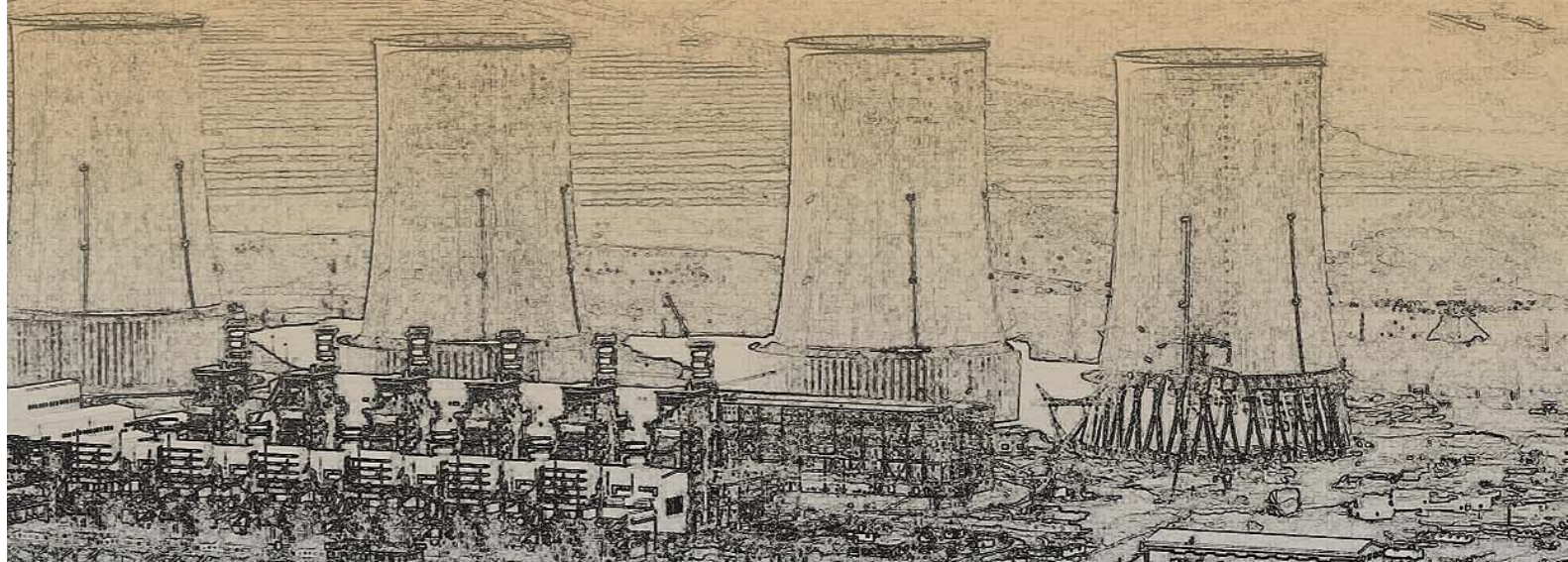


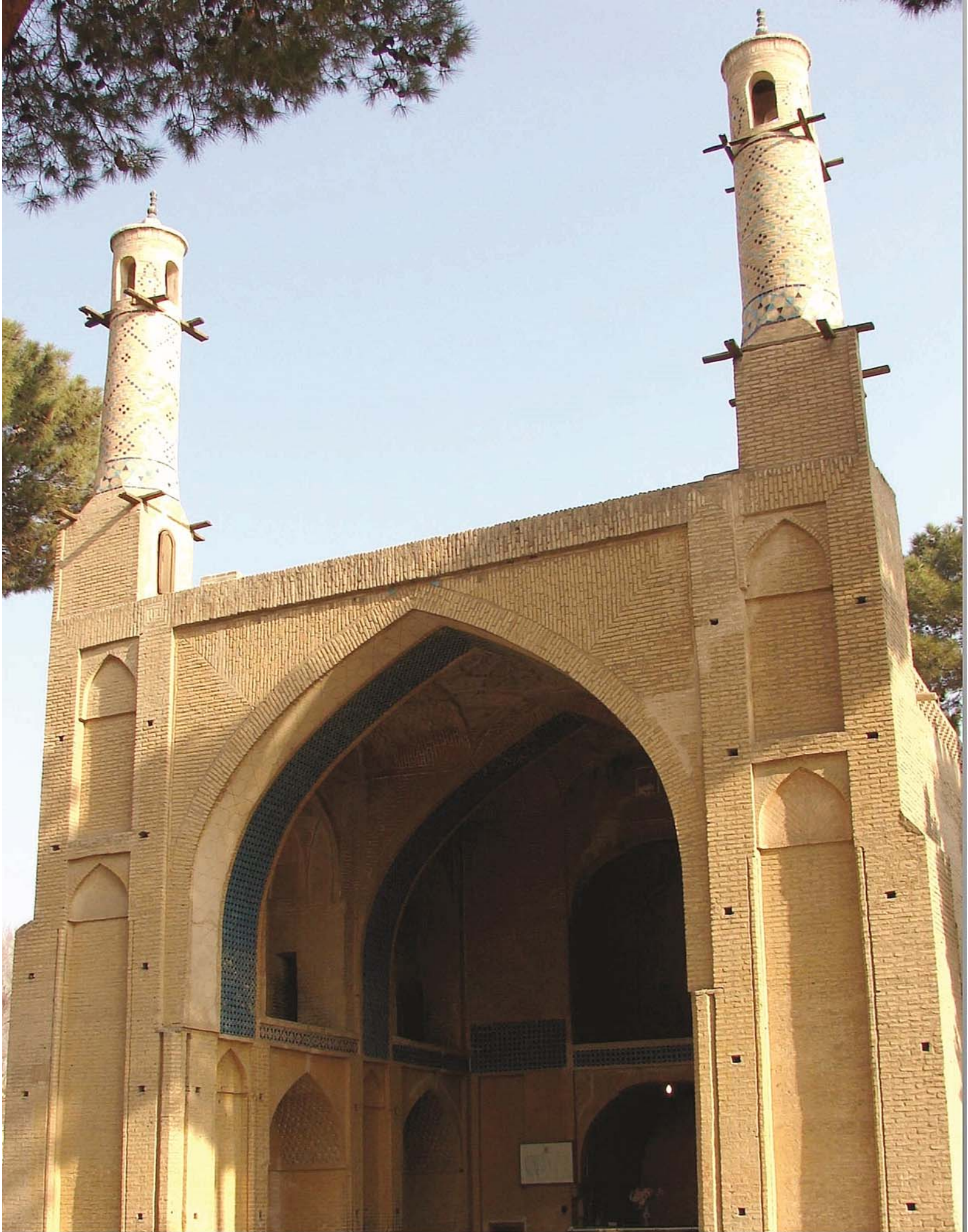


Monenco

Iran

2018 Annual Report





Menar-Jonban is a famous historical monument located in Isfahan, Iran. It was constructed by brick in the 14th century and consists of two shaking brick towers (with 7.5m in height) located at the roof-top. Its special feature is that when one of the towers starts to shake by the human force, the other one starts to shake automatically.

Monenco Iran

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+ 1000

Employees
from 14 nationalities

USA, Iran, Oman, India, Pakistan, Bangladesh, England,
Malaysia, Tajikistan, Kyrgyzstan, Iraq, Germany, Nigeria, Egypt



+45

Years

Experiences

+ 240

Clients
in 15 Countries



Grade Consulting
Engineer in
ICT Sector in the Field of
Exporting Knowledge
Based Services, 2017



+ 400

Domestic ongoing projects

"Exemplary Exporter"
in the field of Engineering
Consultancy 2017



+ 50
Overseas
projects

مونکو ایران Monenco Iran

Consulting Engineers

The only consulting
engineering firm among
Iran's **400** companies
by Industrial Management
Institute

3

Subsidiaries in
Oman, Nigeria and Germany

2

Representatives in
Bangladesh and Canada



Monenco Iran International Presence:
Headquarter in Iran, Tehran
Local Branches in all Over Iran

- Power Transmission Lines & Distribution Networks
- SCADA & Dispatching Centers
- Oil, Gas and Petrochemical
- System and Energy Studies
- Metro and Railways
- Mining
- Airports
- Water and Wastewater
- High Voltage Substations
- Power Generation
- Management Consultancy
- ICT

**Alireza Shirani**

Shirani.Alireza@monencogroup.com

Obtained his B.Sc. in Electrical Engineering from Sharif University of Technology in 1988. He has passed two years in Ministry of Energy as a System Engineer in Energy Division. From 1990 to 1997, he joined in Electric Power Research Center and from 1994 he was appointed as the Head of Electric Department. Since 1997, he has been Vice President of Research in Niroo Research Institute. In 2007, he was appointed as the Managing Director of Monenco Iran.

In 2018, Monenco remained focused on its long-term strategies to provide efficient integrated solutions and bring tangible and long-lasting value to its clients while recognizing economically and technologically challenging conditions globally. This is largely based on Monenco's competence, competitiveness, talented people, timely delivery with highest quality standards and safety performance while focusing on sustainability in our processes and projects.

Considering that globalization is our main growth strategy, we are on target to be among the top 100 consulting and engineering firms in the world by 2021. Also, it is worth mentioning that Monenco is the only consulting engineering firm among the 400 giant companies in Iran.



Top Management

Together, **We** turn the challenges into opportunities for growth

2018 Accomplishments

Throughout the year 2018, we made significant progress across all Monenco business segments.

In domestic market we were successful to expand our capabilities in new and strategic fields with new clients that some of the major projects are as follow;

- Passive defense & cyber security studies for power plants and dispatching centers
- Consulting services of preparing RFP for 35 switching points of infrastructures
- Consulting services for marine cables
- Engineering and site supervision services for installation and operation of Heavy Fuel Oil (HFO) treatment system
- Consultancy services for airport terminal construction
- Consultancy services for smartization including smart cities

In international market, by taking advantages of our registered companies and representatives around the world, we successfully strengthened our presence in Middle East, South East Asia, Africa and CIS Countries in 2018.

Considering Bangladesh as an important hub in South East Asia region, we were able to expand our services. Following are the major strategic projects awarded to Monenco in Bangladesh;

- Implementation of Independent System Operator (ISO)
- Consulting Services for System Studies and Technical Assistance to improve System Reliability and Efficiency
- Detailed Survey and Feasibility Study of Transmission and Distribution Network within Geographical Area

In Afghanistan and Pakistan, we were successfully able to enter into ICT market and established long term business relationship which the following projects were awarded to Monenco;

- Project Preparatory Consultant (PPC) for Implementation of IESCO AMI Project in the Perspective of Viable Financial Solution, Pakistan
- Consultancy services to carry out technical study and preparation of bidding documents for: Pre purchase of internet bandwidth, feasibility study and to prepare bidding documents for Government Networks (Gov.Net) and OFC route survey of Wakhan Corridor, Afghanistan

Our performance in Oman remained strong and we have been successful in greatly expanding our strong positions and signed the following major projects;

- Owner engineer services for supervising & executing shutdown and energizing activities/techno commercial discussion
- Extension of Iran Oman interconnections
- Institutional capacity building to the renewable energy sector
- Consultancy service for design and supervision for new 132kV Double Circuit Lines

In addition to above, we successfully signed about 15 MOUs with world class companies from Germany, Italy, British, Spain, India, Pakistan, Afghanistan, and Africa in the field of Oil and Gas, Railway, Power Transmission, Power Generation, Communication and Mining.

Also, strategic partnership agreements with many oil and gas companies, ICT consultancy, technical training, and renewable energies were signed.

On top of the above mentioned, we have focused on the impact of digital technology which is increasing exponentially. In 2018, we were successful to render smart solutions and apply technologies such as IoT, Big Data, etc. in our services to a wide range of industries such as electricity, telecommunication, oil and gas, water and waste water, ports as well as health and transportation.

Investing in Our People

Monenco's diverse capabilities arise from a talented team of experienced and engineers using leading edge technology in support of a projects' needs and goals. In line with that, we have centered on moulding our employees into leaders in their areas of work. The program called "Talent Management" which rewards incentivizes excellence with the aim of mentoring the next generation of leaders.

Success through teamwork:

Going through 2019, we look forward to the opportunities to expand our services we provide to the clients in new geographies and support sustainability in communities around the world.

In closing, I would like to thank Monenco board of directors and worldwide family of employees for their robust support in helping us overcome the challenges and making 2018 a significant year for Monenco.

Faramarz Ghelichi

Ghelichi.Faramarz@monencogroup.com

Obtained his B.Sc. in Electrical Engineering from Ferdowsi University. He is specialist in H.V. Transmission Lines. From 1992 to 1997 he has worked in Moshanir Consulting Engineers Company as Project Engineer, Site Manager and Project Manager. In 1997, he joined Monenco Iran then in 2007 he was appointed as the Transmission and Dispatching Deputy and in 2012 was appointed as Managing Director of Monenco Consulting Engineers (MCE) in Oman. In 2015, he was appointed as the Transmission and Distribution Director while he is Monenco Oman member of board.



Mohammad Dana Manavi

Manavi.Mohammad@monencogroup.com

Obtained his MBA from Tehran University. From 1992 to 1996 he worked for Bonyad Sazeh Consulting Engineers. He joined Monenco in 1996 as Structural Designer. He continued his work till 2003 in Power Generation Department. From 2003 to 2006 his duty was Project Coordinator. From 2006 to 2008 he continued his duty as a Project Manager. From 2008 to 2011 he acted as the manager of Gas Turbine Power Plant and Utilities Section. In 2011 he was appointed as the Power Generation Director.



Masoud Soltani Hoseini

Soltani.Masoud@monencogroup.com

Obtained his master from Iran Ferdowsi University in Mechanical Engineering in 1991 and his B.Sc from Industrial and Science University in Electrical Engineering in 1988. From 1994 to 1998 he worked in Matn Company as Project Manager. He started working in Niroo Research Institute in 1998 as Project Manager and in 2000 he was appointed as Manager of Mechanic Division and at last in 2005 he was appointed as Manager of Power Generation Research Center. In 2016, he joined Monenco Iran and was appointed as Engineering Director.



Ahmad Massoudi

Massoudi.Ahmad@monencogroup.com

Obtained his Master in Chemical Engineering from Tehran Polytechnic University in 1969. He started his professional activities by joining National Petrochemical Company for 15 years, held different positions, which latest was Project Manager in Aromatic Project, then started working in Ministry of Industry for 5 years as Technical Expert. Next, in Alagas Company from 1991 to 1997 as Project Technical Manager and later as Managing Director in Nikoosarir Company from 1997 to 2003 and Kavir Phosphate from 2003 to 2008. Finally, he joined Monenco in 2008 as International Business Development Manager and in 2012 was appointed as the Planning & System Deputy. Finally, in 2015 he was appointed as the Oil & Gas Director.



Amirali Bankian

Bankian.Amir@monencogroup.com

Obtained his B.Sc. in Industrial Engineering from Khaje Nasir Toosi University of Technology in 2002. Since 2002 he joined Monenco Iran and has been working for the company for 17 years. His first position was Project Engineer and later in 2005 he got into position of Planning & Project Control Engineer. In 2007 he was appointed as Head of Control and Monitoring Department. Also, since 2010 he is a PMP Certificate holder. Then, in 2014 he was appointed as Planning and System Director.



Siamak Khalaj

Khalaj.Siamak@monencogroup.com

Obtained his B.Sc. in Electrical Engineering in 1997 from Iran University of Science and Technology. Since then he joined Monenco and has been working for the company for 20 years. He was the head of Power Transmission Department and in 2010 was promoted to be the Managing Director of Monenco Engineering Limited (MEL) in Nigeria. In 2014 he was appointed as ICT and Dispatching Director in Monenco Iran.



Elham Sadeghian

Sadeghian.Elham@monencogroup.com

Obtained her B.Sc. in 1995 from Bahonar University and her M.Sc. in 1999 from Khaje Nasir Tusi University in Electrical Engineering. From 1999 to 2007 she worked in Niroo Research Institute as a Project Manager and as the Head of Electric Department.

Since 2007 she has been working in Monenco as a Quality Manager and in 2010 she was appointed as the Financial and Administration Director.



Ramin Khoshkho

Khoshkho.Ramin@monencogroup.com

Received his Ph.D. from University of Joseph Fourier of France, M.Sc. and B.Sc. from University of Tehran all in Mechanical Engineering.

From 1990 to 1998, he worked in Matn Co. (Electric Power Research Center) as Senior Mechanical Engineer and Manager of Mechanical Department.

From 1998 for two years, he has been Vice President of Power Generation Research Center and in year 2007 he has been appointed as R&D Manager of Monenco.



Rahim Zeinali

Zeinali.Rahim@monencogroup.com

Received his M.Sc. in Electrical Engineering (Power Systems) from Sharif University of Technology in 2008 and his B.Sc. in Electrical Engineering from Tehran South University in 2005.

From 2006 to 2007 he worked in Sharif University of Technology as a Researcher. From 2007 to 2008 he worked in Paziresh Novin Company, and Beheen Ertebat Mehr Company as a Consultant.

Since 2008 he joined Monenco as an Electrical Engineer in System & Energy Study Center. In 2009 he became the Project Manager and in 2012 he was appointed as Head of Power System Study Group in System & Energy Study Center. In 2015 he was appointed as Manager of System & Energy Study Center.



Mehdi Haji Javad

Javadi.Mehdi@monencogroup.com

Obtained his PhD in 1978 from Faculty of Chemical Engineering of the University Karlsruhe in Germany. From 1978 to 1990 Dr. Haji Javad worked as project manager at Fichtner Consulting Engineers in Germany. In 1990 Dr. Javad joined AF-Consult Switzerland.

From 1995 to 2012 Dr. Haji Javad was Head of the Thermal Energy Plants Department. During 2012-2013 Dr. Haji Javad was as Vice President of AF Thermal Energy Department. He is recognized by the Chamber of Industry and Commerce in Stuttgart, Germany, as a Sworn Expert for flue gas cleaning of firing systems and production plants. In 2016 he was appointed to be the Managing Director of Monenco Germany in Stuttgart.



Davood Moradi

Moradi.Davood@monencogroup.com

Obtained his B.Sc. in Electrical Engineering in 1998 from Tabriz University. Since then he joined Monenco and has been working for the company for 18 years. He was the Project Manager of many of OHL from 63kv up to 765Kv transmission line projects and the

Project Manager of +/- 500 Kv HVDC project (Overhead line and Convertors) also, he was the Director of Power Transmission and Distribution Networks Department from 2010 until 2014 and in 2015 was promoted to be the Managing Director of Monenco Consulting Engineerings LLC (MCE) in Oman.



Jalal Hosseini

Hosseini.Jalal@monencogroup.com

Obtained his B.Sc. from Sharif University of Technology in Computer Engineering in 1996. From 2001 to 2005 he worked in Iran Telecommunication Research Center and IT Department of Ministry of Education as Analyst & Programmer. In 2005 he joined Douran Software Technologies as Software Architect & Analyst. In 2007 he joined Aban Software Company as Project Manager & Software Analyst and in 2008 at Software System Group Co as Project Manager. He joined Monenco Iran in 2009 as Software Systems Supervisor and in 2014 he was appointed as Managing Director of MIR Engineering and Technology Management.



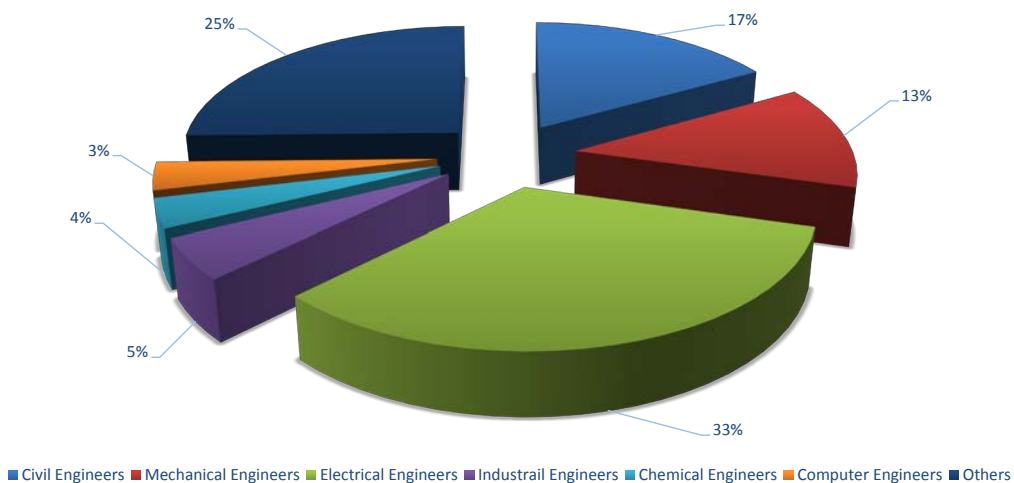
Major Experiences of Monenco

- ▶ Over 55,000 MW Power Plants
- ▶ 14 Renewable Energy Projects
- ▶ 18 Dispersed Generation Projects
- ▶ 42 Economical & Technical Feasibility Studies
- ▶ 2 Heat Recovery Project in Steel Industry
- ▶ 14 Heat Recovery & Energy Optimization Projects
- ▶ 50 National & Regional Dispatching Centers
- ▶ 64 Telecommunication Systems & Networks and Master Plans
- ▶ Smart Solution for Industries and organizations
- ▶ 62 Oil & Gas Complexes
- ▶ 19 Mining & Geology Projects
- ▶ Over 23,000 Km Transmission Lines & OPGW
- ▶ Over 45,000 MVA Substations
- ▶ 39 Kilometer Subway and Electrical Railway Projects (25 Subway Stations)
- ▶ Master Plan of Distribution Systems in Major Cities (such as Tehran & Tabriz) and Provinces (such as Kurdistan & Yazd)

Overseas Projects

- ▶ 25 Projects in the field of transmission lines, distribution networks & high voltage substations
- ▶ 2 Projects in the field of hydro power plants
- ▶ 2 Projects in the field of wind power plant
- ▶ 4 Projects in the field of Small Scale Power Generation Plant
- ▶ 9 Projects in the field of thermal power plants
- ▶ 3 Projects in the field of Oil & Gas
- ▶ 1 project in the field of telecommunication master plan study
- ▶ 2 projects in the field of power system restructuring
- ▶ 1 project in the field of improving system reliability and efficiency
- ▶ 1 project in the field of feasibility study of power plan interconnection to the grid
- ▶ 1 project in the field of master plan for developing environmental friendly technologies
- ▶ 3 Projects in the field of network operation planning study
- ▶ 4 Projects in the field of network stability study
- ▶ 1 Project in the field of network study- synchronization of networks
- ▶ 2 Projects in the field of study on the interconnection of Electricity Network between Countries
- ▶ 1 Project in the field of power quality improvement of steel Mill Factory

Composition of Experts in 2018



Expansion of Services

- ▶ Main and Auxiliary Cooling System Modification by Using Hybrid System
- ▶ MC, Consultancy, Engineering and Site Supervision Services for Wind Farm
- ▶ Consultancy and Site Supervision Services for Met Mast Installation
- ▶ Feasibility Study and Engineering Services for CHP/CCHP and Diesel Generator
- ▶ Consultancy and Engineering Services for Rooftop PV Power Plants
- ▶ Site Supervision Services for Low Grade Geothermal
- ▶ Thermal Power Plants Site Selection Studies
- ▶ Technical and Economic Feasibility Study for 500~600 MW Combined Cycle Power Plant
- ▶ Master Plan for Developing Environmental Friendly Technologies in Iranian Power Sector
- ▶ Engineering Services and Site Supervision of Desalination Projects
- ▶ Study on Water Supply in Polyethylene Plant Petrochemical Company
- ▶ Development of Restoration Plans in Power Systems
- ▶ System Reliability and Efficiency Improvement in Power System
- ▶ Implementation of Independent System Operator (Bangladesh)
- ▶ New Clients from 39 Power Distribution-Owned Companies (Second phase of National Smart Metering Projects – FAHAM)
- ▶ Smart City Consultancy Services and Providing the Road Map and Business Plan for Municipals
- ▶ Enterprise Architecture and Process Modeling
- ▶ E-Government Studies (Services, Architecture, GSB, Integration)
- ▶ Upgrading TIC Intercity & International Voice Switching Network
 - Upgrade current TDM-based voice switching network to a full IP-based one
 - Assess & select the best technology for implementing a IP-based network like IMS
 - Providing technical RFP for client
- ▶ Providing Technical RFP for TIC in the field of Submarine Cable Design
- ▶ Design of the Paramedical School of Hormozgan University Building
- ▶ Consultancy Services for Imam Khomeini International Airport (IKA): Distribution and Automation Dispatching, Smart lighting System, AMI (Advance Metering Infrastructure) and CCTV System
- ▶ Consultancy and Engineering Services for Power Supply, Transmission and Distribution Studies of International Airport
- ▶ Consultancy Services for Waste Water Company Dispatching System
- ▶ Consultancy Services for Construction of an International Terminal and Airside in Airport Projects
- ▶ Consultancy Services for Unusual Buildings which is used for Test Engine Cell
- ▶ Consultancy Services for Intelligent Traffic System(ITS) of High ways
- ▶ Consultancy Services for GTP, GTO and GTA in Petrochemical Plants
- ▶ Feasibility Study for Bio-ethanol Plants, Upstream Oil Projects, Pipe Line, Mineral Projects
- ▶ Know How Transfer in the field of Oil & Gas
- ▶ Engineering and Consultancy of New Petrochemical Complexes with Gas as their Feed
- ▶ Renovation and Optimization of Existing Refineries
- ▶ Oil and Gas Transportation
- ▶ LNG Storage and Regasification Terminals
- ▶ Small Scale Refineries-mini Refineries
- ▶ Laser Scanning System for Mine Survey
- ▶ Phosphoric Acid Production from Minerals

Market Penetration

Domestic

In Monenco, development and growth will be followed by reviewing the goals, planning, prioritizing actions and also continuous improvement. Definitely, access to the goals need to spread a culture of excellence, retain and improve values, ethical principles and observation of social responsibilities. In this regard moving towards realization of vision statement of 2021 horizon as specified bellow is fundamental:

- ▶ Activity in all fields of engineering
- ▶ Retain and development of the current position in the domestic market

In 2018, Monenco was successful in increasing domestic capacity and capabilities, which led to getting awarded the projects in new, national and strategic fields including:

- ▶ Passive Defense Studies for the Power Plant
- ▶ Consulting Services for Obtaining Loans From the International Banks
- ▶ Consulting Services for the Passive Defenses Requirements Assessment and Cyber Security of Dispatching Centers
- ▶ Engineering Services for Reviewing the Contractual Terms of the (Industrial and Non-Industrial) Design, Procurement and Construction Projects
- ▶ Consulting Services for Preparing the Concept Note Documents in order to Submitting to the Green Climate Fund
- ▶ Consulting Services for the Marine Cable
- ▶ Consulting Services of preparing RFP for the 35 Switching Points of Infrastructures
- ▶ Preparing a Business Plan for Power Plant Maintenance Services
- ▶ Engineering Services for Conventionalization of 400 KV Substation
- ▶ Engineering and Site Supervision Services for Installation and Operation of Heavy Fuel Oil (HFO) Treatment System
- ▶ Bid Documents preparation and Studies for Airport Terminal Construction
- ▶ Engineering and Consulting Services for Smartization
- ▶ Engineering Services for Generating, operating, installation and supporting of small scale Power plants optimum locationing Software
- ▶ Consulting Services for Feasibility Study and Bid Technical Documents Preparation for Information Exchange Platform

On the other hand, awarded projects from new clients are as follow:

- ▶ Telecommunications Infrastructure Company
- ▶ Imam Khomeini Airport City
- ▶ Mapna Railway Construction & Development Company
- ▶ West Azerbaijan Electricity Power Distribution Company
- ▶ Guilan Power Distribution Company
- ▶ khouzestan Electric Power Distribution Company
- ▶ Pars Oil & Gas Company
- ▶ General Authority of Sistan & Baluchestan Ports & Maritime
- ▶ Tehran Oil Refining Company
- ▶ Mashhad Electric Energy Distribution company
- ▶ Hormozgan University Of Medical Sciences
- ▶ Mapna Qeshm Water and Electricity Generation Company
- ▶ Tizbaad Niroo Company
- ▶ West Azerbaijan Gas Gompany
- ▶ South Kaveh Steel Company (SKS)
- ▶ Hexa Consulting Engineers
- ▶ Esfahan Province Electrical Distribution Company



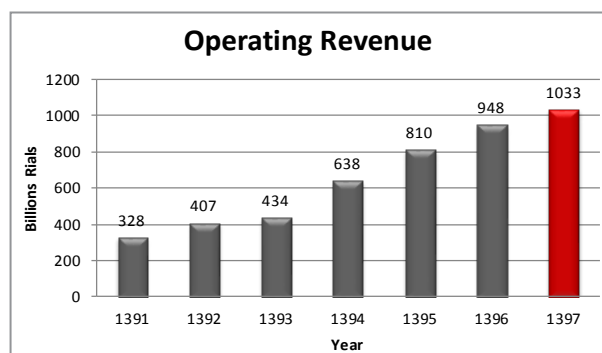
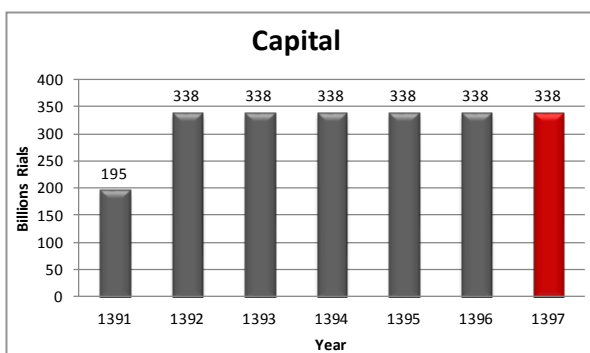
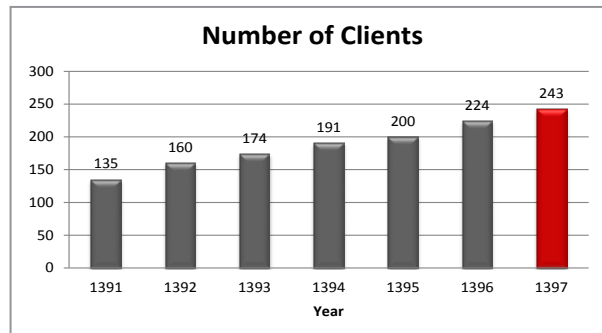
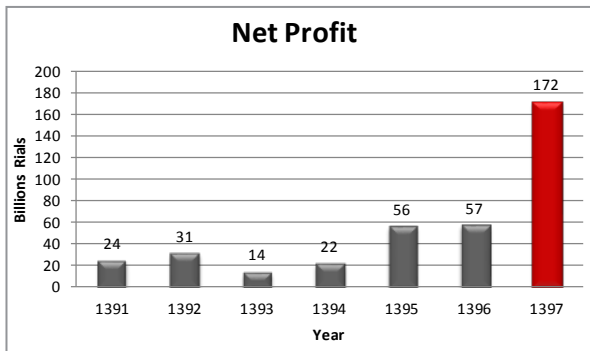
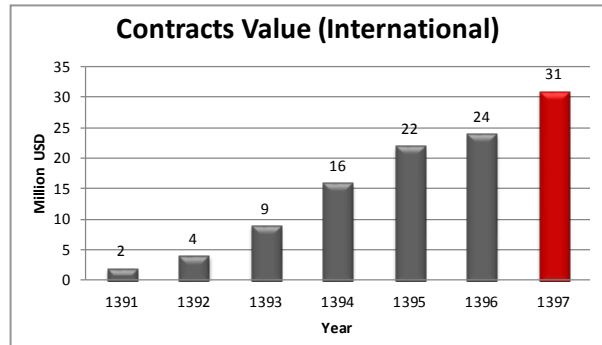
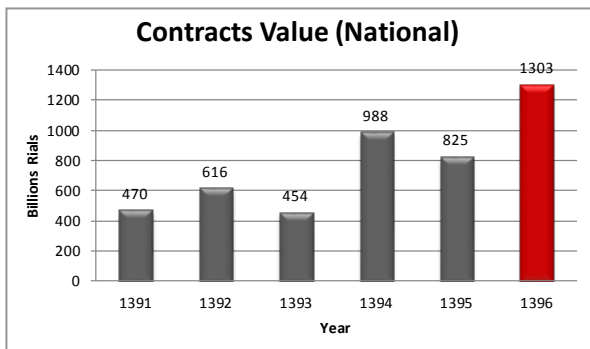
Signing a Contract with Zagros Green Fuel Development Company

International

One of our main international business growth strategies is to penetrate international markets even more every year. We have been committed to meet the client's expectations by offering excellence, quality, & reliability in all fields of our operations.

In addition, being recognized as one of the top consultants internationally by clients empowered Monenco to simply be awarded the following projects:

- ▶ Owner Engineer Services for Supervising & Executing Shutdown and Energizing Activities/Techno Commercial Discussion, Oman
- ▶ Extension of Iran Oman Interconnections, Oman
- ▶ Implementation of Independent System Operator (ISO), Bangladesh
- ▶ Consultancy Service for Design and Supervision for New 132kv Double Circuit Lines, Oman
- ▶ Consulting Services for System Studies and Technical Assistance to Improve System Reliability and Efficiency, Bangladesh
- ▶ Detailed Survey and Feasibility Study of Transmission and Distribution Network within Geographical Area, Bangladesh
- ▶ Project Preparatory Consultant (PPC) for Implementation of IESCO AMI Project in the Perspective of Viable Financial Solution, Pakistan
- ▶ Consultancy Services to Carry out Technical Study and Preparation of Bidding Documents for: Pre Purchase of Internet Bandwidth, Feasibility Study and to Prepare Bidding Documents for Government Networks (Gov.Net) And OFC Route Survey of Wakhan Corridor, Afghanistan



New Area of Experiences

The competitive environment of consultancy services and Monenco's strong belief in gaining knowledge has resulted in experiencing new areas or methods to satisfy customers and constantly provide value in a more efficient way than their competitors.

Taking advantages of our international experience, we have been successfully active in new areas such as Implementation of Independent System Operator (ISO), improving System Reliability and Efficiency, Development of Petroleum Policy, Institutional Capacity Building to the Renewable Energy Sector, Project Preparatory Consultancy for AMI Projects.

Strategic Partnership

According to our expansion strategy, we've made several strategic partnerships with our local and international partners around the world as long-term agreements to share our intellectual resources in order to enhance our chance of achievement in international market. In this regard we've signed strategic partnership agreements with many oil and gas companies, ICT consultancy, Technical training, and renewable energies.

Global Presence

Due to the Company's divers technical, management and financial skills and knowhow, Monenco had been capable to handle the challenges of global presence. Indeed globalization is our main growth strategy and our registered companies around the world reflects our focus on discovering new opportunities and delivering long-lasting value. As a result of internationalization strategy, we've started our official presence in Europe by registering our company in Germany on 2016 and prominent success was achieved in Africa, Middle East, South East Asia and successful partnerships were formed with reputable International and local firms.



Meeting with Iraq Deputy Minister of Electricity at Monenco Iran



Signing the "Development of Independent System Operator (ISO)" Contract in Bangladesh

By arranging marketing trips to various countries we managed to visit major clients in Pakistan (NTDC, OGDCL, PTCL, GENCO), Uganda (EUTCL), Kenya (Kenya Power), Kyrgyzstan (Department of electric power stations and networks, Electrical energy Industry department), Oman (PDO, CCED) and south Africa (SASOL, ESKOM).

As one of the leading engineering companies in Power Sector in Sultanate of Oman we've been in the short list of major clients in this country and client requested us to bid directly for major contracts.

In eastern part of Africa, especially in Kenya, Tanzania and Uganda Monenco achieved prominent success by creating powerful networks and Signed several Memorandum of Understanding with its local partners, moreover we've been technically ranked as first-Grade in most participated tenders.

Bangladesh still is an important hub in South East Asia region and Monenco was managed to enter into ICT market and consequently getting awarded couple of strategic contracts.



Geographical Expansion

Establishing an office in Germany in the previous year strengthened Monenco's strong presence in Middle East, South East Asia, Africa and CIS countries and as a result we participate in various opportunities at several countries including Oman, Nigeria, South Africa, Uganda, Kenya, Tanzania, Lesotho, Ghana, Namibia, Rwanda, Pakistan, Bangladesh, Iraq, Tajikistan, Kyrgyz Republic, and Armenia.

The successful geographical expansion along with world class technical qualification resulted in being shortlisted in 8 projects in different countries around the world in various fields.

We also successfully entered the Afghanistan and Pakistan markets and established long term business relationship with strong local partners. Consequently we have been participated in many opportunities in these countries.

Memorandum of Understanding and Agreements

In order to enhance our offers and offset costs we reached several agreements and signed MOUs with our local and international partners to play win-win strategy in international market. These mutual alliances have led us to not only expand our international market but also to practice new area of experience and knowledge. We've benefited from knowledge transferred by our European partners while our local partners have facilitated the market entrance and penetration. In last year only, we signed about 15 MOUs with world class companies from Germany, Italy, British, Spain, India, Pakistan and Afghanistan in different fields for Oil and Gas, Railway, Power Transmission, Power Generation, Communication and Mining.

Certificates and Awards

- ▶ Iranian ICT Guild Organization Membership

Participation in the Exhibitions

In order to penetrate and develop in domestic and international market, Monenco participated in the following international & national exhibitions. During the exhibitions, Monenco had fruitful and effective negotiations with different clients and partners.

International:

- ▶ Iran –Kyrgyz annual exhibition
- ▶ Iran-Uganda business forum- Kampala, Uganda
- ▶ Iran-Kenya business forum- Nairobi, Kenya
- ▶ Science forum- Pretoria, South Africa

Domestic:

- ▶ 23rd International Oil, Gas, Refining & Petrochemical Exhibition
- ▶ Lateral Exhibition of 23rd Electrical Power Distribution Conference
- ▶ Lateral Exhibition of 33rd International Power System Conference
- ▶ 18nd International Electricity Exhibition (IEE2018)
- ▶ 3th International Logistics, Transportation and related Industries Exhibition



second session of Asia-Pacific Information Superhighway Steering Committee in Thailand



18th Iran International Electricity Exhibition

Publications and Presence in the Conferences

We believe that creation and sharing the new knowledge is essential to the survival of our business. Following our commitment to publish our knowledge constantly, Monenco 6th book; Human Resources Management in Engineering Consultancy Companies has been published in 2018 containing all the aspects of practical HRM. In Iran 33rd International Power System Conference, the book was ranked the highest and Monenco Iran was awarded the certificate of appreciation.

In addition, Monenco published 51 accepted international and 12 national papers and researches in 2018. Furthermore, 42 technical reports were prepared to support our actual and potential clients of the latest technologies and services.

In 2018 we held 108 internal/external seminars and training courses to improve the technical and managerial knowledge of our experts and managers.



Corporate Social Responsibility

As an international consulting engineering firm, Monenco Iran is invested in, and committed to, the social responsibility of business. We believe in the benefits of corporate social responsibility and in building sustainable communities which helps us to create long-term shareholder value.

In 2018, Monenco was successfully active in pursuing CSR opportunities based on Monenco corporate social responsibility strategies as described below;

Social Perspective

Learning and education:

- ▶ In order to develop an environment which supports learning and improvement, other than many training courses held for the employees and clients, Monenco, as the secretary of Cigre (International Council on Large Electric Systems), improved its activities in Cigre Iran and other national committees globally to be more involved in the latest technology development and knowledge sharing in the field of power industries globally
- ▶ Allocating 9 scholarships for students of Sharif University of Technology
- ▶ Providing 42 technical reports in terms of sharing knowledge
- ▶ Sponsoring employees for educating in DBA and MBA
- ▶ Internships for university students

Employees:

- ▶ Welfare programs such as restaurants, sports and shopping gift cards

Communities:

- ▶ Supported 4 non-profit and charitable organizations financially and non-financially in different cases such as natural disasters

Economical Perspective

Considering the long-term benefits for all stakeholders in carrying out the projects, in 2018, we focus on economic viability in order to increase the productivity, reduce costs, reduce use of resources and increase the income.

Environmental Perspective

At Monenco Iran, we use sustainable design and engineering to minimize environmental impact. We strive to undertake all projects in an environmentally responsible manner, and to identify, manage and mitigate any risks that may impact negatively on the environment.

Our studies and analysis on climate change, society, technology and resources enables us to see the future more clearly and advise our clients on solutions that are both ready for today and the years to come.

In 2018, Monenco have been involved in the projects mentioned below in respect of environmental aspects of CSR:

- ▶ Heavy Fuel Oil (HFO) Treatment System
- ▶ Green climate
- ▶ Bio-ethanol production
- ▶ Energy efficiency
- ▶ CO2 reduction
- ▶ Renewable energies such as wind and solar power plant



Scholarship Meeting

Transmission & Distribution Division

The Division of Power Transmission & Distribution 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 losses reduction studies, 19 projects in supervision of capital and mechanization projects, 39 kilometer (25 Subway Stations) metro and railways projects and 34 km High Way as well as an International Terminal and Airside in Airport.



Power 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 us to reach the optimum design in our projects.

Power Distribution Networks

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

Power Grid Stations

The High Voltage 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 substations. 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 our area of expertise. We also deal with control systems for equipment designed for energy production (Hydroelectric and Thermal plants) and Petrochemical Plants. Power system studies, consultancy for asset management, consultancy for project management, economical 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 owing to gain 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 that Ergonomic Control Centers and Green Buildings are included in Civil & Structures Department design expertise.

Railways & Subways

By developing technical knowledge in new fields also in order to be in line with the needs for infrastructure projects in the field of Subways, Urban Railways and Subway Stations in Iran, Monenco Iran has expanded its services and entered into the mentioned fields. However, through the technical and engineering capabilities of Monenco Iran, foreign partners, experienced qualified personnel and using modern technologies caused it be able to render high quality consulting and engineering services in different projects in mega cities and capital of Iran.

The Railways & Subways department, Based on its experiences in mechanical, electrical, civil, Structure, SCADA & telecommunication fields was involved to High way projects and long tunnels along with earning capability to present consultancy services for Intelligent Traffic System(ITS) of High ways are the results of Monenco Iran engagement in such projects.



Articles and Technical Reports

Power Transmission & Distribution Division has published 36 Technical Reports, 2 International articles and papers in 2018 to introduce new technologies & systems to its clients. Below is the list of mentioned reports;

Technical Reports:

- ▶ The Role of Distributed Generation in the Smart Grid
- ▶ Asset Management for Power Transmission Network
- ▶ Earthquake Destructive Effects-Base Separator System in High Important Structures
- ▶ Ultra-Light Walls in Power Substation Building; Reliability & Cost Reduction
- ▶ Implementation of Transformer Shed in Tropical and Warm Regions for Performance and Life Cycle Improvement
- ▶ Analysis of Automatic Train Protection Function and Its Failures in Railway System
- ▶ World Class: Integration and Life Cycle Data Management of Projects (Products)
- ▶ Seismic Control System for Power Transformers
- ▶ Smart Substations in Distribution Network
- ▶ The Ventilation System in Road Tunnels
- ▶ Protection of Transmission Lines against Freezing with Protective Coatings
- ▶ Technical and Economic Comparison of GIS with Indoor AIS Power Substation
- ▶ Rule of Structural Health Monitoring in Electric Power Industry Structures
- ▶ Gas Insulated Line (GIL) for the Needs of Network Future
- ▶ The Role of Energy Storage in the Smart Grid
- ▶ A Survey on Affection of Train's Speed on Design of OCS
- ▶ Saturated Iron Core Fault Current Limiter in Power Industries
- ▶ The Role of Consulting Engineers in Managing and Improving the Status of Projects
- ▶ Using of Isolation Concrete Form (ICF) in Concrete Walls for Power Industry Buildings
- ▶ Infrastructures and Accessories for Smart Distribution Network
- ▶ Evaluation of Risk Management for Construction of Subway Stations
- ▶ Enhancement of Power Network Reliability with the use of Shell-Type Transformers
- ▶ The Use of Mobile Robots in Preventive Maintenance of Power Transmission Lines
- ▶ Modern Technologies And Materials Usage by Passive Defense System Approach at Power Industry

- ▶ The Power Outage Cost for Distribution Network
- ▶ Determination of Insulators with Pollution Measurement Solutions at Power TL & Substation
- ▶ Solution to Reduce the Destruction Effects of Dust Pollution in Grid
- ▶ Using of Geothermal Energy for Air Conditioning at Railway & Subway Stations
- ▶ Smart Home and Consumers
- ▶ Using of Renewable Energies in Subway Stations - Piezoelectric System
- ▶ Using of Roller Compacted Concrete (RCC) for Roads and Landscaping of Projects
- ▶ Rule of Thermal Insulation to Reduce Energy Consumption & Capacity of Cooling and Heating Systems
- ▶ Sustainable Development - Lightning Formation and Recording Systems for the Parameters
- ▶ Smart Grid Conceptual Model
- ▶ The Role of Test Stations for Transmission Line Towers at Sustainable Development
- ▶ Implementation of Disconnecting Circuit Breaker as Promotion in Design of HV Substations

Articles

- ▶ Energy Management in Smart Homes Including Smart V2G Facilities and Distributed Generations
- ▶ Experimental Investigation on Ungrounded Conductive Objects Effects Approximate to Power Transformer during IVPD Test

Major Ongoing Projects

Consultancy and Site Supervision Services for Construction of Bardsir-Daraloo 230kV Transmission Line

Start date: 2018 **Finish date:** 2020 **Location:** Kerman Province, Iran **Client:** National Iranian Copper Industrial Co

Scope of work:

- ▶ Data Collection
- ▶ Route selection
- ▶ Transmission line surveying and preparation of plan & profile drawings
- ▶ Tower spotting
- ▶ Detail design
- ▶ Tendering and contract awarding
- ▶ Design review
- ▶ Witnessing factory acceptance test
- ▶ Contract Management, project progress and cost control
- ▶ Site Supervision on project implementation in foundation construction, tower erection and stringing
- ▶ Witnessing HSE considerations
- ▶ Controlling delivery of Site material, machinery and equipment to site
- ▶ Review As-Built documents submitted by contractor
- ▶ Assist client in provisional project handover
- ▶ Assist client in permanent Project handover

Description: The main purpose of this project is to supply electricity for Daraloo factories and mine complex. Accordingly, a new 230 kV double-circuit transmission line between Bardsir and Daraloo substations will be constructed by National Iranian Copper Industrial Company in which Monenco Iran will be responsible to render consultancy and site supervision services in this project.



Consultancy Services for Receiving Fund from an International Bank

Start date: 2018 **Finish date:** 2019 **Location:** Azarbayjan, Kordestan & Kermanshah Provinces, Iran
Client: Gharb Regional Electric Company

Scope of work:

- ▶ Inception report
- ▶ Detailed explanatory report
- ▶ Environmental studies and social studies

Description: In order to complete and connect the power transmission network between North and South in the west part of Iran and supply Sustainable Energy, 400 kV transmission line with 350 km length has to be constructed connecting Miandoab, Sanandaj and Mersad. Regarding this matter, Gharb Regional Electric Company decided to receive fund by various methods of funding from one of the international banks such as JAICA, Islamic Development Bank or Asian Infrastructure Investment Bank.



Consultancy and Site Supervision Services for Construction of Esmalon 230 kV Transmission Line

Start date: 2018 **Finish date:** 2019 **Location:** Yazd, Iran
Client: Iranian Mines and Mining Industries Development and Renovation Organization (IMIDRO)

Scope of work:

- ▶ To evaluate Bidders Proposals and prepare Technical and Financial report and award contract
- ▶ Design Review
- ▶ Contract Management, project progress report and cost control
- ▶ Site Supervision on project implementation at foundation construction, tower erection and stringing
- ▶ Witnessing HSE concerns



- ▶ Monitoring the delivery of site material, machinery and equipment to the site
- ▶ Review As-Built documents and drawings
- ▶ Assist client in provisional project handover
- ▶ Assist client in permanent project handover

Description: the main purpose of this project is electrification and supplying electricity requested by Esmalon Copper Mine from Abarkuh Substation.

Consultancy Services for Preventive Maintenance of Power Substations Relays Setting and Transmission lines

Start date: 2018 **Finish date:** 2019 **Location:** Zanjan & Qazvin Provinces, Iran **Client:** Zanjan Regional Electric Company (ZREC)

Scope of work:

- ▶ Maintenance Instruction review based on the last instruction of Tavanir
- ▶ To prepare specification and tender documents
- ▶ To hold the tender
- ▶ To evaluate Bidders proposals and prepare technical and financial report and award contract

Description: Considering the necessity of asset management and proper operation of the equipment in electricity industry, Zanjan Regional Electric Company intends to increase the quality of maintenance and repairs in transmission lines and high voltage substations in Qazvin and Zanjan provinces.

Consultancy and Engineering Services for Power Supply, Transmission and Distribution Studies of Mashhad International Airport

Start date: 2018 **Finish date:** 2019 **Location:** Mashhad, Iran **Client:** Iran Airports and Air Navigation Company

Scope of work:

- ▶ Identification, data gathering and preliminary design
- ▶ Power network analysis, determination of power supply and distribution
- ▶ Feasibility study for renewable energies with economic solutions
- ▶ Preparation of tender documents
- ▶ Tendering and contract awarding

Description: Nowadays, the growth of transportation especially air mode is increasing. Because of the role that Mashhad airport plays in network connections in economic and strategic way, this project was defined by Iran Airports and Air Navigation Company. In this project, Monenco Iran is responsible to render consultancy and engineering services for Power Supply, Transmission and Distribution Studies of Mashhad International Airport.



Submarine Cable for Iran and Oman Grids Interconnection

Start date: 2018 **Finish date:** 2019 **Location:** Iran & Oman **Client:** Tavanir and Oman Electric Transmission Company

Scope of work:

- ▶ Overview of environmental standards and environmental impact assessment
- ▶ Cable route study
- ▶ Offshore activities and hazards investigation
- ▶ Route engineering and design
- ▶ Environmental assessment of alternative
- ▶ Basic route engineering and design report
- ▶ Environmental feasibility study report
- ▶ Converter technology
- ▶ Cable design study

Description: This project aims at exploring the impacts of the interconnection between Iran and Oman electric power systems upon some important aspects. Iran and Oman interconnection can be a fruitful project; because of the possibility for Iran grid to interconnecting GCC via Oman and also providing this chance for Oman grid to interconnecting overseas countries via Iran. Access to other markets will be an excellent opportunity from technical and economic point of view for both of Iran and Oman.

This project was defined to be carried in 5 main tasks. Main Task I is data gathering and system modeling. At this stage, required data including technical, economic and financial data for modeling of Iranian and Omani grids are gathered. Moreover, in this phase, literature survey is carried out in order to review international experience and technical considerations of HVDC interconnection. In Main Task II, detailed economic studies will be done. This phase comprises of assessment of value drivers for Iran and Oman interconnection, estimation of investment costs, calculation of benefits, and measuring economic feasibility of alternatives.

In the third phase of the project, technical studies will be accomplished on both Iran and Oman grids in order to evaluate the impact of interconnection between these power systems. In this regard, the main studies are power flow analysis, contingency analysis, total transfer capability analysis, short circuit analysis, transient stability analysis and frequency stability analysis in 2023.

Task IV deals with route survey, environmental assessment and technology specification. The main objective of this phase is to develop an environmental feasibility study for the interconnection between Iran and Oman, considering alternative sea cable routes and selecting the more suitable one(s) from the environmental point of view.

In the final task, economic studies will be updated and operational agreement will be done on the commercial and financial aspects of the interconnection.



Consultancy Services for Connecting Kish South Kaveh Steel Company (SKS) to National Power Grid

Start date: 2018 **Finish date:** 2019 **Location:** Hormzgan Province, Iran **Client:** Kish South Kaveh Steel Company (SKS)

Scope of work:

- ▶ Data collection
- ▶ Network deck simulation
- ▶ Current system study, load flow, (n-1) contingency and finding the pros and cons
- ▶ Recommending scenarios of grid connection
- ▶ Feasibility study
- ▶ Attending in the meetings
- ▶ Prepare technical and financial report
- ▶ Cooperating with client in receiving confirmation

Description: Kish South Kaveh Steel Company (SKS) needs to utilize the maximum capacity of the existing power transmission substation and increase the number of circuits in order to be connected to National Power Grid. This is due to the Company production growth. Therefore, the studies need to be carried out to connect the new line or lines to the Grid based on the current status of National Power Grid.



Consultancy Services for Tender Procedure of five Transmission Lines Connected to Transmission Substations through Islamic Development Bank (IDB) Funding

Start date: 2018 **Finish date:** 2019 **Location:** Isfahan and Chahar Mahal Bakhtiary, Iran **Client:** Esfahan Regional Electric Company

Scope of work:

- ▶ To proceed the tender
- ▶ To evaluate the bidders

Description: The main purpose of this project is to supply required electricity to Esfahan and Chahar Mahal Bakhtiari provinces. Therefore, Esfahan Regional Electric Company (EREC) through the Islamic Development Bank funding intends to hold the tender for construction of transmission lines to be connected to the five power transmission substations.

Consultancy Services for Technical, Qualitative and Financial Supervision on Entire Power Distribution Projects in the South Kerman Province

Start date: 2018 **Finish date:** 2019 **Location:** Kerman, Iran **Client:** South Kerman Electricity Distribution Company

Scope of work:

1. Technical & Economic Analysis
2. Design of Power Distribution Projects Comprising:
 - ▶ MV & LV Networks (Overhead and Underground Lines)
 - ▶ Distribution Transformers and Posts
 - ▶ Street Lighting
 - ▶ Replacement Utilities
 - ▶ Provide Right of Way

Description: One of the most important issues in operation and management of the projects is implementation of development, modification, services, repair and maintenance as well as updating, automation and mechanization of distribution networks in line with the latest standards and in a safe condition. Nowadays by increasing in number of executive contractors on one hand and by expansion and development of updated and modern distribution networks equipment and systems on the other hand, the needs for high quality supervision and analyzing the procedures of dealing with this systems/issues is recognized to have an important role in Distribution Systems. Therefore, Distribution Companies are looking for first class consultant engineers to handle the above-mentioned issues in the distribution network under their authority.

In this project, Monenco Iran is responsible to provide Designs on operational plans for distribution networks in the South of Kerman Province based on modern technologies.

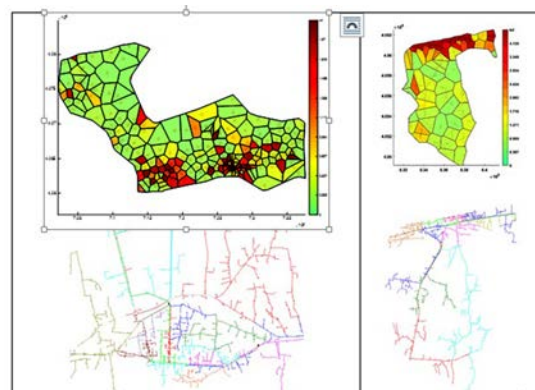


Consultancy and Engineering Services for Preparation of Master Plan of Distribution Network (MPDN) in Mazandaran Electricity Distribution Company

Start date: 2018 **Finish date:** 2019 **Location:** Mazandaran Province, Iran **Client:** Mazandaran Electricity Distribution Company

Scope of work: Consultancy services for preparation of Master Plan of Distribution Network (MPDN) based on national & international standards, requirements & criteria, limitations of distribution networks development as follow:

- ▶ Data Gathering and Verifying
- ▶ Preparation of Design Philosophy
- ▶ Network Modeling in Software
- ▶ Initial Network Studies
- ▶ Load Forecasting
- ▶ Substation & Feeder Development Studies in the Long, Medium and Short Term
- ▶ Distribution Transformers Location in the Short Term



Description: Master Plan of Electricity Distribution Network Project, designate the guidelines for the development of the power grid structure. By specifying the location of the installation, technical specifications and development plan of substations and feeders, the network performance will be optimized and electrical and economic indicators will be improved. Moreover, the inefficient technical structures in each section of the distribution network will be enhanced. In This Project, a long term development plan including substations, medium voltage feeders and distribution transformers with respect to network load, design, safety and reliability will be compiled for Mazandaran electricity Distribution Company.

Consultancy Services for Revising and Updating the Conditions of Contract for EPC (industrial/non-industrial) Projects

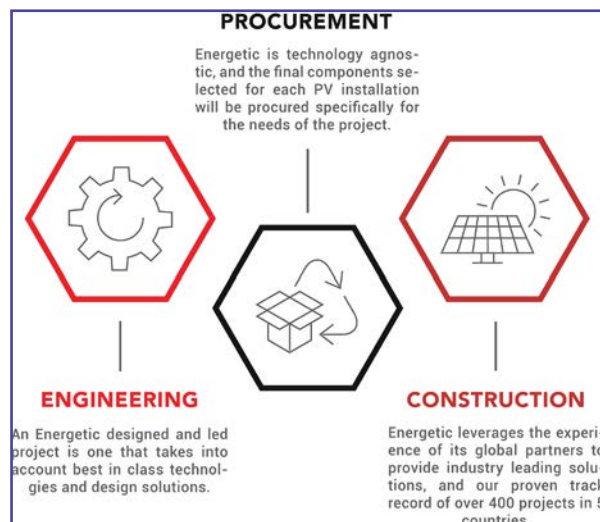
Start date: 2018 **Finish date:** 2020 **Location:** Tehran, Iran **Client:** Plan & Budget organization

Scope of work:

- ▶ Revising and updating the conditions of contract for EPC (industrial/non-industrial) projects
- ▶ Revising and updating the conditions of contract for EPCF (industrial/non-industrial) projects
- ▶ Revising and updating the conditions of contract for EP projects
- ▶ Revising and updating the conditions of contract for PC projects
- ▶ Revising and updating the conditions of contract for P projects

Description: Considering that the terms and conditions of the EPC contracts have been implemented since 10 years, now it is essential to revise and upgrade the EPC contracts rules and conditions (industrial and non-industrial). Accordingly, Plan and Budget Organization has assigned the required consultancy services to Monenco Iran. Below matters are considered as the major reasons in this project:

- ▶ Obstacles and experiences that stakeholders confronted during the implementation of this contractual model so far
- ▶ Enquiries and clarifications requested by employers, contractors and consultants from the country's technical and executive system over the past few years
- ▶ Country's development which is heading towards private sectors from public sectors also the position of the joint companies in the public and private sectors as a client in the development and infrastructure projects
- ▶ The growing trend of EPC model as the top model for the implementation of the country's development and infrastructure projects
- ▶ Changes in the international standards to assign the EPC contracts and contractual patterns/regulations
- ▶ Changes in the national laws and regulations and executive directives in recent years and the need to apply their effects on the contractual patterns
- ▶ The necessity of applying new legal, financial, insurance regulations in the contractual models



Consultancy Services and Detail Design for Construction of Rigan 132/20 kV Substation

Start date: 2018 **Finish date:** 2021 **Location:** Rigan- Bam Kerman Province, Iran

Client: Kerman Regional Electric Company (KREC)

Scope of work:

- ▶ Implement topographic operation of substation and soil investigation
- ▶ Basic design of electrical documents and detail design of all civil documents
- ▶ Tendering in order to select civil contractor
- ▶ Tendering in order to select installation and testing contractor
- ▶ Bid evaluation and contracting
- ▶ Design review and checking the related invoices
- ▶ Inspection, factory test and ordering the required equipment

Description: Electrification of Kerman Province is the prime role of Kerman Regional Electricity Company (KREC) considering the national welfare and economy improvement. Hence, Kerman Regional Electricity Company (KREC), decided to construct Rigan 132/20 kV substation which the benefits are as follow:

- ▶ Improvement of voltage level in Kerman Province
- ▶ Reducing voltage sage of the regional and national network
- ▶ Availability of power with acceptable quality in the area
- ▶ Supplying electricity to infrastructure industrial and mining projects in the region
- ▶ Supplying electricity to agricultural and residential consumers in the area
- ▶ Job opportunities due to providing electricity to new industries and other sectors
- ▶ Improvement of voltage profile of the local network



Basic Design Services for Construction of Abadan 132/33 kV Substation

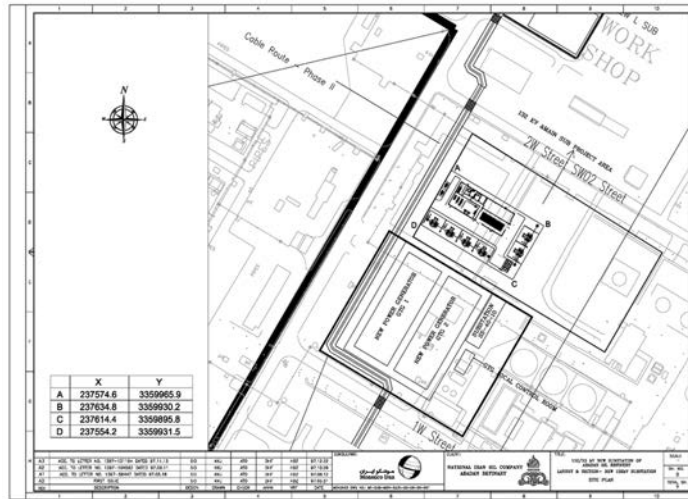
Start date: 2018 **Finish date:** 2020 **Location:** Abadan, Khozestan, Iran

Client: Abadan Oil Refining Co (AORCo)

Scope of work:

- ▶ Identification, data gathering
- ▶ Basic & conceptual design and technical specification of electrical and civil documents

Description: The latest development in Abadan Oil Refining Co (AORCo) forced the client to implement new infrastructures according to power system analysis and studies. Accordingly, based on the studies, a 132/33kV substation need to be constructed at the site.



Consultancy and Design Services for Construction of Power Substations and Transmission Lines at Fajr Petrochemical Complex

Start date: 2018 **Finish date:** 2020 **Location:** Khozestan, Iran **Client:** Fajr Petrochemical Complex

Scope of work:

- ▶ Basic design of single line diagrams for power plant substation in Region 2
- ▶ Basic design of single line diagrams for 400kV substation in extension phase
- ▶ Sizing of OHL and cable lines in final extension phase
- ▶ Basic design of substations civil infrastructures and power transmission channels
- ▶ Layout drawings of equipment in substation extension
- ▶ Financial estimation report of 132kV GIS substations extension for region 2 power plant and Fajr 400kV transmission substation
- ▶ Financial estimation for increasing the capacity of 132kV cable lines in region 2

Description: The main purpose of this project is to expand and develop the infrastructure of FAJR Petrochemical Complex as well as supplying required electricity to the Complex. In this project, Monenco Iran is responsible to render consultancy and engineering services and feasibility studies for increasing the capacity of power plant and construction of substation and power transmission lines.



Consultancy Services for Construction of Qom II 400/230 kV Substation

Start date: 2018 **Finish date:** 2020 **Location:** Qom, Iran **Client:** Tehran Regional electricity Company (TREC)

Scope of work: Consultancy services for engineering, programming, coordination, design review, etc. comprising:

- ▶ Preliminary design of all electrical and civil drawings required for the project
- ▶ Preparation of tender documents
- ▶ Holding tender and bid evaluation
- ▶ Preparation of technical and financial bid evaluation report and making contract
- ▶ To Review and approve the detail of technical specifications
- ▶ Control and approving of construction plan as well as factory tests
- ▶ Inspection, factory testing and ordering the required equipment

Description: By considering the increasing electricity demand in Qom Province and capability and reliability requirements of Iran electricity network, there is an urgent need for construction of the 400 kV substation in Qom Province. This Substation is one of the most important substations in Tehran Regional Electricity Company territory because of reinforcing the Power Grid and supplying power to other sub-transmission substations in Qom Province.



Consultancy Services for Implementation of Tizbad 132kV Power Plant AIS Substation and 2 bays Extension in Khaf 400kV Substation

Start date: 2019 **Finish date:** 2021 **Location:** Khaf, Iran **Client:** Tizbad Niroy Company

Scope of work:

- ▶ To Review and approve the detail of technical specifications
- ▶ Control and approving the construction plan as well as factory tests
- ▶ Inspection, factory testing and ordering the required equipment

Description: By considering the increasing electricity demand in Khorasan Razavi Province and capability and reliability requirements of Iranian electricity network, Khorasan Regional Electricity Company decided to implement the project.

Consultancy Services for Construction of Jahad 132/33 kV Substation

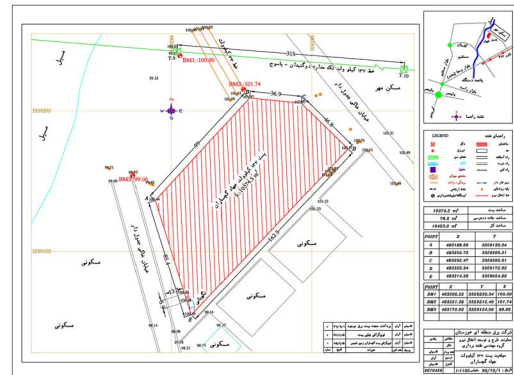
Start date: 2018 **Finish date:** 2019 **Location:** Khuzestan Province, Iran

Client: Khuzestan Regional Electric Company (KZREC)

Scope of work:

- ▶ Identification, data gathering and preliminary design
- ▶ Providing basic design
- ▶ Providing technical specifications and data sheets
- ▶ Tendering, bid evaluation, assisting in selection of contractor and contracting
- ▶ Design review Inspection, Factory testing and ordering the required equipment

Description: Due to increase of electricity demand and loads in Khuzestan Province, it is essential to construct 132 kV substation in the Province. Jahad Substation is one of the most important substations in Khuzestan Regional Electricity Company territory because of reinforcing the local power grid and supplying power to various consumers (including industrial, agricultural ...) in the Province.



Consultancy Services for Construction of Sabzab 230/132/33 kV Substation

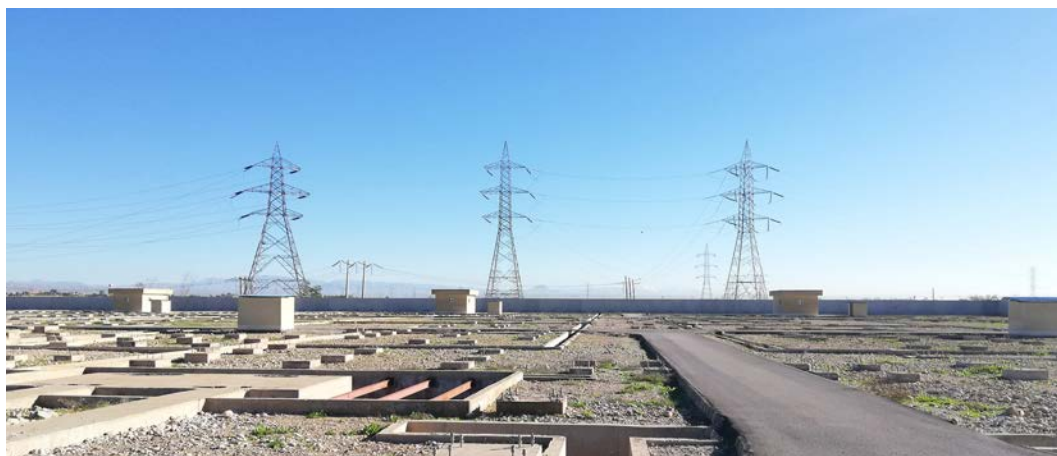
Start date: 2018 **Finish date:** 2021 **Location:** Khuzestan Province, Iran

Client: Tehran Regional Electricity Company (TREC)

Scope of work:

- ▶ Identification, Data gathering and preliminary design
- ▶ Providing Basic Design
- ▶ Providing Technical Specifications and Data Sheets
- ▶ Tendering, Bid evaluation, Assisting in selection of contractor and Contracting
- ▶ Design review Inspection, Factory testing and ordering the required equipment

Description: Due to increased electricity demand in Khuzestan Province, there is an urgent need for construction of the 400 & 230 kV substation in this province. Sabzab 230/132/33 kV Substation is one of the most important substations since it reinforces the power grid and supply electricity to other sub-transmission substations in the Province.



Consultancy Services for implementation of SVC System at 230/132/20 kV Sabzab & Andimeshk Substaions

Start date: 2018 **Finish date:** 2021 **Location:** Khuzestan Province, Iran **Client:** Tehran Regional Electricity Company (TREC)

Scope of work:

- ▶ Identification, Data gathering and preliminary design
- ▶ Providing Basic Design
- ▶ Providing Technical Specifications and Data Sheets
- ▶ Tendering, Bid evaluation, Assisting in selection of contractor and Contracting
- ▶ Design review Inspection, Factory testing and ordering the required equipment

Description: Existence of nonlinear loads in each network growth harmonic distortion, which increase system power losses. Therefore, more power generation is needed and transited to loads through the Grid. Subsequently, SVCs are used to produce required reactive power, located in parallel in network, in order to solve the mentioned problems. Therefore, studies and provision of SVC system at 230/132/20 kV Substations of Khuzestan Province to improve the power Grid have been taken into consideration. Sabzab and Andimeshk Substations are the most two important substations because of reinforcing the power grid and supplying power to other sub-transmission substations in Khuzestan Province.



Engineering and Supervision Services to make 4 Existing Substation Unmanned

Start date: 2018 **Finish date:** 2019 **Location:** : Kermanshah & Kurdistan, Iran **Client:** Gharb Regional Electric Company (GREC)

Scope of work:

- ▶ Identification, data gathering and preliminary design
- ▶ Providing basic design



- ▶ Providing technical specifications and data sheets
- ▶ Tendering, bid evaluation, assisting in selection of contractor and Contracting
- ▶ Design review inspection, factory testing and ordering the required equipment

Description: Many of the power outages and failures in the power substations are due to possible operational errors and lack of full access to the main control centers in these substations also the traffic volume of the operators. Therefore, realization of full control to power substations without the need of operator, in form of remote control (Unmanned), has been consider as one of the modem and reliable solutions in order to reduce the operating costs and such errors caused by the wrong performance of substation-based operators.

Consultancy Services for Technical, Economic Analysis and Design for Power Distribution Projects & Supervision on Implementation in Golestan Province

Start date: 2018 **Finish date:** 2019 **Location:** Golestan Province, Iran **Client:** Golestan Province Electrical Distribution Company

Scope of work:

1. Technical & economic analysis
2. Design of power distribution projects comprising:
 - ▶ MV & LV Networks (Overhead and Underground Lines)
 - ▶ Distribution Transformers and Posts
 - ▶ Street Lighting
 - ▶ Replacement Utilities
 - ▶ Provide Right of Way
3. Technical & Financial Supervision on Power Distribution Projects Comprising:
 - ▶ New Electrification
 - ▶ Street Lighting
 - ▶ Repair and Maintenance
 - ▶ Equipment Quality Control
 - ▶ Reconstruction Network
 - ▶ Equipment Procurement
 - ▶ Construction
 - ▶ Rehabilitation

Description: In this project, Monenco Iran is responsible to design and render supervision services on operational plans for distribution networks in Golestan Province Electrical Distribution Company comprising 14 Regions based on modern technologies.



Consultancy Services for Construction of Extension at Omidiyeh (I) 400/230/132/33/20kV Substation

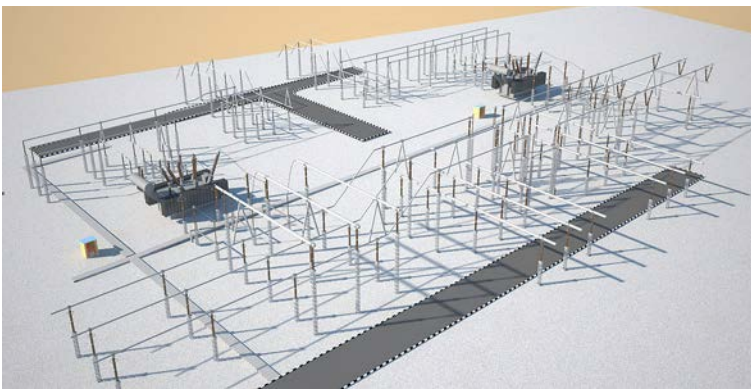
Start date: 2018 **Finish date:** 2020 **Location:** Omidiyeh – Khuzestan Province, Iran

Client: Khuzestan Regional Electric Company (KZREC)

Scope of work:

- ▶ Identification, Data gathering and preliminary design
- ▶ Basic Design
- ▶ Providing Technical Specifications and Data Sheets
- ▶ Tendering, Bid evaluation, Assisting in selection of contractor and Contracting
- ▶ Design review Inspection, Factory testing and ordering the required equipment

Description: Due to increase of electricity demands in Khuzestan Province, it is an urgent need to extend the 400 & 230 kV substations in the Province. Omidiyeh (I) Substation is one of the most important substations in Khuzestan Regional Electricity Company territory because of reinforcing the power grid and supplying power to other sub-transmission substations in Khuzestan Province.



Consultancy & Site Supervision Services for Design Review, Supervision and Confirmation of Performance Tests of Construction of 63/20/6 kV Substation at Tehran Oil Refining Company

Start date: 2018 **Finish date:** 2020 **Location:** Tehran, Iran **Client:** Tehran Oil Refining Company (TORC)

Scope of work:

- ▶ Design review and checking of related invoices
- ▶ Inspection, factory test and ordering the required equipment



Description: The expansion, development and supply of required energy in Tehran’s Oil Refinery (TORC) on one hand and reducing the production of electricity from the internal gas generator units of the refinery due to gas shortage in winter season on the other hand are the main reasons to supply required electricity by the refinery, especially in winter. Therefore, utilization of urban electricity is needed to provide part of the required electricity. Accordingly, construction of 63/20/6 kV substation project has come into consideration and defined by the client.

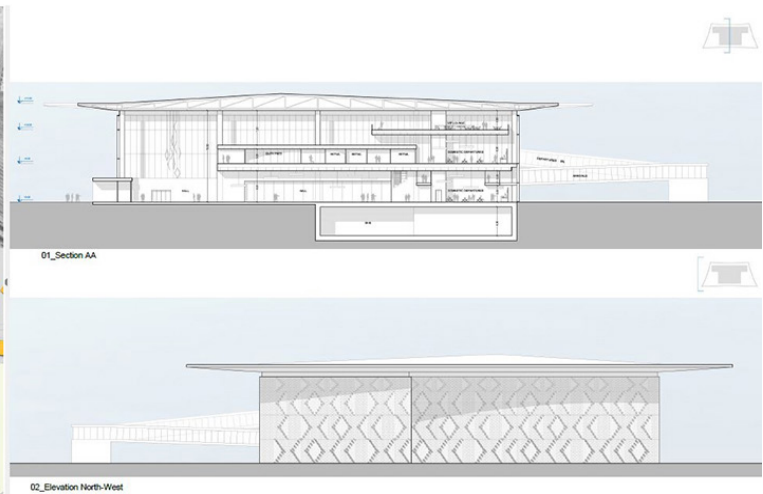
Consultancy & Engineering Services for Construction of New Terminal and Peripheral Area in both Landside and Airside Area at Kerman International Airport

Start date: 2018 **Finish date:** 2018 **Location:** Kerman, Iran **Client:** Iran Airports Company

Scope of work:

- ▶ Identification, data gathering and preliminary design
- ▶ Determination of technical design criteria and completion of the conceptual
- ▶ Determination of financial and technical criteria for investor
- ▶ Investor selection procedure

Description: Kerman International Airport plays a critical role in Iran network connections in terms of economic and strategic situation. Also, due to increased demand for transportation especially air mode, infrastructure development of this airport has been taken into consideration. In this project, Monenco Iran will be responsible to render consultancy and engineering services for construction of new terminal with 15000 m2 with all the requirements for both landside and airside area in Kerman International Airport.



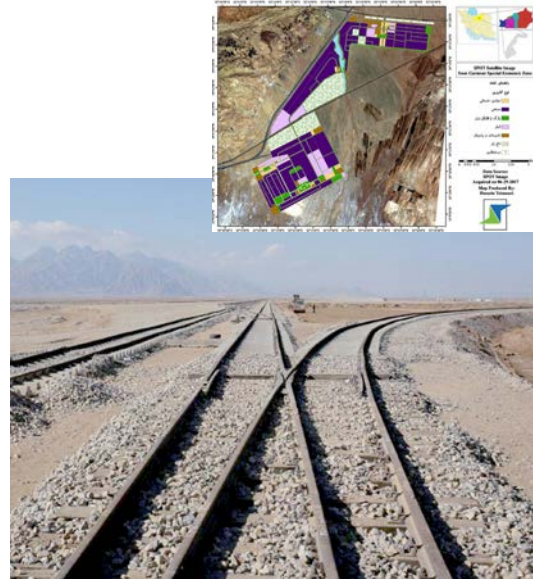
Consultancy & Engineering Services for Connecting Garmsar Special Economic Zone to National Railways

Start date: 2018 **Finish date:** 2018 **Location:** Semnan Province, Iran **Client:** Garmsar Special Economic Zone Management Company

Scope of work:

- ▶ Conceptual Design
- ▶ Design of geometric plan
- ▶ Route design
- ▶ surveying
- ▶ Design of longitudinal profile
- ▶ Receiving approvals from technical committee of Islamic Republic of Iran Railway

Description: The plan is to transform the Garmsar region to an economic zone and create an appropriate investment environment for investment. In this regard, considering that the railways are one of the most important future infrastructures, this project was defined and awarded to Monenco Iran.



Engineering Services for 230/132 kV Dogonbadan Substation Expansion

Start date: 2018 **Finish date:** 2019 **Location:** Gachsaran, Kohgiluyeh & Boyerahmad Province, Iran **Client:** Khuzestan Regional Electric Company (KZREC)

Scope of work:

- ▶ Implement topographic operation of substation and soil investigation
- ▶ Basic Design of Electrical documents and Detail Design of all Civil Documents
- ▶ Tendering in order to select civil contractor
- ▶ Tendering in order to select Installation and testing contractor
- ▶ Bid evaluation and contracting
- ▶ Design review and checking of related invoices
- ▶ Inspection, factory test and ordering the required equipment

Description: Due to increasing energy demands in Kohgiluyeh & Boyerahmad Province, there is an urgent need to extend the 230 kV substation in Kohgiluyeh & Boyerahmad Province. Dogonbadan Substation is one of the most important substations in Khuzestan Regional Electricity Company territory because of reinforcing the power grid and supplying power to other sub-transmission substations in Kohgiluyeh & Boyerahmad Province.



SCADA, ICT & Smart Solutions Division

SCADA, ICT & Smart Solution Division was formed in 1994 to provide engineering and Consultancy services to Energy industries. Today, after over two decades, we provide A-Z engineering and consultancy Services to a wide range of industries such as Power , telecommunication, oil and gas, water and waste water, ports, steel as well as health and transportation. It is one of the most important and fastest growing divisions in Monenco as a result of dealing with inter-disciplinary and high-tech businesses (responding to the needs of the country for advanced ICT utilizing activities). Having technical teams dedicated for SCADA and telemetry, dispatching and monitoring, AMI and smart solutions, mobile and fixed telecommunication networks, IT systems (IT Governance, IT Strategic Planning, Enterprise Architecture, BPR, Big Data, Data Centers, Data Model, ...), telecommunication master planning and telecommunication business and strategic planning has made us a reliable and unique consultant for our clients in providing total solutions to them. Benefiting from highly qualified engineers, software, hardware infrastructures and the valuable experience of the company, the success of our clients in their plans and portfolios is guaranteed.



Smart Solutions Department

During 2018, Smart Solution Department developed its consultancy services to the different domains of energy industry such as Electricity (including Generation, Transmission, Distribution, and End-users), Oil & Gas, and Water and Waste water. Smart Grid (SG), Smart City (SC), Smart Homes (SH), Smart Applications and platforms (EMS, DMS, etc.), and any other concept regarding Intelligence of functions and equipment are in our department scope. As a new trend, smart solution department presents broad solutions in smart city with focus on municipal asset management, IT road map and urban resource management.

SCADA & Automation Department

SCADA and Automation Department represents consultancy services in various stages of consultancy and engineering in SCADA/EMS/DMS and automation plans within the power industry (including generation, transmission and distribution), Water & Waste Water Utilities, copper and steel production industries, metro & railway, oil & gas and other industries. In this regard this department has an extensive knowledge in the engineering of SCADA and telemetry systems, dispatching and distribution automation within the power sector. Deep knowledge and experiences regarding digital transformation and intelligent and smart grids makes us as a unique consultant in designing new and smart SCADA and DMS systems. In 2016 Monenco was granted the first grade of expertise in SCADA and cyber security from the Ministry of Power of Iran. In this Department we also offer consultancy services regarding designing various Dispatching buildings and other vital facilities, considering ergonomics, security and architecture Services.

ICT Department

The ICT Department of Monenco Iran has an extensive presence in different industries namely Power, Transportation, Oil & Gas, port, etc.

ICT as an enabler and transformer in national and enterprise level, has critical position in economic development and making new opportunities for businesses. Smart business is mainly based on human and IT resources. Aligning IT with Organization's goals is achieved by making IT Governance more efficient and effective. Developing ICT Master Plans, Enterprise Architecture, IT Business Models, and Business Process Reengineering are main expertise areas of the department.

As a featured area, the department has a special experience in telecommunication industry. In spite of low Capex in telecom sector in comparison to other sectors in industrial mega projects, the added value made by telecom sector in terms of improving the efficiency and reducing the operating costs, is extremely noticeable. In this case the role of a consulting engineering firm in accomplishing telecommunication master plans and the application of the technologies like IoT and Big Data is remarkable.



The telecom sector is like a volcanic eruption that in the nearest future will disrupt almost all industries in the world by the means of innovation. Mobile devices and having access to broadband networks is becoming an inseparable part of today's societies that can be affected by Video Streaming and Internet of things (IoT). The number of connected things and smart devices are intensively increasing and this growing trend is promising for telecommunication firms in terms of untapped markets and greater market opportunities. For the telecom operators, PAPs, ISPs and other B2C companies, business strategy and a winner business model accounts as an undeniable necessity in this competitive and volatile market. Also, the rapidly growing industry and its diversified actors such as MVNOs, OTTs, broadband operators, IoT and M2M providers and other regulatory organizations in each country would be requiring a robust policy and regulation. Telecom infrastructure companies in order to expand their network and increase their efficiency should get involved in technologies like software defined network (SDN) and network function virtualization (NFV). In implementing these new systems they are facing fast changes in technology and equipment which requires the best options and solutions. ICT Department of Monenco is a reliable consultant in the fields of IOT, Smart solutions, Network design, mobile & fixed broadband, IT Governance and E Government being accompanied with strategy and business model which are supported by R&D to fulfill industries' needs.

Articles and Technical Reports

Several technical reports have been prepared and published in 2018 in order to introduce new technologies & systems to the clients. Below is a list of the mentioned reports:

Technical Reports:

- ▶ Different communication solutions and feasibility study for Smart Grid applications
- ▶ Design, Operation, and Maintenance requirements of Data Centers in Smart grid Applications
- ▶ Smart Fire Fighting
- ▶ Energy storage and it's applications
- ▶ IOT , A major enabler for future utilities
- ▶ Iran AMI Project Architecture in Comparison to Other Successful International Experiences
- ▶ The trend of e-government development in Iran

Papers:

- ▶ GCC Power Conference 2019, “IRAN Smart Metering Project Security Architecture: Challenges and Solution
- ▶ INTEROPERABILITY IN IRAN’S SMART METERING PROJECT - Metering & Smart energy international
- ▶ Worst-case Jamming Attack and Optimum Defense Strategy in Cooperative Relay Networks –IEEE Xplore
- ▶ Smart Monitoring and Control of Thermal Power Plant Using Internet of Things _ 3rd international Conference on Modern Wireless telecommunication Systems
- ▶ Digitalization in energy
- ▶ Data mining in the power distribution network based on improved CRISP-DM and neural network model - 5th Conference on Knowledge-Based Engineering and Innovation

Major Ongoing Projects

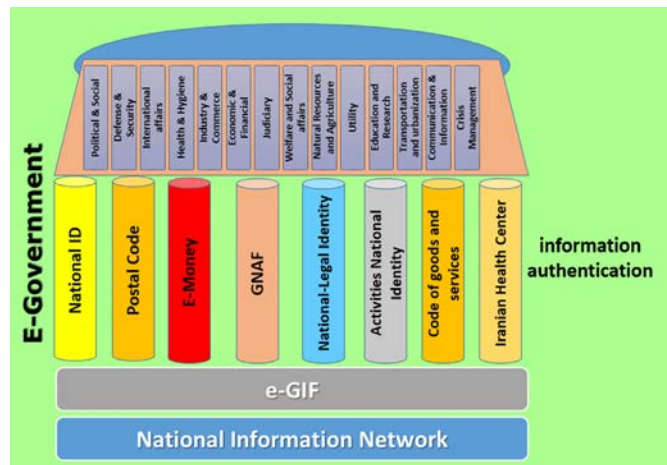
Consultancy Services for Feasibility Study and Preparing RFP for e-Government

Start date: 2018 **Finish date:** 2019 **Location:** Iran **Client:** Tavanir

Scope of work:

- ▶ Initial Planning, Studying and Evaluating the National Environment and Bench Marking,
- ▶ Gathering and Analyzing Platform Requirements,
- ▶ Determining the Framework and General Considerations of Data and Services Exchange Platform of Tavanir and Subsidiary Architecture and Governance,
- ▶ Identifying and Reviewing Vendors and Relevant Products for Selected Platform (Market Study),
- ▶ Feasibility Study of Providing a Selected Data and Services Exchange Platform of Tavanir and Subsidiary,
- ▶ Determining Features and Characteristics of Vendors and Products,
- ▶ Preparing RFP for Data and Services Exchange Platform of Tavanir and Subsidiary Procurement

Description: According to this fact that Tavanir Company consists of various subsidiaries such as Regional Electrical Companies (16 Companies), Electric Distribution Companies (39 Companies) and Iran Grid Management Company, lack of integrated interactions between them has been considered as an important matter. Therefore, there is a necessity for implementing Data and Services Exchange Platform to create an integrated Platform, which brings flexibility and agility to organizations. Each of Tavanir’s subsidiaries renders different services to different clients. Sharing these services among the subsidiaries and allowing them to inquire and exchange the data in a secure environment, while increasing the productivity and quality of services, will accelerate the provision of services. At the moment, each of the subsidiaries has their own dedicated database, so access to other subsidiaries’ database is not possible without the agreement. Besides, there are technological heterogeneity among these companies, as well. Doubtless, among existing approaches, Service Oriented Architecture (SOA), as a new approach to software design, can respond to above-mentioned requirements. Data and Services Exchange Platform of Tavanir as a platform based on standardization and service orientation, provides a platform for more and more interactions among companies operating in the electricity industry. In this regard Monenco Iran as a consultant will be responsible to prepare feasibility study and appropriate RFP for Data and Services Exchange Platform for Tavanir and the subsidiaries in order to accelerate the development of e-government in governmental organizations like Tavanir Company.



Consultancy and Supervision Services for Fiber Optic Cable Laying and Telecommunication Buildings Design of North to East-North Gas Pipeline (Part 2)

Start date: 2018 **Finish date:** 2020 **Location:** Iran **Client:** Iranian Gas Engineering and Development Co.

Scope of work:

- ▶ Development methods services and work organization
- ▶ Services for monitoring the supply of goods (procurement of materials, materials and equipment)
- ▶ Contract coordination and management services
- ▶ Supervision of designing the engineering department and design changes during the implementation of the project
- ▶ Service and planning work progress monitoring
- ▶ Building and installation supervision services
- ▶ Quality control services
- ▶ Monitoring services for commissioning, operation and delivery

Description: The purpose of this project is to build a telecommunication infrastructure in data transmission and telecommunication buildings at the second section of north to northeast 6th gas transmission pipeline between Shahrud and Sabzevar.

In this project Monenco Iran is responsible to render supervision services, detailed design, providing required materials for implementation of fiber optic cable (about 370 km) and the telecommunication buildings.



Consultancy and Supervision Services for Fiber Optic Cable Laying and Telecommunication Buildings Design of North to East-North Gas Pipeline (Part 3)

Start date: 2018 **Finish date:** 2021 **Location:** Iran **Client:** Iranian Gas Engineering and Development Co.

Scope of work:

- ▶ Development methods services and work organization
- ▶ Services for monitoring the supply of goods (procurement of materials, materials and equipment)
- ▶ Contract coordination and management services
- ▶ Supervision of designing the engineering department and design changes during the implementation of the project
- ▶ Service and planning work progress monitoring
- ▶ Building and installation supervision services
- ▶ Quality control services
- ▶ Monitoring services for commissioning, operation and delivery

Description: The purpose of this project is to build a telecommunication infrastructure in data transmission and telecommunication buildings sectors at the third section of north to northeast 6th gas transmission pipeline from Sabzevar airport to Turkmenistan border.

In this project Monenco Iran is responsible to render supervision services for detailed design, providing required materials for implementation of fiber optic cable (about 435 km) and telecommunication buildings.

Feasibility Study for CRA (Communication Regulatory Authority) Capital Asset Acquisition and Obtaining a License from PBO

Start date: 2018 **Finish date:** 2018 **Location:** Iran **Client:** Communication Regulatory Authority of Iran

Scope of work:

- ▶ Data gathering
- ▶ Basic & detailed feasibility study
- ▶ Writing feasibility reports in three levels
- ▶ Considering economic, financial, social/cultural, environmental aspects in the project scope and design appropriate checklists

Description: In this project, feasibility study on capital asset acquisition will be carried out to verify the ministry public revenue budgeting by MPO (Management and Planning Organization). This project consists of 3 subproject as described below:

- ▶ Frequency management
- ▶ ICT regulation
- ▶ Supply, repair and construction of facilities

Consultancy Services and Supervision on Smart Metering Project in Mashhad, Tehran, and Zanjan Electric Distribution Companies

Start date: 2018 **Finish date:** 2019 **Location:** Mashhad, Tehran, and Zanjan (Three main distribution companies as representative for more than 22 EDCs) **Client:** Mashhad, Tehran, and Zanjan EDCs

Scope of work: Superior supervision on installation, commissioning and activation of all smart meters in more than 22 EDCs, supervision on operation of data centers, supervision on the performance of application systems, supervision on operation of the telecommunication network and IT system, supervision on The process of supplying, delivering and installing smart meters, supervision on the process of producing smart meters at the factory, verifying the contractors' invoices, Supervision on Create Asset Management System, Supervision on Create Smart home and etc.

Description: Due to electrical energy consumption increase in Iran, Tavanir Company and Iran Ministry of Energy decided to implement FAHAM (IRAN Smart Metering) Project in order to optimize energy consumption. Accordingly, electric distribution companies have a key role to achieve the defined goals by implementing smart metering, electronic technologies, advanced telecommunications equipment and consumer awareness and collaboration.

Smart meters are a clear demonstration of the new ICT infrastructure that has been developed to improve energy efficiency. Smart metering enables consumers to play a vital role in the performance of the electricity market. FAHAM has a great role in creating the necessary platform for the future implementation of the smart grid and provides the basis for the forward movement of the power supply such creating an intelligent system for management of electric distribution network or other Legacy system such as OMS, CIS, GIS and etc.



Site Supervision for 6th Pipeline between Ahwaz and Dehgan

Start date: 2018 **Finish date:** 2020 **Location:** Iran **Client:** Iranian Gas Engineering and Development Co.

Scope of work: SCADA Master Plan for GREC sub-transmission network and substations including:

- ▶ Development methods services and work organization
- ▶ Services for monitoring the supply of goods (procurement of materials, materials and equipment)
- ▶ Contract coordination and management services
- ▶ Supervision of designing the engineering department and design changes during the implementation of the project
- ▶ Service and planning work progress monitoring
- ▶ Building and installation supervision services
- ▶ Quality control services
- ▶ Monitoring services for commissioning, operation and delivery

Description: Consist of design, engineering, purchasing, and installation, setting up, delivery and temporary maintenance of NG-SDH equipment, network management, simultaneously network, IES access system, PABX Digital Telephone equipment, Hotline Telephone system, Radio microwave system, VHF/UHF radio system, tower, antenna, SCADA system, power supply equipment, and F.O installation.

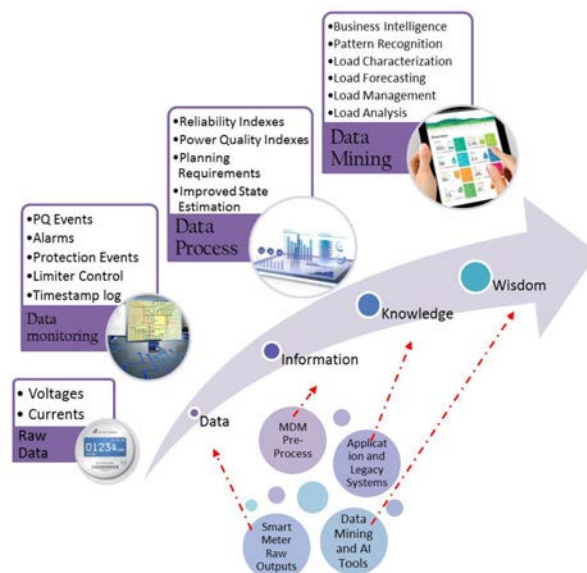
Consultancy Services and Supervision on Commissioning of the Sixth Data Center of Advanced Metering Infrastructure Project (FAHAM) in Esfahan Province Electrical Distribution Company

Start date: 2018 **Finish date:** 2019 **Location:** Esfahan, Iran

Client: Esfahan Electrical Distribution Company

Scope of work: Consultancy services and superior supervision on commissioning of the sixth data center in Esfahan and seven others distribution companies, supervision on operation of data centers, supervision on the performance of application systems, supervision on operation of the telecommunication network and IT system, supervision on the process of supplying, delivering and installing smart meters, verifying the contractors' invoices, development of smart grid roadmap, consultancy services on SOC and NOC deployment, and etc.

Description: Electrical distribution companies plays a key role in achieving smart electrical distribution goals, which is achieved through the use of smart metering, electronic technologies, advanced telecommunications equipment and consumer awareness and collaboration. High volume deployments of smart meters lead to big data challenges. So, design and commissioning of data centers is a critical concept. Monenco Iran, as consultant of AMI project in Iran is responsible to render consultancy services for implementation, supervision and administration for sixth data center in Esfahan Electrical Distribution Company.



Consultancy Services for Kish Submarine Fiber Optic Cable

Start date: 2018 **Finish date:** 2018 **Location:** Iran **Client:** Telecommunication Infrastructure Company

Scope of work:

- ▶ RFP Preparing based on engineering principles and standards for the preparation and implementation of a 24 core submarine fiber optic cable for Kish Island to the mainland
- ▶ Providing design
- ▶ Implementation and supervision instructions
- ▶ Identifying contractors
- ▶ Preparing a plan of contractor assessment
- ▶ Estimating the project cost
- ▶ Determining the methods of FAT
- ▶ Physical testing and delivery
- ▶ Presenting the methods of PAC and FAC
- ▶ Suggestions for project control software
- ▶ Suggestions for purchasing items that are required for maintenance period.

Description: Kish Island is one of the most important islands in Iran in terms of communication infrastructure. Therefore, presence of TIC Company in this Island is very important. In this regard, Monenco Iran will be responsible to design the submarine fiber optic cable and intends to prepare an appropriate RFP for selecting the best design and implementation method based on standards and environmental considerations.



Consultancy Services for Comprehensive Study of the Telecommunication System of Urumieh City Automation Network

Start date: 2018 **Finish date:** 2018 **Location:** Iran **Client:** West Azarbaijan Power Distribution Company

Scope of work:

- ▶ Telecommunication system study in regard of future development of the network
- ▶ Feasibility study of the resources limitation and geographical implementation
- ▶ Existing telecommunication network evaluation and provide new design to improve it
- ▶ Availability to synchronization with FAHAM project
- ▶ Basic and conceptual design should be based on international standards, etc
- ▶ Security requirement in different layers such as physical, data and application layer
- ▶ Provide Quality of service and service level agreement
- ▶ Monitoring system requirement and telecommunication network management

Description: Comprehensive study of the telecommunication automation system in Urumieh city in the field of primary distribution level (Feeders and middle pressure substations) should be done. Also basic and conceptual design should be provided based on national and international standards.

Updating Inter-City and International Switching Network

Start date: 2018 **Finish date:** 2019 **Location:** Iran **Client:** Telecommunication Infrastructure Company

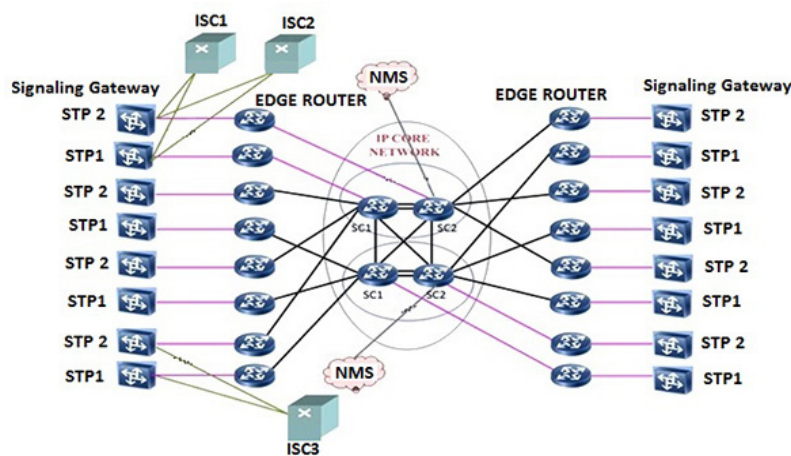
Scope of work:

- ▶ Data gathering and evaluation of the existing network and providing a report to the client (In this step, all aspect of the current network will be evaluated)
- ▶ Attending in several meetings to introduce all available and suitable technology to update network
- ▶ Select the best technology and present all advantages and disadvantages
- ▶ RFP Preparation
- ▶ Finalize RFP document based on client comments

Description: Telecommunications Infrastructure Company has enjoyed a valuable position in the country's telecommunications sector due to its role with the domestic operators of the country, as well as the gateway to international telecommunication & communications, which is up to date with the latest developments in the field of communication for it as a necessary and unavoidable need.

In order to optimize and efficiently exploit this potentially important telecommunication role, the 35-point master plan has been defined with the aim of updating and improving the inter-provincial audio communication network between operators and internationally. In this project, focusing on the telephone network of the country, the status of the infrastructure of communication infrastructure in communication transit, the need to change the architecture and structure of the infrastructure network, to compile and provide technical specifications and RFP to achieve the future network in the implementation of a comprehensive plan of 35 points.

1. Establishing the connection of internal access operators, i.e. the provision of a telephone transit service for different operators at two levels: a) Inter-provincial b) Inter-provincial and intra-operator
2. Establishing international communication for internal access operators



Engineering Services for Establishing Hormozgan AOC SCADA System and Dispatching Building

Start date: 2018 **Finish date:** 2019 **Location:** Iran **Client:** Hormozgan Regional Electric Company

Scope of work: Preparing basic design of AOC SCADA system and dispatching building for Hormozgan Regional Electric Company including:

- ▶ Identification and preliminary study
- ▶ Preparation of basic design
- ▶ Evaluation the needs of the regional Electric company for the required SCADA software modules
- ▶ Estimation project budget
- ▶ Preparation of tender documents
- ▶ Performing tender procedures and Contractor selection
- ▶ Project supervision services

Description: The main purpose of this project is to establish the necessary SCADA system in order to help operate growing AOC network and sub-stations. Therefore, HREC intends to establish the AOC center and is planning to construct necessary control centers and prepare prerequisites of the substations to make all the sub-transmission observable. In this project, Monenco Iran is responsible to render SCADA system basic design, cost estimation, tender evaluation and site supervision services.



Engineering Service for Hormozgan Medical Faculty

Start date: 2018 **Finish date:** 2019 **Location:** Iran **Client:** Hormozgan University of Medical Sciences

Scope of work: Preparing an executive plan including performing technical calculations and preparing plans, providing technical specifications, cost estimation of operation and preparing work schedules.

Description: Providing consulting and engineering services for Hormozgan University of medical sciences. This project includes designing Faculty of Paramedicine, School of Health and Amphitheater.



Engineering Services for Tehran Dispatching Building

Start date: 2018 **Finish date:** 2019 **Location:** Iran **Client:** Tehran Regional Electric Company

Scope of work: Data gathering including weather condition and solar radiation, Designing the terms and conditions of the architecture building, Study of building materials and construction methods, evaluation facilities and equipment required, Preparing a schematic plan and preparing a report, Preparation of technical and executive plans, Preparing tender procedures and Contractor selection.

Description: Today, Dispatching centers play an important role in power system operation. In this project, Monenco Iran is responsible to study the existing condition including ground and weather, prepare basic design of the building considering client comments and in final stage, prepare plans and reports.



Engineering Services and Supervision for IKA Airport City Dispatching System

Start date: 2018 **Finish date:** 2019 **Location:** Iran **Client:** Imam Khomeini Airport Town Co.

Scope of work: Consultancy services on Dispatching and smart city electricity network including:

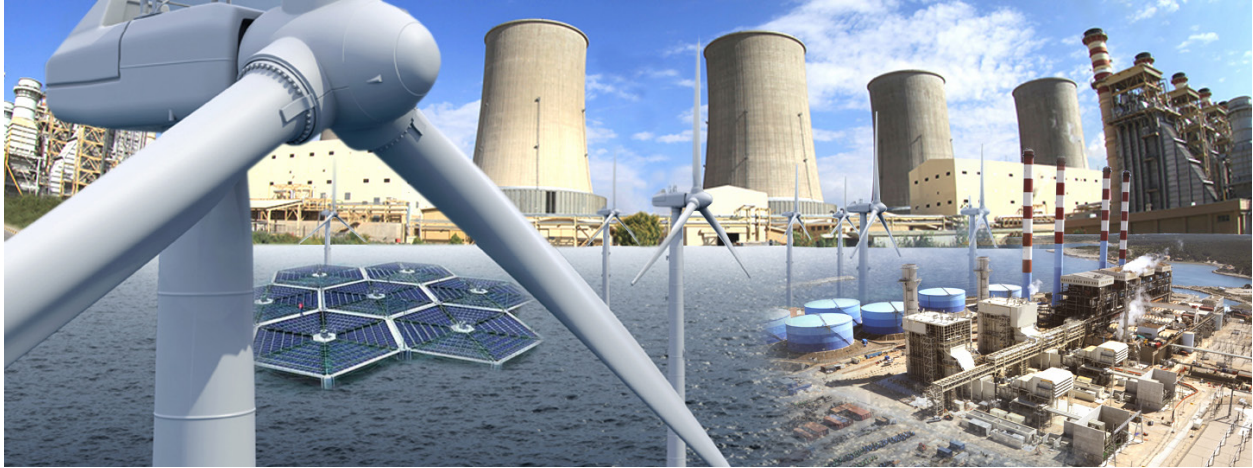
- ▶ Control and supervision of feeders in power substations
- ▶ DG Remote control
- ▶ Establishment of distribution management system (DMS)
- ▶ Establish a telecommunication platform for various purposes
- ▶ Record electricity consumption and remote control of subscribers
- ▶ Substation supervision with CCTV system
- ▶ Complete the fire alert system
- ▶ Establish telephone communication between substations
- ▶ Perform smart light system

Description: In order to achieve a modern grid with control capability it is mandatory to use the DMS and make electricity network as an observable system to improve the system performance. In this project, the main peruse is to establish distribution automation system and dispatching center for IKA.



Power Generation Division

Power Generation Division covers all types of power generation projects from Combined Cycle, Thermal Power Plant to Renewable and CHP, CCHP. More than 55,000 MW power generation projects have been Engineered, Designed, and Supervised by this department including 19,000 MW Gas Turbine and 33,000 MW Combined Cycle Power Plants. Also feasibility studies of more than 3000 MW Thermal Power Plants have been done by Monenco. In 2018, Monenco Iran was involved in 5500 MW power generation projects globally.



Desalination

The desalination plants for supplying potable and industrial water are frequently constructed as integrated part of power generation and sea water desalination plants. In this context it is very important to choose and optimize the most appropriate plant configuration and technology for the desalination process. This applies in particular to privately financed projects in public-private partnership models. That is why Monenco always designs such facilities individually to best meet the specific project requirements. This includes both processes for sea water desalination as well as raw water treatment and also post-treatment and/ or conditioning of product water according to the relevant requirements.

Consulting Services

Monenco renders consultancy services as owner engineer for power plant projects. As a consultant the scope includes: review of design & drawing as submitted to client for approval, engineering & project management, supervision of construction, installation, testing, commissioning, quality control, dismantling & disposal procedures and other activities throughout pre-construction/ construction/ commissioning stages of project. Supervision of all activity in the site such as site leveling, excavation, foundation, steel structure, concrete structure, welding, test of material and equipment, piping, cabling, termination and etc.

Wastewater Streams Recovery and Reuse

Due to lack of available potable water resources in the most parts of Iran, arid and semi-arid climate in our country, also for the sake of protecting and preserving the environment from pollution, using our available experiences and technologies for recovery and reuse of wastewaters in industrial plants as well as sewage recovery would be very applicable. Based on that, Monenco started participating in this market by rehabilitation and redesign of waste water treatment plants in old industrial and power plants.

Combined Cycle Power Plants

Due to economic and environmental concerns, there is general tendency towards constructing combined cycle power plants or converting gas turbine power plants into combined cycle power plants, to increase efficiency. Monenco is a pioneer company in offering engineering and consultancy services for different modules of combined cycle power plants.

Feasibility Studies

To start a business, there is a need for insight and vision in terms of the viability of the proposed project concept. Most rational decisions, taken either by existing or aspiring entrepreneurs to make a business investment, are preceded by an investigation of the feasibility of the project. The analysis of the project involves a certain number of stages also some parameters and elements need to be analyzed in order to make decisions about the viability and direction of the business. In Monenco, we have an expert team for the technical and economic feasibility studies of the projects in all fields.

Main Cooling System Modification

The purpose of Main cooling system Modification is reducing water demand of cooling system. For modification power plant cooling system, Hybrid system (dry/wet cooling system) should be applied. The hybrid system cooling system consists of a Heller type_ dry cooling tower which is connected to the CW (Cooling Water) circuit, downstream of the turbine dry tower. Monenco has been started design of main cooling system modification since 2016.

Gas Turbine Power Plants

Currently a significant fraction of electrical power in Iran is generated through gas turbine power plants and this is growing rapidly. Monenco has long experience of offering engineering, design and consultancy services for gas turbine power plants.

Renewable/Green Energies & Distributed Generation

Monenco actively participates in eco-friendly and clean energy projects such as renewable energy based generation (wind power plants, PV power plant, waste to energy, and etc.) and distributed generation with use of combine cooling, heating and power generation (CHP/CCHP) and diesel generators. We are well aware that protecting and preserving the environment is both a social responsibility and a crucial element to sustainable development. The renewable energy generation and distributed generation in Iran is increasing with a significant rate and this can be seen as an emerging market for Monenco. Monenco started participating in this market since 2009.

Repowering

Monenco participates in studying and rendering engineering services in repowering projects of existing thermal power plant not only for extending the lifetime of existing plants but also for reducing the life-cycle costs in order to remain competitive in comparison to new power plants. Repowering targets existing thermal power plant under certain conditions to make such an effort viable for competitive power generation costs. Monenco started to study different thermal power plants in Iran to fulfill the goal of modernization and repowering in order to increase the economics and dispatch ability of existing power assets.



Articles and Technical Reports

- ▶ Review on physicochemical characteristics of groundwater in Iran and other countries and fingerprinting of their changes in GIS software
- ▶ Definition of the project area for sustainable development (with water use approach)
- ▶ Investigating the Project Risks for Quality Study of Groundwater
- ▶ Evaluation of Groundwater Quality Using Groundwater Quality Index (GWQI) and Other Parameters by GIS Software around Mamlou Dam (Iran)
- ▶ Introduction to some processes as Reverse osmosis for chemical drainage treatment in an electrical power plant
- ▶ Water management by change in Condensate polishing plant system in an electrical power plant
- ▶ Study on internal and external conventions about environment and role of power plants as air pollution source
- ▶ Study on air pollutants removal methods in power plants
- ▶ Investigation of Removal Scheme of the Fire Ash Deposit from the Heating surface of Boilers to Increase the efficiency of the power plant
- ▶ Investigation of Changing the Method of Boiler Water Treatment with Film Forming Amine to Prevent Boiler Corrosion
- ▶ Investigation of Prevent Scheme of Energy Loss in HRSG due to Hot Air Leakage from diverter damper
- ▶ Assessment of GSHP Installation in Buildings
- ▶ Energy Storage Systems (With Renewable Energy Approach)
- ▶ Chapter of handbook: The Application of Membrane Bioreactors (MBR) for the Removal of Organic Matter, Nutrients, and Heavy Metals from Landfill Leachate Doi

Major Ongoing Projects

Technical and Financial Feasibility Study and Met Mast Installation Supervision for Milnader 50 MW Wind Power Plant

Project type: Consultancy and Supervisory Services **Start Date:** 2018 **Finish Date:** 2019

Location: Sistan and Baluchestan Province **Client:** MAPNA Renewable Energies Generation Co.

Scope of work:

- ▶ Selection of Proper Polygon for Wind Power Plant
- ▶ Selection and Installation of Met Mast Report
- ▶ Supervision on Met Mast Installation
- ▶ Supervisory Services During Data Collection Period
- ▶ Feasibility Study of Selected Site
- ▶ Financial Feasibility Study of Wind Power Plant

Description: Milnader zone is located in the northwest of Zabol, Sistan and Baluchestan province. This zone is near the Afghanistan border and have high wind potential. MAPNA Renewable Energies Generation Co. intends to select proper polygon for 50 MW wind power plant construction. However, after met mast installation and data gathering for one year, technical and financial feasibility study will be carried out. Then, if feasibility of this site is proven, 50 MW wind power plant will be constructed in this site.



Consultancy Services and Site Supervision for Tizbaad 99.2 MW Wind Farm

Project Type: Consulting and Site Supervision **Start Date:** 2018 **Finish Date:** 2019

Location: Razavi Khorasan Province **Client:** Tizbaad Niroom Co.

Scope of work:

- ▶ Supervisory Services
- ▶ Design Review of Basic and Detail Design Documents
- ▶ Site Supervision Including Supervision on Procurement, Construction, Pre commissioning, Commissioning, Factory Acceptance Tests (FAT) and Site Acceptance Tests (SAT)

Description: The project is located in Khaf which is a county in Khorasan Razavi Province in Iran. This project includes 31 sets of Siemens 3.2 MW wind turbine generators model Siemens SWT-3.2-113 IEC IIB with total installed capacity of 99.2 MW. First, this wind farm will be connected to 33 KV / 132 KV wind farm substation and then, through a double circuit transmission line will be connected to 400 KV substation. Monenco Iran is responsible to review the basic and detail design documents and provide site supervisory services.

Master Plan for Developing Environmental Friendly Technologies in Iranian Power Sector

Project type: Environmental Data Gathering for Power Plants **Start Date:** 2017 **Finish Date:** 2018 **Location:** Iran **Client:** TEPSCO (Tokyo Electric Power Services Co., Ltd.)

Scope of work: Environmental pollution data collection of ten power plants including water, air and noise pollution, together with a summary of socioecological studies for each region.

Description: The project includes data collection of the existing power plants to be carried out in two sections as below:

Section I:

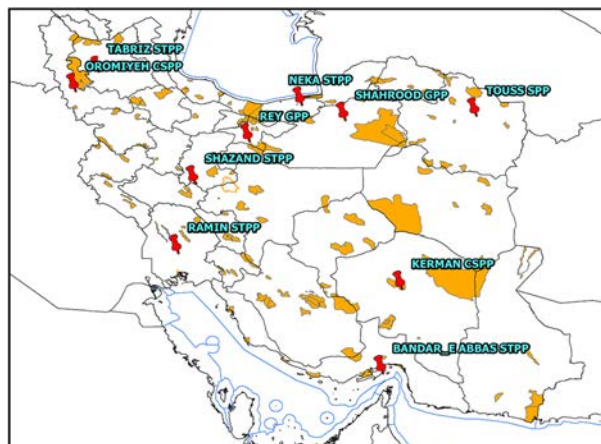
Data collection of the existing thermal power plant in Iran (for conventional fossil fueled conventional thermal power plant, combined cycle power plant and gas turbine simple cycle power plant). They are assumed approximately 10 thermal power plants owned by TPPH (Thermal Power Plants Holding Company):

1. Plant Data (Name, Output, Type, Owner, Location, Completion year, Major equipment Manufacturer, etc.)
2. Operating data
3. Design Parameters of Major Equipment

Section II:

Natural and Social Environmental Survey as follow:

1. Collecting Information of relevant laws and regulations including EIA procedure
2. Collecting Information of current status of natural and social environment
3. Collecting Information regarding the existing power plants
4. Collecting Information of PCB (Polychlorinated biphenyls)
 - Related Laws and regulations of PCB
 - Related Administrative organizations (Name, Structure, Role of government, local authority)
 - Licensed freight companies that are able to carry PCB products etc.
 - PCB treatment facilities (Company name, Address, URL, Organization, Equipment, Treatment-capacity, storage status, etc.)



Consultancy Services for Design and Optimization of Diesel Generators Layout

Project Type: Consulting and Engineering Services **Start Date:** 2018 **Finish Date:** 2019

Location: Kermanshah Province, Iran **Client:** West Regional Electric Company

Scope of work:

- ▶ Drawing Main Distribution Network Documents of West Regional Electric Company
- ▶ Optimal Grid Connection Scheme of Diesel Generators
- ▶ Providing Sound Level Reduction Plan of Diesel Generators
- ▶ Providing Tender Documents for PC Contractors

Description: West Regional Electric Company is located in Kermanshah and contains an official building with five floor and one basement. The electricity of this building is provided by two main transformers and two diesel generator (85 KVA and 205 KVA) as emergency source. The 85 KVA and the 205 KVA diesel generators are located in basement and yard area, respectively. Considering the request of Ministry of Energy to support the electrical grid during the peak hours, besides using PV power plant, West Regional Electric Company decided to supply part of its consumption during peak hours from available diesel generators. In this project, Monenco Iran will consider sound level reduction of diesel generator located in the yard, available capacity of diesel generators, synchronization and optimization of diesel generators capacity and etc.



Consultancy Services for Designing A 500 KW Grid Connected PV Power Plant

Project Type: Consultancy and Engineering Services **Start Date:** 2018 **Finish Date:** 2019

Location: Tehran, Iran **Client:** Telecommunication Infrastructure Company

Scope of work:

- ▶ Site Study and Preliminary Feasibility Study
- ▶ Technical Studies
- ▶ Grid Connection Studies
- ▶ Financial Studies
- ▶ Detail Design
- ▶ Providing Tender Documents
- ▶ Training Courses

Description: Based on the approval of the council of ministers, government offices and public services must provide 20% of their electrical energy consumption from renewable energy resources.

Accordingly, the feasibility study for more than five separate locations have been done and finally, the best location for construction of PV power plant in order to provide 20% of total energy consumption from PV panels have been selected. This plant will be connected to internal electrical grid of this company.

In this project, Monenco Iran is responsible to provide feasibility study, detail design, financial study services and tender documents from selection of PC contractor.

Thermal Power Plants Site Selection Studies in 20 Years Horizon

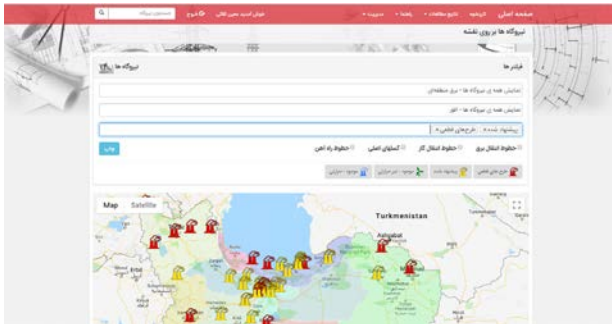
Project Type: Consulting and Engineering Services **Start Date:** 2016 **Finish Date:** 2018 **Location:** Iran
Client: TPPH Company

Scope of work:

- ▶ Determining suitable locations for the establishment of thermal power plants (steam, gas and combined cycle) with regard to various parameters using Geographic Information System (GIS) in all regions of the country
- ▶ Prioritization of suitable sites for construction of thermal power plants in the country with a 20-year planning horizon in three different periods of short-term, medium-term and long-term
- ▶ Preparation of the sites' database in GIS and Identification full details of each

Description: The main purpose of this project is to provide a comprehensive database for Iran Ministry of Energy and Thermal Power Plants Holding Company. In this project, proper locations for construction of new plants will be determined in a 20-year horizon by exchanging the electricity generation and consumption in Iran network. For each of the primary structures, 14 important factors must be considered. As a result, a complete database (Atlas of Power Plant) with full specifications of each of them in the GIS will be provided. In addition, during the work, the status of transmission and substations also a list of power plants that are going to be retired in near future will be updated.

Outputs and Results in special software: Providing a software package to access project information in the Web. All information collected on the candidate sites and their 14 different reports, also the latest state of the existing power plants, is available in this software. Also, GIS maps of 230 and 400 kV power transmission network, gas network and rail network are also available in this software. This package has been linked to Google Map and all of the power plants and information loaded are in their actual coordinates.



Engineering and Site Supervision of Pasargad Qeshm Combined Cycle Power Plant

Project Type: Combined Cycle Power Plant **Start Date:** 2019 **Finish Date:** 2021
Location: Qeshm Island, Iran **Client:** Thermal Power Plant Holding Company
Nominal Capacity: 500 MW (1 GTG * 320 MW + 1 STG * 180)

Scope of work: Engineering (Basic Design, Detail Design, Plant and Overall Engineering) and site supervision

Description: The plant is located in Qeshm Island in Hormozgan Province consisting of gas and steam generation portions; One(1) cycle Class F GTG Ansaldo type + one(1) STG, one(1) HRS generator sets & main and auxiliary cooling system ACC Type & 230 kV AIS substation.

Design of Qeshm Combined Cycle Power Plant

Project Type: Combined Cycle Power Plant **Start Date:** 2016 **Finish Date:** 2019

Location: Qeshm Island, Iran **Client:** Energy Gostra Qeshm Company

Nominal Capacity: 480 MW (2 GTG * 160 MW + 1 STG * 160) +8000 m3/day desalinated water by MED

Scope of work: Basic Design, Detail Design, 3D Modeling of Plant and Overall Engineering

Description: The plant is located in Qeshm Island in Hormozgan Province consisting of gas and steam generation portions; Two(2) cycle Class E GTG MAPNA + one(1) STG, Two(2)HRSG generator sets & main and auxiliary cooling system once-through Type &MED type desalinated water system & 230 kV GIS substation.



Design of Rudshour Combined Cycle Power Plant

Project Type: Combined Cycle Power Plant **Start Date:** 2017 **Finish Date:** 2019 **Location:** Saveh, Iran

Client: Tolid Va Gostaresh Bargh Amirkabir **Capacity:** 1132 MW (3 GTG+1 STG)

Scope of work: Basic Design, Detail Design, Interfacing Review, 3D Modeling of Plant and Site Technical Office Coordination.

Description: The plant is consisting of 1 steam unit. The portions of combined cycle power plant each consists of three (3) HRSGs, one Class F Siemens steam turbine generator sets, main & auxiliary cooling system ACC Type and 400 kV GIS substation for the existing simple cycle Class F gas turbine power plant including 3 GTG units to be converted to the combined cycle power plant in “3+1” configuration for the Rudshour site. The purpose of this project is to increase the efficiency of Rudshour Combined Cycle Power Plant to 58%.



Hormozgan (Sirik) 1400 MW Thermal Power Plant

Project Type: Combined Cycle Power Plant **Start Date:** 2017 **Finish Date:** 2022 **Capacity:** 1400 MW

Location: 4* 350 MW Supercritical Conventional Thermal Power Plant **Client:** TPPH Company

Scope of work: Design Review, Supervision & Control for Construction of 1400 MW as well as 400 KV Substation

Description: In this project, the four units of Hormozgan Thermal Power Plant and 400 KV gas insulated substation will be constructed, on a turnkey basis.

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 general the project includes design and engineering services and necessary studies, project control and management, preparation and procurement, manufacture and/or procurement of required equipment (from main equipment manufacturers in Russian, Western Europe, Japan, USA, and Iran) including boiler, turbine, thermal cycle, electrical system, control system and control instruments, factory tests, export packing, insurance, marine and inland transportation, customs clearance, transportation through the territory of Iran, unloading, handing over to site, site mobilization, temporary ware housing and necessary protection thereof, execution of civil work, including test of soil mechanics and topographical surveying, earth works, perimeter wall building, green area, landscaping, industrial and nonindustrial buildings, and as a whole, all works required for construction of 1400 MW TPP and 400 KV GIS.



Study on Water Supply in Polyethylene Plant of Kazeroun Petrochemical Company

Start Date: 2018 **Finish Date:** 2018 **Client:** Kazeroun Petrochemical Company

Scope of work: Technical and economic assessment of water transmission, Technical and economic evaluation of the final treatment plant to meet the requirements of the petrochemical complex, Water market studies, contractual provisions for different scenarios, and providing financial model

Description: In order to supply 5 million cubic meters per year from two different sources, 3 main following steps were done:

Section I: Technical and economic assessment of water transmission from two different sources:

Water transmission in two scenarios (Nargesi Dam/Wastewater Treatment Facility of Kazeroun City) to the plant were studied. The following activities were done:

Mapping and designing the route, Conceptual design of the pumping stations and pipelines, land exploitation, and estimation of the cost of main transmission equipment. After the conceptual design of transmission line, its cost was evaluated and the best option was selected.

Section II: Technical and economic evaluation of the final treatment plant to meet the requirements of the petrochemical complex:

The conceptual design of pretreatment and advanced treatment systems were carried out for both water resources (scenarios). Technical and economic studies for both scenarios were examined and finally the preferred option was selected.

Section III: Water market studies, contractual provisions for both scenarios, and providing financial model:

With regard to the preliminary contracts with two water suppliers, the water price was evaluated and the cost of treated water per a cubic meter (including water price, transmission, and treatment) was calculated in both scenarios. Finally, a financial model was provided to select the best option.

Consultancy, Engineering and Site Supervision for TPPH Administration and Parking Buildings

Project Type: Engineering and Site Supervision **Start Date:** 2018 **Finish Date:** 2019

Location: : Tehran, Iran **Client:** Thermal Power Plant Holding Company

Scope of work:

- ▶ Engineering (Architectural Conceptual, Basic & Detail Design) and Site Supervision
- ▶ Engineering (Interior Detail Design) and Site Supervision
- ▶ Engineering (HVAC & Plumbing Conceptual, Basic & Detail Design) and Site Supervision
- ▶ Engineering (Electrical Conceptual, Basic & Detail Design) and Site Supervision
- ▶ Preparing tender documents and bidding procedure, bidders' assessment and selection
- ▶ Preparing contract draft and signing the contract
- ▶ Purchases Consulting services

Description: The admin project is 3 stories building and 7800 m2 in Tehran city to be constructed for TPPH as central office. The parking project is 9 stories building and 14500 m2 in Tehran city to be constructed for TPPH.



Oil & Gas Division

Oil & Gas and Petrochemical consultants across the globe are looking for timely solutions to help them address the current challenges of a global economic down turn, decline the overall margins and increased emphasis in process safety compliance.

Monenco Iran offers innovative engineering solutions that provide unique answers to these challenges in areas of auditing, metering, upstream and process safety management consulting of petrochemical plants, oil & gas complexes and transmission lines. Our technical team has delivered leading methodologies, best practices and robust software solutions that reflect Oil & Gas Industry insights and vast experience in our core competencies. We are, and will continue to be, second to none in understanding our client's needs and the most worthy steward of their resources.

Monenco Iran benefits from participation and cooperation with prominent international and regional engineering consultancy companies in joint ventures to render consultancy and engineering services abroad in the field of Oil & Gas. At the same time, this partnership provides broader opportunities for serving domestic clients with higher quality. Monenco, by having the major oil and gas projects in the work history has established an outstanding presence in this industry and expanded the scope of services in order to spread its presence in this market. Entering into the new target markets such as GTP, GTO and GTA in petrochemical plants, feasibility study for Bio-ethanol plants, upstream oil projects, Pipe line, Mineral projects and Know How Transfer have been the most remarkable achievements for the department in 2018. Engineering and consultancy of new petrochemical complexes with gas as their feed and renovation and optimization of existing refineries are the targets of Oil and Gas Division. Challenging with our international competitors all around the world in the fields of oil and gas transportation, LNG storage and regasification terminals and small scale refineries-mini refineries-are extended global services of this division.



Technical Reports and White Papers

Oil & Gas Division has published 4 technical reports and 3 International articles and papers in 2018 to introduce new technologies & systems to its clients. Below is the list of mentioned reports;

Technical Reports

- ▶ Introduction of Geo Scan method in Mine Exploration
- ▶ Smart Wireless system in OIL & GAS plants
- ▶ Gas Condensate fractionation in Visbreaker unit
- ▶ Study on production & sale of Heavy Fuel Oil and recommendation for future challenges

Articles

- ▶ A Review of Energy Storage Technologies for Sustainable Renewable Energy Integration
- ▶ Vaporizers used in LNG Regasification process
- ▶ Geological Characteristics of Coal Layers and Resource Estimation, Estel-Kenar, Central Alborz, Iran

MC Services and Site Supervision of Basht Fuel Bioethanol and By-product Production

Start Date: 2018 **Finish Date:** 2021 **Location:** Basht, Kohgiluyeh and Boyer-Ahmad Province, Iran
Client: Zagros Green Fuel Development Company (GSZ) **Capacity:** 200,000 Lit/day

Scope of work: Contributing PMC services such as:

- ▶ Providing RFP & Process Engineering Licensor Company
- ▶ Providing Tender Documents for Selection EPC Contractor
- ▶ Supervision of Basic & Detail Design & Procurement engineering Services
- ▶ Supervision & Consultancy Services for Construction phase in site
- ▶ Supervision of Commissioning & operation phase in site

Description: The main purpose of this project is to build a green field facility for Ethanol production (200,000 liter/day at 99.8% volume) located in Kohgiluyeh and Boyer-Ahmad Province in Iran. Basht Bioethanol production project is considered as the second project in Iran after Kermanshah bioethanol production project. As the bio-fuel will be used as a supplement/improver of gasoline in the future, gasoline consumption or gasoline petrochemical supplements elimination (especially MTBE) will be reduced. However, reduction of pollution is one of the most important benefits and advantages for the environment and public health.



Consultancy and Design for Fuel Tanks in Kharg Power Plant

Start Date: 2019 **Finish Date:** 2019 **Location:** Kharg Island, Iran **Client:** Fars Regional Electricity Company
Capacity: 2 Million Liter Storage Tanks

Scope of work: Engineering works for construction of two storage tanks with capacity of 2 million liter for each as following:

- ▶ Mechanical documents and drawings
- ▶ Design of civil works including pipe sleepers, Pipe supports, tank foundation and Dike walls
- ▶ Design of firefighting and cooling system
- ▶ Preparation of tender documents and evaluation of bids

Description: Kharg Island Power Plant includes 2 distinct method to generate power and electricity; 5 diesel generators with capacity of 3MW and a 25MW turbine.

Both of them are fed with gasoline from out-of-site storage tanks. The required storage tank does not exist in the power plant site. Therefore, in the peak conditions with high demand of power, an exceeded pressure would be on fuel supply system. Thus, storage tanks need to be constructed to avoid any disruption. Moreover, by constructing storage tanks the power plant will have an independent fuel supply chain and will be able to service

Engineering Services for Danan Oil Field Development

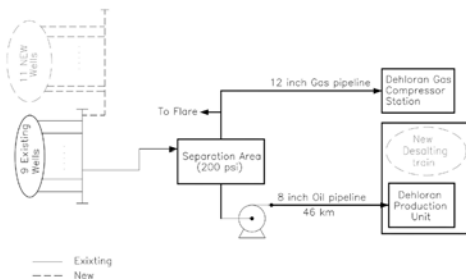
Start Date: 2019 **Finish Date:** 2021 **Location:** Iran, Dehloran **Client:** Iranian Central Oil Field Company (ICOFC) **Capacity:** 11 new wells each, 5000BPD

Scope of work:

- ▶ Providing site data gathering
- ▶ Endorsement of existing documents
- ▶ Feed design
- ▶ Detail design
- ▶ Procurement Services
- ▶ Site support services

Description: Danan Oil Field is located in 80 Km northwest of Andimeshk and 30 Km south of Dehloran cities in Dezful. Dehloran field is located at 180 km western north of Ahwaz and has 58 km distance from Cheshmeh-Khosh production unit. The scope of this project consists of engineering, procurement, drilling and related activities, construction, pre-commissioning, commissioning, start-up and performance test and geo-physics of Danan Oil Field.

Wellhead facilities for 11 new wells in Danan Field includes 2 skid mounted Chemical Injection Packages for each well, totally 22 Nos. 6" crude flow lines connects the 11 new wellheads in Danan field to the existing Danan Manifold (total 55 km). Power overhead line from Danan Manifold to the new wellheads is also in the scope of work. Dehloran new equipment includes one complete crude oil desalting unit with capacity of 10000 STBD and a water bath heater (WBH) to heat the crude for desalter in the existing dehloran desalting plant.



Technical and Site Supervision Services for Gas Supply and Distribution Projects in Tehran

Start Date: 2018 **Finish Date:** 2019 **Location:** Tehran, Iran **Client:** Tehran Province Gas Company

Scope of work: Technical services and supervision for gas supply and distribution projects including industrial, urban, rural and building projects in Tehran Gas Distribution Company operation department in accordance to NIGS standards;

- ▶ Branches and distribution network construction projects with steel and polyethylene pipes, gas injection, industrial and non-industrial commissioning
- ▶ Constructing, installing and commissioning gas pressure reduction stations and cathodic protection
- ▶ Building and ancillary facilities projects related to gas pressure reduction stations, cathodic protection and operational buildings
- ▶ All operations required for the above mentioned construction and operation
- ▶ Land acquisition, distribution, domestic and industrial branches. Removal of old domestic globe valves and installation of valve pits. Refurbishing of gas industrial land, urban pressure reduction stations (CGS)

Description: Considering Tehran Province Gas Company goals as one of the subsidiaries of National Iranian Gas Company (NIGC) intended to manage, design and implement gas supply and distribution projects in Tehran province including industrial, urban, rural and building projects in accordance to NIGC standards. The main purpose of this project is safe distribution services of natural gas as a clean fuel. Providing welfare and increasing consumer satisfaction are the benefits of this project.

Supervision Services for Tehran Gas Mechanical Project

Start date: 2018 **Finish Date:** 2020 **Locatin:** Tehran, Iran **Client:** Tehran Province Gas Company

Scope of work:

- ▶ Design, Consultancy and Site Supervision Services on Installing Valves, Actuators, Accelerographes (Sensor and Digitizer) and other relevant Equipment in DRS, CGS and Super Block Stations
- ▶ Supervision services for Procurement Stage
- ▶ Tehran Gas Network Risk Analyzing and assessment Services and Specifying Locations with High Seismic risk
- ▶ Algorithm Preparation for Closing Shut-off Valves based on Tehran Sub-Structures and Structures of Tehran Gas Network Facing Probable Earthquakes
- ▶ Starting up a Mobile Monitoring Program for Continues Supervision on all Equipment Condition
- ▶ Preparing of PC Tenders

Description: Earthquakes cause huge damages to gas networks. However, due to high pressure lines this problem is even worse in Tehran Gas Network. Earthquake causes leakage and heavy fires destroy sub-structures and damage citizens.

The main purposes of this project is to find high risk locations, installing earthquake sensors and shut-off valves on Tehran Gas Network in order to manage earthquake crisis. In this project, Monenco Iran is in charge of design, consultancy and supervision services in all stages of this project including engineering, procurement and construction.



Structural & Mechanical Rehabilitation Studies for T.B.S Gas Station of Alborz Gas Company

Start date: 2019 **Finish Date:** 2019 **Locatin:** Alborz, Iran **Client:** Alborz Province Gas Company

Scope of work: Rehabilitation Studies for T.B.S Gas Station including:

- ▶ Rapid Visual Screening of Buildings for Potential Seismic Hazards
- ▶ Determine Seismic Performance Levels for Structural and Nonstructural Elements
- ▶ Choosing Rehabilitation Objectives including Basic Safety Objective, Enhanced Rehabilitation Objectives or Limited Rehabilitation Objectives
- ▶ Obtain As-Built Information, Building Configuration, Component Properties, Site Characterization and Geotechnical Information and Adjacent Buildings Properties
- ▶ Modeling and Analysis Existing structure. The analysis shall address the seismic demands and the capacity to resist these demands for all elements in the structure.
- ▶ Evaluation of Existing Condition by Using Rehabilitation Measures
- ▶ Choosing Rehabilitation Strategy Based on Analysis Results, Such as Local Modification of Components, Global Structural Stiffening, Mass Reduction, Seismic Isolation and
- ▶ Preparing Construction Quality Assurance Plan and Requirements
- ▶ Preparing Technical Reports including Material Properties, Construction Method and General Requirements
- ▶ Preparing Construction drawings and Material take off (M.T.O)
- ▶ Preparing Tender document



Description: This project was defined by considering Alborz Province Gas Company goals as one of the subsidiaries of National Iranian Gas Company (NIGC) in terms of seismic rehabilitation of TBS gas stations, The main purpose of this project is to provide operational level performance in post-earthquake condition, reduce damage of seismic hazard and safe distribution services of natural gas in Alborz province urban areas in accordance to NIGC standards.

Consultancy & Site Supervision Services for Gas Projects in West Azerbaijan

Start date: 2018 **Finish Date:** 2021 **Locatin:** West Azerbaijan, Iran **Client:** West Azerbaijan Gas Company

Scope of Works:

- ▶ Consultancy Services
- ▶ Site Supervision Services Including Planning, Assurance and Quality Control
- ▶ Contractors and Vendors Assignment Services
- ▶ Construction and Installation Services
- ▶ Commissioning, Experimental Operation and Delivery to the Beneficiary Services
- ▶ Legal Affairs and Contracts
- ▶ HSE Control
- ▶ Preparing of PC Tenders

Description: This project involves consultancy and site supervision services for installation, operation and commissioning of gas pipe line and distribution networks including steel pipeline junctions, gas pressure reduction stations, mechanical and foundation works.

Tasks are included as follow:

- ▶ Supervision on the gas transmission projects
- ▶ Supervision on the civil projects (residential and commercial)
- ▶ Supervision on the gas transmission to the industrial, commercial and residential complexes



Designing Fire Detection System in Chabahar Port

Start Date: 2018 **Finish Date:** 2019 **Locatin:** Chabahar, Iran

Client: Sistan and Baluchestan Province Department of Ports and Maritime Organization

Scope of work: Consultancy services for the first and second stage studies on the construction of fire detection system in port facilities as a network and connecting them to fire stations of Shahid Beheshti and Kalantari ports

Description: This project is to design the fire alarm system for industrial and non-industrial sites in order to comply with the existing standards and prevent fire and financial damages.

The design of this system is wireless and is based on the ISA100 Standard.

Engineering and Site Supervision Services for Installation and Operation of Heavy Fuel Oil (HFO) Treatment System

Start Date: 2019 **Finish Date:** 2020 **Location:** Tehran, Iran **Client:** Mapna Group

Scope of work: Engineering and Supervision Service for Heavy Fuel Oil System Treatment

Description: To prevent turbine system damaging, it is required to control inlet Heavy Fuel Oil (HFO) impurities, specially sodium, potassium salts and vanadium contents. Main duty of Heavy Fuel Oil (HFO) Treatment unit is to reduce (Na+K) content to 0.5 ppm and inhibit corrosion effect of vanadium.

The principal cleaning technique is washing with water in two separation stages where the oil is washed and after the centrifugal separation impurities (salts) will be extracted from oil and gathered in residual water.

By injection the magnesium compounds into the oil flow, magnesium oxide will be formed during combustion, which will be combined with vanadium oxide. This Mg/V compound is high melting and non-corrosive.



Feasibility Study for debottlenecking of Besat Fuel Gas Letdown Station and Performing Relevant Feed

Start date: 2018 **Finish Date:** 2019 **Locatin:** Assaluyeh, Iran **Client:** Pars Oil and Gas Company (POGC)

Scope of work:

- ▶ Feasibility and conceptual Study
- ▶ Preparing of feed document for new Gas Pressure Reducing Station (GPRS)
- ▶ Preparing of feed document for Backup Fuel Gas Pipeline
- ▶ HAZOP & HAZID study
- ▶ Preparing of EPC tender document

Description: Natural gas as feed to central power plant of south pars is supplied from IGAT 4 pipeline at variable pressure and temperature.

The duty of GPRS is to supply fuel gas to power generation unit with stable pressure, acceptable outlet pressure and required quality.

Design capacity of existing GPRS is 300,000 Nm³/h, which will be treated in two 150,000 Nm³/h, while third 150,000 Nm³/h unit is standby.

As per contract, existing gas reduction station behavior during running time and troubles in operation and maintenance was discussed and alternatives to solve the problem was reviewed and technically preferred alternative selected.

As per feasibility and conceptual study report, it was decided to design one new run 300.000 Nm³/h independent stream to existing plant.

All required feed documents for new GPRS such as process, safety, piping, mechanical, instrument as well as electrical were prepared.

HAZOP and HAZID study for existing and new GPRS was performed and results implemented to related documents accordingly.

In addition for consideration of passive regulation, a new 16 inch underground gas pipeline was designed as a new GPRS feed.



Mining & Geology

Monenco Iran is committed to provide high quality services in the field of Geology, Exploration and Mining through its experienced staff also to establish cooperation with international well-known firms in the mentioned field. However, the services include: Geology, Exploration, Resource Geology, Geochemistry, Geophysics, Mining, Resource Estimate, Grade Control, Monitoring, Feasibility Studies, Soil Mechanics, Rock Mechanics, Open Pit Mine Design, Underground Mine Design, Mine Optimization, Environmental Studies, Mine Planning and Hydrology.

In addition, Monenco is equipped with sophisticated professional software such as Gemcom Surpac, Downhole Explorer, dataminestudio, FLAC, Gems, and UDEC and prepared to provide consultancy services in exploration and extraction of mineral deposits while partnering with highly skilled international companies by using modern equipment and machineries.

Introduction of New Technologies

Monenco as a consultancy company takes this responsibility to continuously update its knowledge. Therefore, several studies in related to the following fields were conducted and in the form of seminars, white papers presented to the clients, competitors and etc.

► Phosphoric Acid Production from Minerals

Phosphoric acid is an important intermediate chemical product. It is mainly used for the manufacturing of fertilizers. The aim of this study is the development of a new commercially competitive process for the production of concentrated phosphoric acid, where the following requirements must be fulfilled:

- A high grade the phosphoric acid
- Production high grade byproducts like phosphogypsum that it will be suitable for building purposes

▶ Laser Scanning System for Mine Survey

In mining operations determination block extraction in different period, geometry changes in place of extraction, volume of mineral depot, volume of waste depot, volume of waste depot are basis of mine design and planning. These works performed by manually surveying and followed by this method with human and system tolerance. As per contract, existing gas reduction station behavior during running time and troubles in operation and maintenance was discussed and alternatives to solve the problem was reviewed and technically preferred alternative selected.



Major Completed Projects

- ▶ Study and Detail Design of Pabdana Coal Mine in Iran
- ▶ Exploration engineering services and Supervision of in Central Alborz Coal reservoirs in Mazandaran-Iran
- ▶ Preliminary and Detailed Exploration Study of Iron Ore Anomalies in Yazd-Iran
- ▶ Consultancy Services and Design of Coke Plant in Central Alborz Coal mines in Mazandaran-Iran
- ▶ Coal Exploration activities in Mazandaran, Zirab
- ▶ Detailed Exploration of Baba Ali 2 Iron Ore Deposit in Hamadan
- ▶ Detailed Exploration of Galali 2 Iron Ore Deposit in Kurdistan
- ▶ Engineering Services, Site Supervision, Detailed Studies and Exploration Drilling of Water, Mining and Power Plant in Mazino-Tabas Coal Mine

Engineering and Supervision Services for Hydrated Calcium Carbonate Plant in Lar Mountain

Duration: 12 Months **Location:** Yasoj, Iran **Client:** Iran Minerals Production and Supply Co. (IMPASCO)

Scope of Work:

- ▶ Prepare technical documents of contract and scope of work
- ▶ Prepare prescription of work circulation between contractor and client
- ▶ Checking and commenting basic and detail design
- ▶ Engineering procumbent services
- ▶ Pre shipment surveyor
- ▶ Test certificate in relation with test design parameters
- ▶ Supervision & consultancy services for construction phase in site
- ▶ Provisional operation period services

Description: Lar mountain in Charam province has many Calcium Carbonate mines. In order to best use of production of these mines, IMPASCO decided to establish a Hydrated Calcium Carbonate Plant with capacity of 30,000 tone/year. In this project, Monenco Iran is responsible to render design, engineering and supervising services for construction of the power plant.



Consultancy Services, Prospecting and General Exploration in Sabzevar Area

Duration: 24 Months **Location:** Sabzevar, Iran **Client:** Iran Minerals Production and Supply Co. (IMPASCO)

Scope of Work:

- ▶ Data gathering include satellite image (aster data), airborne geophysics, geochemistry study, geology map
- ▶ Compilation data for detecting promising area
- ▶ Design sampling (geochemical and heavy mineral samples)
- ▶ Geochemical exploration of stream sediments
- ▶ Analyzing samples (ICP,XRF,XRD)
- ▶ Lithology study (thine and Polish section of litho sample)
- ▶ Anomaly checking and litho geochemistry study
- ▶ Preparing Geology map in minimizations zone
- ▶ Preparing Exploration report in minimizations zone
- ▶ Final Report and Geo database in GIS

Description: This Exploration area is located between Neyshaboor and Shahroud and the south of Joghatay and Jovein and the North of Sabzevar with 4670 square kilometer. This area is and important mineral zone in Khorasan Razavi. The first phase of project is data gathering of latest studies and Compilation data for detecting promising area. Second phase of project is prospecting and geochemistry study in promising area after analyzing mineral samples. Finally, Monenco prepares exploration report and geodatabase in GIS format.



System and Energy Studies Center

Energy and System Studies Center (ESSC) as a special studies division in Monenco was established in 2008 in order to provide services based on the new business environment and to enhance its technical capabilities. This center by means of its talented experts and devoting efforts made it possible to take part in different consulting areas.

Activities of ESSC can be categorized into four groups as follow:

- ▶ Power System Studies
- ▶ Electricity Market and Economic Feasibility Study
- ▶ Energy System Planning
- ▶ Electricity Sector Strategic Planning and Management

Besides, ESSC has held different trainings, workshops and seminars to spread its achieved technical knowledge to everyone involved in Iranian power industry and other related industries.



Electricity Market and Economic Feasibility Study Group

Economic Feasibility Study and Electricity Market Group activities cover all consulting services in the areas of economic feasibility and market studies. These services are not limited to electricity industry and cover all industrial projects. Some of the major tasks of this section are economic feasibility study for investment projects, developing regulations related to the electricity market, electricity energy and services pricing, providing energy bidding strategy for private owners in the electricity market, competitive market analysis indicators, economic studies on electricity transit and exchange and studying and predicting the behavior of other market players. Moreover, this section has recently entered Stock Valuation area and public private-partnership and tried gaining experiences in the field of energy exchange, electricity market design, market policy and authority, market monitoring and organizations, etc.



Energy System Planning Group

Energy System Planning Group has been responsible for comprehensive study of energy (Electricity, Oil and Gas, etc.), studying the effect of economic, environmental, and social aspects of using new technologies to optimize and reduce energy consumption, establishment of energy management system, providing a road map for optimizing energy consumption in major processes, studies to identify bottlenecks and provide solutions to improve the energy consumption, energy auditing and proposing tactics to save energy.

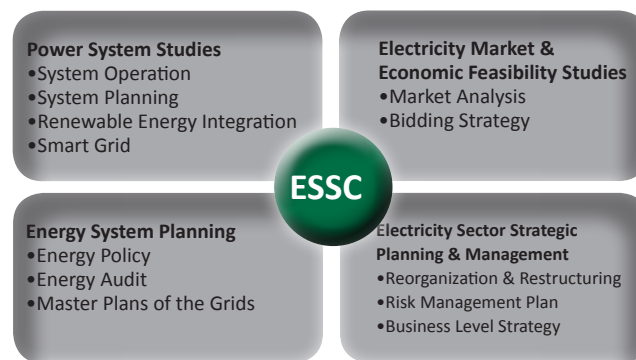
Electricity Sector Strategic Planning and Management Group

Strategic Planning and Management Group has been performing as a consultancy group to provide services in the areas of strategic planning and management, evaluation of effectiveness and efficiency and planning for cascading strategies in electricity sectors. Besides, this group has experiences in management processes, operational planning, evaluating performance of related companies and organizations and etc.



Power System Studies Group

Power System Studies Group as the main part of ESSC offers services and activities related to the generation, transmission and distribution sectors. It provides consultancy services for feasibility studies of power plants, analyzing power system events, studying application of new technologies in power system, studying power quality, reducing loss in electrical networks and etc.



Articles and Technical Reports

Energy and System Studies Center has published 1 national and 2 international Paper in 2018 in order to introduce new technologies and achievements to its clients. Below is the list of these papers;

- ▶ Optimal design of hybrid power generator systems considering technical constraints and reliability indices using shuffled frog leaping algorithm, the 33th International Power system conference, Tehran, 2018
- ▶ Technical and financial study of using TCSC for transient stability improvement” GCC CIGRE 2018
- ▶ Challenges and Requirements of Large Scale Photovoltaic Grid Connection”, the 33th International Power system conference, Tehran, 2018
- ▶ International Financial Reporting Standards (IFRS) & implementation that in power sector Resiliency of power systems
- ▶ Private Sector participation in power transmission segment
- ▶ Investigating necessity of demand Side management in Iran & load component decomposition analysis

Major Ongoing Projects

System Studies and Technical Assistance to Improve System Reliability and Efficiency of Bangladesh Power System

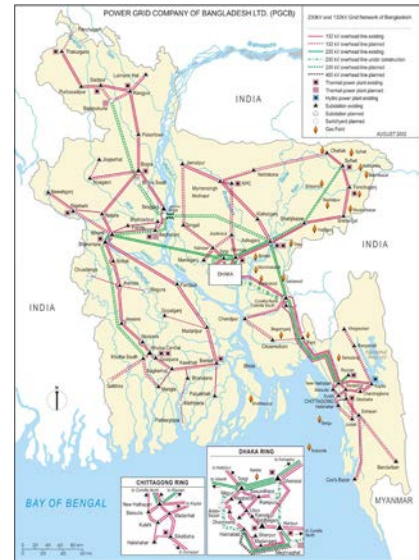
Start Date: 2018 **Finish Date:** 2020 **Location:** Bangladesh

Client: Power Grid Company of Bangladesh (PGCB)

Description: Ancillary services are grid support services required by the power systems (system operators) to maintain integrity, stability and power quality or the power system (transmission or distribution system). Ancillary services can be provided by connected generators, controllable loads and/or network devices. Some services are set as requirements in Grid Codes and some services are procured as needed by system

operators to keep the frequency and voltage of the power system within operational limits or to recover the system in case of disturbance or failure.

Bangladesh has historically had issues in terms of frequency control and voltage regulation. As the country of Bangladesh is experiencing a significant growth, the need for reliable supply becomes ever more critical and it is in such conditions that the present project has taken place in order to allow the network operator to be able to establish primary and secondary frequency response along with effective voltage regulation.



Implementation of Independent System Operator (ISO) in Bangladesh Power Sector

Start Date: 2018 **Finish Date:** 2019 **Location:** Bangladesh

Client: Power Cell, Power Division, M/O Power, Energy & Mineral Resources, Govt. of Bangladesh

Description: Power networks in developing countries are going through a restructuring phase by which it is hoped to achieve higher efficiency in development of electricity supply to consumers while attracting public sector's participation and investment in the industry. In order to facilitate a development compliant with such considerations, it is required to form a competitive and transparent environment in which all utilities are able to provide their services.

Independent System Operators (ISO) are thereby implemented in order to ensure such an environment is created where access is provided to all utilities (public and private) without prejudice while the network security measures are also taken into account.

Bangladesh, as a country that is experiencing an overwhelming growth in its economy and power sector, has opted to consider the implementation of ISO in its network as well in order to ensure that the vast developments of this sector are made in an efficient and economic manner while also addressing the concerns of all participants to ensure further investment is made into the sector. With this goal in mind, this project will see the selection of a suitable model for the implementation of an ISO in Bangladesh by analyzing the different models currently in use around the globe and retrofitting a suitable model for this country to the requirements of Bangladesh. Furthermore, the project will provide a suitable implementation guide for restructuring of the power sector in Bangladesh by considering all stakeholder concerns. The scope of services in this project will include:

- ▶ The Review of Bangladesh Power Sector Existing Structure;
- ▶ The Review of Worldwide ISOs;
- ▶ Benchmarking and Determination of ISO model in Bangladesh; and
- ▶ Determination and Setting of Guidelines for the Implementation of the Selected ISO Model in Bangladesh.



Electrical Study of Fajr Petrochemical Company

Start Date: 2018 **Finish Date:** 2019 **Location:** Iran **Client:** Fajr Petrochemical Company

Description: An electric load of petrochemical industries mainly includes drivers and power electronic equipment which exhibit high sensitivity to voltage and frequency deviations. The changes in the loads of the petrochemical industries in the region, result in fluctuation in the voltage and frequency of the region-2 generation units. On the other hand, due to such fluctuations in the voltage and frequency, the downstream loads would trip because of their high sensitivity, which consequently leads to disconnection of the generation units from the network since they are not able to provide a fast response to the resultant instantaneous load variations. This pattern reduces the lifetime of generation units and thus imposes financial loss on petrochemical industries in the region. Reliable and continuous power supply to different sections of petrochemical complexes is of utmost importance, since various products that are being produced in such complexes require continuous, reliable power supply; even outages of short duration can result in huge financial losses for these complexes and cause damages to our countries economy. Therefore, since Fajr Petrochemical Company plays an important role in supplying the electrical demands in the region, careful planning for providing reliable power supply and improving the stability of the power grid of the complex in different operational conditions is of the greatest concerns and priorities of the management body of the Fajr Petrochemical Company. Taking into account the expansion and increase in future plans of National Iranian Petrochemical Company in the region, the Fajr petrochemical company has decided to increase the number of generation units in the region-2 of petrochemical complex, aiming to ensure high-quality power supply and customer satisfaction.



Feasibility Study of Iran and Oman Grids Interconnection

Start Date: 2017 **Finish Date:** 2019 **Location:** Iran

Client: Tavanir Iran and Oman Electricity Transmission Company (OETC)

Description: This work aims at exploring the impacts of the interconnection between Iran and Oman electric power systems upon some important aspects. Iran and Oman interconnection can be a fruitful project; because of the possibility for Iran grid to interconnecting GCC via Oman and also providing this chance for Oman grid to interconnecting overseas countries via Iran. Access to other markets will be an excellent opportunity from technical and economic point of view for both of Iran and Oman.

This project has been defined in five main tasks. Main Task I is data gathering and system modeling. At this stage, required data including technical, economic and financial data for modeling of Iranian and Omani grids are gathered. Moreover, in this phase, literature survey is carried out in order to review international experience and technical considerations of HVDC interconnection. In Main Task II, detailed economic studies will be done. This phase comprises of assessment of value drivers for Iran and Oman interconnection, estimation of investment costs, calculation of benefits, and measuring economic feasibility of alternatives. In the third phase of the project, technical studies will be accomplished on both Iran and Oman grids in order to evaluate the impact of interconnection between these power systems.

In this regard, the main studies which will be conducted are power flow analysis, contingency analysis, total transfer capability analysis, short circuit analysis, transient stability analysis and frequency stability analysis in 2023.

Task IV deals with route survey, environmental assessment and technology specification. The main objective of this phase is to develop an environmental feasibility study for the interconnection between Iran and Oman, considering alternative sea cable routes and selecting the more suitable one(s) from the environmental point of view. In the final task, economic studies will be updated and operational agreement will be done on the commercial and financial aspects of the interconnection.

Consultancy Services for Development, Installation and Support of Optimum Distributed Generation Placement Software in Gharb Regional Electricity Company

Start Date: 2018 **Finish Date:** 2019 **Location:** Iran **Client:** Gharb Regional Electric Company

Description: Nowadays, the use of small scale power plants (Distributed Generation) in distribution networks is considered as one of the main methods of energy generation in the world. Given the significant development of small scale power plants and the technical impacts that the connection of these power plants can have on the network, the optimal placement of these generators in the network and the feasibility of constructing them in different areas of the network is very important issue. Considering the importance and high sensitivity of the development of small scale power plants in the network, Gharb Regional Electric Company, which possesses a great potential to develop these power plants within its borders, intends to develop and implement a software with the aim of finding optimal locations for the placement of small scale power plants (DGs) in the Gharb Regional Electric Company territory and contracted Monenco Iran for this project.



Development of a Master Plan for Transmission and Sub-Transmission Network of Yazd Regional Electric Company (to 2026)

Start Date: 2018 **Finish Date:** 2019 **Location:** Iran **Client:** Yazd Regional Electric Company

Description: The main aim of this project is to provide a development planning for transmission and sub-transmission network of Yazd Regional Electric Company up to 2026.

With increasing consumption of electrical energy, an appropriate power system expansion planning must be done to provide adequate electric energy with high reliability in order to respond to consumer needs. Careful planning of the electric sector is therefore of great importance since the decisions to be taken involved in the commitment of large resources, with potentially serious economic risks for the electrical utility and the economy as a whole.

Power system planning is part of a more general problem, that of energy and economic development planning. Its objective is therefore to determine a minimum cost strategy for long-term expansion of the generation, transmission and distribution systems adequate to supply the load forecast within a set of technical, economic and political constraints.

Research and Development

Research and Development (R&D) in Monenco aims to apply new ideas in energy industries in order to enhance efficiency, reliability and productivity. We help industries to meet their demands, make a better use of available resources, reduce the environmental impact and optimize maintenance costs. The main goals of R&D office are as follow:

- ▶ Exploring research capabilities and capacities in different sections of Monenco
- ▶ Developing technical and scientific knowledge in new areas
- ▶ Know-how transfer of the new technologies to the design disciplines of Monenco
- ▶ Communication with academic and research centers



Articles and Technical Reports

Research and Development Division has published 9 papers in 2018 in order to introduce new technologies and systems to its clients as follow;

- ▶ Study of water spray on inlet air of ACC cooling systems
- ▶ Study of using wavy fins on the performance of ACC cooling systems
- ▶ Modal analysis of ACC structure using finite element method
- ▶ Technical study of using compressor in methane collecting systems during pipelines maintenance
- ▶ Study of Iranian power industry resiliency considering environmental threats
- ▶ Determining technical specification of main equipment of Bafgh CCPP
- ▶ Design of tanks roof using AMETANK software and evaluation of results
- ▶ Comparison between different flue-gas desulfurization systems for Sirik steam power plant
- ▶ A numerical study on using rifled tubes in water-walls of existing boilers of Touss power plant

Major Ongoing Projects

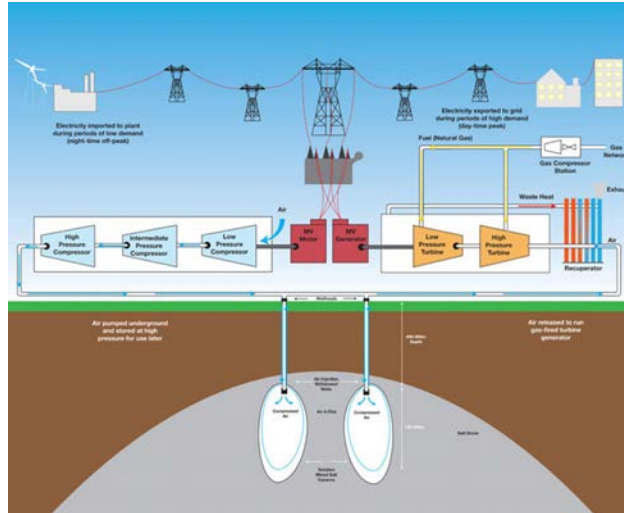
Study of water spray on inlet air of ACC cooling systems

Performance of ACC cooling systems are decreased in hot days of year. One of the existing methods for improving cooling system performance is water spray at the inlet of ACC system. The aim of this project is technical design of water spray system, calculation of annual water consumption considering different ambient temperature set points for start of water spray, calculation of increased electricity generation for different set points and executing financial modeling for different scenarios.



Case study of compressed air energy storage in Iran

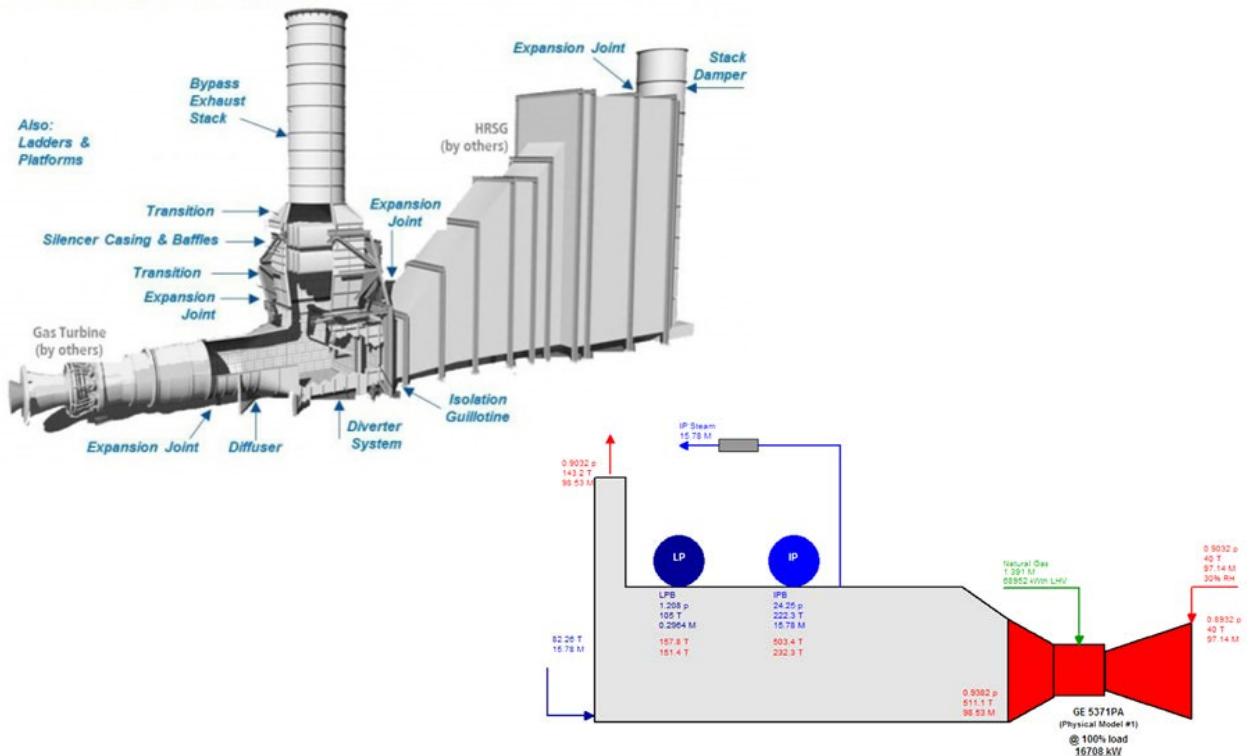
Compressed air energy storage (CAES) is a way to store energy generated at low energy demand (off-peak) time for use at higher demand (peak load) time using compressed air. This study includes literature survey of CAES, site selection for installation of CAES system in Iran, determining technical specification of main equipment of plant, annual performance calculation of system, estimation of CAPEX and OPEX and financial modeling of plant.



Feasibility study and conceptual design of HRSG for Ilam refinery plant

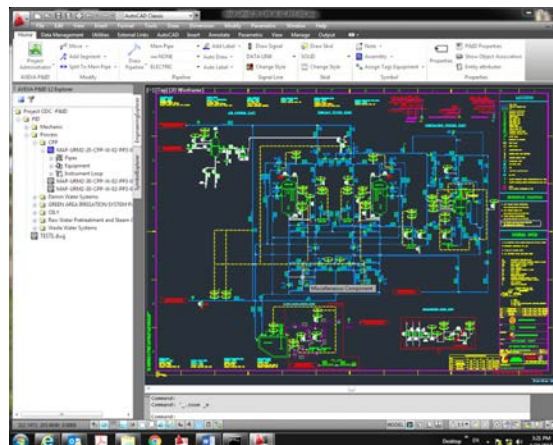
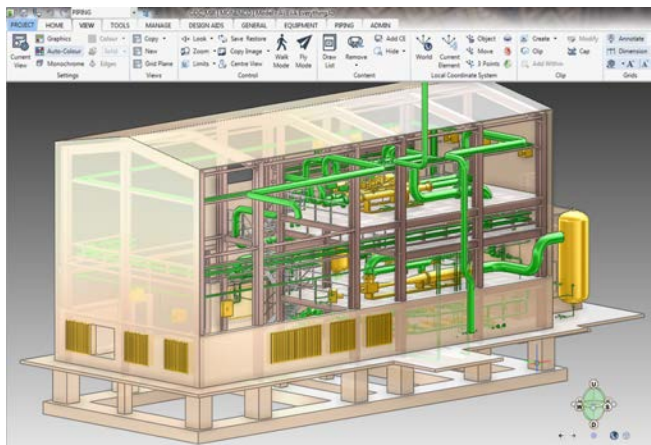
The main goal of this project is to conceptual design of HRSG for 25 MW gas turbines of Ilam refinery plant. At the first phase of project, different technical scenarios will be defined. At the second phase, design calculation and modeling will be done for each scenario and the best scenario will be selected according to performance parameters and also plant general layout. At the third phase, technical specification of HRSG, technical data sheets of main equipment, PFD and outline drawings will be issued for selected scenario.

GT Exhaust System Components



Engineering Capability

Engineering Division is a significant division in Monenco that provides engineering services for a wide range of projects carried out in this company. Seeking for the latest science and technologies keeps this division up to date in its tasks, providing services to the other divisions in a matrix-based structure.



Articles and Technical Reports

Engineering Division has published 14 white papers in 2018 in order to introduce new technologies or design to its clients as follows:

- ▶ A Thorough, nonlinear dynamic analysis and design-control of industrial structures with use of OpenSees software
- ▶ Optimization of dry cooling systems by thermohydraulic and mechanical considerations
- ▶ Consideration of ductwork design for industrial plants
- ▶ Design consideration of earthing systems for wind turbine farms
- ▶ Architecture based on renewable energies for non-industrial buildings in power plants
- ▶ Comprehensive and optimum design of piping in industrial plants
- ▶ Wireless technology application for control systems of power plants and industries
- ▶ Emergency shutdown system in industrial plants and its applications
- ▶ Smart integrated communication and monitoring system in industrial plants
- ▶ Protection of high-height buildings against lightning with passive and active methods
- ▶ Optimum greenbelt design for industrial plants according to climate conditions
- ▶ Methodology for air pollution control in large cities
- ▶ Optimization of construction management in industrial plants
- ▶ Optimum selection of HVAC systems (absorption/compressed) based on annual energy consumption for commercial buildings

Engineering Division has also published the following papers in 2018:

- ▶ Load balancing and reactive power compensation based on distributed generation compensation in smart distribution grids, International Journal of Emerging Technology and Advanced Engineering, 2018
- ▶ Modal and dynamic analysis of Air Cooled Condenser (ACC) structure for thermal power plants with finite element method, 8th International Acoustic and Vibration Conference, Tehran, 2018
- ▶ Design of structural roof of large tanks with AMETANK software and its validation with SAP2000, 33th International Power System Conference, Tehran, 2018
- ▶ Composite wrap for non-leaking piping defects of underground pipe, 3th International Conference on Mechanical and Aerospace Eng., Tehran, 2018
- ▶ Comprehensive design of piping in water industry, 2nd National Water and Hydraulic Structures, Dezfoul, 2019

- ▶ Design of power system stabilizers with H_2 and H_∞ orders using linear matrix, 4th National Science and Technology Conference, Tehran, 2018
- ▶ Heat transfer and pressure drop prediction for air-side Air Cooled Condenser (ACC) in thermal power plants, 33th International Power System Conference, Tehran, 2018
- ▶ Advanced combined cycle (F/H) selection for Bafgh power plants, 33th International Power System Conference, Tehran, 2018

In 2018, this division besides giving services for all projects of the company, it was successful to extend its knowledge to the following fields and subjects:

- ▶ Design of ACC and steam duct for F-class combined cycle power plants
- ▶ Digital O&M for thermal power plants
- ▶ Optimization of power plant design based on 3D modelling
- ▶ Optimum greenbelt design for industrial plants
- ▶ Design of advanced water treatment systems
- ▶ Integrated design of IP-based communication and monitoring systems
- ▶ Modelling and strategic planning for decreasing of air pollution in large cities and industrial areas

Moreover, this division has collaboration with R&D Department as well as several outstanding international companies in order to stay strong and innovative in the energy market. This division consists of seven professional departments; Civil & Structure, Piping, Mechanical, Process & Environment, Electrical, Instrumentation & Control (I&C) and Plant Layout & Design Coordination (PLD). The specialized experts of this division, design, review, endorse and modify all engineering documents if needed, based on Monenco contractual scope of work, project specification and client technical requirements.

Design Engineering Software Tools

Monenco, by relying on its experienced personnel and valuable experiences in the field of three-dimensional design software, has launched a number of engineering software of AVEVA Company while upgrading the PDMS 12.1 to E3D and Revit. Using this softwares causes integration among engineering data plus reduces the time and cost of the projects. Below is the description of main softwares:

- ▶ Aveva E3D: It provides automatic project synchronization and sharing work processes between Monenco office locations while retaining project and system control
- ▶ Aveva P&ID: A P&ID design system which stores intelligent engineering data onto graphical entities in an AutoCAD drawing while the designer draws and annotates the P&ID
- ▶ Aveva Instrumentation: Instrument and systems engineering, design, documentation and management for the en re asset lifecycle
- ▶ Aveva Electrical: Electrical engineering and design system, documentation and management for the entire lifecycle
- ▶ Aveva Engineering: It creates schematics, diagram, datasheets, engineering lists and indexes
- ▶ Aveva Bocad: A powerful software for structural steelwork design and detailing for different plants
- ▶ AMETANK: An applied software for atmospheric storage tank that automates the process of 3D modeling, mechanical and structural design, manufacturing detailing, and generation of production components and assemblies, material purchase list, and costing data
- ▶ PLAXIS: A powerful and user friendly finite element package intended for two-dimensional as well as three-dimensional analyses of deformation and stability in geotechnical engineering and rock mechanics. PLAXIS is used worldwide by top engineering companies and institutions in the civil and geotechnical engineering industry. Applications range from excavations, underground construction, embankment and foundations to tunneling, mining and reservoir geomechanics
- ▶ Revit Architecture, Mechanical, Electrical and Piping (MEP): 3D comprehensive design of commercial buildings including architectural, structural, mechanical and electrical systems

Information Technology Management

After a year of unceasing efforts in the establishment of the information security management system (ISMS), Monenco Iran, IT division succeeded in obtaining the international certification of ISO/IEC 27001:2013. Getting this certification confirms the company's right path of movement and intellectual maturity in the management of information security and increasing the power of competition with domestic and foreign competitors.

In this regard, the continuous improvement of the information security management system, identification of new risks and recognition, analysis and selection of appropriate control measures in risk management and the development and institutionalization of information security culture will be our agenda.

The preemptive penetration testing process was implemented by the IT Group to identify and assess the vulnerability of the IT infrastructure. In this process, by designing and performing precise testing, attempts were made to exploit vulnerabilities to penetrate the network, servers, services, applications and utilities. In addition, other potential penetration methods, such as access to network resources and the way information was acquired through social engineering mechanisms, was also examined. These evaluations help confirm the effectiveness of defensive mechanisms and adherence of end-users to security procedures.

The most prominent improvement projects of IT Department in 2018 are:

- ▶ Changing the domain name of our Company from monenco.com to monencogroup.com
- ▶ Optimizing network, Backup and VoIP Infrastructure.
- ▶ Launch of Log Analyzer for managing, maintaining and troubleshooting IT systems
- ▶ Launch of RDS Server for remote application sharing
- ▶ Migration from ESET 5.0 to ESET Endpoint Security 7.0
- ▶ Providing ESET Mail Security for Exchange Servers
- ▶ Providing valid SSL Certificates for Critical web applications and websites
- ▶ Holding an ISMS introductory course for end-users
- ▶ Holding advanced information security courses for IT staff
- ▶ Providing ISMS E-learning Software for Staff training

A tremendous amount of effort went into completing technology research and installations in the 3D-modeling sector including:

- ▶ Launch of AVEVA DIAGRAM for intelligent P&ID maps
- ▶ Making virtual tours of high-power posts
- ▶ Developing the initial version of MONENCO 3D Group Application for android platforms and making multiple models of Augmented Reality include Auxiliary Service Building (Power Plant) and Control Building (Baghestan Substation)
- ▶ Conducting feasibility studies of new software and methods for utilizing in engineering units (i.e. AVEVA ERM, HOLOGRAPHIC-3D, Aurora 3D Presentation, AVEVA E3D Help)

Our software sector delivered numerous new programs, such as new version of complaint and Power Plant web applications. Power Plant application is shows the status of the power plants in geographic map.



Augmented Reality (AR)

Monenco Iran Consulting Engineers, as one of the pioneers in using modern technologies to improve performance in the process of engineering and designing projects, has implemented some of the power plant models in the Augmented Reality format (AR) in the form of an application.

AR is an interactive experience of a real-world environment where the objects that reside in the real-world are enhanced by computer-generated perceptual information.

Using Augmented Reality in displaying models has the following advantages:

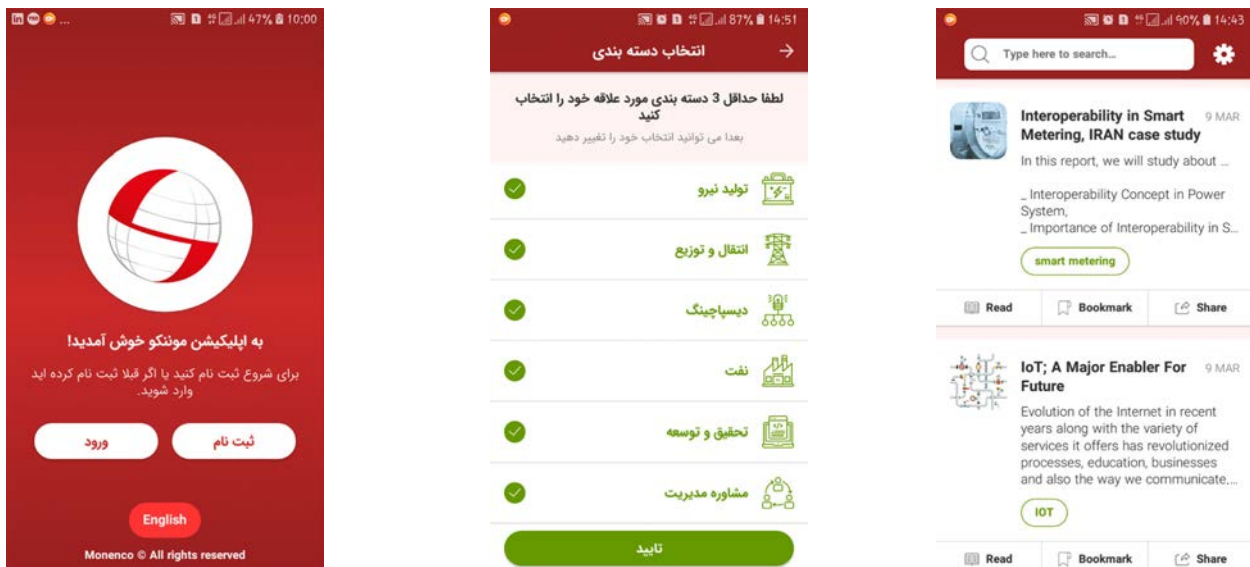
- ▶ Providing a realistic view of the 3D modelling
- ▶ The Ability to compare the as-built designs with 3D models
- ▶ The ability to display 3D models on smartphones or tablets, without using any professional 3D software.
- ▶ The ability to take advantage of Augmented Reality in the field of education and marketing



Monenco Insights

Monenco Insights is a mobile application that helps its users to become familiar with Monenco views of industry's "today and future trends" by providing technical and managerial reports. These reports help users to update themselves with the recent innovations in science and technologies.


This application provides an easy public access to the knowledge and information through articles and white papers which are prepared by Monenco. It targets top and middle managers, engineers, students, and tech lovers. Most of the information in this rich database is free and some could be purchased. These articles would help engineers and managers to make better decisions based on the provided knowledge.



Strategic Planning

There is no doubt that strategy performance management is one of the most important processes in any organization. Due to the strategic planning review at Monenco, Balanced Score Card (BSC) model was developed to evaluate new organizational strategies fulfillment. This model as a performance metric is used to identify and improve various internal functions of a business and their resulting external outcomes.

To begin with, we defined several detailed key performance indicators to help us for measuring the strategic goals achievement and measured all KPIs for the past three years. According to these measurements and our vision on 2021, annual targets were determined for all KPIs as a translation of our vision for each division. In order to meet these targets, strategic initiatives were proposed and discussed in different meetings with Improvement Committee members to assure correlation between them and indicators. Finally, to continuously evaluate the strategic performance of organization, KPIs are being monitored during the year in various time periods and the results will be discussed in Improvement Committee.

 موننکو ایران Monenco Iran		Balanced Score Card								Date: 04/06/2019	
Perspective	Strategic Objective	Objective Code	Objective Waight	KPI	KPI Code	Measurement Period	2016	2017	2018	2019	Initiatives
Financial	Cost Management	F1	0.013	Cost Deviation	F1.1	Seasonal	31%	4%	21%	0%	Develop a series of effective periodical cost control reports
				Profitability	F1.2	Seasonal	12.6%	14%	14.9%	16%	
	Increase Productivity	F2	0.042	Labour Productivity	F2.1	Anually	1.13%	1.17%	1.07%	1.09%	Develop a tailor-mede model of productivity cycle for Monenco Iran
				Capital Productivity	F2.2	Anually	41.34%	27.71%	50.89%	51.91%	
				Total Productivity	F2.3	Anually	1.1%	1.13%	1.05%	1.07%	

Budgeting process

To integrate budgeting with company strategies, annual revenue targets are defined according to the vision and actual revenue trends in past ten years. Benchmarking of top engineering companies in the world, studying internal and external market situation in specific fields of our company such as oil and gas, power and ICT were considered to set the targets.

We always keep our eyes on every budget deviations. Last year, monthly reports were published to show the percentage of budget elements realization (revenue, cost, internal and external contracts). Also settlement reports were published to distinguish the reason of deviations in cost and revenue.

Customized Productivity Model

In last five years, we have measured productivity of company by 3 indexes which are Labor, Capital and Total productivity of departments and divisions.

To improve the effectiveness of productivity measurement, we tried to implement the productivity management by defining the customized productivity cycle. The proposed model has four-stage: measurement, analysis & evaluation, planning and improvement. After measuring with financial indexes, based on sensitivity analysis as a tool, we found the most influent productivity factors in our company: revenue, personal cost and equipment cost aspects. According to sensitivity analysis results, we presented an action plan for each deputy, to focus on increasing/decreasing the index elements in the direction of strategic goals.

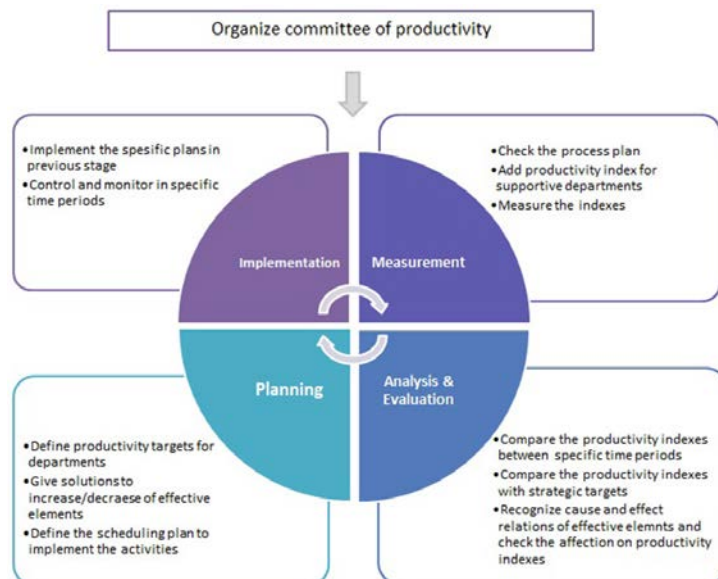
Developing Systems and Methods

System Improvements

After successful implementation of the EDMS system in power plant projects in 2017, the development of the system's application for other deputies was planned in 2018. Hence, two more deputies have joined the project this year. Also, in order to improve the process and complete automation, in a specific project, a connection was established to communicate directly with the client's EDMS system; so that all the correspondences transfer and internal and external distribution will be managed automatically.

Risk Management

Organizational risk management was developed based on ISO 31000, 31010 and 9001: 2015 standards and identification of risk symptoms and causes (risk identification and response to the risk plans) were conducted for context of the organization (external and internal issues), needs and expectations of interested parties and processes. Risk identification and risk response plans have been reviewed every three months, and risk response plans have been updated. At the end of this year, the effectiveness of the organizational risk management process in the company has been evaluated and subsequently risk response plans with highest priority were included in the strategic operational plan of the departments in this year.



Project Control & Monitoring

The monitoring and controlling process oversees all the tasks and metrics necessary to ensure that the approved and authorized project is within scope, on time, and on budget so that the project proceeds with minimal risk.

The purpose of Project Monitoring and control is to provide an understanding of the project's progress so that appropriate corrective actions can be taken when the project's performance deviates significantly from the plan.

This process involves comparing actual performance with planned performance and taking corrective action to yield the desired outcome when significant differences exist.

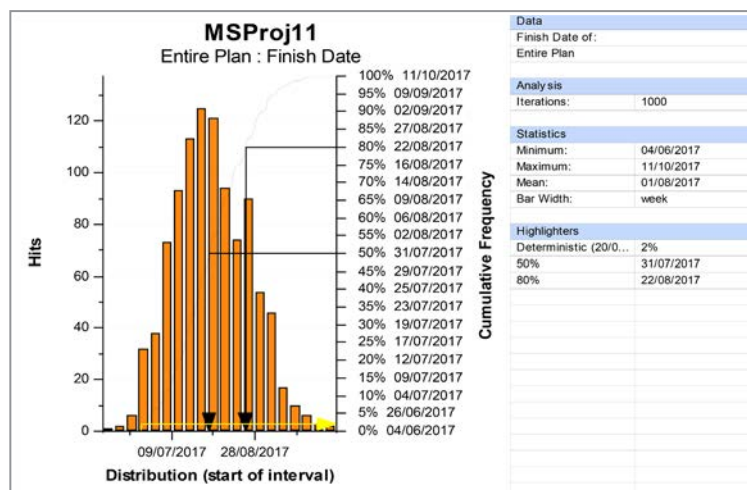
This process is continuously performed throughout the life of the project. So Project planning, Monitoring and controlling can play a very important role in the success and prosperity of any organizations.

Perhaps the most important part of project management is that of control and monitoring. The completion of control-related tasks will ensure achievement of the targets as they were defined in the planning stage of projects. After planning a project, it is recommended to implement a control system.

Monenco Control & Monitoring Department consisting of 26 experienced experts is one of the most vital contributors in order to successfully implement the projects. With above mission in mind, all of the members are committed to work in maximum efficient ways to do scope verification and change control, schedule control, cost control, performance reporting, risk control, develop budgets and schedules to meet project requirements, control project progress on its right track, participate in meetings to discuss exactly what is needed based on procedures developed in updated methodologies such as PMBOK and ISO 21500 and project control software like MSP, P6 and Pert MASTER.

In 2018, the most important actions of our team to achieve organization goals, summarized as below:

- ▶ Two papers submitted in international conferences. The first one was Introducing the grey area of the project which was presented in the 6st National Conference on Industrial Management and Engineering with Emphasis on Entrepreneurship and the second one was a case study on Agile Management which was presented in International Project Management Conference.
- ▶ Feasibility and survey on project delay analysis methods according to Society of Construction Law Delay and Disruption Protocol (SCL 2017)
- ▶ Implementing new software in project control and planning called One NOTE
- ▶ Manage project charging on Timesheet
- ▶ The main goals of our team for 2019 can be summarized as below:
- ▶ Raising knowledge by using updated control projects software professionally
- ▶ Implementing new software in project control and planning called Power BI
- ▶ Implementing and preparing issue log document in whole executive projects
- ▶ Preparing a procedure of investigating delayed contractor for defining in its tender documents
- ▶ Implementing a project Management information system (PMIS) to integrate the whole information of projects for different users
- ▶ Planning for some colleagues to get PMP certificate
- ▶ Specialized training members of group with COMFAR software to preparing financial reports



Quality ASSURANCE

In 2007 Monenco established and implemented a Quality Management System (QMS) and got certified according to International Standard ISO 9001:2000 in order to improve the quality of its engineering services and enhance the customer satisfaction. In 2011, Monenco replaced the third edition of ISO 9001:2000 with fourth edition (ISO 9001:2008) and got certified in accordance with ISO/TS 29001:2010 for petroleum, petrochemical and natural gas projects. Furthermore, change of Certification Body BV to IMQ was accomplished in 2014. According to the last edition (ISO 9001:2015), Monenco upgraded its certificate from fourth edition (ISO 9001:2008) to fifth edition (ISO 9001:2015) to be in compliance with new standard's requirements.

The main achievements of QMS in 2018 are as follow:

- ▶ Improving procedures to control actual and potential non-confirming products to define and eliminate root causes
- ▶ Improving processes of evaluating customer satisfaction and interested parties complaint consideration based on ISO 10004 and ISO 10002.
- ▶ Implementing risk management through identifying and evaluating risks of strategies, processes and interested parties
- ▶ Ranked first technical score in 29% of tenders in all fields including new businesses which is increased 11% during 2018
- ▶ Obtaining the client's letter of appreciation for 29 projects. This item increased 38% during 2018
- ▶ Aggregating key performance and process indicators and establishing integrated database.

Health, Safety & Environment

In 2011, Monenco established HSE Management system and got certified according to ISO 14001:2004 and OHSAS 18001:2007 in order to maintain and increase personnel health, safety and environmental requirements. According to the last edition of ISO 14001, Monenco upgraded its certificate from 2004 to 2015 edition to be in compliance with new environmental management system's requirements.

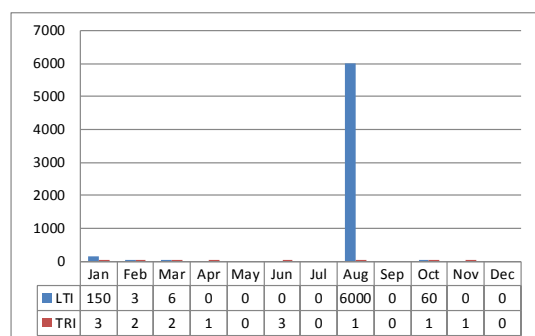
HSE-MS certificate for engineering consultancy and supervision services was gained in 2015. The main achievements of HSE management system in 2018 are as follow:

- ▶ E-learning courses and exams were implemented for site supervisors and newcomers employees at office
- ▶ 12 man-days HSE audit were executed at sites
- ▶ HSE training for all supervisors and new employees (Total Man-Hours: 6499)
- ▶ Health, Safety & Environmental risk evaluation procedure revised on projects' sites (According to FMEA approach)
- ▶ Measuring environmental factors was done according to Department of Environment requirements
- ▶ HSE Campaigns such as Diabetes & No Car Day were held
- ▶ Corrective and preventive actions were followed effectively
- ▶ Emergency Response Plans (ERP) such as rescue and emergency evacuation drill were done
- ▶ Monitoring employees medical status
- ▶ Measuring and monitoring of LTI, TRI & vehicle crashes

Health, Safety & Environment

	LTI	TRI		Vehicle Crashes
		Near Miss	Accident	
2018	6219	1	14	1

Month	LTI	TRI
Jan	150	3
Feb	3	2
Mar	6	2
Apr	0	1
May	0	0
Jun	0	3
Jul	0	0
Aug	6000	1
Sep	0	0
Oct	60	1
Nov	0	1
Dec	0	0
SUM	6219	14

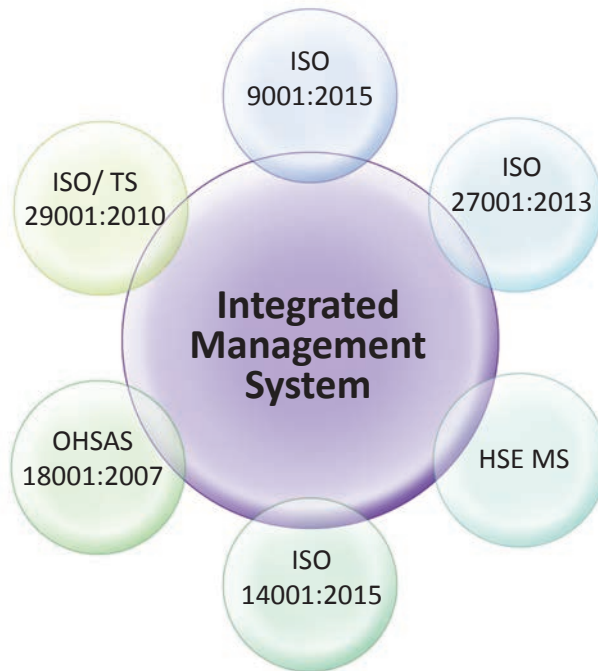


Integrated Management System

Integrated Management System (IMS) in Monenco is in compliance with ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007, ISO/TS 27001:2013 & ISO/TS 29001:2010 standards and HSE-MS Guideline (Fig 1), that was implemented in order to achieve:

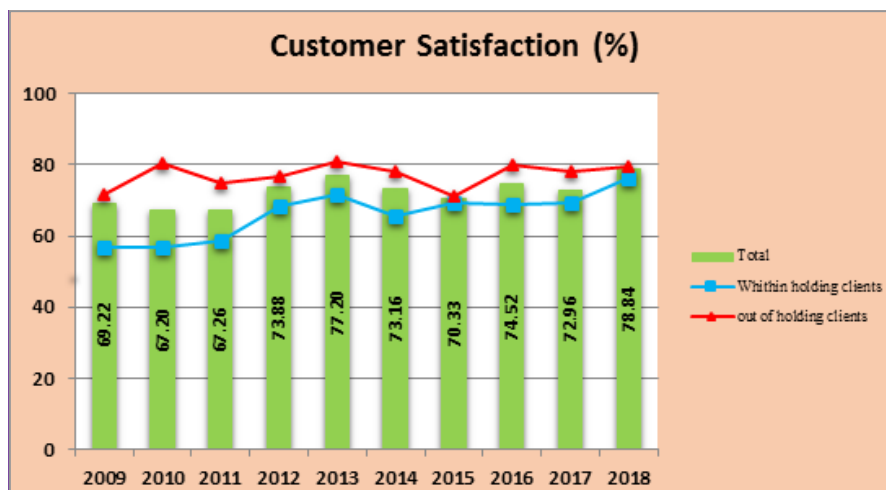
- ▶ Reduction of planning cost, establishing and maintaining QHSE management systems
- ▶ Increasing the productivity and efficiency of the systems
- ▶ Avoiding repeated tasks and omitting reworks
- ▶ Optimum usage of resources LTI, TRIR & vehicle crashes
- ▶ Preserving privacy of all interested parties
- ▶ Providing information confidentiality and accuracy.

In 2018, Monenco got certified according to International Standard ISO 27001:2013. As well as, it was aimed to be prepared for implementing ISO 45001:2018 to meet its requirements.



Customer Satisfaction

To ensure meeting customer requirements and perform corrective actions in appropriate time and efficient manner, QM section independently communicates with customers according to Monenco CRM method through semi-structured meetings, phone calls and sending questionnaires.



Objectives & Development plans

Based on IMS policy & Monenco strategies, objectives and development plans of each department are determined yearly by “Monenco Enhancement Work-Group” established by “QHSE & Productivity Management Office”.

Each department is responsible for performing the relevant plans & reporting the progress monthly. QHSE & Productivity Management Office is responsible for controlling progress plans and defining appropriate corrective actions to achieve objectives. In 2018, 63% of company’s objectives have been met.

Excellence Model

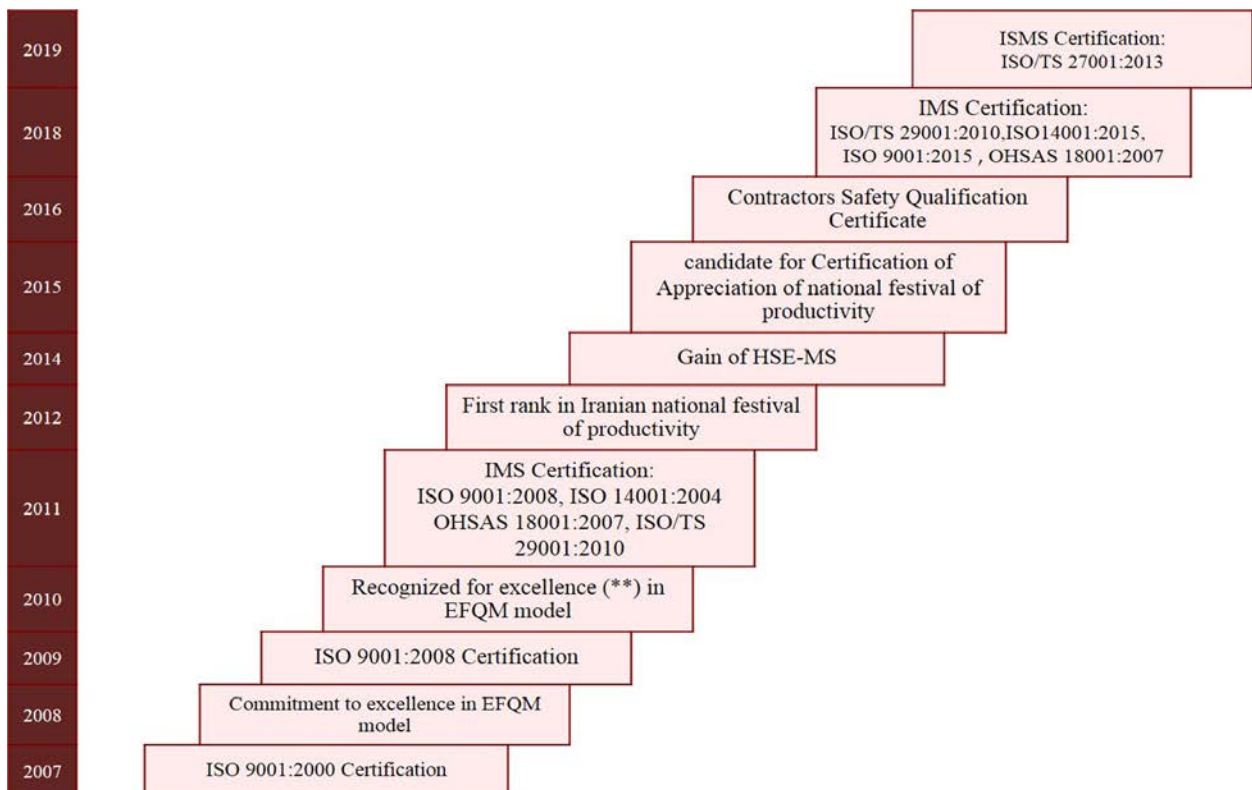
In order to provide sustainable excellence and achieve balanced results in all sectors of organization, Monenco performance has been assessed based on EFQM excellence model and awarded “Committed to excellence” level in 2009. In 2011, Monenco has been awarded “Recognized for Excellence”, based on EFQM model (2010 version). Improvement of projects has been continuously defined and developed in Monenco based on EFQM framework.

Self-Evaluation of sites and the office was performed based on “EFQM model” since 2014.

In 2019, moving toward excellence models has been planned as one of the QHSE & Productivity Management Office goals.

Continuous Improvement

The effectiveness of implemented models & systems yearly is being controlled by QHSE and Productivity Management Office. The trend of Monenco’s Continuous Improvement is demonstrated as shown in the picture below.



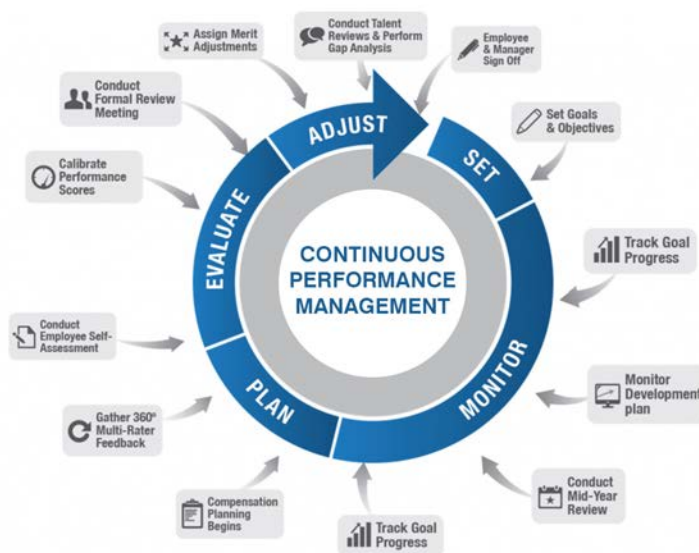
Performance Management

Performance Management is a process that enables employees to perform their roles to the best of their abilities with the aim of achieving the established targets that are directly linked with Monenco's strategies. In Monenco, Performance Management is posited as a strategic management technique that supports the overall Monenco's goals through linking each individual's work goals to the overall mission of Monenco. It is further hypothesized as an integrated system where management and employees work together in setting objectives, assessing and reviewing how these are being met and rewarding good performance.

In recent years, Monenco has changed its employee performance measurement approach from performance evaluation to performance management. The model was customized based on Armstrong model. The main features of Monenco's Performance Management System are as follow:

- ▶ Managers are responsible to align employees' performance with Monenco strategies
- ▶ Managers are responsible to set and clarify the performance expectations in an agreement meeting with employees
- ▶ Managers are responsible to make necessary arrangements for coaching in case of employees' need
- ▶ Managers monitors the employee performance indicating the levels of meets expectations
- ▶ Managers analyze the employee's performance and provide feedback and potential solutions
- ▶ Managers set new performance expectations for the next period

In Monenco, HR Department is in charge of deploying this model to be run properly and provide related reports.



Talent Management

One of the cutting edge topics in Human Resource (HR) is Talent management. In respect of that, in 2017, Monenco Iran implemented talent management. The approach was a key business strategy which is considered as an investment to promote employees' capabilities. Also, since employees are the most valuable assets in Monenco, Talent Management is considered as one of the most effective tools in staff retention.

Talent Management Procedure in Monenco Iran

Following tasks have been carried out in Monenco Iran for Talent Management:

- ▶ Identifying key position
- ▶ Identifying indicators for every single key position
- ▶ Evaluating the employees' competencies and potentials
- ▶ Applying 9 box matrix to identify talents
- ▶ Extract the best employees based on their status in the matrix

To get the most effective outcome from talent management potential indicators, they have been chosen based on;

- ▶ Clearly defined
- ▶ Consistent across the business
- ▶ Differentiated by function, role and level
- ▶ Updated at appropriate intervals



2018 Outcomes

Monenco Iran HR team have applied depth and breadth of content and analytical expertise to generate talent pool according to key positions. As a result, talents were identified for some of these key positions and individual development plan has been provided.

Recruitment

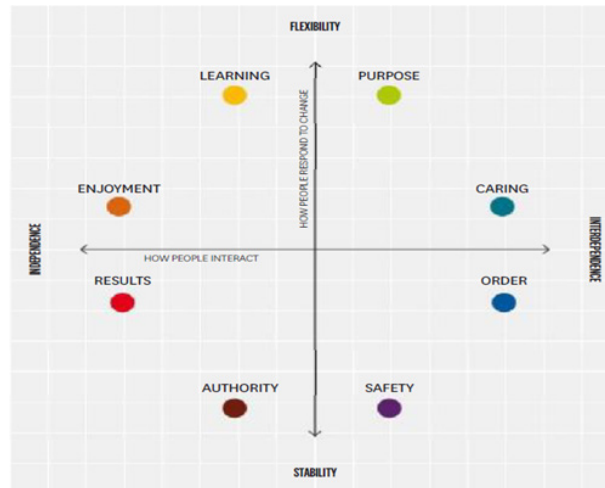
In the process of finding and hiring the best qualified and professional candidates for available jobs in Monenco, we have focused on placing the right people into right roles. Also, investing in people who are capable in responding to modern technologies.

In 2018, about 2000 people applied jobs in our website as applicants which 280 of them were selected and 240 people were hired.

Culture

In 2018, culture survey was conducted as a tool to collect insights of employees that evaluates how well-aligned is with Monenco’s values, ethics and strategies. While employees’ perception impacts our business, conducting this survey eliminates the gap between actual and intended culture.

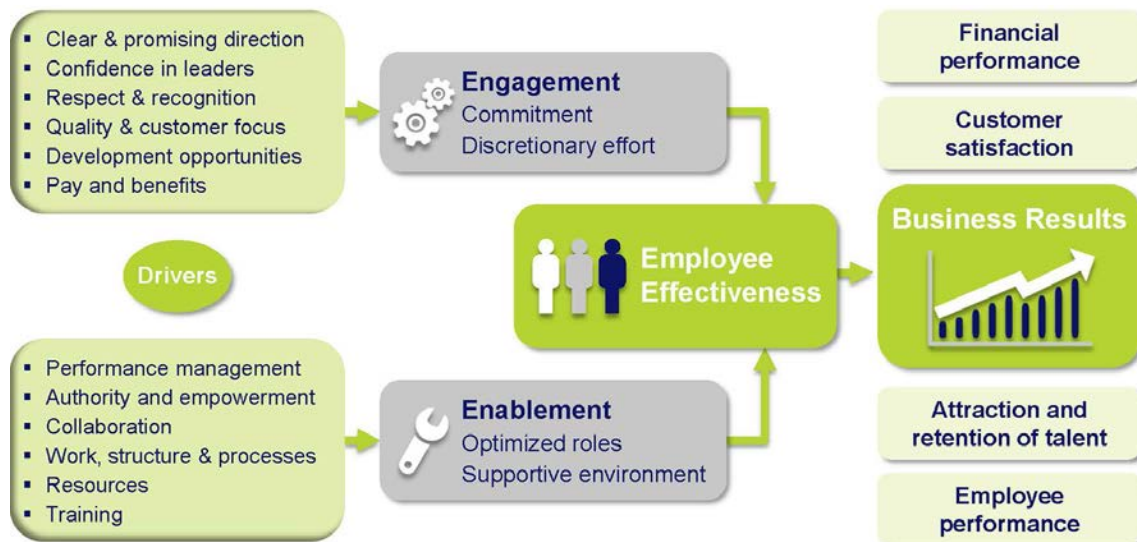
The survey was based on “8 Types of Culture” published by HBR. In this article, two concepts underlie a company’s culture in order to plot the different cultural types on a two-dimensional axis. The first dimension is people interactions which can range from highly independent to highly interdependent. The second dimension deals with response to change, ranging from stability to flexibility. By applying this, eight cultural styles as follow have been identified; Learning, Enjoyment, Results, Authority, Safety, Order, Caring, Purpose.



Effectiveness Employee Survey (EES)

Top-performing organizations combine effective employee engagement and enablement programs to reduce staff turnover and drive performance. Monenco Iran conduct an Effectiveness Employee Survey (EES) based on Hay Group Model every two year to measure and analyze the levels of engagement and enablement that employees are experiencing.

The model consists of twelve drivers in the form of an effectiveness matrix. The result shows whether the organization is in effective place or not. It gives us the critical information we need to identify the factors preventing employees to be effective. And by addressing these barriers to performance, we can create a more positive environment which leads to quantifiable business improvement.



EES Approach in Monenco Iran

In 2018, EES was conducted in Monenco Iran and required action and improvements plans were provided. As a result, the most important improvement actions were to conduct the following surveys: performance management, Talent management and HR Branding.

HR Branding

Coordinating HR functions with marketing tactics, HR branding gives the opportunity for companies to influence the firm’s identity and reputation.

In 2018, In Monenco, the effects of three dimensions of HR branding; reputation culture and value proposition on employment experience have been studied in three stages; attraction, selection, and retention.

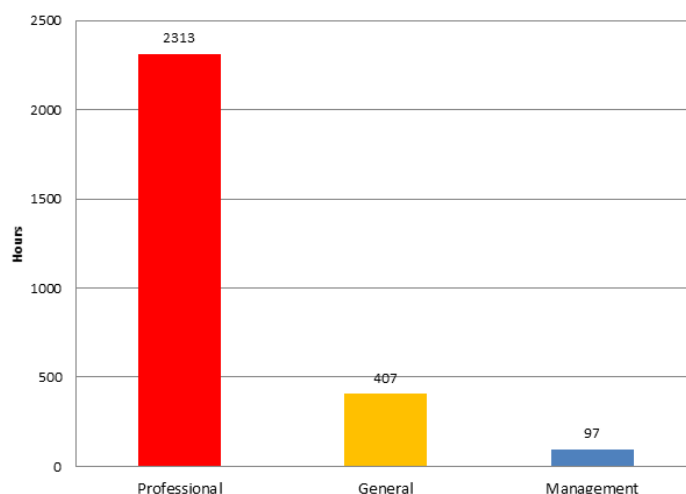
In Monenco’s HR branding process, obtaining the maximum potential value from an HR brand by three essential components have been planned; (1) managing the firm’s reputation, (2) managing the firm’s culture, and (3) managing the firm’s value proposition.

Component of hr Branding	Attraction	Selection	Retention
employer Branding Managing the firm’s reputation	Helps ensure the right type of applicants apply for positions.	Helps ensure employees who fit with the organization’s culture are hired.	The good reputation of a company lends prestige to a position, and employees want to maintain the association.
internal Branding Managing the firm’s culture	A positive work culture is highly sought in today’s labor market, and firms with a reputation for such an environment will attract many applicants.	A well crafted and defined culture will help companies identify individuals who share the same norms and values. Applicants with this good “fit” will also be more likely to accept job offers.	Employees who share the same values and norms with their employers are more likely to stay. Similarly, if the work culture is consistent with the company’s mission, employees are more likely to remain motivated and engaged.
Total rewards Branding Managing the firm’s value proposition	Companies with a reputation for providing high rewards (intrinsic and extrinsic, and including employee development) attract more applicants (and more qualified applicants).	Greater compensation (both intrinsic and extrinsic) increases the probability a candidate will accept a job offer. Being able to effectively communicate the rewards package facilitates this.	Both intrinsic and extrinsic rewards help retain employees. Making employees aware of all aspects of the total rewards package helps them understand the full value of their compensation package. Getting employees to consider their entire rewards package, and not just base pay, helps prevent other companies from easily making job offers that may at first appear to be more generous.

Training

In order to develop competencies of employees, Human Resource Department provides a variety of training and development opportunities for employees to meet Monenco’s strategic needs. In 2018, we have most focused on interpersonal effectiveness and new employees’ orientation and coaching. We provided training classes by in-house facilitation and work-climate mostly with collaboration of Mir Company. Our training program is aligned with Monenco’s values and based on ISO 10015.

Training Courses in 2018



Monenco in the Middle East

We served clients globally across the energy and power sectors and provide local services in our core markets. In past year Monenco has been very active in Oman as one of leading companies in that region; our focus sectors were power generation and transmission & distribution. Across several successful bidding in last year we won new three years contract with OETC providing various engineering services right across the Sultanate. Also Monenco was able to penetrate new markets in fields of Oil and Gas and Water by serving the major clients such as Petroleum Development Company (PDO) and Public authority for Electricity and Water (PAEW) as per our defined mission.

Previously, we were awarded a prestigious Certificate of Appreciation for 4.5 Million Safe Man hour from Dhofar Power Company (DPC) and being shortlisted as one of the recognized consultant providing consultancy engineering services in field of Oil and Gas by achieving JSRS Certificate.

Monenco was appreciated by OETC as our strategic Omani client as an outstanding consulting engineers. Also, received DCRP certification from January 2018 which it will be valid until 2021.

Some of our major projects are as follow:

- ▶ Detailed Engineering Services for Construction for Upgrade Shinas 33/11kV Primary Substation from 2X20 to 3X20 MVA (Majan Electricity Company (SAOC))
- ▶ Detailed Engineering Services at MEP (Mechanical, Electrical and Piping) parts for Engineering, Procurement & Construction of 2 X 10 MVA, 33/11kV Step down Primary Substation for Gumdah at Musandam Governorate (RAECO)
- ▶ Consultancy Services for Construction and Supervision of Water Supply Scheme to Al Hsen and Bander Jissah in Muscat Governorate
- ▶ Detailed Engineering Services for Construction for New 3X20 MVA, 33/11kV Primary Substation at AlKhuwair South – Muscat Electricity Distribution Company (MEDC)
- ▶ Consultancy Services for Construction and Supervision of Upgrading of 33/11 kV Qairoon Hairi PSS from 2x10 MVA to 2x20 MVA Capacity
- ▶ Consultancy Services for Design & Supervision of New 132/33 kV Jebreen Grid Stations
- ▶ Load Cycle Study of Electric Arc Furnace (EAF) for Modern Steel Mills
- ▶ Consultancy Services For Design and Tendering Services for Construction of 3X20 MVA Primary Substation at Rusayl-08 in Knowledge OASIS Muscat
- ▶ Consultancy Services for Design & Supervision of New 132 kV Grid Stations at Dil Abdusalam (DAS) & Suwaiq
- ▶ 3 Years Framework Agreement with OETC for Power System Studies
- ▶ Comprehensive Analysis, Strategy Development, and Business Planning for Global LLC
- ▶ Consultancy Services for Construction and Supervision of Construction of 11kV Outgoing Cable feeders from Salalah Port-GCT Primary Substation
- ▶ Consultancy Services for New 132kv Double Circuits Lines from Rustag-Alawabi-Nakhal with a new 132/33kv GS at Al Awabi
- ▶ Detailed Engineering Services for Construction for of 132/33kV Liwa Grid Station
- ▶ Detailed Engineering Services for Construction 132/33kv Mulladha Grid Station
- ▶ Consultancy Agreement for LNT Strategic Marketing Plan
- ▶ Consultancy Services for Design and Supervision of New 132/33kv Bousher-2 and Addition of Third and Fourth Transformer at Ghala Grid Station, Amerat Grid Station and Airport Heights Grid Station
- ▶ Consultancy Services for Design and Supervision of Upgrading of Seeb Grid Station, Adding 3rd and 4th Transformers at Mobella (2) & Construction of Mobella (3) with 4X125MVA Transformers
- ▶ Request for Proposals for the Engagement of a Consultant for the Realization of a Telecommunication Architecture Study throughout PAEW Service Area
- ▶ Consultancy Services, Basic Design and Tendering for Construction New Siah Al Kheirat Power Plant for (RAECO)



- ▶ Consultancy Services for Design and Supervision of New 132/33kv Halban Grid Station
- ▶ Consultancy Services for Design and Supervision of New 132/33kv Airport Height Grid Station
- ▶ Consultancy Services for Design and Supervision of New 132/33kv ASalam Grid Station
- ▶ Detailed Engineering Services for Construction of Construction Dhafrat Power Plant for (RAECO)
- ▶ Detailed Engineering Services for Construction of Construction Duqm Power Plant for (RAECO)
- ▶ Consultancy Services for Design and Supervision of New 400/132 kv NAHADA Grid Station

Commissioned Projects:

- ▶ Construction of Madinat Nizwa 132/33 kV Grid Station and Associated Transmission Line
- ▶ Upgrade of 33/11 kV Qairoon Hairity Primary Substation from 2 x 10 MVA to 2 x 20 MVA Capacity
- ▶ 33/11 kV, 20 MVA Primary Substation, designated as Salalah Port GCT PSS
- ▶ Consultancy Services for Preparation of Network Asset Maintenance Standards & Associated Asset Management Documentation
- ▶ 33/11 kV, 20 MVA Primary Substation, designated as Rusail
- ▶ 33/11 kV, 20 MVA Primary Substation, designated as Alkhuwair South
- ▶ 33/11 kV, 20 MVA Primary Substation, designated as Shinas
- ▶ 132/33 kV Jaalan-Bani Buhamid Grid Station
- ▶ 48 MVA Siah Al-Kheirat Power Plant
- ▶ 132/33 kV Al-Saada Grid Station
- ▶ Consultancy Services for Design & Supervision of New 132/33 kV Jebreen Grid Station
- ▶ Consultancy Services for Design & Supervision of New 132/33 kV Dil Abdusalam & Suaiwq Grid Stations
- ▶ Consultancy Services for Design and Supervision of New 132/33kv Seeb & ASalam Grid Station

Monenco Certificates in Oman

- ▶ Oman Ministry of Commerce and Industry
- ▶ Oman Chamber of Commerce and Industry
- ▶ Professional Indemnity Policy
- ▶ Oman Tender Board
- ▶ Oman Ministry of Defense
- ▶ Muscat Municipality for Issuing Permit Building
- ▶ Oman Oil & Gas Industry's Joint Supplier Registration System (JSRS) Ministry of Oil & Gas
- ▶ Vendor Approval – Petroleum Development Oman (PDO)
- ▶ DCRP Certificate – Distribution Code Review Panel (DCRP)

Number of projects with each Client	
Client	No. of Project in 2018
Oman Electricity Transmission Company (OETC)	9
Muscat Electricity Distribution Company (MEDC)	3
Modern Steel Mills (MSM)	2
Majan Electricity Company (MJEC)	2
Modern Light Trading & Contracting Co. LLC (MLTC)	1
Dhofar Power Company (DPC)	5
Public Authority for Electricity & Water (PAEW)	3
Oman Power and Water Procurement Company (OPWP)	1
Rural Areas Electricity Company (RAECO)	4
Atlas International Engineering Consultants Co.	2
Bahwan Engineering Company (BEC)	2
Larsen & Tubro Company (LTO)	1
Global Chemical Industries (Global)	2

Oman Water Telecommunication Architecture Study

Start Date: 2017 **Finish Date:** 2017 **Location:** Oman

Client: Public Authority for Electricity & Water (PAEW)

Scope of Services: Data Gathering, Conceptual Design, Basic Design, Detail Design, Recommending Design and Methodology for Implementation and Financial and Economic Study

Description: Oman as one of the warmest climates in the world needs to manage the optimal use and supervise the water sources, particularly in arid areas. As Oman faces the shortage of water, the “Telecommunication Architecture Study” project is defined to improve and expand the telecommunication network of water industry.

3 Years Framework Agreement with OETC for Power System Studies

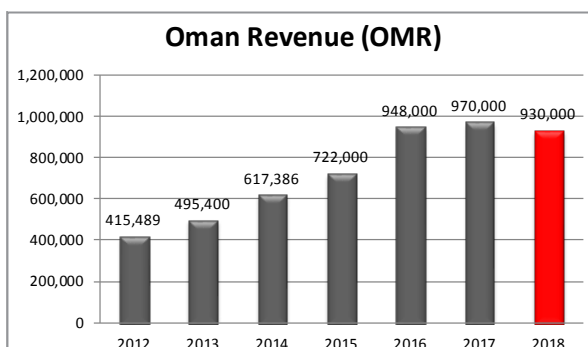
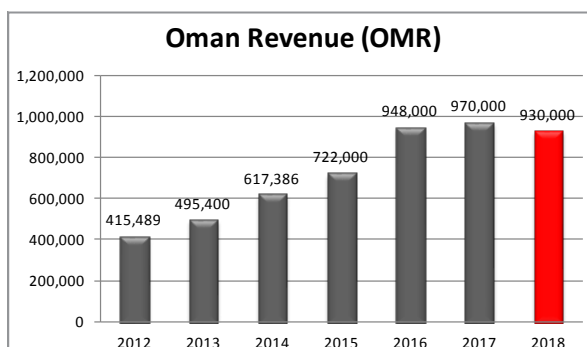
Start Date: 2015 **Finish Date:** 2018 **Location:** Muscat, Oman

Client: OETC (Oman Electricity Transmission Company)

Scope of Services:

- ▶ Dispatch scenario when any new power plant connects to the system
- ▶ Operational effects of new major loads connected to the system
- ▶ Economic dispatch requirements
- ▶ Spinning reserve management
- ▶ Under frequency settings
- ▶ Islanding procedures
- ▶ Black start procedures
- ▶ Preparation and modification of system Operation Procedures
- ▶ System operation studies
- ▶ Study the system behavior for any new connection
- ▶ Study the difficulties in the international connection
- ▶ Study the voltage issues in winter time
- ▶ Study the major incidents and partial blackouts
- ▶ Help to prepare the contingency plan
- ▶ Advice for real time operation
- ▶ Study n-1 criteria by modeling the network system
- ▶ Study the PDO-MIS and PDO-Dhofar connections
 - Risks of the interconnection
 - Risk of inter-area oscillations
 - Specific issues linked to energization (overvoltage, resonance)
 - Tuning of system protections to face emergency conditions like loss of synchronism, evaluation of maximum power transfer

Description: As preferred consultant for all operating requirements in 3 years of OETC and wide projects in operating fields show the capabilities of Monenco in system studies.



Consultancy Services for Design and Supervision of New 132/33kv Bousher-2 and Addition of Third and Fourth Transformer at Ghala Grid Station, Amerat Grid Station and Airport Heights Grid Station

Start Date: 2016 **Finish Date:** 2019 **Location:** Oman **Client:** Oman Electricity Transfer Company (OETC)

Scope of Services: Data Gathering, Conceptual Design, Basic Design, Detail Design, Recommending Design, Project Management and Supervision

Description: OETC Oman decided to construct new 132/33kv Bousher-2 and addition of third and fourth transformer at Ghala Grid Station, Amerat Grid Station and Airport Heights Grid Station.



Consultancy Services for Design and Supervision of Upgrading of Seeb Grid Station, Adding 3rd and 4th Transformers at Mobella (2) & Construction of Mobella (3) with 4X125MVA Transformers

Start Date: 2016 **Finish Date:** 2019 **Location:** Oman **Client:** Oman Electricity Transfer Company (OETC)

Scope of Services: Data Gathering, Conceptual Design, Basic Design, Detail Design, Recommending Design, Project Management and Supervision

Description: OETC Oman decided to construct upgrading of Seeb Grid Station, adding 3rd and 4th transformers at Mobella (2) & construction of Mobella (3) with 4X125MVA transformers.

Consultancy Services for Design and Supervision of 400/132 kV Grid Station with 2X500MVA Transformers

Start Date: 2018 **Finish Date:** 2022 **Location:** Oman **Client:** Oman Electricity Transfer Company (OETC)

Scope of Services: Data Gathering, Conceptual Design, Basic Design, Detail Design, Recommending Design, Project Management and Supervision

Description: This project is part of North – South interconnection in Oman electrical network and the main purpose of implementation of this project is to supply power for Al Fahud and Al Kuthar Oil fields in Al Dakheliyah governorate.

The project includes construction of a new Grid Station at Nahadah with a double circuit 400kV overhead line strung with quad Yew AAAC conductors per phase in two sections for LILO of 400kV Ibri-New Izki OHL to Nahadah (2*1 km).

Nahadah Grid Station is GIS type in 400kV and 132kV voltage levels with two 400/132/33kV-500 MVA power transformers and Sufficient space for future extensions. The control system of the substation is SAS with IEC 61850 protocol.

In this project, Monenco is responsible for basic and conceptual design of the grid station, and to analyze the mentioned project from environmentally aspects including weather condition and geographical point of view, technically (background and technical requisite for construction of the project), high voltage, low voltage protection and control and civil aspects, economically (cost estimation of each part of the project and total budget estimation) and time schedule of the project points of view. Also providing the telecommunication system in order to connect with central SCADA is in the scope of work as well.

Monenco Germany Outlook

In May 2017, the Monenco Germany GmbH has been officially registered according to German Law and started its business activities as a consulting engineering company. The main shareholders of Monenco Germany are Monenco Iran (51 % of shares) and PUT GmbH in Stuttgart (25 % of shares).

The business activities of Monenco Germany GmbH for planning and implementation of energy and environmental projects cover the following sectors:

- ▶ Thermal coal-, oil- and gas-fired power and heat plants
- ▶ Gas turbine and combined cycle power plants
- ▶ Combined Heat and Power Generation (CHP Plants)
- ▶ Biomass heat and power plants
- ▶ Waste incineration plants
- ▶ Renewable energy sector and energy storage systems
- ▶ Flue gas cleaning system
- ▶ Water and waste water treatment system
- ▶ Power transmission systems
- ▶ Projects in oil and gas sector
- ▶ Projects in infrastructure sector



Monenco Germany provide services for national and international clients. A main aim of the company is the cooperation with the main shareholders Monenco Iran and PUT GmbH for implement of national and international projects. The provided services of Monenco Germany GmbH to his clients are as follows:

- ▶ Project management and coordination services
- ▶ Expertise, due diligence and project appraisal reports
- ▶ Technical, environmental and financial reports
- ▶ Feasibility studies and business plans
- ▶ Conceptual design reports
- ▶ Repowering and efficiency improvement reports
- ▶ Environmental Impact Assessment reports (EIA)
- ▶ Tender documents (e.g. for EPC) and tender evaluation reports
- ▶ Design review of contractors engineering documents
- ▶ Site supervision and quality assurance services during implementation phase
- ▶ Assistance in settling disputes and supervision of guarantee works

Monenco in Africa

Monenco Engineering Ltd. (MEL) provides consultancy and engineering services with focus on energy sector since 2010 and despite being new in Nigeria has contributed significantly in developing projects within the country as a strong and professional consulting engineering company. Consequently, at the very beginning of its operation, two projects were awarded to the company from different Nigerian clients. As part of MEL business development strategy and to extend business opportunities, MEL has entered into partnership agreement with different international and local companies and participated in several pre-qualification and bidding exercises within Nigeria in various sectors. For example, in order to expand its services in the field of telecommunication and smart metering, MEL has negotiated with related organizations such as NCC & Galaxy. In order to achieve 100% client's satisfaction MEL has always focused on its services' quality from very beginning to the end and have assisted them from investment to the commissioning. Monenco Nigeria has won and completed following tenders:



- ▶ Consultancy Service, Project Management & Site Supervision of 132kV Transmission Line and associated Substations
- ▶ Little Gombi – Mubi – Gulak 132 kV Double Circuit Transmission Line (125km)
- ▶ 2 × 60MVA, 132/33 kV Substation at Mubi
- ▶ 2 × 132 kV Line Bay Extension at Mubi Substation
- ▶ 2 × 60 MVA, 132/33 kV Substation at Gulak



Professional Affiliations

- ▶ Consultancy certificate for Oil & Gas sector: With regards to field development and international investment in Nigeria Hydrocarbon Sector, MEL has put on necessary provision in order to initiate its business in Oil & Gas sector. As the first step MEL has been granted a Consultancy Certificate for Oil & Gas Sector from Department of Petroleum Resources (DPR) of Nigeria. This certificate identifies MEL as a consultant and authorizes the company to engage in Oil & Gas Projects
- ▶ General Consultancy Certificate: MEL has applied for a Consultancy Certificate under Council for Regulation of Engineers in Nigeria (COREN), the Individual Certificates has been secured and the Corporate Certificate has been granted
- ▶ Environmental Consultant: MEL is accredited as Environmental Consultant with Nigeria National Environmental Standards and Regulations Enforcement Agency (NESREA) in the following category:
 - Environmental Management System
 - Environmental Audit
 - Environmental Studies

Completed Projects in Africa

- ▶ Feasibility Studies, Engineering Design and Preparation of Contract Documents for 34MW Dadinkowa Hydro Dam: The engineering service was completed and relevant bankable feasibility study report submitted to the client. Job Completion certificate was granted
- ▶ Engineering Services for Kabompo Gorge Hydro power plant in Zambia: MEL received job satisfaction certificate from the client
- ▶ EPC Bid evaluation (PHCN-TCN): Satisfaction certificate was issued by the client
- ▶ Consultancy services for the sixth cost of service study in the electric power sub-sector in Kenya



Engineering Management and Technology Company

MIR Engineering and Technology Management Company

For over 11 years, MIR Engineering and Technology Management Company, as a fully owned subsidiary of Monenco Iran Consulting Engineers has been dedicated to making a better world through diverse businesses that today span the following services:

- ▶ Management Consultancy (Strategic planning, Restructuring, Human Resource Management Governance model) Information and Communication Technology (ICT)
- ▶ General and Professional Training Services

Experienced qualified personnel and using modern systems led us to provide high quality services in the field of Management Consultancy services. More specifically we have focused on Designing Strategic Plans, Business Plans and ICT Master Plans. For instance, we designed and implemented Strategic Plans for Behpak Industrial group, Modje Niroo Company, Kharazmi Information Technology Development Company, Zarrin Company, Pars Switch Company and Monenco as well. Also in ICT sector for a regional power company, a project with the topic of optimal location of power plants was defined which is now under way.

One of important project for us was a market research plan for Pars Switch Company that completed in 2018, in this project MIR studied Iranian market for this company and select five country as target market. In addition MIR start to deliver some services in the Cooperate Governance to the large scale companies in IRAN, corporate governance is very important for business growth.

In 2018, MIR Company rendered various services in the field of training such as training courses which some of them are as follow:

- ▶ e-Learning course designed and implemented for simulation of software system that used in Monenco Iran
- ▶ Held 60 industrial courses for about 1200 students in various fields

Mir company has License is in the following sections:

- ▶ Certificate of rating and qualification of informatics companies
- ▶ License for training activities in Oil Company





Cigre, International Council on Large Electric Systems

Founded in 1921, Cigre, the Council on Large Electric Systems, is an international non-profit association based in Paris for promoting collaboration with experts from all around the world by sharing knowledge and joining forces to improve electric power systems of today and tomorrow.

Cigre counts more than 3500 experts from all around the world working actively together in structured work programs coordinated by the Cigre Study Committees. Their main objectives are to design and deploy the Power System for the future, optimize existing equipment and power systems, respect the environment and facilitate access to information.

Cigre Iran

In line with the missions of Iran Electricity Industry, Iranian National Committee for Electric Power Studies, Cigre-Iran, was established in 1989. In view of that, in 2016 Mr. Falahatian, Deputy Minister of Energy of Iran also chairman of Cigre-Iran, appointed Monenco Iran to act as the Secretariat of Cigre-Iran. Cigre-Iran's mission is to promote Cigre in Iran and increase involvement of Iranian members in CIGRE.

Executive Congress

- ▶ Mr. Hodayoun Haeri, Deputy Minister of Energy ---- Chairman
- ▶ Mr. Alireza Shirani, Managing Director of Monenco Iran ---- Executive Chairman
- ▶ Mr. Mohsen Arabani ----- Secretary
- ▶ Ms. Nasim Nematollahi ----- Administration Office Manager

Major Activities in 2018

- ▶ 4 technical committees have been organized as follow:
 - Overhead Lines
 - Substations
 - Protection and Automation
 - Distribution Systems and Dispersed Generation
- ▶ Over 70 Iranian memberships in Cigre
- ▶ Sponsoring 33rd International Power System Conference & Exhibition: in this conference, Cigre Technical Committee Chairman was invited as a key note speaker. Also Cigre Iran held 5 technical sessions with the titles as below:
 - The contribution of private sector in transmission extension planning
 - ICT Architecture of Iran AMI Project (FAHAM) and Using BigData on It
 - Special Protection Scheme in Power System
 - Improving market competitiveness in electricity market of Iran
 - A tutorial with the title "HVDC: A Technology in Continuous Evaluation"
- ▶ New approaches in Power Industry
 - Presence of 5 Cigre Iran members in Cigre Session 2018 and 2 papers were presented in this session
 - 5 Iranian memberships in Cigre international working groups



Cigre Iran Board Members Meeting

Profit (Loss) Statement at 20 March 2019

	1396 (at 20 March 2018) Million Rial	1397 (at 20 March 2019) Million Rial
Services Income	946,011	1,033,302
Services Finished Price	-779,397	-883,856
Gross Profit	166,614	149,446
General & Administrative Costs	-76,804	-89,771
Other Operating Income	3,678	127,357
	-73,126	37,586
Operating Profit	93,488	187,032
Financial Costs	-19,219	-13,999
Other non-operating income	5,221	16,445
	-13,998	2,446
Profit Before Tax	79,490	189,478
Tax on Income	-20,163	-17,000
Net profit	59,327	172,478
Accumulated Profit/Loss Account Turnover		
Net profit	59,327	172,478
Accumulated Profit in the beginning	233,094	269,912
Annual Modifications	-22,910	-9,134
Accumulated Profit in the beginning-modified	210,184	260,778
Profit Dividend	-5,650	-6,191
	204,534	254,587
Profit Distribution	263,861	427,065
Appropriation of Profit		
Legal Reserve	-3,083	-9,820
Accumulated Profit in the Final Period	260,778	417,245

Monenco Head Quarter

Monenco Iran Consulting Engineers
No. 12 Attar St., Vali Asr Ave., Vanak Sq.
Tehran, Iran
Tel: +98 21 81962061
Fax: +98 21 88771206
info@monencogroup.com
www.monencogroup.com

Monenco Offices in Iran

Isfahan

Apt #3, 1st Floor, Arman Building, Aref St.,
Sheikh Mofid St., Sheikh Sadoogh Ave.,
Tel: +98 31 36632253
+98 31 36629579

Shiraz

Building No. 1, Site 1 Urban Railways,
Shiroodi Blvd., Gol-e-Sorkh Sq.
Tel: +98 7137228105-6

Kermanshah

No. 11, 133rd St., Nobahar Blvd., Kermanshah
Tel: +98 83 38362825

Urumieh

No. 41 Molavi St., Urumieh, West Azarbayjan
Tel: +98 44 33459660

International Companies

Monenco Consulting Engineers (MCE)

P.O. Box: 1139, P.C. 133, Al Khuwair,
Muscat, Sultanate of Oman
Tel: +968 24619229
Fax: 968 24619210
mceinfo@monencogroup.com
Oman.monencogroup.com

Monenco Engineering Limited (MEL)

No. 52 Yedseram St., Flat 4 – Block 3,
Off IBB Blvd, Maitama, Abuja, Nigeria
info@monencogroup.com
nigeria.monencogroup.com

Monenco Germany GmbH

Bludenzer Street 6, 70469 Stuttgart, Germany
Javad.Mehdi@monencogroup.com
info@monencogroup.com
Germany.monencogroup.com

Representative

Canada: Mohammad Hoghooghi
1303 – 1415 West Georgia Street, Vancouver
V6G3C8 CANADA
mohammad.hoghooghi@gmail.com
info@monencogroup.com



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Monenco Subsidiaries and Representatives Internationally
Monenco International Presence



موننکو ایران
Monenco Iran

No. 12 Attar St., Vali Asr Ave., Vanak Sq., Tehran, Iran
Tel: +98 21 81961 Fax: +98 21 88771206
info@monencogroup.com
www.monencogroup.com