main Client: Thermal Power Plant
Holding (TPPH)**

Location: Bandar Abbad - Iran

- **Description:** The main purpose of this project is to supply required electricity to Mokran (Mokran coastal region in southeastern Iran) development plans, increase the employment, upgrade the knowledge of construction of Thermal power plants and provide drinking water to the surrounding villages by constructing desalination plants.

In this project, Monenco Iran is responsible to render engineering and supervision consultancy services to build 1400 MW Thermal Power Plant.



Presently there is gas shortage in Bangladesh resulting less power generation, low gas pressure and no new gas connection in industrial, captive and CNG sector impeded in whole gas pipeline network areas. To meet up the upcoming energy supply challenge, Government of Bangladesh has planned to construction of land based LNG re-gasification terminals at Moheshkhali and Kutubdia under COX's Bazar district and payra under Patuakhali district each having 7.5 MTPA@ capacity 1000 MMSCFD.

Sample Projects



Feasibility Study of Iran and Oman Grid Interconnection



Start Date: 2017

Client: Oman Electricity Transmission Company

Location: Oman

● **Description:** Iran and Oman interconnection project provides this chance for both countries to access regional markets in addition to its intrinsic technical and economic benefits. In this project, by means of internal and global experiences of networks integration, a feasibility study about interconnection of Iran and Oman electrical networks will be performed and all strength and weakness points along with advantages and disadvantages of the plan will be investigated through an inclusive study from technical and economical points of view. Moreover, identifying the needs and requirements to utilize such interconnection together with providing technical, economic and financial recommendations in order to fully realize the benefits are in the scope of this consultancy services.

Consulting Services for Preparing and Finalizing the Contract between Tehran Water and Waste Water Company and Suez SAS Company Regarding Reducing NRW

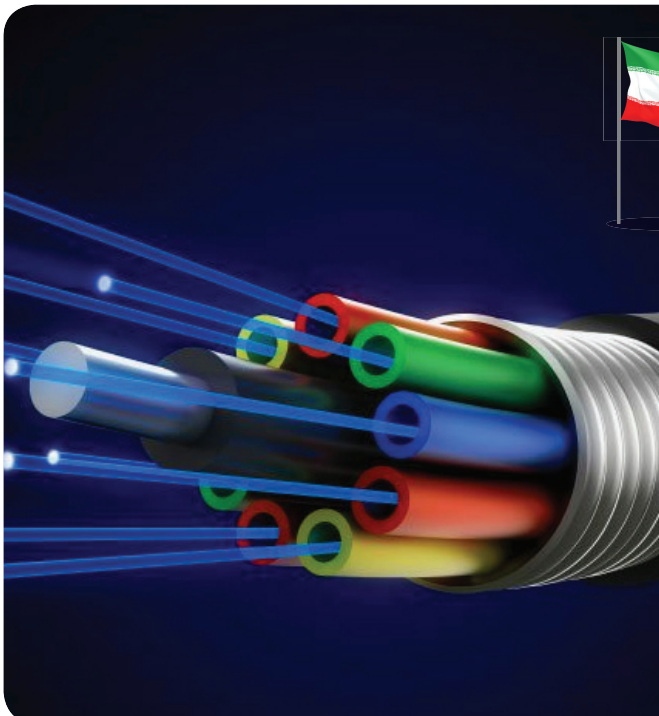


Start Date: 2017

Client: Tehran Water & Waste Water Company

Location: Tehran - Iran

● **Description:** Non Revenue Water is considered as a high important problem that all water utilities over the entire world are faced with. This problem may be raised due to physical and non-physical (Faults in metering and tampers...) issues. In order to investigate what issues are the main causes of NRW, we need to use real time Technics and high tech hardware and software. Suez SAS Company is one of the most experienced Companies in the world in this regard, so the client, Tehran Water and Waste Water Company No: 1, TWWC, has chosen this company to accomplish this task. Monenco's role in this step is to prepare and finalize the contract between TWWC and also to negotiate with authentic international Banks for financing of this project.



Engineering Services for Revision and Reconsideration of Optical Fiber Master Plan

Start Date: 2017

Client: Fars Regional Electricity Company (FREC)

Location: Tehran - Iran

● **Description:** the purpose of this project is to review the current situation of the existing network and reconsider and improve the network topology which meets the REC requirements.

In this project, Monenco Iran is responsible for data gathering via site survey as design input, telecommunication network design, interconnection with public operator, security assessment, scenario selection with regarding technical and financial analyses, tender document preparation

Events



The first Conference of Claims Management in Projects

- In the first conference of "Claims Management in Projects" which was held at University of Tehran on 17-18 Jul 2017, Monenco Iran presented its experiences in the form of a workshop "Identify and presenting the roots of delays in power plant engineering projects and providing a quantitative methodology for preparing a bill of delay".



Monenco Iran as a Leading Company in Exporting of Engineering and Consulting Services in 2016

- In the conference of "Leading Companies (pioneer) in Export of Engineering Consultancy & Equipment in Water and Power Industry" which was held at the Ministry of Energy, Monenco Iran received an appreciation letter from the Ministry as a leading company in exporting of engineering and consulting services in 2016.

Energization of Jebreen 132 kV Substation (Oman)

- New 132/33 kV Jebreen substation (2×125 MVA) is one of the most important substations which supplies power to northeastern of Oman. In 2014, consultancy services including preparation of tender documents, association in holding tender, bid evaluation, design review and site supervision was assigned to Monenco Iran, as a lead consultancy company in Oman. Therefore, using professional experts as well as great team working, Jebreen substation was successfully energized in August 2017.



Monenco Iran Presence in the exhibition of the "22nd Iran International Oil, Gas, Refining & Petrochemical Exhibition"

- 22nd Iran International Oil, Gas, Refining & petrochemical Exhibition was held 6-9 May 2017 in Tehran International Permanent Fairground. The Exhibition displays a wide range of technical and industrial abilities of Iran and other countries worldwide in the area of Oil, Gas and Petrochemical. It is one of the most important oil and gas exhibitions in the Middle East also among the most significant oil and gas events in the world. The exhibition provides a platform for local and international companies to take advantage of major opportunities in the industry as well as to learn about the developments in the local and global markets. The exhibition was organized by National Iranian Oil Company (NIOC) and supported by Ministry of Petroleum. 4000 domestic and foreign oil companies from 38 countries have taken part in the event. Monenco Iran, also attended in this exhibition in which the presence of well-known companies provided a good chance for mutual cooperation in view of signature of contracts, investments, exchanging the information on the latest cutting-edge technology. In addition, high authorities visited Monenco Iran booth including Mr. Bitaraf, Deputy to Minister of Petroleum in which fruitful and effective negotiations was conducted during these meetings.



Holding a Seminar of “Presence in International Markets and Exporting Technical and Engineering Services”

● On August 22nd 2017, “International Presence and Exporting Technical and Engineering Services” seminar was held by Mr. Shirani, Managing Director of Monenco Iran at the Ministry of Industry, Mines and Trade with the presence of the deputy minister and a group of directors and senior managers of the Ministry. In this seminar, Mr. Shirani described the requirements, strategies, potential opportunities for presence of Iranian companies in international markets and exporting the technical and engineering services. Also, he described the valuable experiences of Monenco Iran presence in international markets since 2010.

Signing an Agreement with WTS Energy



● On 10.04.2017 in Tehran, MIR Engineering & Technology Management (subsidiary of Monenco Iran) has signed an agreement with WTS Energy (Netherlands) for a global strategic partnership in the fields of; Management Consultancy, Information technology, Training and Technology Transfer, Man Power supply.

WTS Energy head quartered in Netherlands has 15 established companies all around the world and is active providing world class services to the clients globally. It is worth mentioning that one of the world leaders in the Management Consultancy field Arthur D. Little (ADL) Company will be supporting this collaboration.

Bangladesh Power Summit 2017 Exhibition



● Monenco Iran attended in the exhibition of “Bangladesh Power Summit 2017” which was held on July 11th and 12th in Dhaka-Bangladesh. In this summit, over 300 senior representatives from government, power utility and IPP, EPC, investment institutions and global solution providers has been participated. In general the following topics were discussed in this summit;

- Government Power Policy, Industry Overview and Vision
- Energy and power Fuel Market
- Power Infrastructural Financing and Legal Issues
- Power Generation Mix and Energy Efficiency
- T&D and plant O&M

Monenco Participated in Oman Energy & Water Exhibition and Conference

● Monenco Participated in Oman Energy & Water Exhibition and Conference together with Mapna Group which took place from 1-3 May 2017 at the Oman Convention & Exhibition Centre Muscat, Oman. The main conference lasted for two days. Also specialized and dedicated seminars; Oman Automation & Control summit 2017 & Oman Drainage & Wastewater Management 2017 were held on May 3rd and was divided into several sessions.

Oman Automation & Control Summit 2017 covered the latest advancements for monitoring and managing distributed equipment and facilities via recent developments in SCADA, remote networks (wireless & wired), security (cyber & physical), automation, onsite and back-up power, and all other manner of technology that allows for the management of remote assets in the Sultanate’s Oil and gas, Power, Water and wastewater and Chemical and petrochemical industries.

Also, Oman Drainage & Wastewater Management 2017 covered;

- Updates on policy and regulation
- Planning, Operation and Maintenance for power and water
- Renewable Energy
- Power and Water Research Technologies
- Energizing Waste in the Sultanate – Waste-to-energy (WtE)

In this event we had 3 full days of networking as well as introducing Mapna and Monenco to the clients and other participants.

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Events

Holding the "Designing Competency Model" Course for Human Resources Managers of National Iranian Oil Company

On September 11th to 13th, MIR Engineering and Technology Management Company and WTS Energy Company held a joint course on "Designing a Competency Model" for human resource managers at National Iranian Oil Company in Kish Island.

The purpose of this course was to increase the level of knowledge of the managers and their ability to design a suitable competency model in line with the modern standards.



Clients Perspective



Reader Support:

If more information is required about the topics, easily indicate the number of the title in the following table and send it to the address below or info@monenco.com.

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