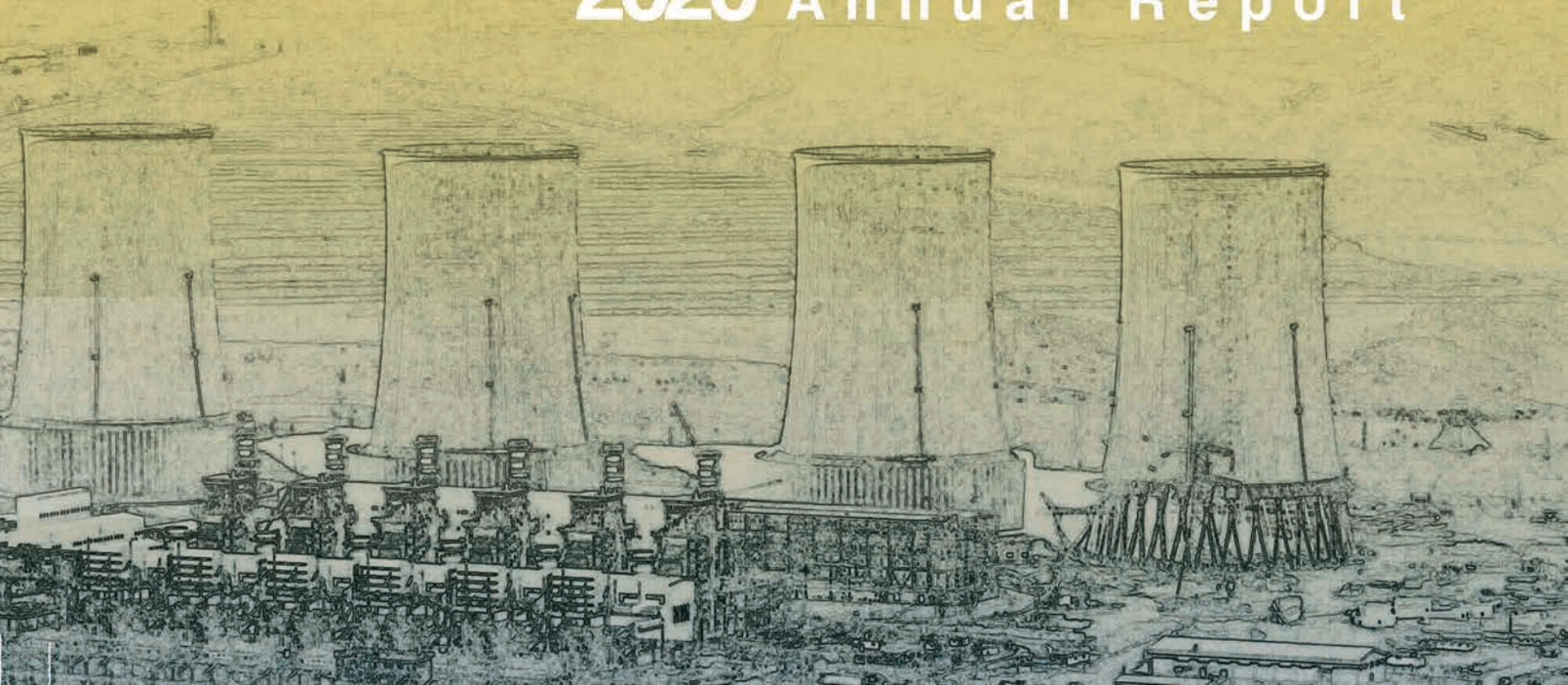
Monenco Iran

2020 Annual Report



Contents

MONENCO

+1000
Employees
from 14 nationalities
Iran, USA, Oman, India, Pakistan, Bangladesh, England, Malaysia, Tajikistan, Kyrgyzstan, Iraq, Germany, Nigeria, Egypt

48
Years
Experiences

+290
Clients
in 17 Countries

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

+65
Overseas projects

"Exemplary Exporter" in the field of Engineering Consultancy

Affiliate Member of International Federation of Consulting Engineers (FIDIC) as the only Iranian company

مـونـتـکو ایـــران
Monenco Iran
Consulting Engineers

The only consulting engineering firm among Iran's 300 companies by Industrial Management Institute

2
Representatives in Bangladesh and Canada

+450
Domestic ongoing projects

30% Presence in National Civil Project

3
Subsidiaries in Oman, Nigeria, Germany

3
Branches
kenya, Kyrgyzstan and Tajikistan

Monenco Global Networking and Project Foot Prints

Monenco Subsidiaries, branches and Representatives Internationally

Monenco International Presence

Business Areas

Power Transmission Lines & Distribution Networks

SCADA & Dispatching Centers

Oil, Gas and Petrochemical

System and Energy Studies

ICT

Airports

High Voltage Substations

Metro and Railways

Water and Wastewater

Power Generation

Management Consultancy

Mining

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.

Year of 2020,

In the late 80, the imagination of 2020 was a world of integrity, expanded to other planets in the galaxy with intelligent robots and computers to fulfil the human requirements and now, we passed 2020, but still far from these imagination and unfortunately still face with many places with poverty, lack of appropriate infrastructures and last but not least, less attention to the environment.

In such a circumstances, our rules as an International consulting firm is not only focusing on optimal design of the awarded projects, but also is focusing on the sustainable development, which includes but not limited to the soil, air and water as the main resources of the life.

We take on every element of a project from mining to infrastructure, oil and gas to electricity, telecommunication and ICT to smart home and smart cities, subway to electrical rail way as well as water. Offers services ranging from Master Planning, Feasibility, Environment and Sustainability Management, Architecture, Engineering & Design to Project Management to all major sectors of infrastructure. The unique feature of Monenco comprehensive and innovative service is the value addition imparted to each of its services.

We are proud ourselves in providing sustainable projects with emphasis on safety, excellence and commitment. We offer various services with focus on our client's needs, but never compromising on ethical standards, safety and quality.

Top Management

With attention to these facts, in the year 2020, Monenco tried more than before to fulfil its predefined values such as:

- Professional ethics
- Social Responsibility
- Team Working
- Knowledge Sharing
- Environment Protection
- Personal & Organizational Empowering

We always rise above the expectations of our valued clients and that is why Monenco has become a trusted Consulting Engineering organization.

Over the past 48 years, we have stayed true to what we always believed in – that our clients and professionals deserve our best – and this is still the foundation for our dynamic domestic and beyond operations today.

We hope that this annual report can completely describe these efforts which were made by our colleagues, partners and albeit our shareholders in Monenco for these purposes.

We are confident about the future of Monenco as we look toward new opportunities and continued growth in our many fields of services in Iran and beyond. We continue to strive towards our aim of becoming a leading consultancy organization in the world.

The success of our firm lies in the effective execution of projects and the workmanship of our group. I would like to express my deepest gratitude and appreciation to our clients for their confidence in our craft. To ensure success, we believe in hiring people with the right values and specialized experiences. Cheers to our dedicated team for their untiring efforts and hard work.

At the end, let take help from Johann Wolfgang Goethe who said:

Daring ideas like chessman moved forward, they may be beaten, but they may start a winning game.

In closing, I would like to thank our clients and shareholders for their continued support and our employees around the world for their dedication and commitment to our clients, our communities and Monenco.

Top Management

Faramarz Ghelichi

Ghelichi.Faramarz@monencogroup.com

Obtained his B.Sc. in Electrical Engineering from Ferdowsi University and DBA from University of Tehran, Faculty of Management. 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.

Siamak Khalaj

Khalaj.Siamak@monencogroup.com

Obtained his B.Sc. in Electrical Engineering in 1997 from Iran University of Science and Technology and MBA from University of Tehran, Faculty of Management. Since then he joined Monenco and has been working for the company for 21 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.

Amirali Bankian

Bankian.Amir@monencogroup.com

Obtained his B.Sc. in Industrial Engineering from K.N. Toosi University of Technology and MBA from University of Tehran, Faculty of Management. Since 2002 he joined Monenco Iran and has been working for the company for 18 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 S ystem Director.

Ali Talkhabi

Talkhabi.Ali@monencogroup.com

Obtained his B.Sc in Mechanical Engineering from Shahid Beheshti University in 1999. He started his professional activities by joining Azarab industries Company for 8 years, held different positions, which latest was Project Manager for Tehran Refinery Project, then started working in Doris Engineering LTDA Company as Technical expert in south pars gas field development Phases 6, 7 & 8 for 1 year. He joined Monenco in 2009 as Mechanical Manager and in 2019 was appointed as the deputy to Oil & Gas director. Finally, in 2020 he was appointed as the Oil & Gas Director.

Pouneh Dadgar

Dadgar.Pouneh@monencogroup.com

Obtained her B.Sc. from Sharif University of Tenchnology in Fluid Mechanics Engineering. She Joined Monenco Iran immediately after her graduation in 1997. Since then she has been experiencing a variety of professional position. She worked as a BoP designer for 4 years in Monenco. Then she worked in Nargan Consulting Engineers as fixed equipment designer for one year. After that she came back to Monenco and worked as plant layout and piping designer for 4 years. She joined Power Generation Division as Mapna Standard Combined Cycle Power Plant project manager for 3 years. For 4 years she was power plant consultant in different types of projects. From 2016 she was prompted as “head of 3D Integrated and Plan and Proposal Discipline”. Finally, in May 2020 she has been appointed as the Director of Power Generation Division.

Nazila Majidi

majidi.nazila@monencogroup.com

Obtained both her B.Sc. and M.Sc. from Amirkabir University of Technology (Tehran Polytechnic) in Polymer Engineering. She joined Monenco Iran immediately after her graduation in 2003. Since then she has been experiencing a variety of professional positions. After spending the first two years as a process engineer, she joined the Power Generation Division of the company and worked there for 12 years as the project engineer and project manager. Acquiring both technical and managerial background, she eventually came back to Engineering Division as the manager of Process and Environmental Engineering Department and since Sep 2019 she has been appointed as the Director of Engineering Division.

Top Management

Elham Sadeghian

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Obtained her B.Sc. from Bahonar University and M.Sc. from K.N. Toosi University in Electrical Engineering and her DBA from University of Tehran, Faculty of Management. 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

Obtained his B.Sc and M.Sc. in Mechanical Engineering from University of Tehran and Received his Ph.D. from University of Joseph Fourier of France. 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 in Niroo Research Institute and in 2007 while he was associated professor of Shahid Beheshti University he joined Monenco Iran and appointed as R&D Manager.

Rahim Zeinali

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

Javad.Mehdi@monencogroup.com

Obtained his B.Sc. in 1972 from Faculty of Chemical Engineering of Karlsruhe University of Germany, his M.Sc. in 1975 & his PhD in 1978. From 1978 to 1990 Dr. Haji Javad worked as project manager at Fichtner Consulting Engineers in Germany. In 1990 he joined AF-Consult Switzerland. From 1995 to 2012 he was Head of the Thermal Energy Plants Department. During 2012-2013 he 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 he has been working for the company for more than 22 years. He was the project manager of many of OHL projects to design and implement projects from 63 kv up to 400 kv Power Transmission Lines , and project manager of designing of 765 Kv Overhead Transmission line projects as well as -/+ 500 Kv HVDC projects (including Overhead line and Convertors). He was appointed as Manager of Power Transmission and Distribution Networks Department of Monenco from 2010 until 2014 and in 2015, he was promoted to be the Managing Director of Monenco Consulting Engineers LLC (MCE) in the Sultanate of Oman.

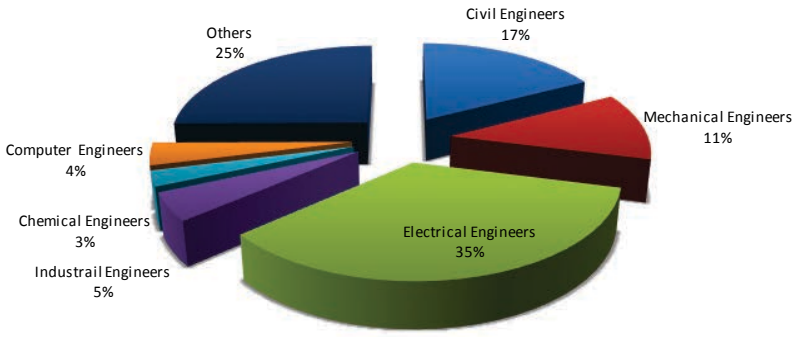
Major Experiences of Monenco

- Over 60,000 MW Power Plants
- 14 Renewable Energy Projects
- 18 Dispersed Generation Projects
- 2 Water & Wastewater Engineering Consultancy
- 2 Heat Recovery Projects in Steel Industry
- 14 Heat Recovery & Energy Optimization Projects
- 47 Economical & Technical Feasibility Studies
- 1 Software Development
- 58 National, Area operating, Regional and Distribution Dispatching centers
- 70 Telecommunication Systems & Networks and Master Plans
- Smart Solutions for Industries and Organizations
- 64 Oil & Gas Complexes
- 26 Mining & Geology Projects
- Over 27,500 Km Transmission Lines up to 765 kV, +/-500 kV HVDC & OPGW
- Over 60,000 MVA Substations up to 500 kV AC and +/- 500 kV HVDC Systems
- Over 215 km Electrical Railway & Subway Projects and 30 Subway Stations
- Over 34 Km Highways
- Over 400 Km railway electrification
- Detail design of 2 metro lines & metro system
- Over 50000 m^2 Industrial, Commercial, Control Centers and Training Buildings
- Over 100 Master Plan and Loss Reduction Studies of Distribution Systems in Major Provinces and Cities

Overseas Projects

- 32 Projects in the Field of Power Transmission Lines, Distribution Networks & Power Substations
- 2 Projects in the Field of Power System Restructuring
- 1 Project in the Field of Improving System Reliability and Efficiency
- 2 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
- 3 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
- 1 Project in the Field of Supervision Services for Implementation Project of Replacement SCADA/DMS Master System and Cyber Security, Oman
- 1 Project in the Field of Power System Reliability and Efficiency Improvement, Project of the World Bank, Bangladesh
- 2 Projects in the Field of Hydro Power Plants
- 3 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

Composition of Experts in 2020



- 3 Projects in the Field of Oil & Gas
- Recovery of Petrochemical Plants
- Carbon Capture & Storage Methods (including pollutant control and producing CO2 for industrial and other purposes)

Expansion of Services

- Consultancy services for design of industrial, administrative and commercial buildings
- above ground facilities for midstream of oil & gas industry
- Minerals Processing
- Application of Virtual Reality (VR) & Augmented Reality (AR) in high voltage substation
- 3D Modeling for power substation using Autodesk Revit
- Consultancy services for Digital Power Substations and Unmanned Power Substations
- Consultancy services for Asset Management
- Consultancy services for PM & RCM
- Reforming the contract conditions based on FIDIC models
- Detail design of Subway Line Power Supply
- Detail design of HVAC and Smoke Disposal in Subway Tunnel and Stations
- BIM (Building Information Modeling)

Meeting Between Monenco Iran & MAPNA Group

- Consultancy Services for Development, Installation and Support of Optimum Distributed Generation Placement Software in Power System Grid
- Consultancy, feasibility studies and engineering services in areas related to Electrical (Transmission, Distribution), Water & Waste Water, Oil & Gas and major Industry Dispatching and Automation based on state of the art methods and modern Artificial Intelligence and Smart Technologies.
- Smart Cities
- Smart CNGs and UFG detection
- Smart Distribution Automation
- Submarine Fiber Optic design
- Enterprise Service Bus (ESB) platform design
- IMS technology to transmit voice calls over IP network
- Telecommunication master plans based on IP design in place of TDM
- Block Chain, Data Mining, Smart Contracts, etc.
- ICT Governance
- Vessel Terrific Services
- Power generation in industries, Solar field design for solar thermal power plant ,Optimization design of power plants, Design of water and waste water treatment plant for Industries, Desalination plants ,Rehabilitation and Repowering

Business Development

Development and growth are achieved by reviewing the goals, planning, prioritizing actions and also constant improvement. Reaching the goals needs spreading the culture of excellence, retain and improve values, ethical principles and observation of social responsibilities. In this regard, Monenco's strategies are defined as bellow:

- Market development focusing on international markets
- Diversification of the services portfolio
- Promoting the position and brand of Monenco in domestic and international markets

Market Penetration

Domestic

In 2020, Monenco was successful in increasing domestic capacity and capabilities which led to the award of the following projects in new, national and strategic fields:

- Railway lines electrification studies
- Consulting services for evaluation of companies providing comprehensive customer service software
- Third stage consulting services (before, during and after supervision) for construction of fire alarm network base system and its connection to the fire stations
- Technical, economic and social assessment of solar thermal power plants
- Study of compiling the governing document of information technology and communication
- Supervision and Site supervision services for the construction of Airliner Engine Test Cells
- Electronic control and monitoring services of the navigable waterways
- Feasibility studies for the use of biogas produced from the treatment plant
- Supervision services (site supervision and supervision) for gas transmission lines strengthening unit projects
- Reviewing services for detailed design and existing drawings as well as designing and supervising for oil transfer monitoring unit construction project operations
- Consulting services for reviewing studies and design of metro stations

the first general assembly of the Employers' Association of Energy Consulting Engineers

- Consulting services for the electricity export auction
- Elicitation of detailed information and additional requirements for the urban smart elements plan
- Basic and detailed design of vessels electric power supply system using local electricity network
- Engineering services for water transmission pipelines coating and welding inspection
- Feasibility studies and measures related to the National Cyberspace Center Plan
- Power plant ACC vibration correction studies
- Updating the Iran's comprehensive coal plan regarding the thermal coal mines as well as coal market studies in Iran and the region
- Solar farm design and engineering services for combined cycle power plant
- MC and Site supervision service for Desalination Project

- Macro-environmental Impact Analysis (PESTEL) on the business focusing on the effects of technological changes
- Basic design and engineering of prefabricated oil processing unit in the oil fields
- Virtual Reality (VR) and Augmented Reality (AR) applications
- Compilation of instructions for the operator-less sub transmission substations operation
- Design and engineering for Heavy Fuel Purification(HFO) pilot system
- Instantaneous monitoring of turbine and generator dependent parameters to detect deviations
- Consulting Services for banks power room design

On the other hand, below new names were added to the list of Monenco's clients in 2020:

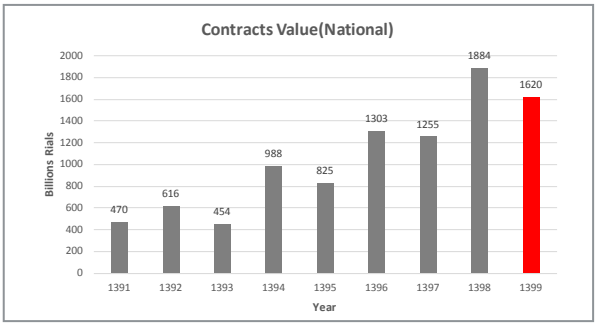
- Trade Association of Electric Energy Distribution Companies
- Tehran Province Electricity Distribution Company
- Kermanshah Province Electricity Distribution Company
- Tehran Urban Research and Planning Center
- Ports & Maritime Organization
- Fath International Electrical and Energy Laboratories Company
- Shahid Tondgooyian Petrochemical Company
- Agricultural Parks Company
- Petroleum Engineering and Development Company
- Tehran Municipality ICT Organization
- Lengeh Ports & Maritime Organization
- Regional Water Authority of East Azerbaijan
- National Cyberspace Center
- Shimi Baft Petrochemical Company
- Mehdiabad Lead and Zinc Mines Development Company
- Vinesaar Consulting Engineers Company
- Azaran Industrial Structures Company
- Taraz Coating Steel Industries
- Naghshe Aval Keyfiat Company (NAK)
- Academic Center for Education, Culture and Research
- MahTaab Kish Water and Power Company
- Iran Alloy Steel Company
- Gohar Energy Sirjan Company
- Dehdasht Petrochemical Company
- Payvand Gostar Pars Electricity and Energy Company
- Bank Melli Iran

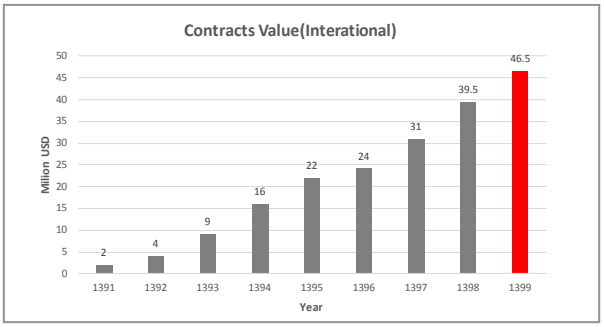
Auditing of Monenco Iran Integrated Management System

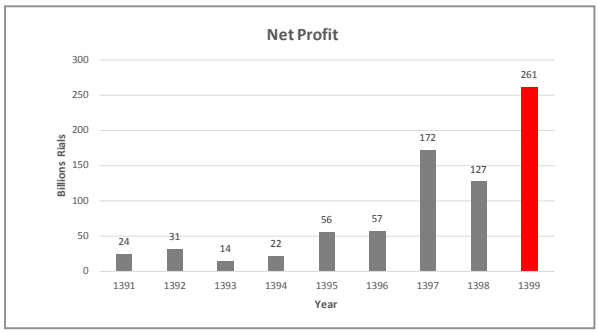
International

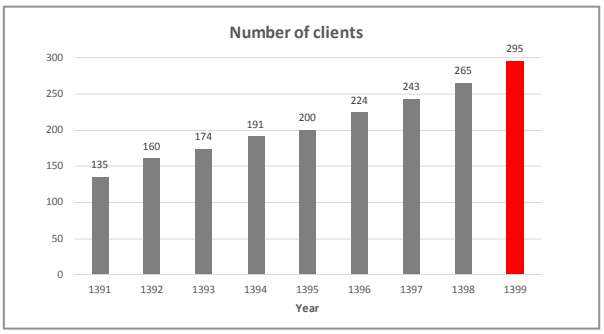
International market penetration is one of our main business growth strategies. We have been committed to meet the client's expectations by offering excellence, quality and reliability in all fields of our operations. In addition, being recognized as one of the top international consultants has empowered Monenco to be awarded the following projects:

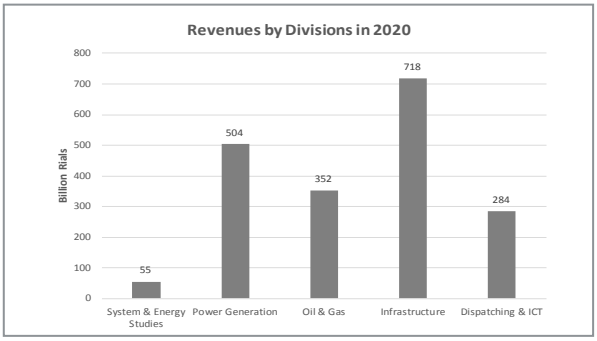
- Consultancy Services for Replacement of Existing Distribution Network by Underground Distribution Network (Power Distribution Network of Jalshiri Housing), Client: Narayanganj, Pally Bidyut Samity 2 (PBS-2), Bangladesh
- Zob-Ahan Industrial Wastewater Treatment Plant, Client: Nasb Niroo, Iran
- Owners engineers to supervising & executing shutdown and energizing activities for distribution network, Client: DPC, Oman
- Provision of Qualified Personnel and Equipment for 30 Laser scanning of R 1 Offshore Complex Topsides, Client: Nautic Middle East DMCC, UAE
- Pre-bid engineering service for proposed electrical network, Client: Al Hadeetha Resource L.L.C, Oman
- Long-Term Agreements for Engineering Design Service for the UN World Food Program projects, Client: UN-WFP, Italy
- Electrical Interconnection of Block 10 & 20 at DGC Salalah, Client: Precision, Oman
- Detailed Design Engineering (Electrical & Civil) - Elecnor Projects, Client: AFAQ AL MUSANA TRADING LLC, Oman
- Consultancy services for design and supervision for new 132 kV grid station at Wadi Bani Auf., Client: OETC, Oman
- Qarn Alam Power Plant Co-generation Project - Power System Study, Client: Petrofac, Oman
- Feasibility Study for Interconnection of Power Grids of Azerbaijan, Iran and Russia, Clients: Rosetti & Azerenerji JSC
- Design Consultancy and Supervision Service for Tanweer project (Substation and Transmission Line 11/33 KV), Client: Tanweer, Oman

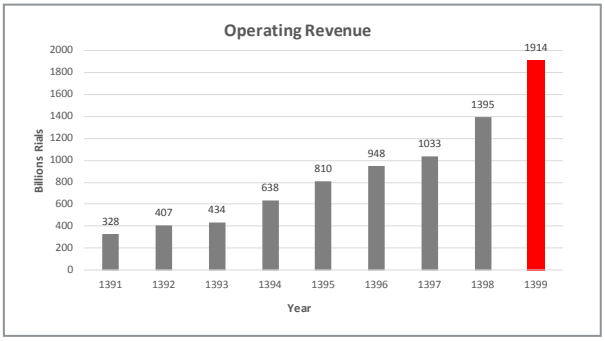












New Area of Experiences

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.

By taking advantage of our international experience we have been successfully active in new areas such as design of power distribution network in a very densely populated area, feasibility studies and detailed design as well as providing a comprehensive plan for the UG (underground) network and GIS survey replacement SCADA/DMS Master System and Cyber Security, electrification of water desalination plan, feasibility study for PPP projects in various sectors, capacity building in renewable energies and training.

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 companies in the fields of Electricity Industry, Oil and Gas, ICT consultancy, Traffic, LPG, Mining and Mineral, Technical training and renewable energies.

Global Presence

Due to the Company's diverse technical, managerial and financial skills and knowhow, Monenco has been capable to handle the challenges of global presence. Indeed, globalization is our main growth strategy and our registered companies around the world reflect our focus on discovering new opportunities and delivering long-lasting values.

As a result of internationalization strategy, we've established our companies in Nigeria in 2010 and in parallel, in Oman and following to that, we started our official presence in Europe by incorporating 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.

As a part of our market development targets in CIS countries, Monenco successfully registered two offices in the region.

Monenco Kyrgyzstan and Monenco Tajikistan were both established in 2019 and eased our productive presence in CIS region, so that we participated in nearly most of the EBRD funded projects in renewable energies and water and wastewater sectors.

As one of the leading engineering companies in Power Sector of Sultanate of Oman, we've signed 11 contracts during the last year in this country and clients requested us to bid directly for major contracts.

In the eastern part of Africa, especially in Kenya, Tanzania and Uganda, Monenco tried to achieve prominent success by registering its own office in Nairobi, Kenya in 2020 and reinforcing its powerful networks and signing several Memorandum of Understanding with its local partners. As a result, Monenco signed a strategic contract with Kenya Electricity Transmission Company (KETRACO) for Consultancy Services for Engineering Design and Contract Documentation, Soil Investigation and Engineering Survey for almost one fifth of the country Power Transmission Lines.

CASA 1000 Representatives from Tajikistan Visited Monenco Iran

Through our reputation and technical capabilities which we have forged during all these years, we succeed to achieve the contract of interconnection of Iran, Azerbaijan and Russia transmission lines. Besides that, in 2020 we were listed as the trusty consultant of CTCN (Climate Technology Centre & Network, which is the operational arm of the UNFCCC Technology Mechanism, hosted by the UN Environment Program and the UN Industrial Development Organization (UNIDO)) and UN for fulfilling upcoming projects.

Geographical Expansion

Establishing companies in Nigeria, Oman and Germany as well as registering offices in Kyrgyzstan, Tajikistan and Kenya beside strong networks of local partners have strengthened Monenco's presence in Middle East, Europe, Africa, south Asia and CIS countries and as a result we participated in various opportunities in several countries including Afghanistan, Angola, Armenia, Azerbaijan, Bangladesh, Chad, Congo, Ethiopia, Georgia, Ghana, Kenya, Lebanon, Malawi, Mauritania, Moldova, Mozambique, Namibia, Nepal, Nigeria, Oman, Pakistan, Rwanda, Seychelle, Tajikistan, Tanzania, Uganda, Uzbekistan, Zambia, Mauritius, Botswana, Libya, Burkina Faso, Liberia, Cameroon, Ivory Coast, Lesotho, Swaziland, Zimbabwe, Russia, Sierra Leone, Mali, Niger etc.

The successful geographical expansion along with world class technical qualification resulted in being shortlisted in 10 projects in different countries around the world in various fields including Tajikistan (Pamir Energy), Bangladesh (BAPEX), Botswana and etc.

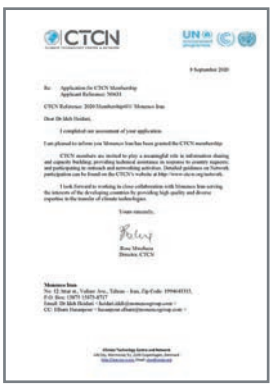
Memorandum of Understanding and Agreements

In order to enhance our technical and financial offers and in order to engage the local work power we reached to several agreements and signed MOUs with our local and international partners to achieve a win-win strategy in international market. These mutual alliances have led us to not only expand our international market but also to practice new areas of experience and knowledge.

In the last year only, we signed about 9 MOUs with local companies from Afghanistan, India, Pakistan, Libya, Mauritius, Uganda, Mozambique and Nigeria in different fields for Oil and Gas, Railway, Power Transmission, Power Generation, Communication and Mining.

Certificates and Awards

- Monenco Iran obtained 25 grades for providing consulting services from Iran Plan and Budget Organization in which 6 grades have been obtained in 2020.
- In 2020, Monenco Iran extended the validity of certificate from Iran Association of Banking and Credit Investment Consultants for one year. Monenco has grade A-2 for providing feasibility study and supervision services on funded projects by investment authorities and banks.
- Updating HSE Accreditation Certificate Awarded by General Director of Cooperatives, Labor and social welfare of Tehran Province
- Ranked 297th in Top 500 Iranian Companies by Industrial Management Institute (IMI-100 ranking) According to the 2016-2017 fiscal year
- Updating Membership of Tehran Chamber of Commerce Industries Mines and Agriculture
- Membership at Center Technology Network and the United Nations Climate Technology Network (CTCN)
- Membership renewal for federation of consultants from Islamic countries(FCIC)
- Updating the Telecom Syndicate Membership



- Updating Membership of Iranian society for human resources
- Updating Membership of International Consultants and Contractors Association of Iran
- Updating Membership of Iranian ICT Guild Organization
- Updating the Membership of Union of Exporters of Engineering Services, Consultants and Contractors of the Telecommunication Industry of Iran

In 2020, Monenco Iran successfully carried out 30 projects which accordingly the related satisfaction letters have been issued by the clients. When looking back, Monenco performance indicates 33 and 29 in 2019 and 2018 respectively with the same KPI.

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.

- 20th International Electricity Exhibition (IEE 2021)
- The 16th International Water & Wastewater Exhibition
- 2nd International Smart City Exhibition
- Iran Exhibition on Water, Electricity, Energy, telecommunication technical & engineering consultancy in Afghanistan
- 48th International Cigre e-session

Monenco Iran at the first exhibition of Iran's Technical and Engineering Services in the field of Water, Electricity and Energy in Afghanistan

Publications and Presence in the Conferences

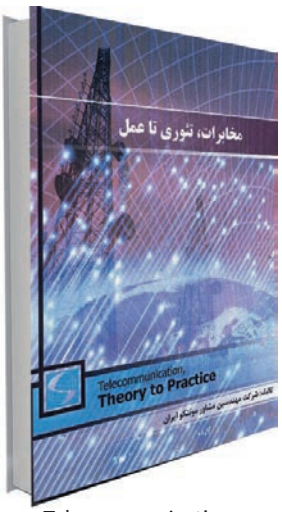
We believe that sharing the new knowledge is essential to the survival of our business.

Following our commitment to publish our knowledge constantly, we have published one book in 2020 by the title of "Telecommunication, Theory to Practice" also, one other book in the field of Refinery is at final stages which will be published soon.

In addition, Monenco published 15 accepted international and 49 national papers and researches in 2020.

Furthermore, 82 technical reports were prepared to support our actual and potential clients of the latest technologies and services.

In 2020 we held 126 internal/external seminars and training courses to improve the technical and managerial knowledge of our experts and managers.



Telecommunication, Theory to Practice

Corporate Social Responsibility

As an international consulting engineering firm, Monenco 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 2019, Monenco was successfully active in pursuing CSR opportunities based on Monenco corporate social responsibility strategies as described below;

Compilation and publication of books

Collaboration with employers in the hope of using foreign financial resources such as Green Climate Fund (GCF)

Launch of Monenco Insights application includes technical reports

Preparation of technical reports and national and international articles

Cooperation with organizations and NGOs; for instance blood donation and blood pressure campaign

Submitting the idea of changing Iran to the regional energy hub (negotiation with Oman, Tajikistan and Iraq as well as study and investigate the plan of connection between AIR countries)

Submitting an insurance guarantee plan (Surety Bond) to the Ministry of Economic Affairs and the Planning and Budget Organization

Presenting the national idea of the hidden economy plan to the Ministry of Economic Affairs and Finance

Protection and cooperation with charities

Awarding scholarships to top students of University of Tehran

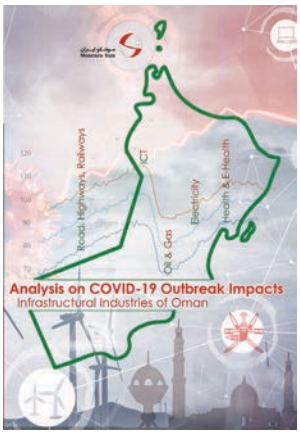
Awarding scholarships to top students of Sharif University of Technology

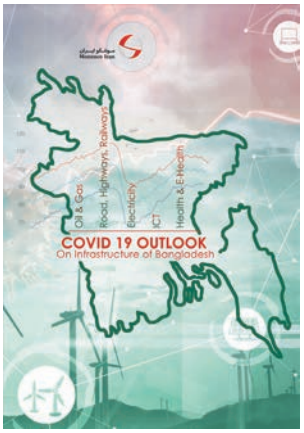
Focus on research and development

Responsible of all Cigre Iran activities

Focus on renewable energy sources projects

In 2020, Covid 19 Pandemic happened and had certain consequences on global economy. In this regards, Monenco Iran, based on its community commitment, prepared and published reports about the effects of Covid 19 on infrastructure industries of I.R. Iran, Oman and Bangladesh. These reports distributed among key decision makers of before mentioned countries and Monenco's recommendations and solutions have been addressed in reports."





Economical Perspective

Considering the long-term benefits for all stakeholders in carrying out the projects, in 2019, we focused on economic viability in order to increase the productivity, reducing costs, reducing use of resources and increasing the income.

Environmental Perspective

At Monenco, we use sustainable design and engineering in our projects 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.

Following is some of the projects Monenco was involved in 2020 in respect of environmental aspects of CSR:

- Heavy Fuel Oil (HFO) treatment system
- Green climate
- Bio-ethanol production
- Heat recovery and energy efficiency
- CO2 reduction
- Renewable energies
- Smart cities

Recruitment

In the process of finding and hiring the best qualified candidates for available jobs at Monenco, we have focused on placing the right people to the right roles and we are investing in people who are capable of responding to modern technologies and are revising the competency model of Monenco in order to find the most competent candidates.

In 2020, out of 2303 people who have applied for a position at Monenco through our website, 350 interviews were conducted and 95 people were chosen to work at the headquarters and also a total of 301 supervising engineers were chosen to work at worksites.

HR Branding in 2020

As we desire to be among the 100 best consulting engineers according to the ENR list, internal branding will make us unique. Employees as Brand Ambassadors are our best assets to convey our goals.

Also, Culture is one of the three principles in our HR Branding methodology. So we carried out a survey on employee's perceptions and experiences. It helped us detect any gap between our favorable condition and what exists. Which we all know is inevitable in every organization. So to solve the problem we need to spend several months and even a year introducing our desirable culture to our people, fortunately because of the digitization era it can happen intensively, through digital channels. These events allow people to articulate how their work brings our brand to life, and how their role as an organization's window is important to how we appear in the market and society.

Accordingly, we planned improvement actions and they are in progress, Because we know the great impact of these actions when employees also realize them. We try to translate people's experience and expertise into our evidence of unique insight.

Improvement actions:

- Creating an employer brand that attracts people who exemplify our unique service brand
- Communicate our vision and mission clearly at an expert's level through having regular meetings with senior managers, which helps them take pride in opportunities to share beliefs, failures, strengths and decisions
- Having periodical surveys to compare the results with an optimal level (normally every 2 years)

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 targets that are directly linked to Monenco's strategies.

In Monenco, Performance Management is posited as a strategic technique that supports Monenco's goals through linking the individual's work goals to the overall mission of Monenco. It is further thought of as an integrated system where managers and employees work together in setting objectives, assessing and reviewing how goals are being met and also 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 the Armstrong model.

Monenco's Performance management process

The main features of Monenco's Performance Management System are as follows:

- Managers are responsible of aligning employees' performance with Monenco's strategies
- Managers are responsible of setting and clarifying their expectations in an agreement meeting with employees
- Managers are responsible to make necessary arrangements for coaching in case of employees' needs
- Managers monitor employee's performance indicating the level of expectations that have been met
- Managers analyze employee's performance and provide necessary feedback
- Managers set new performance expectations for the next period

In Monenco, the HR Department is in charge of deploying this model properly and providing 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.

Strategic Talent Management in Monenco Iran

As a strategic process it was aimed to apply a model which keeps errors and bias to the minimum.

- Accordingly, searching through the best practices started by benchmarking international companies and the best ranked universities, and finally a 9box (GE) Matrix was chosen because of its simplicity and measurable properties. The aim is to choose talents for a succession plan.

Due to the model following tasks have been carried out in Monenco Iran:

- Identifying key positions
- Identifying potential indicators for each position
- Evaluating employees based on their potentials and the performance indicators
- Applying a 9 box calibrate matrix to prioritize them in boxes (mathematical methods were applied)
- Matching the employees' points and scores in the matrix's axis to find their positions in the talent pool.

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

- As clearly defined
- As consistent across the business
- Differentiated by function, role and level
- By updated intervals

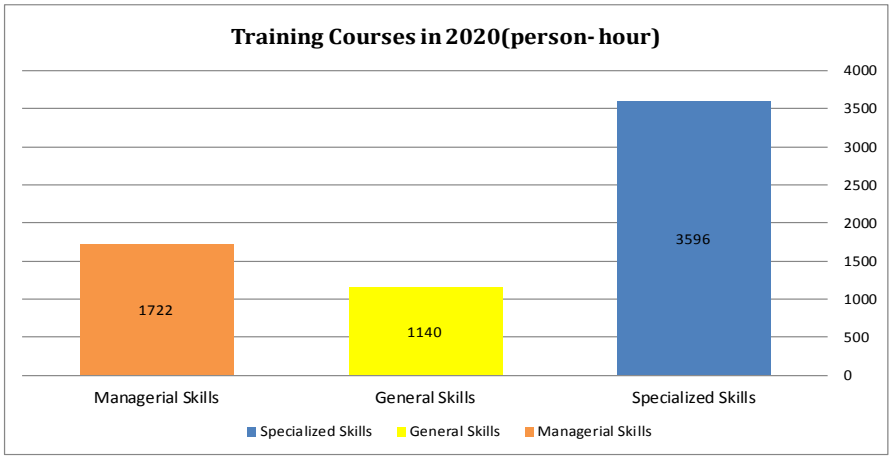
The outcome of talent management

Four boxes are critical in the Matrix, so we have deeply focused on them. As mentioned before, we assessed and situated employees in boxes according to the assessment, to organize a talent pool which consists of employees in boxes numbers 5, 7, 8 and 9, therefore they are chosen as stars.
Phase two, is designing the chosen talent's career and development path (formal and informal).One of the main goals of talent management is employee's satisfaction and retention.

Based on different surveys and trouble analysis it was found that career development is one of the main disappointing facts in most organizations. As vertical promotion is not possible to advance thoroughly for all, Horizontal promotion is a perfect way to solve the problem.
Based on this theory, planning stars' development is in progress. Precise recognition about needed training and detecting deficiencies to grow is our major principle.
The benefit of the talent pool at the moment is to train suitable employees for empty positions; trainings planned by human resources department for individuals that increase efficiency and avoid wasting expenses.
All the while, highlighting the role of the human resources department as a business partner.
Considering the importance of reviewing the Talent Bank and evaluating the staff, this process is carried out biennially.

Training and Development

As an international consulting firm, Monenco's strategy is to be modern and up-to-date in terms of knowledge and science. Therefore, training is considered as one of the most critical functions of HR in Monenco. Due to the Covid-19 pandemic, the number of training courses held in our organization were lessened at first but eventually, online courses were programmed and elevated and back on track.
The purpose is to foresee the needs of employees and design the required courses in line with Monenco's strategies, competency model and ISO 10015.



Teleworking during the Corona Pandemic

Since the outbreak of the Covid-19 Pandemic, to ensure the well-being of workers and continued productivity, MonenCo decided to switch from office work to daily/hourly remote work.
With 507 employees working at the headquarters of MonenCo, a total of 13330 days were spent teleworking. In order to evaluate teleworking, employees were expected to send a report on what they had managed to work on during their teleworking hours/days.

Information Technology

In 2020, Monenco successfully renewed the Information Security Management System (ISMS) certificate (ISO/IEC 27001:2013) for the third year in a row. The renewal of this international certificate demonstrates the improvement of the security standards in order to protect the information of the organization's stakeholders which indicates the credibility of Monenco Iran in providing a safe consulting engineering services. Accordingly, in order to institutionalize the culture of information security, continuous improvement of this system and identification of new risks as well as recognition, analysis and selection of appropriate control measures in risk management will always be on our agenda.

In the same year, the preemptive OWASP testing process was implemented by the IT Group to identify and assess the vulnerability of the web applications and websites. In this process, in order to detect vulnerabilities, it was tried to penetrate the web applications and websites through assessment and precise testing. These evaluations confirm the effectiveness of defensive mechanisms and adherence of end-users to security procedures.

Some of the major development projects of IT department in 2020 are as follow:

- Improvement of security for all web applications by adding SSL certificates and also implement OWASP test for critical services
- Network configurations to improve security issues
- Optimization of resources with virtualization technology in ICT group (almost 40 services were transferred to virtual server; this project will be continued in 2021)
- Implement an Internal ISMS auditing project in order to identify vulnerabilities
- Define and implement many improvement projects to upgrade our ICT infrastructures such as firewall, switch and network policies
- Design and implement a secure teleworking platform for remote working
- Improvement of quality of services for ICT stakeholders with modern tools and processes despite the growing number of users and variety of services
- Launch a Web Application Firewall to improve internet services
- Due to corona pandemic, Monenco Iran implement the teleworking platform therefore it was required to publish the internal IT services to secure the internet and web applications which have to be protected from the software attacks
- Providing and developing a few software application in AR (Augmented Reality) and VR (Virtual Reality) and in this field this project (Develop an AR/VR Laboratory) was awarded to monenco from MAPNA group

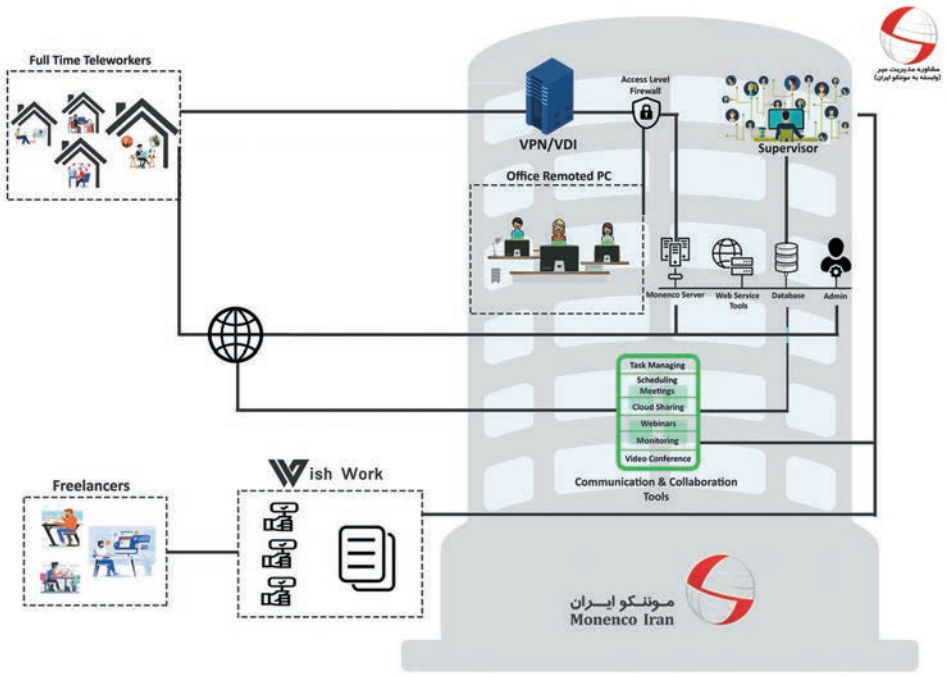


Figure 1 - Teleworking Platform Architecture

- Developing a software project which is an integration tool with 3D software design (PDMS). This project helps designers to estimate and optimize the price of materials and equipment in a power plant
- In order to support HSE processes, a software service to render and analyze medical test results was designed and implemented (for employees)

Strategic Planning

Strategic Planning is used for one purpose only and that's to help an organization carry out a better job. If we cannot assess and adjust the organization's direction in response to a changing environment, our strategic planning method has to be changed.

In the middle of 2018, we finalized the strategy review after one year continuous meetings with top managers of the company, evaluating IE factors. Then, we defined several detailed key performance indicators as a Balanced Scorecard to measure the extent of strategic goals achievement.

In 2019, our main challenge during our strategic planning review was the rapid changes in our business environment. In this situation, the company needs to stay competitive by recognizing and capitalizing on opportunities as well as identifying potential threats and mitigating or preventing them from materializing in the first place. Therefore, we started to develop the Agile Strategic Management.

According to that, last year, we studied about organizational agility and strategic agility. Our survey was shown that strategic agility is one of the organizational agility dimensions.

In fact, strategic agility is the ability of quickly and appropriately respond or drive change while maintaining flexibility and focus. Therefore, we have developed customized agility model for Monenco Iran in 7 steps as shown in figure 2.

Figure 2– customize agility model for Monenco Iran

Project Management System Implementation

In 2020, we decided to review and improve our project management according to the draft version of PMBOK Guide 7th Edition, ISO 21500 and PRINCE2 as other sources for project management. Eventually, according to Monenco organizational structure, we realized that the most proper way is to work with knowledge areas (According to PMBOK Guide 6th Edition) and themes (according to PRINCE2 and also PMBOK Guide7th Edition) correlative and paralleled. Besides, we are modifying our governance method by developing an ongoing comprehensive audit system to monitor how project managers are implementing the procedures. Finally, for each 10 knowledge areas, we documented a customized guideline of all needed forms in various knowledge areas which caused project managers work with a standardized system throughout the company.

Budgeting Process

In 2019, AHP method with 6 parameters was used to define revenue target. In 2020, the model was reviewed and AHP parameters reduced to 5 by merging “Global business and market situation” and “Estimated income from current & Potential Projects” into one parameter.

Furthermore in order to estimate the strategic budget in US dollars, we used Purchasing Power Parity rate which is calculated by comparing the Poverty Line in Iran and USA.

Monenco Iran	Revenue Targets						Date:	
Dep / Parametrs	Power Generation	Oil $ Gas	Power Transmission and Distribution	Dispach, Communication and Information Technology	System Study Center	R & D	Total	weight considered
Strategic planning target	895,271,626,696	613,220,250,829	1,293,271,456,158	489,449,596,060	99,637,516,686	15,824,259,436	3,406,674,705,865	1,732,068,455,357
Actual revenue trend	574,483,600,000	551,324,000,000	1,036,748,000,000	333,523,000,000	39,631,800,000	15,824,259,436	2,551,534,659,436	299,646,840,409
Projects potential in next years	625,418,967,285	294,128,166,660	1,035,322,054,151	286,043,567,340	175,028,858,267	15,824,259,436	2,431,765,873,138	402,787,015,897
Average profit and primary costs	1,080,375,668,911	483,662,712,930	867,801,273,954	381,893,214,264	215,550,224,586	15,824,259,436	3,045,107,354,082	384,778,938,829
Country economic situation in next years	607,440,209,918	422,924,330,969	1,079,325,682,792	355,775,827,770	104,637,538,723	15,824,259,436	2,585,927,849,607	212,390,036,862
Target in 2021	960,452,436,316	521,097,842,973	1,149,085,970,639	412,876,800,914	175,028,858,267	15,824,259,436		3,234,366,168,545

* All numbers are in Iran Rials

AHP method in budget process

Knowledge Management

We implemented our knowledge management system and sharing instruction by establishing several knowledge domains’ expert pools to validate and verify all the created knowledges. We also reviewed the knowledge management process based on ISO 30401:2018 and all relevant instructions and forms were reviewed accordingly.

This year we implemented the knowledge management maturity model, and based on that, we planned to improve organizational knowledge culture. KM strategies have been stablished and the initiatives have been determined in order to achieving our strategic goals. We developed vision and values of knowledge management system accordingly.

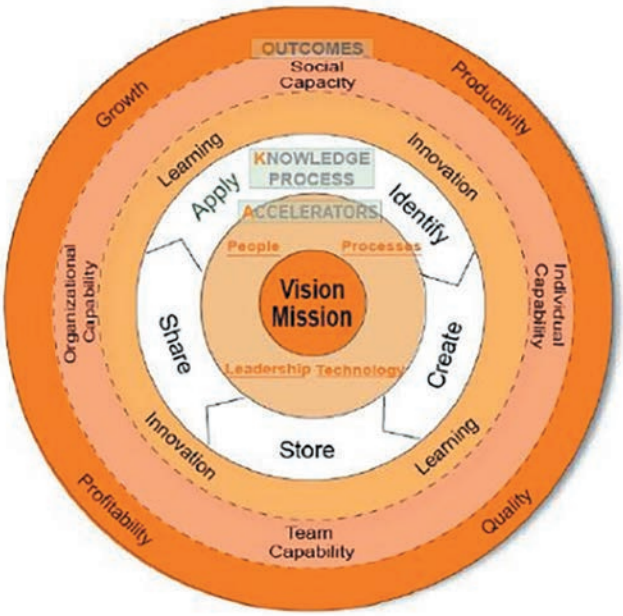


Figure 3- APO Maturity Model

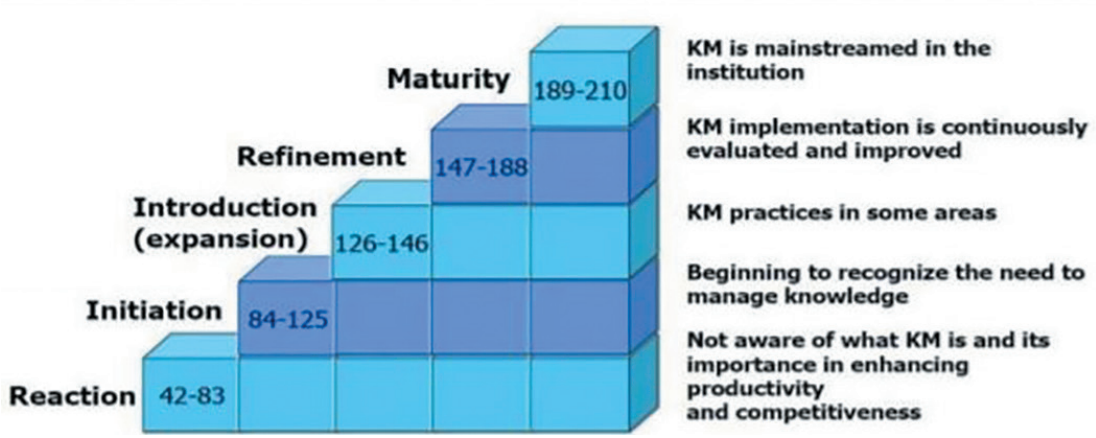
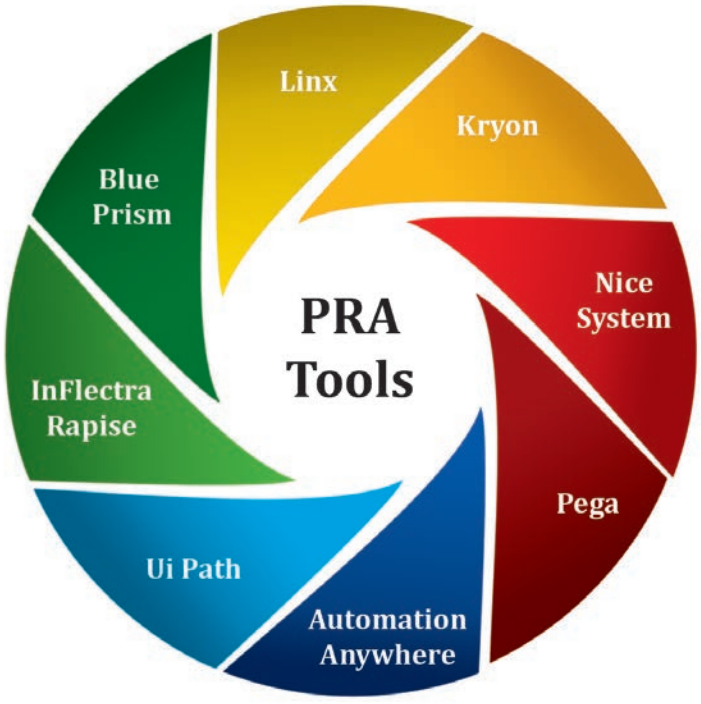


figure 4- KM Maturity Levels

Business Process Management

In Monenco, the most focuses are on organizational processes rather than the organization as a combination of several units. All processes of the organization are identified and formulated and classified in 11 categories based on APQC model. We identified categories, process groups, process and activities. In the following, we developed process models by BPMN2 and finally we automated 10 processes in process maker software.

According to our research, we achieved to a new subject as RPA (Robotic Process Automation) which helps to increase speed, reduce errors, increase productivity, and ultimately reduce organizational costs. We are already using this technology in some of our IT services and sub-systems and we are going to implement this technology more in the future.



RPA Tools

System Improvements

This year we have set new projects in the Infrastructure Division in order to expand EDMS to the whole organization. Furthermore we developed our EDMS with two new modules to improve our detailed design process and the quality of our services and also we tried to enhance the security of EDMS.

Moreover, we linked our EDMS to some of our clients EDMS and we are going to use these types of communications more efficiently in the future.
We also have planned to develop some of the software we are using to deliver our services by supporting new startup companies or SMEs in IT services.

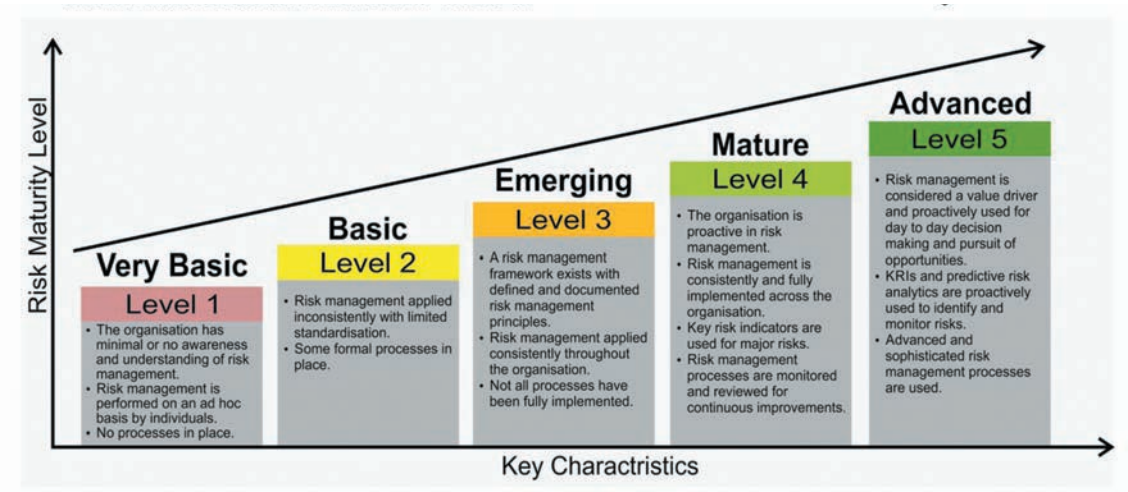
Risk Management

Organizational Risk Management was developed based on ISO 31000:2018 standard and all relevant instructions and forms were reviewed accordingly.

This year we implemented the risk management maturity model, and based on that, we planned to improve organizational risk culture. We developed vision and policies of our Risk Management System. We focused on different types of risk identification channels and a variety of risk effectiveness models.

	IIRM Risk Maturity Matrix					
	Current Year	Previous Year	Current Year		Previous Year	
Core Areas	Score %	Score %	Level		Level	
Risk context	60	40	Emerging	3	Basic	2
Risk Culture	80	72	Mature	4	Mature	4
Risk identification	72	70	Mature	4	Mature	4
Risk Assessment	40	35	Basic	2	Basic	2
Risk Treatment	92	80	Advanced	5	Mature	4
Communication & Reporting	52	45	Emerging	3	Emerging	3
Review	36	29	Basic	2	Basic	2
Systems	76	64	Mature	4	Mature	4
Overall Score and Level	64	55	Mature	4	Emerging	3

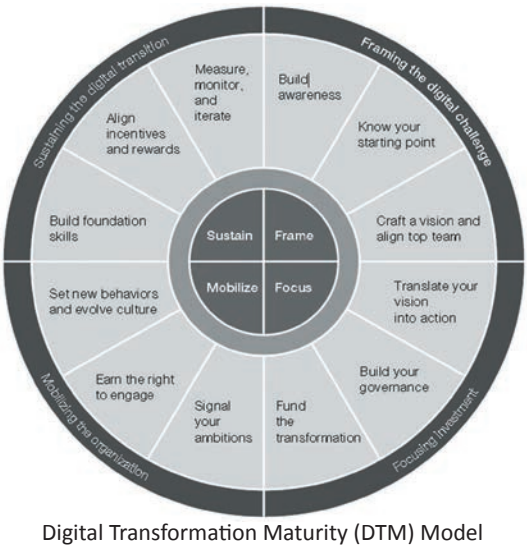
RISK Maturity Model (RM3)



Digital Transformation

We developed, measured and analyzed Monenco Digital Transformation Maturity (DTM) model. According to the result of DTM measurement, we planned a roadmap to guide the organization to its digital transformation objectives and due to achieve this goal we benchmarked lots of well-known companies.

We realized that digital transformation is not only automation process, but also the attitude of the managers and the business model must change too.



Digital Transformation Maturity (DTM) Model

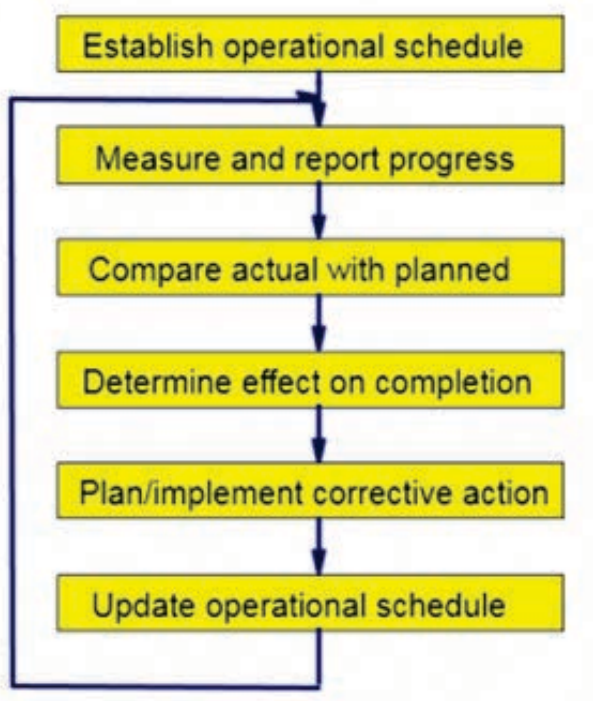
Project Control & Monitoring

Project Control is a professional function which is not widely recognized as a set of specialized skills in its own right. It is a function that is critical to achieve successful project outcomes i.e. delivering required benefits to cost, time, and performance. The main goals are the data gathering, data management and analytical processes used to predict, understand and constructively influence the time and cost outcomes of a project through the communication of information in the formats that assist in effective management and decision making. This definition covers all stages of a project lifecycle from initiating and scoping the project through to closure.

Also project control is concerned with estimating initial baseline performance metrics, determining the current status of the project, estimating the future potential of the project, identifying any variances (baseline to current position and baseline to potential future position), and considering appropriate action to be taken to recover any positive variance. On this basis the components of Project Controls are measuring, monitoring and controlling variables which are principally time and cost aspects:

- Planning and Scheduling
- Risk Management (including identification & assessment)
- Cost Estimating and Management
- Scope and Change Management
- Earned Value Management
- Document Control
- Supplier Performance
- Maintaining the Project Baseline
- Reporting

Following diagram shows the project monitoring cycle to be followed at regular period of intervals of the project duration.



Monitoring and controlling activities involve tracking, reviewing, and regulating project progress and includes status reporting, progress measurement, and forecasting. Key results from monitoring process are progress and status reports, plan updates, risks registers, change requests, work products/ deliverables. Since Monenco Iran has entered into managing the contracting areas, procedures and needed reports & related infrastructures have been designed and prepared in Control & Monitoring Department. Monenco Control & Monitoring Department consisting of 27 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 preparing time schedule as a basic time-management tool, consists of a list of activities and times at which possible tasks and actions are intended to take place. Also the sequence of activities is considered in schedule and finally the baseline schedule will be issued which will be the basis of resource management and action plans. In addition, scope verification and change control, schedule control, cost control, performance reporting, risk control, developing budgets and schedules to meet project requirements, control project progress on its right track, helping other sections with needed information about details of projects ,participating 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 2020, the most important actions of our team to achieve organization goals are summarized as below:

- Preparing articles with related subjects to project management.
- Holding seminars and preparing technical reports with various subjects such as Kanban in project management, using value engineering & risk management method in order to optimize project's goals.
- Developing a parameter system for oil & gas deputy to measure their performance
- Taking the necessary actions for national award of project management
- Preparing Dashboard which fulfilled the idea for demonstration and presentation of "key performance index" report of all sections of firm.
- Studying and surveying of developing MSP server in order to integrate project schedule which has been prepared in MSP software.

The main goals of Control & Monitoring Department for 2021 can be summarized as below:

- Raising knowledge by using updated control project software professionally
- Transferring MSP based projects to MSP server & controlling them
- Preparing statement for national award of project management (a particular project has been chosen as a sample)
- Training assessors for assessing in national award of project management
- Studying and providing a formula for estimating cost pursuant circular of design & service in civil section based on percentage of executing cost and comparing the method with MAPNA's method.
- Studying & surveying about developing "chief project office " position in the firm
- Studying & surveying about application of "TRIZ" in the project management
- Improving the cost control process and reporting
- Preparing some technical reports and sending them to clients
- Holding seminars with related subjects in order to raise members knowledge
- Preparing articles with related subjects to project management
- Studying and analyzing version 6 & 7 of PMBOK and preparing action plan in order to adjust with new version

Quality Assurance

In 2007 Monenco established and implemented Quality Management System (QMS) and got certified according to the International Standard ISO 9001:2000 in order to improve the quality of its engineering services to enhance the customer satisfaction. In 2011, Monenco improved from the third edition of ISO 9001:2000 to fourth edition (ISO 9001:2008), also received ISO/TS 29001:2010 certificate 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 2020 are as follow:

- Improving procedures to control actual and potential non-confirming products to define and eliminate root causes
- Implementing risk management through identifying and evaluating risks of strategies, processes and interested parties
- Gained highest first technical score in 25.31% of tenders in various fields even in new businesses
- Obtained the client's letter of appreciation for 30 projects
- Reviewed key performance and process indicators and established integrated database
- Achieved the highest customer satisfaction (This item was 84.06% which shows an increase of 2.31% during 2020)

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 enhance employees' health and safety and meet 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 in 2020, Monenco migrated from OHSAS 18001:2007 to ISO 45001:2018.

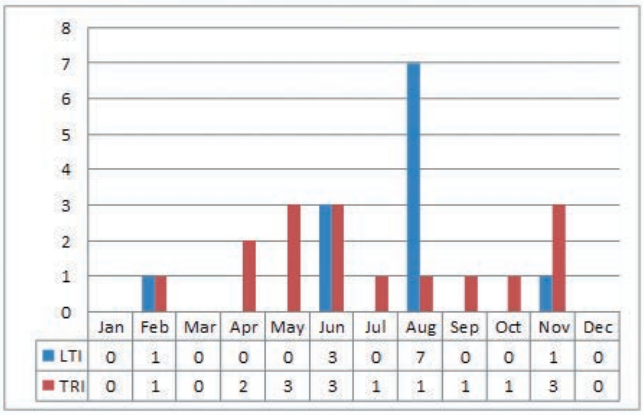
HSE-MS certificate for engineering consultancy and supervision services was gained in 2015. The main achievements of HSE Management System in 2020 are as follow:

- E-learning courses and exams were implemented for site supervisors and newcomer employees at office
- HSE training for all supervisors and new employees (total Man-Hours: 1998)
- Measuring environmental factors was done according to Department of Environment's Requirements
- Increasing employee participation rates in occupational safety and health
- Corrective and preventive actions were followed effectively
- Emergency Response Plans (ERP) were done
- Monitoring employees' medical status
- Measuring and monitoring – FSI

	LTI	TRI		Vehicle Crashes
		Near Miss	Accident	
2020	12	7	9	0

Health, Safety & Environment

Month"	LTI	TRI
Jan	0	0
Feb	1	1
Mar	0	0
Apr	0	2
May	0	3
Jun	3	3
Jul	0	1
Aug	7	1
Sep	0	1
Oct	0	1
Nov	1	3
Dec	0	0
SUM	12	16



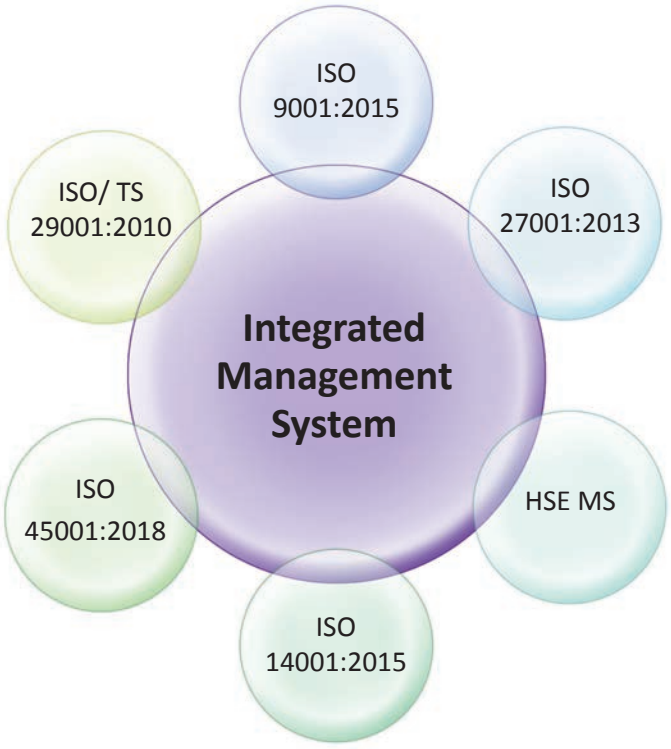
- Implement health protocols to prevent the spread of COVID 19 such as:
  - Assigning health packages to employees including items such as masks, gloves, alcohol and spray
  - Creating infrastructure for teleworking
  - Holding meetings via video conferencing

Integrated Management System

Monenco's Integrated Management System (IMS) is in compliance with ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO/TS 27001:2013 & ISO/TS 29001:2010 standards and HSE-MS Guideline (below figure), that was implemented with the aim of:

- Enhancing interested parties' satisfaction
- 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 and energy
- Reduction of 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 and it was planned to be prepared for implementing ISO/TS 29001:2020 to meet its requirements.



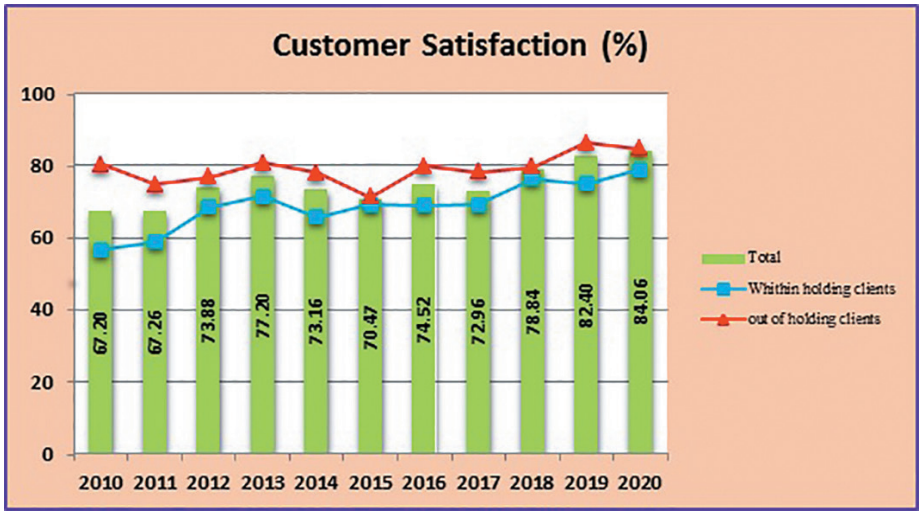
Development Plans

Based on IMS policy & Monenco strategies, development plans of each department are determined annually by "Monenco Enhancement Work-Group" and monitored by "QHSE & Productivity Management Office".

Each department is responsible for performing the plans and reporting the relevant progress monthly. QHSE & Productivity Management Office is responsible for controlling progress plans and defining appropriate corrective actions to achieve objectives. In 2020, 74% of company's development plan objectives have been met which shows an increase of 19.35% during this year.

Customer Satisfaction

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



Productivity Management Method

Productivity is the issue that creates competitive advantages in organizations by using resources effectively and efficiently. Productivity indexes including Labor and Capital which the total productivity have been measured for more than 5 years in Monenco. However, the more important point is productivity improvement. Monenco, therefore, designed a 4-phase Productivity Cycle Model (measurement, analysis & evaluation, planning and improvement, implementation) in 2018 to improve the effectiveness of productivity measurement. According to the mentioned model, the productivity elements, significantly contribute to the productivity results, have been analyzed using relevant tools such as goal seek and scenario for the most effective initiatives of company's productivity in practice. As per the sensitivity analysis results, an action plan for both the company and divisions has been presented in order to focus on increasing/ decreasing the productivity indexes' elements in the direction of Monenco's strategic goals.

مونتکو ایران
Monenco Iran

ACTION PLAN FORM **DATE:**

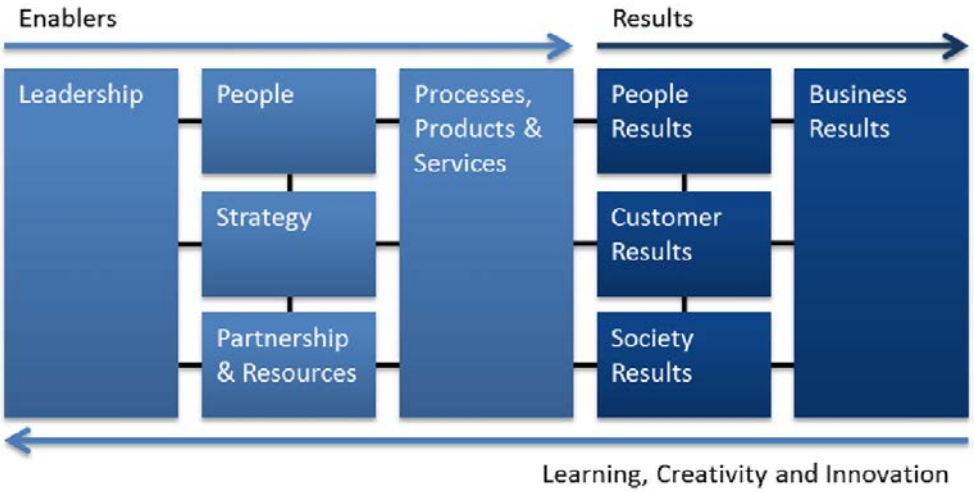
Plan: Labor costs decrease

Effective Element: Extra work limitation **Department:**

Row	requirement	Start Time	Finish Time	Real Amount of Element	Target Amount of Element
1	Survey on allowable extra work time				
2	Assign a specific procedure for applying extra work permission				

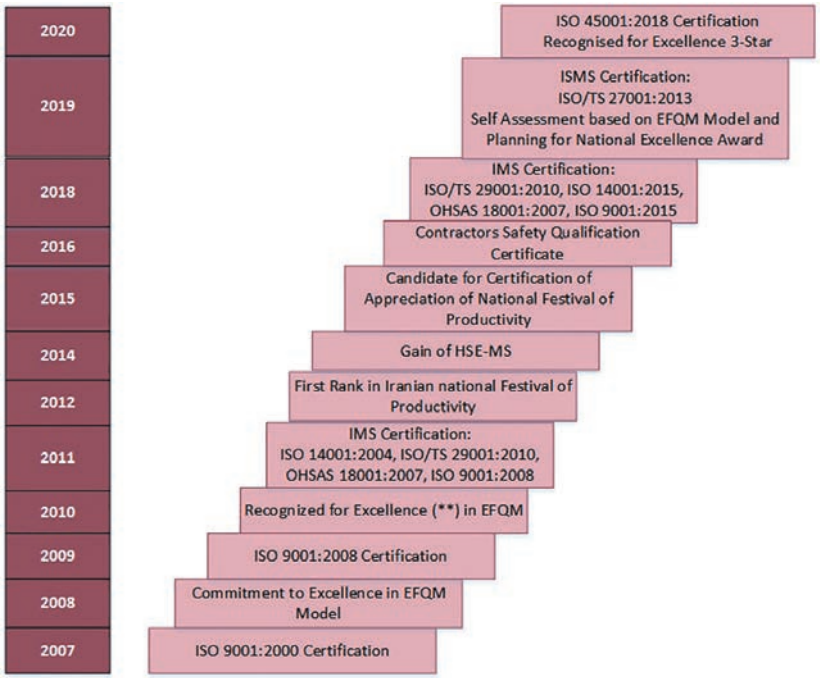
Excellence Model

In order to provide sustainable excellence and achieve balanced results in all sectors of the organization, Monenco's performance was assessed based on EFQM excellence model and "Committed to excellence" level award was received 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 business excellence models, hence in 2019, moving toward excellence models was planned as one of the QHSE & Productivity Management Office's goals. Accordingly, Monenco's Organizational Excellence Declaration has been compiled in 2019 based on Mapna Group's Total Excellence Model and EFQM framework (the following figure), and a comprehensive self-assessment process was done with the aim of identifying key strengths and potential gaps in relation to Monenco's stated Vision and Mission. Based on the results announced in 2020 by MAPNA Group, Monenco recognised as a 3-star organization using the Total Excellence Model and EFQM framework.



Continuous Improvement

Monenco implements different systems and methods such as Integrated Management Systems and Excellence model to make sure that processes, methods, and practices are as efficient, accurate, and effective as possible. The effectiveness of implemented models & systems and their compatibility with organization's vision and mission are controlled annually based on PDCA cycle and RADAR logic by QHSE and Productivity Management Office. The trend of Monenco's Continuous Improvement has been demonstrated as below:



Infrastructure Division

+27,500 km

Transmission Lines up to 765 kV, +/-500 kV HVDC & OPGW

+60,000 MVA

Substations up to 500 kV AC and +/- 500 kV HVDC Systems

+50,000 m^2

Industrial, Commercial, Control Centers, & Training Buildings

+100

Master Plan & Distribution Network Losses Reduction Studies

+215 km

Electrical Railway & Subway Projects

+400 Km

Railway Electrification

1

International Airport Terminal

+34 Km

Highways

+30

Subway Station

Power Transmission Lines

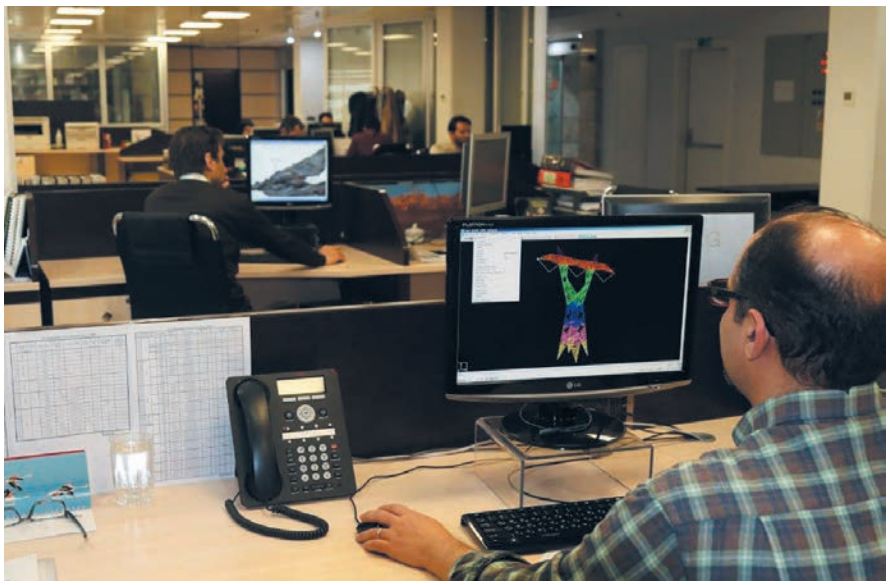
Power Transmission Lines Department offers consultancy, engineering and supervision services in all stages of Transmission Lines projects including overhead lines, underground cables, OPGW, ADSS and Detail Design with economic studies. In addition, using the latest version of software such as PLS-CADD, 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, resilience assessment and enhancement, 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.

Railways & Subways

By developing technical knowledge in new fields and in order to be in line with the needs of infrastructure projects in the field of Subways, Urban Railways and Subway Stations in Iran, Monenco has expanded its services and entered into the mentioned fields. However, through the technical and engineering capabilities of Monenco, foreign partners, experienced qualified personnel and using modern technologies caused it to be able to render high quality consulting and engineering services in different projects in mega cities and capital of Iran. According to the above, Railways & Subways Department, based on its experiences in mechanical, electrical, civil, structure, SCADA & telecommunication fields has been involved in railway electrification projects, high way projects and long tunnels as such was capable to render consultancy services for Intelligent Traffic System (ITS) of high ways.



Power Grid Stations

Our Grid Stations Department is equipped to deal with all necessary aspects of engineering and construction supervision HV & MV substations in different local and international (regional) regional electricity companies and industries 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, relay coordination in industrial complexes, design and engineering services for HVDC Systems in ±500kV voltage level, Hybrid type design services for AIS & GIS Substations, consultancy for asset management, consultancy for project management, Conducting Comprehensive and transient state studies through certified international software, providing as built drawing via Ground Laser Scan technology in power substations, performing Digital and Unmanned substations , using Augmented Reality & Virtual Reality in design of substations, economic studies and preparing financial and economic justification reports are other services proposed by this department.

Civil Engineering & Urbanism

This department providing basic and conceptual studies and detailed design of feasibility studies, comprehensive urban plan and special economic zones, urban planning, construction and industry based on the latest national and international regulations performs consultancy services, engineering, superior and site supervision. Civil engineering & urbanism department also serves as a specialist and engineering arm in the field of construction activities and required by other deputy groups, mainly in the field of providing engineering services related to transmission lines, high voltage substations, distribution networks, dispatching centers and telecommunication towers.

On the other hand, by providing consulting and engineering services, basic and detailed design, site and superior supervision services and consultancy in urban, industrial, office, commercial, residential projects, airport infrastructure studies, peak hour traffic studies, Landside design, including accessibility and terminal passenger, airside design including runways, apron and Taxiway, passive defense studies and other conventional and unconventional structures, development plans and buildings renovation using new technologies as well as providing engineering services in the field of Geo-Radar, building ergonomics for the operation of systems, building energy management in the phases of design, implementation and operation, flood risk assessment in the project site, green buildings, etc. has a significant role in the infrastructure deputy.

Total		International		National Project		Building
Area	Project Quantity	Area	Project Quantity	Area	Project Quantity	
2,954,000	263	52,000	25	2,893,000	1399	Control Buildings, BCR, Guard & Guest Buildings
12,700	3	-	-	12,700	3	Industrial Building
35,800	4	-	-	35,800	4	Commercial & office Building
15,000	1	-	-	15,000	1	Airport Terminal
22,000,000	2	-	-	22,000,000	2	Special Economic Zones & Urban Planning
More than 385 Project		More than 47 Project		More than 338 Project		Foundation, Lattice & Telescopic Tower Structure Design

Major Ongoing Projects

Transmission lines and Substations Projects

Consultancy Services for Engineering Design, and Contract Documentation, Soil Investigation and Engineering Survey for Transmission Lines and Substations (570 km transmission line and 26 substations)

Start Date: 2019

Finish Date: 2021

Location: Kenya

Client: Kenya Electricity Transmission Company (KETRACO)

Scope of work:

- Data collection
- Feasibility study (technical and economic)
- ESIA report
- RAP
- Route selection and surveying
- Geology study
- Basic design for civil, electrical, protection/control and communication (Preliminary design and Conceptual Design)
- Tower spotting
- Preparing tendering documents and tendering process
- Design review
- Contract Management, project progress and cost control
- Site supervision on project implementation in foundation construction, tower erection and stringing
- Witnessing factory acceptance test
- Witnessing HSE considerations
- Controlling delivery of site material, machinery and equipment to site
- Reviewing As-Built documents submitted by contractor
- Training
- Assisting client in provisional project handover
- Assisting client in permanent Project handover

Description: Kenya Electricity Transmission Company is implementing network development including 132 kV and 220 kV transmission lines and substations, in order to align the electricity sub-sector plans with the 2030 vision targets by network upgrades and expansions. The transmission projects will provide reliability, enhance security of supply to the existing demand hubs in the country; expand transmission capacity necessary to enhance electrification initiatives and reduce technical losses in areas currently served by long medium voltage. Network expansion includes 570 km 220 kV and 132 kV transmission lines associated 400/220/66 kV, 220/132 kV, 220/33 kV and 132/33 kV substations.

Consultancy & Detail Design Services for Construction of Lar-Jenah 400 kV Transmission Line

Start Date: 2019

Finish Date: 2021

Location: Fars & Hormozgan Provinces, Iran

Client: Fars Regional Electric Co.

Scope of work:

- Route selection for transmission line, surveying, geology & geotechnics
- Engineering and detail design services
- To prepare technical specification for Project equipment purchase
- To prepare technical specification for construction activities
- To prepare tender documents
- conduct bidding and tendering procedures
- To evaluate technical and financial bidders proposals and prepare contracts to be awarded to contractors
- Witnessing FAT test

Description: The project has been defined by the Fars Regional Electric Company (FREC) to increase the stability of the network and supply demand in the southern part of Fars province with interconnection of Lar and Jenah Power substations through the 400 kV transmission line.

Consultancy & Engineering Services for Construction of Rosagh-Forg 132 kV Transmission Line

Start Date: 2019

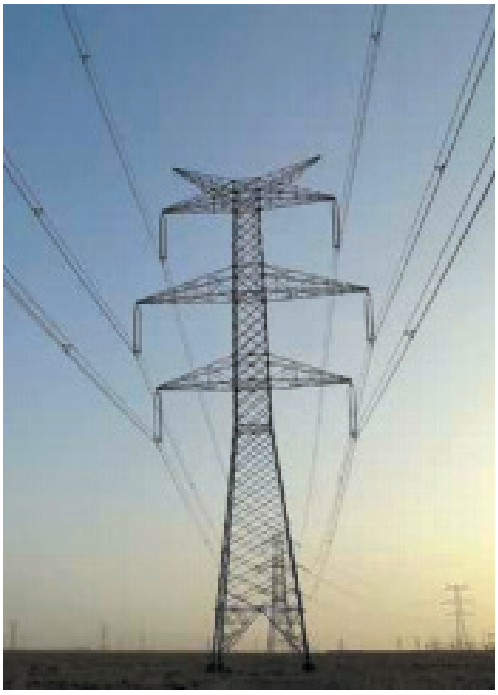
Finish Date: 2021

Location: Fars Province, Iran

Client: Fars Regional Electric Co.

Scope of work:

- Route selection for transmission line, surveying, geology & geotechnics
- Engineering and detail design services
- To prepare technical specification for project equipment purchase
- To prepare technical specification for construction activities
- To prepare tender documents
- To conduct bidding and tendering procedures
- To evaluate technical and financial bidders proposals and prepare contracts to be awarded to contractors
- Witnessing FAT test



Description: The project has been planned for construction by the Fars Regional Electric Company (FREC) to increase the stability of the network in vicinity of Forg City with interconnection of Rosagh and Forg power substations through a 132 kV double circuits transmission line.

Consultancy and Site Supervision Services for Installation Fiber Optic on Distribution Network

Start Date: 2019

Finish Date: 2020

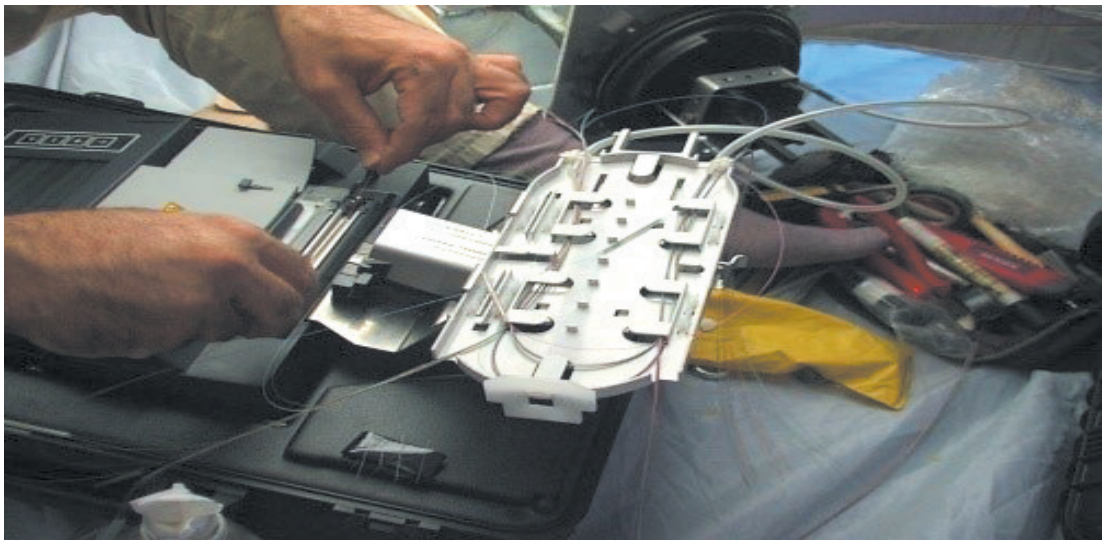
Location: Tehran Province, Iran

Client: Great Tehran Power Distribution Company

Scope of work:

- Design review
- Contract management, project progress and cost control
- Site supervision on project construction
- Witnessing HSE considerations
- Controlling delivery of site material, machinery and equipment to site
- Reviewing As-Built documents submitted by contractor
- Assisting client in provisional project handover
- Assisting client in permanent project handover

Description: Tehran Electric Distribution Company aims to complete its Fiber Optic Network to connect its substations and offices by installing ADSS cable on its telecommunication infrastructure. Accordingly, design review and site supervision of the mentioned project was awarded to this consulting engineers.



Submarine Cable for Iran and Oman Grids Interconnection

Start Date: 2018

Finish Date: 2020

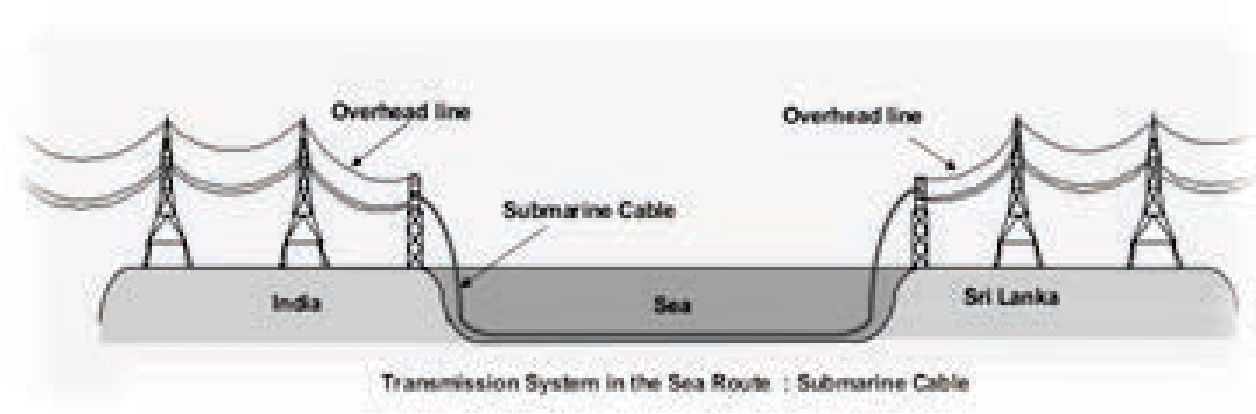
Location: Iran & Oman

Client: Tavanir and OETC (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
- Convertor 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 interconnect GCC via Oman and also providing this chance for Oman grid to interconnect 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.



Transmission System in the Sea Route : Submarine Cable

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, Engineering & Site Supervision Services for Construction of Mehregan - Saryazd 63 kV Transmission Line

Start Date: 2019

Finish Date: 2021

Location: Yazd Province, Iran

Client: Yazd Regional Electric Co.

Scope of work:

- Transmission line routing and surveying
- Engineering services and detail design
- Technical specification preparation for project equipment purchase
- Technical specification preparation for project construction activities
- To prepare specification and tender documents
- To hold tendering
- To evaluate bidders proposals and prepare technical and financial report and award contract
- Witnessing FAT test
- Site supervision on project construction
- Witnessing HSE considerations
- Assisting client in provisional project handover
- Assisting client in permanent project handover

Description: The project has been defined by Yazd Regional Electric Company (YREC) to increase the stability of the network in vicinity of Saryazd city with interconnection of Mehrgan and Sarizad substations through a 63 kV double circuit transmission line.

Consultancy & Site Supervision Services for Transmission Line Variant of Crossed to Chabahar – Zahedan Railway

Start Date: 2019

Finish Date: 2021

Location: Sistan and Baluchestan Province, Iran

Client: Hexa Consulting Engineers

Scope of work:

- Transmission line routing and surveying
- Engineering services, detail design and carrying out spotting
- To prepare technical specification for project equipment purchase
- To prepare technical specification for construction activities
- To prepare tender documents
- To conduct bidding and tendering procedures
- To evaluate technical and financial bidders' proposals and prepare contracts to be awarded to contractors
- Witnessing FAT test
- Workshop supervision services

Description: The purpose of this project is transmission line variant which is crossed over Chabahar-Zahedan Railway (Part 1, 2, 7 & 8).

Supplementary Studies of Power Supply for Persian Gulf Mining & Metal Industrial Special Economic Zone Co.

Start Date: 2019

Finish Date: 2020

Location: Hormozgan Province, Iran

Client: Persian Gulf Mining & Metal Industrial Special Economic Zone Company (PGMISEZ)

Scope of work:

- Data collection
- System studies
- Bid evaluation & cooperation with client for signing contract

Description: The main purpose of this project is to develop the light and distribution network in new area as well as updating the system studies in PGMISEZ zone. Therefore, Persian Gulf Mining & Metal Industrial Special Economic Zone Company (PGMISEZ) intended to carry out the supplementary studies for this zone and the project was awarded to Monenco.

Consultancy Services for Preventive Maintenance and Repair of Substations and Transmission Lines

Start Date: 2019

Finish Date: 2020

Location: Semnan Province, Iran

Client: Semnan Regional Electric Company

Scope of work:

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

Description: Considering the necessity of capital management and the proper functioning of the equipment in Electricity Industry, Semnan Regional Electric Company intends to increase the quality of maintenance and repairs by contractors. Therefore, Semnan Regional Electric Company has decided to select the consulting company to ensure the proper and high quality of the maintenance and repair of the transmission lines and high voltage substations in Semnan province.

Consultancy Services for Construction of 63 kV Power Cable Lines in Sanandaj VI Substations

Start Date: 2019

Finish Date: 2021

Location: Kermanshah Province, Iran

Client: Gharb Regional Electric Company(GHREC)

Scope of work:

- Cable line routing and surveying
- Preparation of plan & profile drawings
- Design and preparation of engineering report
- Detail design review and FAT witnessing
- Preparation of specification and tender documents
- Hold tendering
- Evaluate bidders proposals and prepare technical and financial report and award contract
- Witnessing FAT
- Controlling delivery of Site material, machinery and equipment to site

Description: According to the studies carried out by Gharb Regional Electric Company and in order to strengthen the grid of Sanandaj City, GHREC has planned to construct the 63kV Power Cable Lines in Sanandaj VI Substation.

Engineering Services for Collapsing Towers & Design Issues of Aliabad-Jajarm 400 kV Transmission Line

Start Date: 2019

Finish Date: 2020

Location: Mazandaran Province, Iran

Client: Mazandaran Regional Electric Company

Scope of work:

- Data collection
- Design review of collapsing towers No.356 & 437
- Re-modeling towers by PLS-Tower
- Design for modifying and replacing towers and Transmission Line
- To prepare specification and tender documents
- To hold tendering
- To evaluate bidders proposals and prepare technical and financial report and award contract
- Witnessing FAT test
- Controlling delivery of Site material, machinery and equipment to site

Description: Mazandaran Regional Electric Company (MREC) has had too many collapsed towers and design issues in Aliabad-Jajarm (400 kV) transmission line. MERC has planned to resolve the problems of towers and transmission line design.

Consultancy Services for Improvement and Development Plans of Khuzestan Steel Company

Start Date: 2019

Finish Date: 2021

Location: Ahwaz, Khuzestan Province, Iran

Client: Khuzestan Steel Company (KSC)

Scope of work:

- Identification, data gathering and preliminary design
- Basic design
- Detail design
- Providing technical specifications and data sheets
- Tendering, bid evaluation, assisting in selection of contractor and contracting
- Ensure overall efficiency, improved communication and successful project execution
- Design review, inspection, factory testing and ordering to deliver equipment
- Quality control services
- Coordination & provisional hand over performance services
- Instruction and duration services related to operational and final take-over

Description: Due to high demand of energy and growth rates of Khuzestan Steel Company as one of the top steel manufacturer in the country and considering that electricity as an infrastructural industry is one of the utmost importance in the steel industry, the mentioned project has been defined by Khuzestan Steel Company and consultancy services of the project was awarded to Monenco Iran.

Consultancy Services for Design and Supervision of 400/132 kV Nahadah Grid Station along with Associated OHL

Start Date: 2019

Finish Date: 2021

Location: Oman

Client: Oman Electricity Transmission Company S.A.O.C (OETC)

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

Description: The main purpose of this project is extension of Power Transmission Network and to enhance the 400kV backbone in Sultanate of Oman as well as feeding 132 GSs in the area of the project and supplying power to Petroleum Development of Oman (PDO).

Consultancy Services for Improving Stability and Reliability of Power Grid against Haze Phenomenon

Start Date: 2019

Finish Date: 2021

Location: Ahvaz, Khuzestan Province, Iran

Client: Khuzestan Regional Electric Company (KZREC)

Scope of work:

- Studying the Haze phenomenon and it's impacts on Electricity Industry
- Reviewing experience of Regional Electric Companies and related knowledge in other countries
- Gathering other consultants and expert opinion ideas toward the haze phenomenon
- Participating in meetings with Khuzestan Regional Electric Co. and other Regional Electric Co. with the similar climate
- Reviewing the whole existing solutions to deal with the phenomenon
- Summing up all related documents and issuing final report regarding to the mentioned problems and providing final solutions with respect to all technical, economic and social aspects.

Description: Recent years, the emerging phenomenon of dust haze has affected many Infrastructural industries and has led to numerous problems for power grid such as transmission and sub-transmission lines and substations equipment as well.
These problems impress daily life by causing disturbance in electrification. Therefore, the issue should be considered from three aspects as bellow:

- Recognizing dust natures and sources
- Identifying dust structures
- Making solutions

Therefore, Tavanir Co. defined a national plan of improving stability and reliability of power grid against Haze Phenomenon and assigned Khuzestan Regional Electric Co. (KZREC) on behalf of Power Grid to perform it in collaboration with 5 Regional Electric Companies which are involved in Haze Phenomenon.

Consultancy Service for Comprehensive Power System Study of Kermanshah Polymer Company (Relays Coordination)

Start Date: 2019

Finish Date: 2021

Location: Kermanshah Province, Iran

Client: Kermanshah Polymer Company

Scope of work:

- Identification and data gathering
- Providing input data and system modeling

- Load flow and short circuit, motor driving studies, power system stability analysis and protective relays coordination
- ETAP software training

Description: Expansion of any industrial plant, cause the need of some necessary actions including Study of load flow, short circuit, motor starting and power system stability analyses that have a critical role in identifying the weaknesses of the electrical power supply system as well as achieving the optimum setting and coordination of the existing protection relays. Therefore, Kermanshah Polymer Company has defined the mentioned project and awarded the project to Monenco.

Consultancy Services for Extension of 400 kV/132 kV and 132 kV Fajr Power Substations

Start Date: 2019

Finish Date: 2021

Location: Mahshahr Port, Khouzestan Province, Iran

Client: Persian Gulf Fajr Energy Co. (PGFEC)

Scope of work:

- Identification and data gathering
- Providing input data and system modeling
- Load flow and short circuit, motor driving studies, power system stability analysis and protective relays coordination
- ETAP software training

Description: Due to energy demands increase in Persian Gulf Fajr Energy Company, there is an urgent need to extend the 400 kV substations in this Area. One of the most important power substations in PGFEC is 400/132 kV Fajr substation because of supplying power to other petrochemical companies. Therefore, Persian Gulf Fajr Energy Co. decided to extend of 1.5 breaker scheme of 400kV Switchyard to connect Fajr Power Substation to 400kV Grid. Accordingly, Monenco Iran is responsible to render consultancy services for construction of the project.

Consultancy and Site Supervision Services for Construction of Power Substations & Transmission Lines at West of Karun Power Plant Project

Start Date: 2020

Finish Date: 2022

Location: West Karoun Oil Fields , Khuzestan, Iran

Client: Petroleum Engineering & Development Co.(PEDEC)

Scope of work:

- Data collection
- Project planning and control, legal and financial services
- Bid evaluation, assisting in selection of contractor and contracting
- Factory testing and ordering to deliver equipment
- Coordination & provisional hand over performance services
- Training employer services
- Engineering services
- Site supervision services
- Instruction on duration services related to operational and final Take-Over
- Quality Control Services

Description: Due to the power demand in southern Iran, the Petroleum Engineering and Development Company (PEDEC) decided to build an independent power plant, as well as its utilities in West Karoun with a rated capacity of 500MW by Mapna group with method of "Build-Own-Operate". So, there is an urgent need for the construction of 400 & 230 kV substations and transmission lines in West Karoun oil fields in order to transferring power to consumers in this Zone.
These Projects are:

- Construction of 100 km of 230 kV transmission line
- Construction of 50 km of 230 and 400 kV transmission lines
- Construction of 33 kV transmission line from CTEP South Azadegan Substation to Jofir Exploitation Center

- Construction of 33 kV power transmission line from SGOSP South Azadegan Substation to South Yaran Cluster
- Contract for design, purchase and execution of 5 additional feeders for 230 kV substation of West Karun power plant
- Construction of dispatching center
- Construction of 400 kV Shaheed Baqaei substation
- Construction of 400/230 kV MATN substation
- Construction of 230/11 kV YADAVARAN substation
- Construction of 230/11 kV Substation in North Azadegan
- Construction of 230/33 kV SGOSP substation
- Purchase and installation of CCTV system for all substation
- Gas supply and water supply project to the power plant

Consultancy Services for Construction of Kharameh 400/66 kV substation

Start Date: 2017

Finish Date: 2021

Location: Kharame-Fras Province

Client: Fars Regional Electric Co.(FREC)

Scope of work:

- Survey and selection of line feeders' optimal input & output
- Investigation for selection of site plan
- Participating in value engineering meetings of project
- Preliminary design of all electrical and civil drawings required for project
- Preparation of tender documents
- Holding tender and bid evaluation
- Preparation of technical and financial bid evaluation report and making contract
- review and approve the detail of technical specifications
- Control and approving of construction plan as well as factory tests
- Inspection, factory testing and ordering to deliver equipment
- Supervision on packing, care, shipment, transportation and unloading
- Progress reports
- Participating in temporary and permanent delivery meetings
- Pursuit and approval of As-Built drawings

Description: According to growth of energy consumption in Fars province and meet the projected demand and in order to develop the power transmission and distribution system in this region, Fars Regional Electric Company intends to construct new transmission substation (400/66 kV) in Shiraz, Kharameh. Kharameh High Voltage Substation will be one of the most important substations in Fars Regional Electricity Company (FREC) territory due to the consumers which will energize through it.

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

Start Date: 2019

Finish Date: 2021

Location: Andimeshk– Khuzestan Province, Iran

Client: Khuzestan Regional Electric Co.(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 to deliver equipment

Description: The energy demands have been increased in Khuzestan Province. So, there is an urgent need for the construction of 400 & 230 kV substations in Khuzestan Province. Sabzab 230/132/33 kV Substation is one of the most important substations in Khuzestan Regional Electricity Company territory due to the reinforcing the power grid and supplying power to other sub-transmission substations in Khuzestan Province.

Consultancy and Detail Design Services for Construction of Mil Nader wind Farm 132/20kV Power Substation

Start Date: 2020

Finish Date: 2021

Location: Sistan and Baluchestan Province, Iran

Client: Nasb Niroo Co.

Scope of work:

- Basic and detailed design of electrical documents
- Basic and detailed design of construction documents (Civil, Mechanical)
- Preparing tendering documents and tendering process
- Witnessing factory acceptance test
- Preparing As-Built documents
- Assisting client in provisional project handover
- Assisting client in permanent Project handover

Description: Due to development of renewable power in the national grid, construction of Mil-Nader wind farm and connection to transmission network through Mil-Nader 132/20 kV power substation was placed in the agenda of Mapna Renewable Energy Company as the main client and Nasb Niroo Company as the main contractor of the project.
According to the valuable experiences of Monenco Iran, providing engineering services for consultancy, Basic and Detailed design of 132/20¬kV Power Substation of Mil-Nader awarded to Monenco Iran.

Consultancy and Detail Design Services for Construction of 63/20 kV Power Substation in Garmsar Special Economic Zone

Start Date: 2020

Finish Date: 2021

Location: Garmsar,Semnan Province, Iran

Client: Garmsar Special Economic Zone

Scope of work:

- Identification, Data gathering and Preliminary design
- Basic and detailed design of electrical and construction documents (Civil - Electrical – Mechanical)
- Preparation of equipment purchase documents
- Preparing tendering documents and tendering process

Description: Due to the development of Garmsar Special Economic Zone and forecasting of electricity demand growth in this region, construction of 63/20 kV power substation in Garmsar Special Economic Zone was planned at the first development step for connecting to the Gird.
In this regard and according to the valuable experiences of Monenco Iran; The consultancy, Basic and Detailed design of 63/20 kV Power Substation of Garmsar Special Zone awarded to Monenco Iran.

Consultancy Services for Construction of Dehdasht Petrochemical 400/132kV AIS and 132/20kV GIS Substations

Start Date: 2020

Finish Date: 2021

Location: Dehdasht-Kohgiluyeh and Boyer-Ahmad Province-Iran

Client: Dehdasht Petrochemical Industrial Company (DPIC)

Scope of work:

- Identification, Data gathering and preliminary design
- Basic Design
- Providing Technical Specifications and Data Sheets
- Providing purchase document
- Providing tender documents
- Tendering, Bid evaluation, Assisting in selection of contractor and contracting

Description: Due to development of the petrochemical industry in the southern regions of Iran, in 1383, Bakhtar Petrochemical Holding, including Achsaran Petrochemical with four polyethylene production units named Mamasani Petrochemical Company, Kazerun and Borujen were established in order to complete the production cycle. By the plan of producing 300,000 tons of heavy polyethylene in Dehdasht Petrochemical Company, which purchased a license from the German company Basel and obtained all necessary permits for the construction of the project, from the Environment Organization and the Ministry of Industries and Mines on the area of about 100 hectares which is located in Dehdasht city in Kohgiluyeh and Boyer-Ahmad Province.
In order to supply electricity to the production units of Dehdasht Petrochemical Company and the need to supply power at 132 kV voltage levels, the project of constructing of 400/132 kV AIS and 132/20 kV GIS substations along with 400 and 132 kV transmission lines in Dehdasht was planned.

Distribution Networks Projects

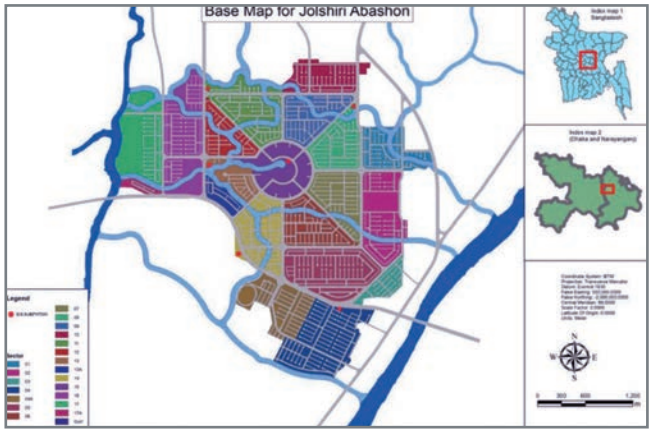
Consultancy Services for Replacement of Existing Distribution Network by Underground Distribution Network

Start Date: 2020

Finish Date: 2021

Location: Jalshiri, Bangladesh

Client: Narayanganj, Pally Bidyut Samity 2 (PBS-2) - BREB



Scope of work:

- Inventory of existing distribution system, preparation of fitting assembly unit, material lists line sketch, single line diagram etc. As per BREB standard and specification
- Feasibility study of proposed underground distribution network of Jalshiri area under Narayanganj PBS-2
- Design and drawing of proposed underground distribution network with fittings, material specification, catalog number, voltage drop study, technical loss study & charging current calculation etc.
- GIS survey works & database preparation
- Preparation of master plan, work plan, BOQ, cost estimation, bid document, etc. For the existing distribution network removal and proposed underground distribution network with proper documents

Description: As a part of the "Replacement of Existing Distribution Network by Underground Distribution Network" project under NARAYANGANJ PBS-2 BREB intends to hire an international consulting firm for detailed survey and feasibility study of sub-transmission and distribution network within Jalshiri in Narayanganj District under Narayanganj Palli Bidyut Samity-2 and preparation of design & drawings, BOQ, cost estimate and bidding document to establish an underground distribution network replacing the existing overhead sub-transmission and distribution network in the area. This project was awarded to Monenco by the highest technical score.

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

Start Date: 2020

Finish Date: 2021

Location: Golestan Province, Iran

Client: Golestan Province Electrical Distribution Company

Scope of work:

- Technical & economic analysis
- 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

- 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 is responsible to design and render supervision services for operational projects of distribution networks in Golestan Province comprising 14 regions based on modern technologies, 33 power distribution designers and 23 power distribution supervisors.

Consultancy Services for Preparation of Master Plan of Distribution Network (MPDN) in Golestan Electricity Distribution Company

Start Date: 2019

Finish Date: 2021

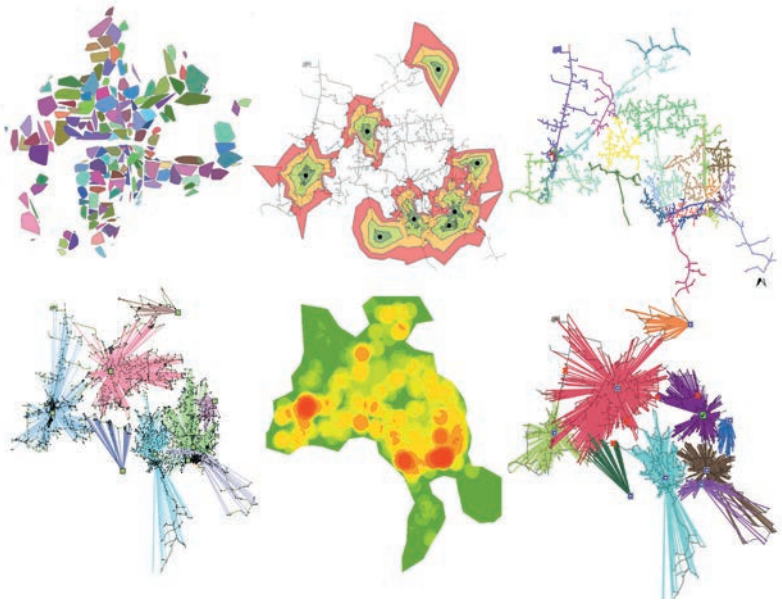
Location: Ali Abad & Agh Ghala Cities, Golestan Province - Iran

Client: Golestan Province Electrical 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:

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



Description: The main goal of master plan preparation of electricity distribution network project is to define guidelines for development and implementation of modifications in power distribution system. This can be obtained through specifying the location of installation, technical specifications and development plan of the substations and feeders, optimizing network performance, improving the electrical and economic indicators and correcting the inefficient technical structures in each section of the distribution network.
In this Project, the goal is to prepare master plan of two cities of Golestan province (Ali Abad & Agh Ghala) with about 100,000 consumers. For this purpose, first of all, GIS data converted to DIgSILENT and current situation of network assessed and then short and long term expansion plans was proposed based on national & international standards.

Supervision Services for Development and Optimization Projects, Planning and Engineering Activities, Operation and Customer Services in Kermanshah Province Power Distribution Network

Start Date: 2020

Finish Date: 2021

Location: Kermanshah Province, Iran

Client: Kermanshah Electricity Distribution Company

Scope of work:

- Technical supervision on power distribution projects comprising new electrification, consumer services, street lighting, operation, repair and maintenance, equipment quality control, construction & reconstruction network, equipment procurement.
- Supervising on all safety regulations for working in projects.
- Supervising on all execution plans and activities in projects.
- Compliance of all performance according to the specific and technical instructions of Client and Ministry of Energy.

Description: In this project, Monenco is responsible to render supervision services for operational projects of distribution networks in Kermanshah Province comprising 17 regions based on modern technologies with 30 power distribution supervisors.

Consultancy Services for Designing Capital & Asset Ownership Projects, Power Supply, Visiting and Preparing Routes for Electricity Applicants and Requesting Services in Urmia City

Start Date: 2019

Finish Date: 2020

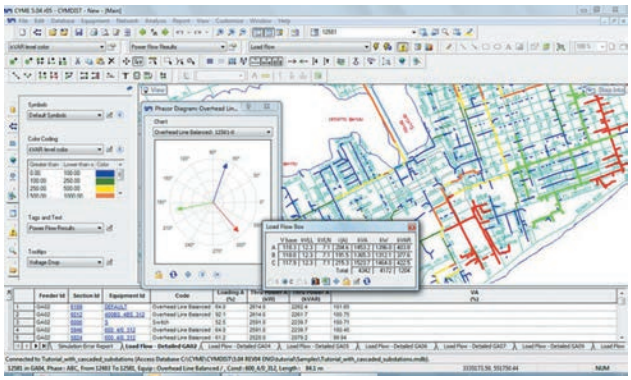
Location: Urmia, West Azerbaijan Province, Iran

Client: West Azerbaijan Electricity Distribution Company

Scope of work:

- Providing basic information
- Electrical & mechanical calculations
- Street lighting, electrical and mechanical calculations
- Cost plan estimate
- Physical estimation of the plan
- Providing a project execution schedule
- Drawing a plan to execute

Description: In this project, Monenco is responsible to design services for operational projects of distribution networks in Urmia City with 21 power distribution designer based on modern technologies and latest versions of software.



Consulting & Engineering Services for Implementation of Power Distribution Projects in Alborz Province

Start Date: 2020

Finish Date: 2021

Location: 4 regions of Alborz province (Mehrshahr, ChaharBagh, Savjeblagh, Nazarabad, Taleghan), Iran

Client: Alborz Electrical Distribution Company

Scope of work:

- Providing, training and certifying the technical competence of supervisors - monitoring and quality control of the performance of the relevant executive groups,
- Visiting the existing facilities and determining the percentage of depreciation or the cost of minor repairs of removal equipment and preparing minutes,
- Supervising the observance of safety principles by contractors,
- Quality control and compliance with technical specifications of equipment, materials and items used in projects,
- Sampling of equipment and performing relevant tests,
- Mechanization services including collection and updating of network Information.

Description: Engineering services for supervision on investment distribution projects, equipment quality control and mechanization services, which including equipment procurement, construction, renewing & reconstruction network and new electrification according to standards and technical criteria. We carry out it in 4 regions of Alborz states with 11 power distribution supervisors and 1 civil engineer.

Civil Engineering & Urbanism Projects

Engineering Services for Garmsar Special Economic Zone Projects

Start Date: 2019

Finish Date: 2021

Location: Semnan Province, Iran

Client: Garmsar Special Economic Zone Management Company

Scope of work:

- Basic design
- Detail design
- Estimation
- Tendering and contract awarding
- Planning and project control
- Supervision, review and approve the contractors invoices

Description: The main purpose of this project is to create investment platform in order to improve the GDP of Garmsar Region.

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

Start Date: 2019

Finish Date: 2021

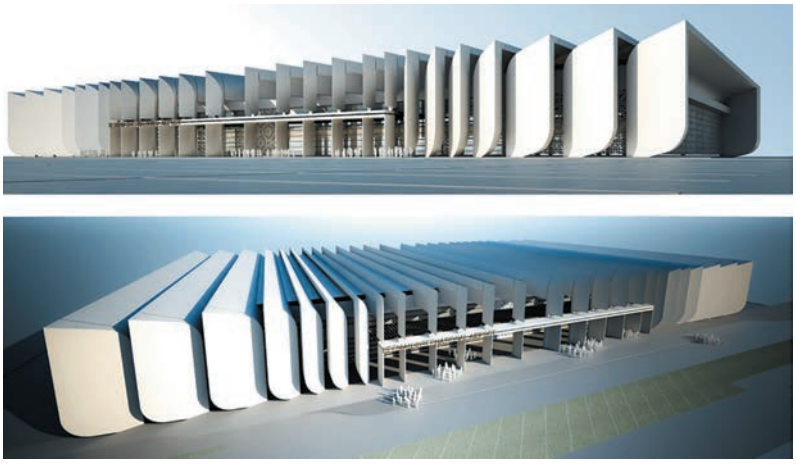
Location: Kerman, Iran

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 will be responsible to render consultancy and engineering services for construction of new terminal with 15000 m^2 with all the requirements for both landside and airside area in Kerman International Airport.



Consultancy & Engineering Services for Construction of Airplane Test Engine Cell

Start Date: 2018

Finish Date: 2020

Location: Alborz, Iran

Client: Turbine Engineering and Manufacturing Company (TUGA)

Scope of work:

- Identification, data gathering and preliminary design
- Design review , technical data sheet for engine test cell
- Preliminary and detail design for mechanical installation fuel storage
- Tender document procedure

Description: Nowadays, due to the growth of air transport and importance of flight safety, testing the different parts of the aircraft is very critical. In this regard, as the aircraft turbo engine is the most important part, they have to be tested to ensure their proper operation. In this regard, consultancy and engineering services for construction of CFM56 Engine Test Cell and Tender Document Preparation was awarded to Monenco Iran.

Railways & Subways Projects

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

Start Date: 2020

Finish Date: 2021

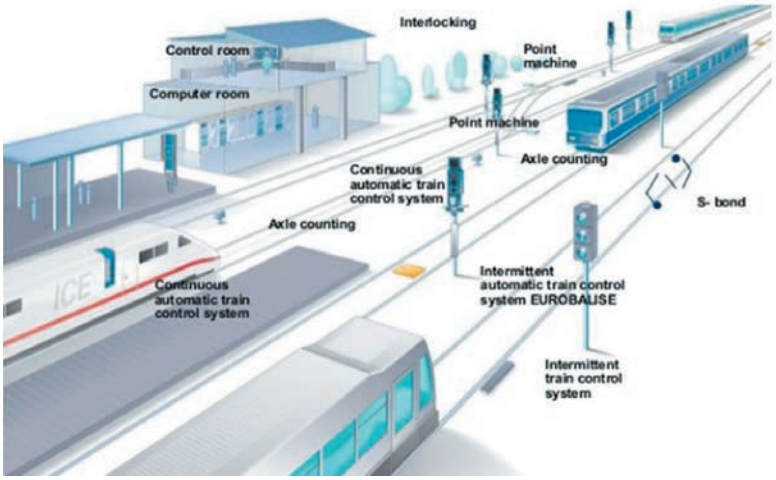
Location: Fars province, Iran

Client: Shiraz Urban Railway Organization

Scope of work:

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

Description: For completion of Shiraz 2nd metro line metro system design, consultancy and engineering services for AFC, communication, signaling, BMS, Scada, fire alarm and firefighting systems have been awarded to Monenco Iran. According to previous awarded project which consisted of power supply, air conditioning and smoke disposal in tunnel and stations and initial radio system, almost all sub systems of 2nd line metro system is under Monenco Iran design.



Electrification Studies of Tehran – Hamadan – Sanandaj Railway

Start Date: 2020

Finish Date: 2021

Location: Tehran, Markazi and Hamadan Provinces, Iran

Client: Construction and Development of Transportation Infrastructures Company

Scope of work:

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

- Preparing investment packages for financing
- Preparing tender documents for selecting the contractors

Description: According to the advantages of electrified railways, the Railway Company of Islamic Republic of Iran decides to study the electrification of railways. Until now, the only electrified country railway is Azarshahr – Tabriz – Jolfa which designed and came into operation by Russian engineers many years ago. Following the Tehran – Hamadan – Sanandaj electrification tender results, the project awarded to Monenco as its highest technical score. This plan consists of two parts, Tehran – Hamadan part with 260 Km length is constructed and Hamadan – Sanandaj part which is 150 Km is under construction. The project is of high importance because is the first in the country which its power supply system is going to be designed by Iranian Company and local experts.

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

Start Date: 2020

Finish Date: 2021

Location: Tehran province, Iran

Client: Tehran Urban and Suburban Railway Company

Scope of work:

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

Description: About 15 years ago, studies have been carried out for design of G3 station in line 3, Tehran metro. Concerning different matters, construction of the station did not start. Now according to the requirement of the station to be constructed, the client held a tender for re-design of G3 station along with the access gallery to K2 station, line 2, Monenco Iran has been awarded. The subway station design should include construction management in such a way without stop or disturbancein train movement in lines 2 and 3. It means the design should be very specific, tailored to the client constraints regarding normal operation of both lines.

As far as is known, there is not a similar experience in the country subway industry to construct a station in a live line. This means the project is of high, better to say very high, importance and the designer should manage the construction procedure as well.

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

Start Date: 2020

Finish Date: 2022

Location: Khorasan Razavi province, Iran

Client: Mashhad Urban Railway Corporation

Scope of work:

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

Description: The purpose of this contract is to provide consultancy & supervision services for the construction operations of Shahrak-e-Abouzar station (X3), Mashhad Urban Railway Corporation, Line 3. As the design of X3 station is in progress by Monenco Iran, the client awarded the supervision services to Monenco Iran for the complete coordination between the designer and the site supervision team.

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

Start Date: 2020

Finish Date: 2022

Location: Fars province, Iran

Client: Shiraz Urban Railway Organization

Scope of work:

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

Description: After operation of Shiraz 1st metro line, the client concentrated on increasing the progress of the 2nd line with 15 Km length and 13 stations.
Parallel to civil works, the metro system detail design has been awarded to Monenco Iran company which is going to be completed. As for the first time, the design of metro system has been carried out by an Iranian company, Monenco Iran, the client concluded to award the consultancy and supervision services to Monenco Iran so as to complete the cycle from design to build and install and operate.

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

Start Date: 2020

Finish Date: 2022

Location: Qom province, Iran

Client: Abtaban Engineering Company

Scope of work:

Engineering and design services consisting:

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

Description: Line A Qom metro has 14 Km length and 14 stations. The first phase of this line is going to be operated by Sep. 2021. So, Qom Urban Railway Organization expects the involved EPC contractors to be on time to meet that aim. According to Monenco Iran expertise, the EPC contractor for the line power supply system awards the design part of his covenants to Monenco Iran.

Dispatching & Automation, ICT & Smart Solutions Division

Dispatching & Automation, ICT & Smart Solution Division was established 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 to 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. Benefiting from highly qualified engineers, software, hardware infrastructures and the valuable experiences of the company, the success of our clients in their plans and portfolios is guaranteed.

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National, Area operating, Regional and Distribution Dispatching centers

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Telecommunication Systems & Networks and Master Plans

Smart Solutions

for Industries and Organizations

ICT

ICT Department of Monenco has an extensive presence in different industries, namely Power, Transportation, Oil & Gas, Port, etc. Having technical teams dedicated to mobile and fixed telecommunication networks, IT systems (IT Governance, IT Strategic Planning, Enterprise Architecture, BPR, Big Data, Data Centers, Data Model, e-Government, Data Mining, etc.), telecommunication master planning and telecommunication business and strategic planning have made us a reliable and unique consultant for our clients in providing total solutions to them.

Also, developing ICT Master Plans, Enterprise Architecture, IT Business Models, ICT Governance and Business Process Reengineering are the other main expertise areas of the department.

Considering our professional team, the ICT Department of Monenco is able to play the role of a high-level consultant company to fulfill industries' needs. In the following ICT Department capabilities, proficiencies, and lesson learned in 2020 has been described.

The ICT industry never stands still. This rapid, ever-changing stream is full of technologies, tools, software frameworks and endless ideas. Some of the newest issues, such as Block chain, Data Mining, Smart Contracts, etc. were our main research topics which concluded papers and technical reports in recent year.

Also, e-governance issue is one of the most exciting and innovative fields out there, and to stay ahead of the competition, we need to keep our finger on the pulse and our eyes on the trends, so we focused on the target and succeed to design the first ESB (Enterprise Service Bus) platform for Energy Industry of Iran which would be able to connect GSB (Government Service Bus) in the future.

On the other hand, according to the technology development, one of the most important issues for making the infrastructures up to date is new technological equipment installation which needs new design and special implementation methods. In 2020, the ICT department succeeded to gain new experience in this regards.

- Due to TDM based voice call switching network restriction, new IP switching network based on different technologies were identified. So, we suggested IMS technology as new IP based network to transport voice calls on all over Iran for Telecommunication Infrastructure Company (TIC). The necessity of capital investment for implementing this infrastructural ICT project leads to investigating among different partnership methods like Public-Private. To this need, the ICT department provides multi-discipline consultancy services consisting of the legal, technical, and economic feasibility study for TIC.
- While Traditional Electric Power Utilities (EPUs) relied on TDM-based telecom infrastructures like PDH/SDH and SONET But, SDH networks might not be able to handle IP-based services in an efficient and effective way. To better addressing telecom needs in EPUs we started migration projects in Iran EPUs. We have planned hybrid solutions with deployment of layer 3 IP/MPLS infrastructure alongside with current SDH one by adopting WDM (wavelength division multiplexing) technology to satisfy future needs and maintain legacy features that are still required for the communication network. These approach guarantees soft migration toward fully-IP network for EPUs which can constitute a modern infrastructure in order to cover all future needs of the EPU and play as an enabler for EPU digital transformation. We present this idea as telecommunication master plans for Fars, Tehran
- Khorasan and Yazd Regional Electric Company. By the end of 2019, we started to compile a professional book in Persian, based on our experts' knowledge, experience and all lesson learned of the projects as a valuable ICT Book for all interested readers. Fortunately, at the end of 2020, the book of Telecommunication, Theory to Practice, has been finalized and got ready to publish.

Dispatching & Automation

Dispatching & Automation Department provides consultancy services in various stages of consultancy and engineering for SCADA/EMS/DMS/OMS and automation plans in 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 and expertise in the engineering of SCADA and telemetry systems, dispatching in transmission and distribution automation within the power sector, considering Cyber security.

Deep knowledge and experiences regarding digital transformation and smart grids, Industry 4 and Cyber security, makes us as a unique consultant in designing new and smart SCADA/EMS for transmission utilities and SCADA/DMS/OMS systems for distribution utilities, considering the state of the art Artificial Intelligence and modern digital technics, Cyber Security and Smart System technologies, empowering Utilities for future Smart Grid Operation.

In 2016 Monenco was granted the first grade of expertise in SCADA and cyber security from the Ministry of Energy of Iran.

Due to the importance of distribution automation projects created by our clients, we succeeded in getting smart distribution automation projects in Bushehr province, in the main city of Isfahan and DCMC (Distribution Management & Control Center) in Fars province, we are also awarded the project to supervise upgrading the SCADA system of MAJAN Electric Distribution Company, in Oman.

Dispatching studies of integrated electricity network in South Pars Region was another important project in Oil and Gas field in 2020.

In this year, this department also succeeded in renewing the transmission dispatching project for Fars provinces regional electric utilities.

In this department we also offer consultancy services regarding designing various dispatching buildings and other vital facilities, considering ergonomics, security and architecture services.

Smart Solutions

Smart Solutions Department starts its engineering and consultancy services from 2009 in different fields regarding digitalization and intelligence of systems, functions, and equipment in real world (Smart Grids, Smart Cities, and Industry 4) with better and faster than any other solutions on the market. We provide consultancy services for Municipalities, Organizations, Factories, and within the Power system (G&T&D), Oil & Gas, Water and Waste Water and other major industries.

Our engineering and consultancy services from 2009 for Iran National Smart Metering Project (FAHAM) is still ongoing. In this project, developing interoperability specifications among different layers of Advanced Metering Infrastructure (AMI) based on international standards and securing the measuring layer, communication media, and the Meter Data Management (MDM) considering detailed risk assessment based on ISO standards, ICT architecture with security protocols, operation directives for AMI component (functional and non-functional requirements), and Business Continuity Plan (BCP) document are the main achievements. Also, technical specifications for different types of single and three phase smart meters (CT, CT/PT, and DC) as well as ICT architecture and functional/non-functional requirements for MDM/AHE systems were prepared by our department.

In 2015, for continuing professional development, our department has expanded its engineering services to comprehensive design of other smart grid domains such as micro-grids, remote monitoring of power plants and transmission networks, and predictive maintenance of grid's the most important assets. Also, due to the development of advanced data analytics algorithms in recent years, we developed our services in data mining applications such as failure prognosis in combined cycle power plants, electric load forecasting, and clustering of energy consumers in order to increase the revenue of energy utilities and improve system operation and energy efficiency.

Recently, this department is improving its new services in centralized Power Plants/Industrial Plants Monitoring System in which client's desired parameters are gathered by different tools and infrastructures and monitored in a unique dashboard. Providing consultancy services in Smart CNGs and UFG detection are our new fields of activities for Oil and Gas Industry.

From 2018, Smart Solution Department developed its consultancy services to present broad solutions in Smart City with focus on:

- Smart City architecture
- Municipal asset management
- IT road map
- Business and Strategic planning
- Urban resource management and
- Preparing RFIs & RFPs

Discover and develop new secure and interconnected functionality in future Smart Cities needs huge investment. To solve this problem, our department prepare investment packages for clients including:

- Identification of potential opportunities of the cities
- The process of return on investment in each defined project
- Comprehensive business plan

Major Ongoing Projects

TREC Telecommunication Master Plan

Start Date: 2019

Finish Date: 2020

Location: Tehran Province, Iran

Client: Plan & Development Deputy

Main Client: Tehran Regional Electric Company (TREC)

Scope of work:

- Basic design
- Conceptual design of active WAN optical network
- WDM design & optical engineering
- Detailed design of active WAN optical network

Description: This project is aimed to upgrade current telecommunication master plan for Fars Regional Electric Company (FREC) as one of the biggest RECs in Iran.
Utilizing latest technologies like IP/MPLS technology for WAN design in this project, make it distinctive from other REC telecommunication master plans which usually have been designed based on TDM-based technologies.
By accomplishing this project, FREC will access to high speed IP/MPLS WAN infrastructure which could satisfy its current and future telecommunication demands for 15 years.

Design Engineering Services of TREC Fiber Optic Network

Start Date: 2019

Finish Date: 2020

Location: Tehran Province, Iran

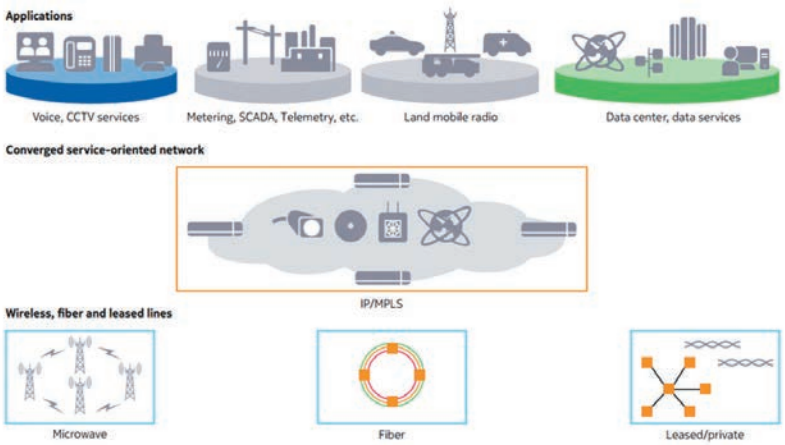
Client: Plan & Development Deputy

Main Client: Tehran Regional Electric Company (TREC)

Scope of work: Engineering services in order to design modern fiber-based telecommunication network based on the latest technologies.

- Data gathering & basic engineering
- Conceptual & detailed design of active WAN Optical Network
- WDM design & optical engineering
- Tender engineering

Description: This project is aimed to upgrade current telecommunication master plan for Tehran Regional Electric Company (TREC) as one of the biggest RECs inside Iran. Utilizing latest technologies like IP/MPLS technology for WAN design in this project, make it distinctive from other REC telecommunication master plans which are usually designed based on TDM-based technologies. By accomplishing this project, TREC will access to high speed IP/MPLS WAN infrastructure which could satisfy its current and future telecommunication demands for 15 years.



Study of Drafting ICT Governance Document for Tehran Municipality

Start Date: 2020

Finish Date: 2021

Location: Tehran, Iran

Client: Tehran Urban Research & Planning Center

Scope of work: Monenco Iran Co. acts as a consultant for Tehran Municipality Studies and Planning Center. It intends to take the service description measures to provide a standard and well-design ICT structure that responds to most ICT requirements of Tehran municipality in government organizations and agencies.

- ICT Benchmark
- Comparative Study of ICT Governance
- Current Status Analysis of ICT Systems
- ICT Gap Analysis
- ICT Road Map
- Drafting an Action Plan

Description: One of the most important signs of the maturity of information technology in organizations is the existence of appropriate technical and infrastructure facilities such as network, hardware, software, etc., to provide good services and optimal performance. In this regard, every organization needs to use the models and frameworks related to ICT governance to realize the principle of alignment and provide a suitable structure for that organization. There is a need for a standard structure in which the assurance of supporting business goals with ICT investments, the trust and responsible spending of ICT resources and the appropriate management of ICT risks have been considered.

Public Private Partnership Consultancy Services for ''Upgrading Intercity & International Voice Switching Network''

Start Date: 2020

Finish Date: 2021

Location: Tehran, Iran

Client: Iran Telecommunication Infrastructure Company (TIC)

Scope of work:

- Project recognition report
- Solutions for the reconstruction of network based on the best technology
- National IN network development design
- Preparing RFP including technical specifications
- Preparation of qualitative and technical assessment documents
- Scheduling of project implementation
- Preparing a plan of contractor assessment
- Estimating the project cost
- Report of the decision to transfer
- PPP contract preparation

Description: Iran telecommunication infrastructure company (TIC) has an advantageous position in the country's telecommunication field due to its presence and governance in domestic operators' communication path and as a gateway to international telecommunication networks. Consultancy services for upgrading intercity & international switching network has been defined to update and improve the voice communication network between operators and International communication. TIC decided to do this joint with a private company as the first ICT sector PPP project.

Engineering and Site Supervision Services for CCTV System of Boushehr SpecialEconomic Zone and Negin Island

Start Date: 2019

Finish Date: 2021

Location: Bushehr, Iran

Client: Boushehr Ports and Maritime Authority

Scope of work: Supervision services during and after the project are as follow:

- Detailed design, purchase, testing
- Installation and commissioning of video surveillance cameras, as well as implementation of construction and commissioning
- Network settings and network security according to the relevant standards until the project's final delivery

Description: Boushehr Port is one of the main ports in Iran in terms of export and import. For this reason, security of this port is very important. Therefore, increasing the security factors of Bushehr ports and maritime authority according to ISPS rules is the main purpose of this project.

Khorasan REC Telecommunication Master Plan

Start Date: 2020

Finish Date: 2020

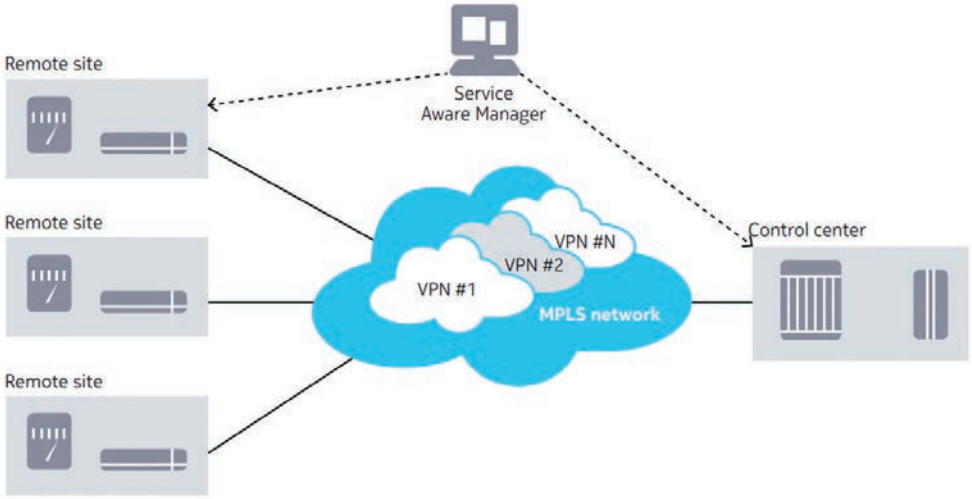
Location: Khorasan Province, Iran

Client: Khorasan Regional Electric Company (KREC)

Scope of work:

- Data gathering & basic engineering
- Conceptual design of active WAN optical network
- Detailed design of active WAN optical network
- Providing tender documents

Description: This project is aimed to upgrade current telecommunication master plan for Khorasan Regional Electric Company (KREC) as one of the biggest RECs inside Iran.
Utilizing latest technologies for WAN design in this project, make it distinctive from older REC telecommunication master plans which are usually designed based on TDM-based technologies.
By accomplishing this project, KREC will have access to high speed WAN infrastructure which could satisfy its current and future telecommunication demands for 15 years.



Consultancy Services for Control and Monitoring Navigable Waterways

Start Date: 2020

Finish Date: 2021

Location: Tehran, Iran

Client: Ports and Maritime Organization

Scope of work:

- Data gathering and gap analyzing of current aid to navigation systems
- Studying the maritime-related standards (IMO, IALA, and ITU-R)
- Risk assessment of each area and determining the suitable communication equipment in the area without such equipment
- Upgrading current VTS and AIS systems
- Preparing technical specification & tender documents
- Reviewing the detailed design prepared by the contractor

Description: This project aims to monitor the vessel traffic in Iran's navigable waterways for vessel traffic services (VTS), maritime rescue coordination centers (MRCC), and maritime pollution response system. Studying the existing aid to navigation systems such as VTS and automatic identification system (AIS), Upgrading the current VTS and AIS systems with modern equipment, and determining suitable and contemporary equipment and services for monitoring vessels in each specific area by considering the critical factors such as wind, sea state, waterway condition, and traffic conditions are some of the important aspects of this project.

Supervision Services for Implementation Project of Replacement SCADA/DMS Master System and Cyber Security

Start Date: 2019

Finish Date: 2021

Location: Oman

Client: Majan Electricity Company

Scope of work: :

- Supervision on implementation & commissioning, submit approvals, find solutions for all challenges and problems, handover the project
- Responsible for coordination between contractor and client for all the works and activities
- Approve all the drawings and inform if any modification required
- Approve SCADA FAT and SAT documents
- Attend SCADA System FAT and SAT. Approve the test reports submitted by contractor or comment
- Issue the final comments prior to commissioning After commissioning, if any SCADA related problems master system, cyber system and integration with the field (Exist RTU) during the one year defects liability period from the date of taking over by client, manager shall provide the root cause analysis detailed report
- Co-ordination and submittal of documents and drawings review and reply to and from the contractor
- Supervision and clearance of snags and ensuring project closure in all respect, including as built submittal, handing over and snag clearance
- Reply on contractors technical queries
- Ensure implementation as per tender requirements doc
- Review proposed system architecture, design, S/W packages, network communication and raising relevant comments
- Responsible of controlling the Cyber Security System regarding this project based on related policy and procedure to insure secure of SCADA system network
- Responsible to ensure secure SCADA system when other systems required to connect with SCADA system regarding the approved contractor designEnsuring that correct and accurate policies and procedures are in place for the new SCADA system
- Supervise execution project as per MJEC requirements
- Providing solutions for SCADA/DMS software problems

- Support MJEC SCADA team in regard of configuration, integration SS's in SCADA, troubleshooting system errors/failures H/W, S/W
- Reviewing the quality, templates and mechanism of generated report and give comments to ensure compliance with MJEC requirements
- Testing all signals with RTU for all integrated/migrated SS's in new SCADA system

Description: The main key to assure the reliability of MJEC power grid is to upgrade dispatching center with the SCADA/DMS system which provides full monitoring of the system (network and all controlling tools installed in network) and enables controlling the system (directly or indirectly per element).

Engineering Services and Preparation of the Executive Plan of Shargh Regional Dispatching Building

Start Date: 2019

Finish Date: 2020

Location: Iran

Client: Regional Electric Company of Sistan and Baluchestan

Scope of work:

Part 1: Initial identification and review

Part 2: Preparing preliminary plans and maps

Part 3: Preparation of executive plans

Part 4: Preparation of the technical documents and cooperation in selecting a contractor

Description: Dispatching centers play an important role in controlling the power network in terms of providing ergonomic and operator friendly environment. In this project, Monenco is responsible to study the existing condition for implementing this project including allocated area, weather conditions, number of employees stationed in the building and etc. As usual, security concerns and regional cultural elements for architectural of the building would be considered.

Engineering Services for renewing SCADA/EMS of Fars AOC Center

Start Date: 2020

Finish Date: 2021

Location: Shiraz, Iran

Client: Fars Regional Electric Company

Scope of work: Preparing basic design of AOC control system for Fars 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 renwing the necessary SCADA system in order to facilitate the oprtaing of growing high voltage electric transmission network in Fars Regional Electric Company region. Therefore, FREC intends to renew the AOC center and is planning to implement and construct necessary control centers and systems and prepare prerequisites of the substations to make all its transmission networks observable. In this project, Monenco is responsible for SCADA system basic design, cost estimation, tender evaluation and site supervision services.

Consulting Services to Provide a Comprehensive Plan for RDC Dispatching Centers of Khorasan Province

Start Date: 2019

Finish Date: 2021

Location: Mashhad, Iran

Client: Khorasan Regional Electric Company

Scope of work:

- Investigating the current situation and needs
  - Get current network information
  - Analyzing existing hardware and software equipment and identify deficiencies
  - Investigating on how to exchange information and future telecommunication needs of the system
- Preparation of a comprehensive plan for the RDC centers
  - Designing the overall structure of the system
  - Reviewing and determining the number of required dispatching centers
  - Determining the general specifications of SCADA software
  - Determining operating instructions Description: In order to achieve a modern grid with control capability, it is mandatory to use the AOC and make electricity network as an observable system to improve the system performance. In this project, the main peruse is to establish AOC center.

Engineering and Consulting Services and Detailed Design of SCADA System in the area of Water and Sewerage Company

Start Date: 2019

Finish Date: 2021

Location: Tehran, Iran

Client: Water and Sewerage Company, Region 3, Tehran

Scope of work:

Detailed design:

- Visiting the places implemented in the project such as pressure breakers and receiving accurate
- Information for installation and deployment of equipment
- Reviewing the basic plans and presenting the final executive plan
- Estimation of the final equipment required on the sites
- Preparing system installation specifications
- Preparing diagrams and engineering-communication documents and layout and installation equipment
- Preparing bidding documents and evaluating bidders

Purchasing:

- Determining how to buy goods and equipment and estimating the risk of methods
- Factory Acceptance Tests (FAT)
- Determining the conditions of delivery of goods and the type of guarantee and insurance required

Contractors:

- Answering the questions of the participants during the deadline
- Examining the technical proposals and correspondence with the bidders to determine the bids if necessary
- Participating in the opening session of financial proposals
- Examining the financial proposals and correspondence with the bidders in order to specify the contents and conditions of the bid if necessary

Description: The main purpose of this project is to facilitate the observability and controllability of the main assets of Tehran's Water and Sewerage Company in region 3. By implementing this system, the reliable water will be supported and sewerage will be managed in the area supported by this company in the capital city of Tehran.

Supervision Services for management and operation of SCADA projects in Tehran province Gas Network

Start Date: 2019

Finish Date: 2021

Location: Tehran, Iran

Client: Iran Gas National company, Tehran Gas Co.

Scope of work:

- Supervision on EPC project
- Responsible for coordination between contractor and client for all the works and activities
- Approve all the drawings and inform if any modification required
- Approve SCADA FAT and SAT documents
- Attend SCADA System FAT and SAT. Approve the test reports submitted by contractor or comment
- Issue the final comments prior to commissioning after commissioning, if any SCADA related problems master system, cyber system and integration with the field (Exist RTU) during the one year defects liability period from the date of taking over by client, manager shall provide the root cause analysis detailed report
- Co-ordination and submittal of documents and drawings review and reply to and from the contractor
- Supervision and clearance of snags and ensuring project closure in all respect, including as built submittal, handing over and snag clearance
- Reply on contractors technical queries
- Ensure implementation as per tender requirements document
- Review proposed system architecture, design, S/W packages, network communication and raising relevant comments
- Responsible of controlling the Cyber Security System regarding this project based on related policy and procedure to insure secure of SCADA system network
- Responsible to ensure secure SCADA system when other systems required to connect with SCADA system regarding the approved contractor design
- Ensuring that correct and accurate policies and procedures are in place for the new SCADA system
- Providing solutions for SCADA/DMS software problems
- Support client SCADA team in regard of configuration, integration SS's in SCADA, troubleshooting system errors/failures H/W, S/W

Description: One of most important project in the field of oil & gas is implementing SCADA system. In this national project, supervisory services for management and operation of Tehran Province Gas Network during natural disasters like earthquake will be executed.

Consulting Engineering of Automation for Bushehr Electricity Distribution Grid

Start Date: 2020

Finish Date: 2021

Location: Bushehr, Iran

Client: Bushehr Electricity Distribution Company

Scope of work: Engineering services for distribution control center of Bushehr province as follow:

- Identification and preliminary study
- Conceptual design
- Basic design

- Evaluation the needs of the Electricity Distribution Company for the implementing automation system
- Estimation project budget
- Preparation of tender documents
- Performing tender procedures and contractor selection
- Project supervision services

Description: Network Observability is crucial to operating the distribution grid. Without an effective monitoring and control system, customer services will not be satisfied. Bushehr province is a critical region because of many vital industries which are the customer of electricity. Therefore, Bushehr Electricity Distribution Company has started this project in order to improve reliability indices, more effective services to customer and achieve to a smart grid. In this project, Monenco is responsible for preliminary studies, conceptual design both for hardware and software (including: define the conceptual architecture, communication protocols, software system integration requirement for SCADA/DMS/OMS and external system, define the criteria for feeder priorities in order to implementation of automation, determine the all requirement and scheduling the process for implementing the automation system), Basic design for SCADA system, budget estimation, contractor quality evaluation document and evaluation of contractors, technical document and tender evaluation.

Engineering Services for Designing Yazd Regional Electric Company Dispatching Building

Start Date: 2019

Finish Date: 2021

Location: Iran

Client: Yazd Regional Electric Company

Scope of work:

Part 1: Initial Identification and Review

Part 2: Preparing preliminary plans and maps

Part 3: Preparation of executive

Part 4: Preparation the tender technical documents and cooperation in selecting a contractor

Description: The aim of this project is to provide consulting services for designing a building for control center of Yazd Regional Electric Company. Our major consideration in this project is to provide an ergonomic operator friendly environment for operators to work under the better conditions. Also, security concerns will be considered in designing the building. The architecture of this building will be performed based on cultural elements of Yazd.

Online Condition Monitoring of Turbine-Generator Dependent Parameters for Anomaly Detection

Start Date: 2020

Finish Date: 2021

Location: Qom Combined Cycle Power Plant, Iran

Client: Saba Power and Energy Group

Scope of work: Huge amounts of raw and semi-raw data arising from automated DCS systems in thermal plants make a unique opportunity to use data analytics algorithms in order to generate useful, non-trivial, implicit, and previously unknown information and knowledge as Industry 4.0 domain. Predictive maintenance is one the most important applications of data mining tools in digital industry. In this project, anomaly or outlier detection techniques were proposed for predictive maintenance and failure prognosis. In this project, it is planned to use innovative unsupervised machine learning algorithms to detect any abnormal conditions in Generator-Turbine units. Our platform will be connected to power plant control system to use real-time field's data such as vibration signals. This platform leads to reduced maintenance costs and also increases MTBF.

Description: Different failures and inefficient O&M procedures in thermal power plants can lead to high system down and increased maintenance costs. Earlier detection of failures in power plants using novel data-driven approaches is considered as a new entry concept and known as predictive maintenance or failure prognosis. In this project, a data analytics software will be developed and then connected to DCS gate to use received data to detect any outlier occurrence probability.

Consultancy and Supervision Services for Smart Metering Projects in Mashhad, Tehran, Isfahan, Boushehr, and Zanjan Electric Distribution Companies

Start Date: 2018

Finish Date: 2021

Location: Mashhad, Tehran, and Zanjan (Three main distribution companies as representative for more than 22 EDCs), Iran

Client: Mashhad, Tehran, Isfahan, Boushehr, and Zanjan EDCs

Scope of work: This project consists of 5 separate projects that include engineering and supervisory services for 5 main distribution power companies and their subsidiaries (In total 39 distribution power companies). The scope of services are as follow; Supervision on installation, commissioning and activation of all smart meters in 39 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 in achieving 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.

Investment Opportunity Identification in the Smart City Domains in Qom, Yazd, and Mashad Cities

Start Date: 2019

Finish Date: 2020

Location: Qom, Yazd, and Mashad, Iran

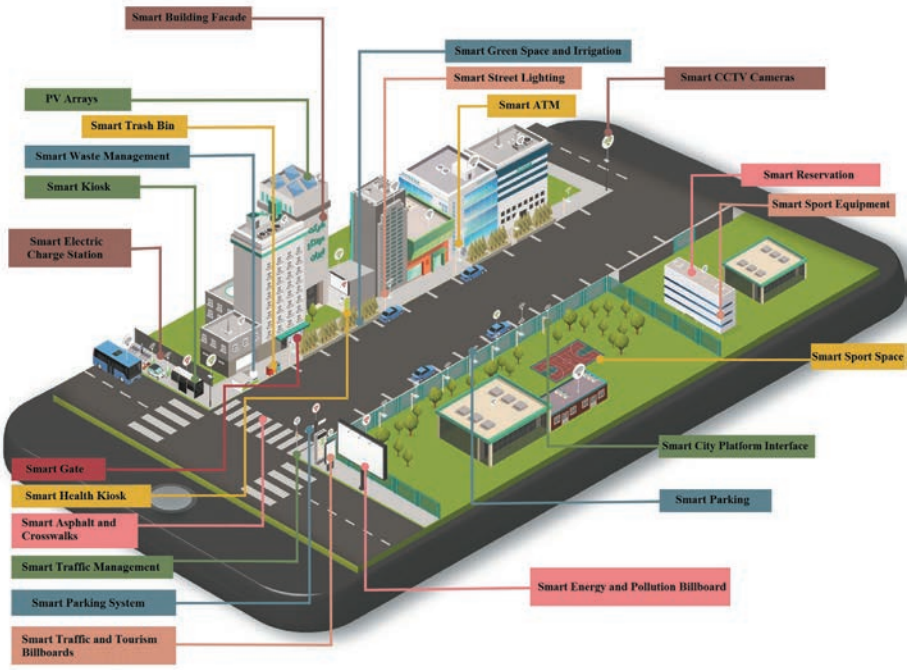
Client: Qom, Yazd, and Mashad, Iran Municipalities

Scope of work: In this project the current state of the cities in terms of intelligence infrastructure was studied. Analytical report, also strategic plan and investment packages in forms of RFPs was prepared

Description: Some of the main activities are:

- Review on successful experiences in the world through a comparative study
- Identification of progress level of e-government services and its relationship with Information and Public Service (GSB)
- Identification of services, issues and problems of urban and resource management
- SWOT analysis for smart city development plans
- Analysis of maturity level of IT governance processes (based on the COBIT model) and provision of municipal services (based on the ITIL model)
- Developing metropolitan development policies (at three levels: macro policies, application policies, and executive policies)
- Development perspective and strategy according to the city's maturity levels
- Providing effective solutions and defining required projects

- Comprehensive plan of free data stream and sharing
- Development of macro policies such as cloud computing, Big Data, IoT Platform, Artificial Intelligence (AI), Social Networks, Distributed Cryptography (Block Chain), Gamification, Shared Economy, New Energy and their Development Framework



Preparing Specification of Smart Elements of Tehran smart City included Smart Bench, Smart Health Kiosk and Smart Interaction Kiosk and Preparing RFP

Start Date: 2020

Finish Date: 2021

Location: Tehran City, Iran

Client: Tehran Municipality Information and Communication Technology Organization

Scope of work: Investigating and identifying the relationship between the project to strategies and dimensions of the Smart Tehran plan, the annual budget of Tehran Municipality and other projects; Survey and identification of stakeholders of Tehran Municipality and their role in advancing the project; Cost-benefit Analysis and Feasibility Study of Project (PESTEL Analysis) with a focus (not limited to) on reducing challenges and removing regulatory barriers; Preliminary estimation of cost and time schedule required for the implementation of the project, prepare RFP documents; prepare investment and business plan.

Description: Smart City is an integrated and strategic approach to developing cities to solve existing problems and take advantage of emerging and widespread opportunities for innovation and creativity. Promoting quality of life and citizen satisfaction, sustainable city development, reducing city costs, increasing the synergy of city elements and stakeholders, improving urban management decisions, and developing innovative businesses are among the most important goals of the smart city. Implementation of urban smart elements project includes elements such as digital signage, smart benches and smart health kiosks, which provide services such as free Wi-Fi, mobile charging, banking transactions, information platform in urban management and especially in times of crisis, measuring air pollution, etc., provides and facilitates citizens' access to urban facilities.

Consultancy Services for Engineering and Supervision on Smart Metering Project for Low Consumption Electricity Consumers (FAHAM Second Phase Project)

Start Date: 2019

Finish Date: 2021

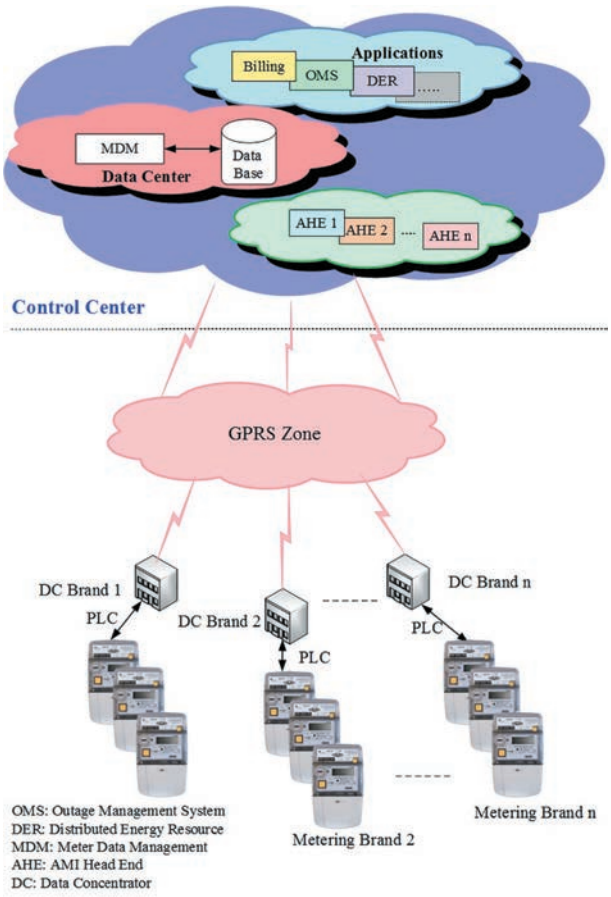
Location: Tehran, Iran

Client: SATKAB Co.

Scope of work: Engineering services such as:

- Providing AMI solution for Low Consumption Customers including technical specifications for Data Concentrator Unit (DCU) and Single Phase Smart Meter and Interoperability Documents for all system layers
- Selection of communication media, preparing test procedures for equipment and telecomm media
- Tendering, and Supervision on smart meters procurement and installation

Description: In this project, more than 5 million low consumption electric consumers (less than 30 kW) will be equipped with three and single phase smart meters.
After a detailed evaluation of international successful experiences and various telecommunication tests on national distribution network, Hybrid Solution (PLC/RF) was selected as the best solution for communication media between single phase smart meters and DCUs. A. In order to guarantee the efficiency of communication media, some technical pilot projects will be performed before mass deployment. Also preparing technical specification for single phase smart meter and DCU as well as interoperability documents are parts of Monenco's scope of work in this project.



Providing Engineering and Consultancy Services for Extension of Iranian Smart Metering Project (FAHAM)

Start Date: 2019

Finish Date: 2021

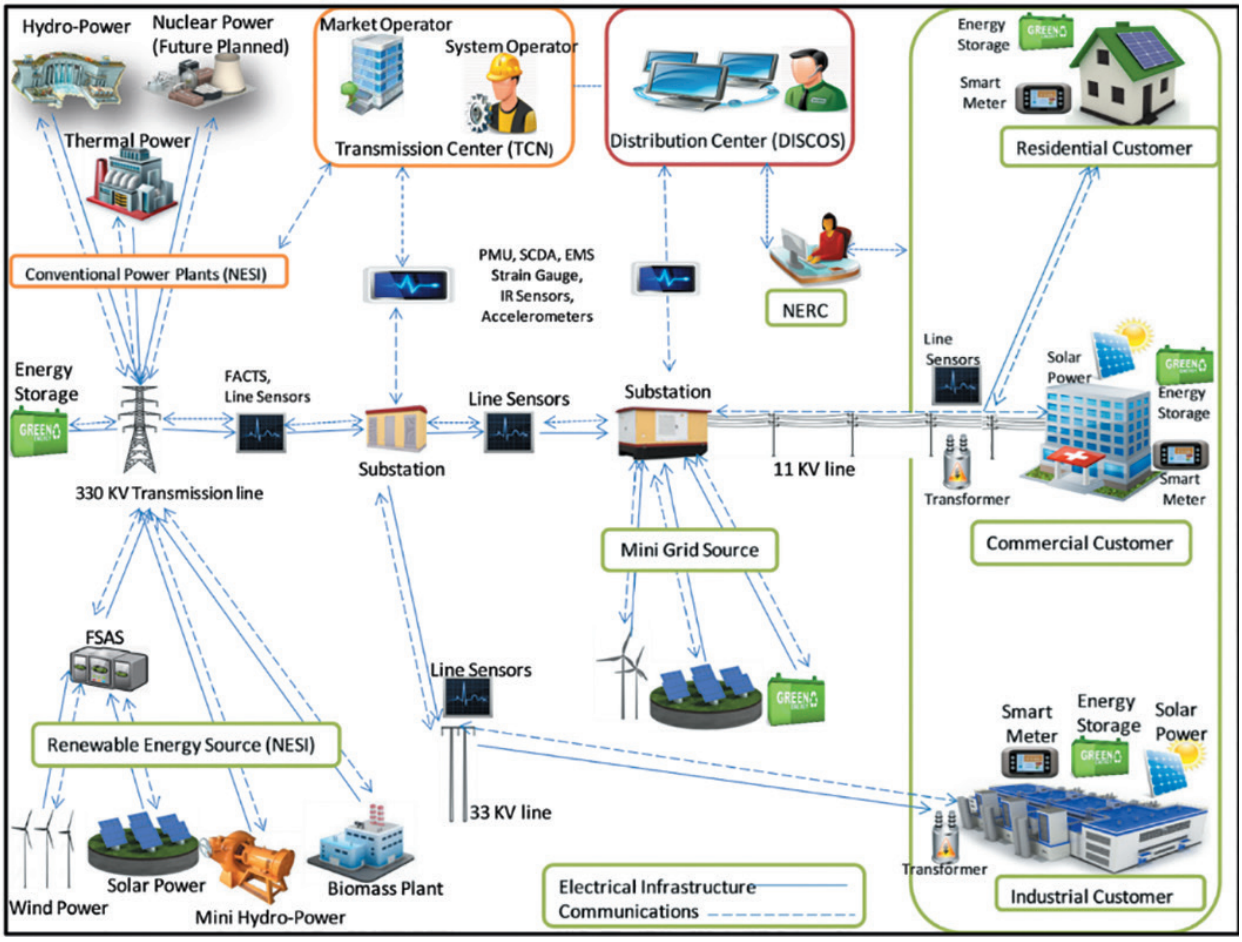
Location: Tehran, Iran

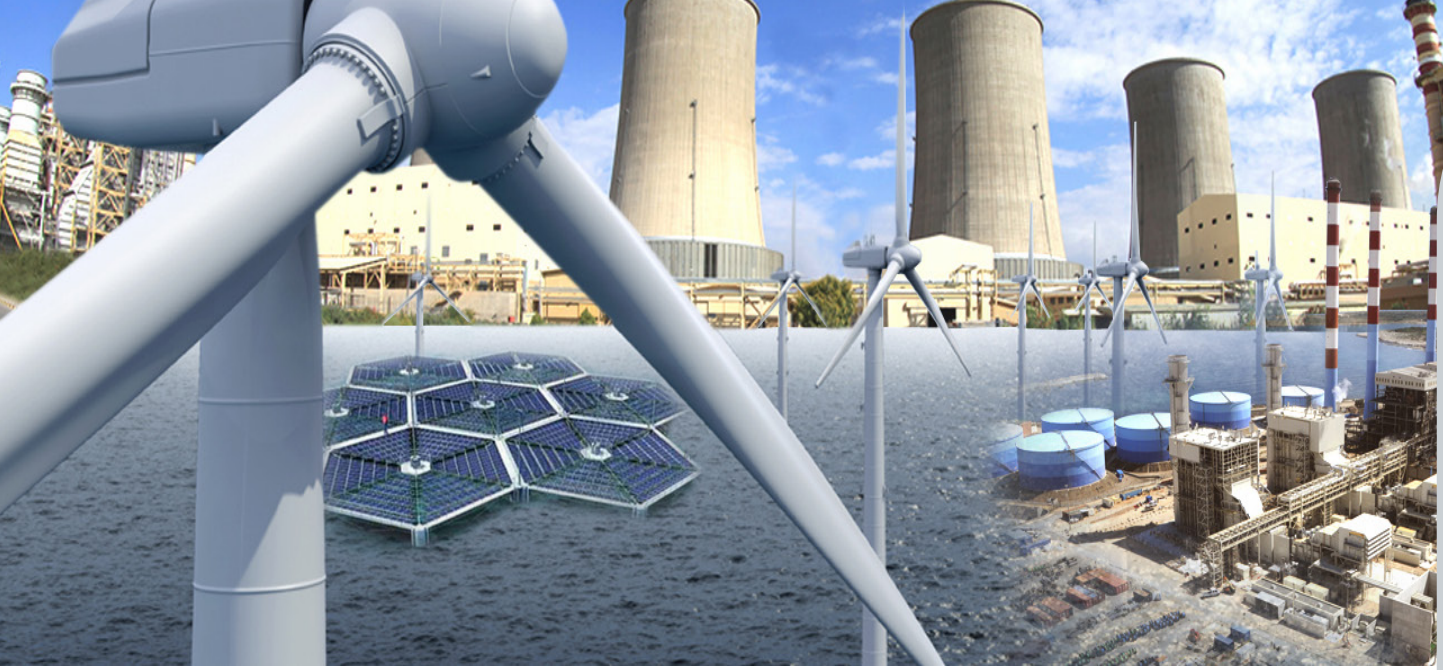
Client: TAVANIR Co.

Scope of work: Following Monenco's responsibilities in the first phase of the FAHAM Project for engineering and supervision services, this project is to modify and update of all the technical documents and design procedures of the first phase of FAHAM project.

Description: In this project, 6th FAHAM data center deployment will be completed in Isfahan province and ICT architecture of FAHAM project will be modified and updated based on new requirements. Also, FAHAM Interoperability Documents (FID) are being updated based on projects new terms. Some additional packages such as Interoperability documents (FID3-packages) for Demand Response and Outage Management System (OMS) will be prepared in order to guarantee the interoperability between MDM and Application systems. A centralized Monitoring Center is being designed in order to:

- Gather all the metered energy data from DSOs' data centers
- Aggregate 63kV-level dispatching data Also, Security Operation Center (SOC) and Network Operation Center (NOC) will be deployed in the Monitoring Center.





Power Generation Division

2,400 MW
Thermal Power Plants

1,100 MW
Wind Power Plants

35,500 MW
Combined Cycle Power Plants

+3000 MW
Thermal Power Plants Feasibility Studies

19,500 MW
Gas Turbine

Renewable Energies & Distributed Generation

As renewable energies are becoming the dominant energy source all around the world (referring to its characteristics, i.e. environmental friendly, dramatic decreasing generating cost, adaptable scalability), Monenco participates in eco-friendly and clean energy projects such as renewable energy-based generation (wind power plants, PV power plant, waste to energy, etc.), and distributed generation with the use of combined cooling, heating and power generation (CHP/CCHP) and diesel generators. The extensive experiences of Monenco in conventional and renewable energy-based power plants projects have provided valuable expertise in project engineering and supervisory services.

Building

Design of Industrial, Administrative and Commercial Buildings:

- Architectural design
- Structural design
- Electrical design
- Mechanical design
- All engineering designs modelled using REVIT with BIM

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, using our 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 wastewater treatment plants in old industrial and power plants.

Desalination

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.

Gas Turbine Power Plants

Major part of power generation in Iran is through gas turbine power plants. Monenco has performed an important role for engineering, design and consultancy services for gas turbine power plants.

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.

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 lifecycle 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.

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.

Major Ongoing Projects

Overall, Basic and Detail Engineering, Interface Engineering, Procurement Engineering, Technical Consultancy, Supply Service and Site Technical Support in all fields of Yazd Integrated Solar Combined Cycle Power Plant

Start Date: 2020

Finish Date: 2022

Location: Yazd, Iran

Client: Mapna MD2

Scope of work:

Engineering services: The Services of this project includes overall, basic and detail engineering, interface engineering, procurement engineering, technical consultancy, supply service and site technical support in all fields (such as civil, mechanical, electrical, instrument and control, etc.) to establish a solar plant in a way that it can operate in a safe and normal condition integrated with other islands of solar thermal power plant for at least 25 years. The scope of services which are requested to technical support will be include to the following tasks:

- Overall, basic and detail design engineering:
  - Providing required drawings, documents, instructions, procedures, manuals and lists that are necessary for safe and reliable design, fabrication, factory tests, transportation, preservation on site before and after erection, civil works, erection, commissioning, operation and maintenance
  - Basic and detail design engineering documents of the project
  - Drawings, documents, instructions, procedures, manuals and lists that are necessary for safe and reliable design, fabrication, factory tests, transportation, preservation on site before and after erection, civil works, erection, commissioning, operation and maintenance
  - Technical consultancy
  - Construction, commissioning, operation and maintenance manuals, start up and shut down procedures
  - Procedures performance test procedure
  - Documents of collector structure, hydraulic system, tracking system & LOC in solar field
- Technical support for procurement engineering:
  - Providing material take off necessary to establish a solar power plant based on conceptual design and EPC tender specification
  - Providing technical specification and technical purchase specification for biding of work packages
  - Attending any clarification meeting with vendors
  - Technical and economical bid assessment against specification on request from Employer (Evaluation of bids)
  - Short description of potential suppliers
  - Answering vendors' technical questions
  - Visit and evaluation of potential local suppliers
  - Assessments of manufacturing documents
  - Review manufacturing documentation provided by vendor (process of manufacturing). (Review how manufacturing has been accomplished(internal protocols) for example reviewing QA, QC documents, material handling protocols, etc.
- Site technical support and service:
  - Construction and commissioning supervision and support
  - Site technical assistance during installation and commissioning
  - Visit and evaluation of potential local suppliers on request of employer
  - Providing necessary support in modification at site during construction and commissioning

- Service during the guarantee period including detection of defects, finding remedy for them, reply the employer and its consultant comments, find solution for the operation problems concerning to the solar portion, etc.
- Preparation of quarterly/final construction and commissioning supervision reports 45-Performance monitoring during two years operation for six times
- Training

► Project Management

- Providing WBS, CBS, detail time schedule, progress reports
- Providing all QC/QA documents, information and requirements
- Providing HSE guidelines and requirements for construction, operation and maintenance

Description: Air Pollution, Toxic Water, Hazardous Waste and Ocean Acidification are main problems that come from fossil fuel consumption in power plants.

Generating electricity with solar power instead of fossil fuels can dramatically reduce greenhouse gas emissions, particularly carbon dioxide (CO2). Greenhouse gases, which are produced when fossil fuels are burned, lead to rising global temperatures and climate change. To this end, it was decided to construct the first concentrated solar power plant in Iran.

The Project is located 520 km South East of Teheran, in the province of Yazd (Iran). Yazd is the provincial capital, and it is the largest and the most inhabited town in the province. It is located in an extensive valley facing the central desert of Iran.

The planned ISCC in Yazd has a nominal capacity of 474 MWel, and consists of two gas turbines of 157 MWel each. The gas turbines are linked with two heat recovery steam generators (HRSG) supplying steam to a 160 MWel steam turbine. Additional steam is provided by the parabolic mirror field via solar heat exchangers. Hot heat transfer fluid (HTF), is pumped from the parabolic mirror field through two heat exchangers where saturated steam is generated. This “solar” steam is admitted to the HRSGs, and contributes – through the thermodynamic cycle of the steam turbine – to an electrical power output of approximately 17 MW (at rated conditions).

The technology used in solar power plants of the above type has special complexities that the design of all stages from the stage of conceptual, basic and detailed design can be done by only a few limited countries. The knowledge used in the design of the above power plants is generally based on several years of studies and research of companies and relevant scientific associations. In recent decades, this technology has been commercialized and made available to energy producers around the world.

The technologies used in Yazd solar power plant include the design of all oil transfer sections, which is called “HTF” for short, and consists of several sub-sections, each of which has a wide range of specific technologies. Also in the other part of the solar farm power plant. Parabolic mirrors are used by solar collectors, which are used in the world under the trade name of “euro through”. Thus, it is clear that the use of the above various technologies requires a wide range of science and knowledge of design and engineering knowledge. Since these consulting engineers are in the early stages of acquiring the above technologies, we need technical support in this field.

35000 m3/day Boushehr Sea Water Reverse Osmosis (SWRO) Desalination

Project Type: Consultancy and Supervisory Service

Start Date: 2018

Finish Date: 2021

Location: Boushehr, Iran

Capacity: 35000 m3/day drinking water

Client: Mapna Group (as the investor)

Owner: Boushehr Water and Wastewater Company

Scope of work: Review and endorsement of the engineering documents, supervision services include the following items:

Design Review and Superior Supervision:

- Endorsement of the "Project Scope" and the "Technical Specifications"
- Site mobilization documents
- Preparing project planning and project control
- Factory and workshop tests
- Claim managements
- Erection completion certification, ECC
- Review, comment, and endorsement of the followings:
  - Conceptual design of water intake method
  - Conceptual design of pretreatment system
  - Calculation notes, data sheet, drawings, and all basic and detail design documents
- Review and approve all technical documents of sub-contractors
- Document checking for all vendors and suppliers
- Checking the interface documents for compatibility
- Cross checking the drawings and technical documents for conformity
- Holding technical meetings with vendors and sub-contractors
- Review and approve spare part list for main and auxiliary systems
- Review and approve training program for main client team

Site Supervision:

- Reviewing all drawings and relevant documents
- Inspection of installed equipment with regard to the relevant drawings and documents
- Study the contracts of client and subcontractors and determine and clarify the work scopes
- Supervision on installation and commissioning of all mechanical, electrical, and control and monitoring system

- Review and approve “as built” drawings and documents
- Supervision on No-load test, load test, commissioning and trial run
- Attending in performance test and witnessing the control parameters

Description: This project intends to desalinate and transfer 35,000 cubic meters of fresh water per day to the Bushehr Water and Wastewater Company, as the owner. The project includes intake basin, pre-treatment unit, desalination plant, post-treatment unit, pumping station and all the electrical equipment, instruments and control and is being implemented as a BOO project by MAPNA Group Company. Sea Water Reverse Osmosis (SWRO) is the main treatment unit of this plant; however, different kinds of pre-treatment systems have been designed to meet the required standards and to make sure to have a safe operation. Since the product is for drinking water, the RO permeate (product) is treated in the post-treatment unit and finally is pumped to be delivered to the owner.

Consultancy Services for Design of SAHAND (BONAB) Combined Cycle Power Plant

Project Type: Combined Cycle Power Plant

Start Date: 2020

Finish Date: 2022

Location: BONAB, EAST AZARBAYEJAN ,Iran

Capacity: 451 MW (1 GTG *307 MW + 1 STG *144 MW)

Client: TPPH

Scope of work: Monenco provides Basic Design, Detail Design and 3D Modeling of Plant including:

- Design of all buildings (Industrial and non-industrial) including architectural, structural and foundation drawings and calculation notes
- Design of all mechanical BOP system including fire fighting of plant, gas oil and natural gas system distribution, compressed air production and distribution system and auxiliary steam production and distribution system
- Design of water distribution including raw, potable, service and demined water
- Design of collecting waste water including (sewage, oily, clean, chemical and surface drainage)
- Design of HVAC and firefighting system of all building
- Design of electrical BOP system of Plant and all building
- Design of main ACC cooling system

Description: The plant is located near BONAB city in East Azarbayejan which is consisting of one full block combined cycle power plant including 1 gas turbine portion (SIEMENS CLASS F) and one steam turbine (TUGA) of combined cycle power plant in 1+1+1 configuration. In addition, the system of main cooling type is ACC and substation is 400 KV AIS.

Consultancy Services for Design of Rumaila Combined Cycle Power Plant (Steam Portion-PH4)

Project Type: Combined Cycle Power Plant

Start Date: 2020

Finish Date: 2023

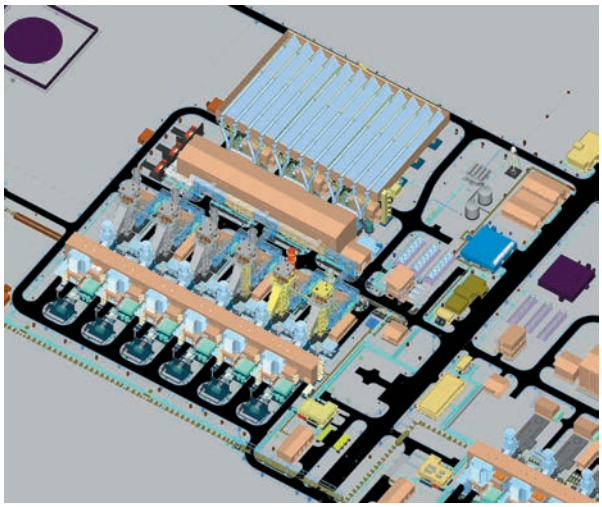
Location: Basra, Iraq

Capacity: 500 MW (3 STG *165 MW)

Client: SHAMARA Power Plant Company

Scope of work: Monenco provides Basic Design, Detail Design and 3D Modeling of Plant including:

- Design of all buildings including architectural, structural and foundation drawings and calculation notes
- Design of all mechanical BOP system including compressed air production and distribution system, auxiliary steam production and distribution system, demin water transfer system, pressurized chemical & clean waste water
- Design of collecting waste water including (Sewage, oily, clean, chemical and surface drainage)
- Design of HVAC and firefighting system of all building
- Design of socket and lighting system of all building
- Design of main ACC cooling system
- Design of main auxiliary cooling system



Description: The plant is located near Basra city in Iraq which is consisting of 3 STG *165 MW. Each STG consisting of two (2) HRSGs and one steam turbine generator set & main and auxiliary cooling system. In addition, the type of main cooling system is ACC.

Consultancy Services for PASARGAD QESHM Combined Cycle Power Plant

Project Type: Combined Cycle Power Plant

Start Date: 2019

Finish Date: 2021

Location: Qeshm Island / Iran

Capacity: 500 MW (1 GTG * 320 MW + 1 STG * 180 MW)

Client: Qeshm Movalled Company

Project MC: Tolou Energy & Juybar Andisheh JV

Scope of work: Engineering design review, endorsement, supervision and site supervision services of EPC contractor scope for gas portion of "Pasargad Qeshm 500 MW Combined Cycle Power Plant" including one Ansaldo (V94.3A) gas turbine & generator unit, common areas and HV substation.

Description: **"**Pasargad Qeshm 500 MW Combined Cycle Power Plant**"** is located in the Qeshm Island of Iran. The project includes one combined cycle block with the capacity of 500 MW and desalination water plant which will be implemented in 2 phases. In the first phase gas turbine portion will be implemented. The type of gas turbine unit is V93.A with the capacity of 320 MW. The required fuel of the plant includes natural gas as the main fuel. The HV substation voltage level is 230 KV. Therefore, Monenco Iran is responsible for engineering and site supervision of power plant (including power block) and HV substation civil, electrical, mechanical and instrumentation works of Pasargad Qeshm 500 MW Combined Cycle Power Plant.

Consultancy Services for Design of QESHM Combined Cycle Power Plant

Project Type: Combined Cycle Power Plant

Start Date: 2016

Finish Date: 2020

Location: Qeshm Island / Iran

Owner: ENERGY GOSTAR GHESHM COMPANY

Capacity: 500 MW (2 GTG * 170 MW + 1 STG * 160 MW)

Client: MAPNA SPECIAL PROJECTS CONSTRUCTION & DEVELOPMENT CO.(MD-3)

Scope of work: Engineering basic and detail design services for all BOP civil / BOP Mechanic /BOP Electric and instrumentation works for one block of combined cycle power plant including common areas and cooling. Monenco provides Basic Design, Detail Design and 3D Modeling of the plant including:

- Design of all Buildings(industrial and non-industrial) including architectural, structural and foundation drawings and calculation notes
- Design and of all mechanical BoP system including fire fighting of plant, gas oil and natural gas system distribution, compressed air production and distribution system and auxiliary steam production and distribution system
- Design of water distribution including raw, potable, service and demined water
- Design of collecting waste water including sewage, oily, clean, chemical and surface drainage
- Design of HVAC and fire fighting system of all building
- Design of electrical BoP system of plant and all building
- Design of main & auxiliary cooling system (once through type)

Description: "Engineering Services of QESHM Combined Cycle Power Plant" QESHM Combined Cycle Power Plant is located in the QESHM Island of Iran. The project includes one combined cycle block with the capacity of 500 mw and desalination water plant which will be implemented in 2 phases. In the first phase design of combined block will be implemented. The type of two gas turbine units is V94.2 each with the capacity of 170 MW and one steam unit with the capacity of 160 MW. The required fuel of the plant includes natural gas and gasoline which natural gas is considered as the main fuel and gasoline as the alternative fuel. Also the cooling system is once through type. Therefore, Monenco Iran is responsible to render basic and detail design for buildings, yard area civil works, electrical installations, mechanical and instrumentation works of QESHM power plant.

Consultancy Services for TPPH (Thermal Power Plant Holding) Buildings

Project Type: Consultancy and Supervisory Service

Start Date: 2018

Finish Date: 2021

Location: Tehran, Iran

Client: TPPH

Scope of work: Site and Supreme Supervision of Construction of Thermal Power Plant Holding office and parking and sport complex buildings project is one of Power Generation Deputy projects in which Monenco Iran Consulting Engineers Company is responsible for ensuring that the project is built in accordance with the requirements of the contract documents, approved plans, specifications, building codes, and client's needs.

These buildings will be TPPH Headquarter in Tehran, Iran. Client's company specializing in thermal power generation and is responsible for organizing government enterprise activities in the field of thermal power generation connected to the transmission network and above. The country distributes electricity, manages subsidiaries and plans, manages the development and operation of these power plants within the framework of the policies of the Ministry of Energy and facilitates the participation of the non-governmental sector in the production of thermal power.

Inspection Services of Nahand New Pipe Line

Project Type: Inspection Services

Start Date: 2020

Finish Date: 2021

Location: Heris Village- East Azarbaijan Province

Client: Regional Water Company of East Azarbaijan

Scope of work: Inspection of carbon-steel water lines and polymeric pipes consist of:

- Inspection of raw material
- During-manufacturing inspection of the pipes
- Final inspection
- Inspection of inside and outside coating of the pipes
- Packing and marking of the pipes

- Loading inspection
- Final book review
- Inspection of welding process consist of:
  - Visual inspection of welds
  - Nondestructive test of welds

Also, preparing inspection and monthly reports for Client review

Description: Regional Water Company of East Azarbaijan intends to complete Nahand pipe line, so it has ordered 7000 meters of pipe line and Monenco as an inspector is supposed to check all stages of pipe preparation, covering and welding in the site.

Tondguyan Petrochemical Complex Feasibility Study of Using the Sewage Treatment Plant Biogas Product

Project Type: Feasibility Study, Basic Design, Tender Document

Start Date: 2020

Finish Date: 2020

Location: Mahshahr, Iran

Client: Tondguyan Petrochemical complex

Scope of work:

- Check the existing conditions
- Collection of necessary data
- Analysis of methods to use existing potential
- Technical requirements of the plan
- Electricity network connection
- Economic analysis

Description: Tondgooyan Petrochemical Company uses three anaerobic reactors to produce biogas in part of its wastewater treatment process.
Initially, the biogas produced was incinerated in two waste incinerators in the petrochemical company, which was prevented from operating due to corrosion in the equipment, and now the biogas produced is incinerated by a Feller device located near the treatment plant.
Tondgooyan Petrochemical Company, due to environmental concerns and in order to increase energy efficiency, intends to use this existing potential to prevent the loss of bio-produced gas. In this regard, Monenco Iran Company provided engineering services to the employer.

Oil & Gas Division

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

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 and chemicals industry insights and vast experience in our core competencies. We are, and will continue to be, second to none in understanding our clients' 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 and international clients with higher quality. Monenco, by having the major oil and gas and chemical 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 2019.

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 in this division.

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Oil & Gas Complexes

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Mining & Geology Projects

Major Ongoing Projects

Engineering Services for Danan Oil Field Development

Start Date: 2019

Finish Date: 2021

Location: Dehloran, Iran

Capacity: 11 new wells each, 5000 BPD

Client: Iranian Central Oil Field Company (ICOFC)

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 in 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 heather (WBH) to heat the crude for desalter in the existing Dehloran desalting plant.

MC Services and Site Supervision of Basht Plant Bioethanol and By-product

Start Date: 2018

Finish Date: 2021

Location: Basht, Kohguiluyeh and Boyer-Ahmad Province, Iran

Capacity: 200,000 Lit/day

Client: Zagros Green Fuel Development Company (GSZ)

Scope of work:

Contributing PMC services such as:

- Providing tender documents for selection EPC contractor
- Supervision of 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 Bioethanol production (200,000 liter/day at 99.8% volume) located in 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. Reduction of pollution is one of the most important benefits and advantages for the environment and public health.

Consultancy & Site Supervision Services for Gas Projects in West Azerbaijan

Start Date: 2018

Finish Date: 2021

Location: West Azerbaijan, Iran

Client: West Azerbaijan Gas Company

Scope of work:

- 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
- Top supervision

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

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

Start Date: 2019

Finish Date: 2021

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.

Supervision Services for Tehran Gas Retrofitting Project

Start Date: 2020

Finish Date: 2021

Location: Tehran, Iran

Client: Tehran Province Gas Company

Scope of work:

- Design, consultancy and site supervision services on retrofitting of DRS stations with TRC (Textile Reinforced Concrete)
- 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
- 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

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 and also retrofitting of Gas District Regulator Stations 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.

Mining, Geology and Minerals

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. The services include: Geology, Prospecting, 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, Data mine studio, 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 an international consultancy company, takes this responsibility to update its knowledge continuously. Accordingly, several studies related to the following fields were conducted and in the form of seminars and white papers were presented to the clients, competitors etc.

Phosphoric Acid

Phosphoric Acid is an essential intermediate chemical product. It is mainly used for the manufacturing of fertilizers. The aim of this service is the development of a new commercially competitive process for the production of concentrated phosphoric acid. Following are the targets of project:

- A high-grade the phosphoric acid
- Producing high-grade byproducts like phosphogypsum that will be suitable for building purposes
- Mineral processing

Phosphoric Acid Production by wet process

Phosphoric acid (H_3PO_4) can be manufactured by using a wet process. In this method, phosphoric acid is produced by reacting sulfuric acid (H_2SO_4) with phosphate rock. The aim of this project is the use of excess

sulfuric acid produced in the copper industry for producing phosphoric acid and fertilizer.

- Production of technical grade phosphoric acid
- Production of high-grade byproducts like phosphogypsum which will be suitable for building purposes
- Production of fertilizers such as Granulated Triple Super Phosphate (GTSP), Mono-Ammonium Phosphate (MAP) and Nitrogen Phosphorus Potassium (NPK)
- Production of food grade phosphates such as Di-Calcium Phosphate (DCP) and Mono-Calcium Phosphate (MCP)

Laser Scanning System for Mine Survey

In mining operations, measuring block extraction in a different periods, geometry changes in place of extraction, the volume of the mineral depot, the volume of the waste depot, the volume of the waste depot are basis of mine design and planning. These works were performed by manually surveying by this method with human and system tolerance.

Major Completed Projects

- Consultancy services, prospecting and general exploration in Sabzevar area
- Study and detail design of Pabdana Coal Mine in Kerman
- Exploration engineering services and supervision of in Central Alborz Coal Reservoirs in Mazandaran
- Preliminary and detailed exploration study of Iron Ore Anomalies in Yazd
- Consultancy services and design of Coke Plant in Central Alborz Coal Mines in Mazandaran
- 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 and site supervision services, detailed studies and exploration drilling of water, mining and power plant in Mazino-Tabas Coal Mine

Major Ongoing Projects

Engineering and Supervision Services for Phosphoric Acid Plant in Bandar Abbas (Special Economic for the Mining and Metal Industries of the Persian Gulf)

Start Date: 2019

Finish Date: 2022

Location: Bandar Abbas-Special Economic for the Mining and Metal Industries of the Persian Gulf, Iran

Client: National Iranian Copper Industries Company (NICICO)

Scope of work:

- Engineering and supervision services on contractors operations
- Prepare prescription of work circulation between contractor and client
- Checking and commenting basic engineering documents
- Engineering procumbent services
- Test certificate in relation to test design parameters
- Supervision & consultancy services for the construction phase
- Provisional operation period services
- Providing engineering services
- Site supervision services (during construction, testing and commissioning)

Description: Sulfuric Acid is an unwanted product in the copper industry. Due to the existence of copper production plants in Iran, the amount of production of this material in the country is high. Sulfuric Acid

is one of the feed materials in the process of producing Phosphoric Acid. Therefore, the construction of a Phosphoric Acid plant, will cover some of the country's need for fertilizer production. To the best use Sulfuric Acid produced, NICICO decided to establish a Phosphoric Acid Plant with the capacity of 360,000 tones P2O5/ year. In this project, Monenco Iran is responsible for rendering design, engineering and supervision services for the construction of the plant.

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

Start Date: 2019

Finish Date: 2021

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 to test design parameters
- Supervision & consultancy services for the construction phase in site
- Provisional operation period services

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

Designing Fire Detection System in Tabas Coal Mine Company

Start Date: 2019

Finish Date: 2020

Location: Tabas, Iran

Client: Tabas Coal Mine Company

Scope of work:

Consultancy services for the first and second phase studies for the construction of fire detection system in port facilities as a network and connecting them to fire stations of in Parvadeh Coal Mine in Tabas Coal Complex.

Description: Fire is a significant concern for those who work in coal mines. Fire at mines occurs unpredictably and results in partial or total evacuation of personnel and could result in loss of lives. Therefore, having a workforce that is well trained to prevent, detect, and fight a fire is important. This project focuses on preparedness in case of fire. Fire alarm system for industrial and non-industrial sites 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.

Coal Exploration Services in the North Kuchakali, Tabas Province, South Khorasan

Start Date: 2020

Finish Date: 2022

Location: Tabas Iran

Client: Mehdiabad Mining Company

Scope of work:

- Geological and technical data gathering
- Preparing an archive of maps and project documentation
- Topographical and geological mapping at 1:5000 and 1:1000 scales
- Development of geodatabase
- Locating and monitoring trench excavation and sampling
- Geological survey of trenches and their sections
- Exploration network design
- Specify the location of drilling points, preparation of drilling logs and supervision of drilling operations
- Geophysical studies
- Preparation of hypsometric profiles and maps and estimate resource and preparation of three-dimensional model

Description: The project area is located in North Kuchakali, Tabas coal field. To coal extraction plan of Zone No. 2 in north Kuchakali, detailed explorations are required, for which purpose Monenco Iran, as a consultant, is responsible for performing detailed exploration engineering services.

Three-dimensional Modeling of Resalat Offshore Complex

Start Date: 2020

Finish Date: 2020

Location: 80 km to Lavan Island

Client: Nautic Middle East DMCC

Scope of work: Engineering Services on Contractors Operations- 3D laser scanning of offshore complex topsides

Description: The proposal is to supply a survey team to carry out Laser Scanning for the Resalat Offshore Complex includes 3 platforms & 2 connected bridges, located offshore south of Iran. The intention of the requested survey is to undertake Brown field engineering support providing Laser Scanning of the structures to be incorporated in the assessment studies.

Update of the Comprehensive Coal Plan of Iran and Perform Market Studies for Domestic and Regional Potential Markets

Start Date: 2020

Finish Date: 2021

Location: The whole country

Client: Iranian Mineral Production and Supplying Co. (IMPASCO)

Scope of work:

- Gathering information by each province of Iran
- Complete and modify GIS information
- Preparation of a summary of the list of resources and reserves by province
- Review quantitative, qualitative and market price

- Export statistics over the previous 5 years by countries and shipping costs
- Import statistics over the previous 5 years by consumers and countries
- Forecast of quantity, quality and price of market for the next 12 years
- Investigate the quantity and quality of production potential of any current mine
- Investigate the possibility of exporting from current mines
- New coal plant construction program
- New mining program and development of existing mines
- Explore new areas and complete exploration of existing areas

Description: The primary purpose of this project is to update the comprehensive coal plan of the country and conduct market studies in the country and the region. Considering the existence of coal mines in Iran, especially in the provinces of East and West Azerbaijan, Mazandaran, South Khorasan and Kerman and also the importance of coal and its products in the domestic and foreign markets, cognizance of resources and production rate of each coal mine plays a vital role in mining plan and development.

Consultancy Services, Prospecting and General Exploration in Hormozgan Area

Start Date: 2020

Finish Date: 2021

Location: Hormozgan, 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 areas
- Design sampling (geochemical and heavy mineral samples)
- Geochemical exploration of stream sediments
- Analyzing samples (ICP, XRF, and XRD)
- Lithology study (thin 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 geodatabase in GIS

Description: This Exploration area is located in the north of Bandar Abbas province and the south of Kahnooj with 11270 square kilometers. The geological structure of this area is Zagros and Makran. Many geology formations in Hormozgan such as Hormoz series, Bajgan complex, Sedimentary Melange, Vaziri unite, Gushi

marl, Sabz unite, Razak, Zendan and Aghajari formation that seems to have a good potential for exploration. The first phase of the project is data gathering of the latest studies and compilation data for detecting promising areas. The second phase of the project is prospecting and geochemistry study in the promising areas after analyzing mineral samples. Finally, exploration report and geodatabase in GIS format will be provided.

Consultancy Services, Prospecting and General Exploration in Gilan and Qazvin Area

Start Date: 2020

Finish Date: 2021

Location: Gilan and Qazvin, 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 areas
- Design sampling (geochemical and heavy mineral samples)
- Geochemical exploration of stream sediments
- Analyzing samples (ICP, XRF, and XRD)
- Lithology study (thin 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 geodatabase in GIS

Description: This exploration area is located in the Guilan and Qazvin Provinces with 4500 and 3495 square kilometers. The geological structure of these areas is West and Middle Alborz. Karaj formation and Tarom zone in Alamut and Alunit explorion area in Qazvin are epithermal deposits. These areas are a good candidates for Zinc, Galena, and Cuprite exploration.
Andesite and mega porphyry rocks in Talesh zone (Gilan area) are good candidates for Gold and Cuprite exploration. The first phase of the project is data gathering of the latest studies and compilation data for detecting promising areas. The second phase of the project is prospecting and geochemistry study in the promising areas after analyzing mineral samples. Finally, an exploration report and geodatabase in GIS format will be provided.

Consultancy Services, Prospecting and General Exploration in Isfahan and Chahar Mahal Bakhtiari Area

Start Date: 2020

Finish Date: 2021

Location: Isfahan and Chahar mahal Bakhtiari, 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 areas
- Design sampling (geochemical and heavy mineral samples)
- Geochemical exploration of stream sediments
- Analyzing samples (ICP, XRF, and XRD)
- Lithology study (thin 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 geodatabase in GIS

Description: This Exploration area is located in the Kashan and Shahrekord Provinces with 1890 and 1108 square kilometers. The geological structure of these areas is Iran Markzi.
Volcano sediment, volcanic rocks in Shahrekord, and skarn deposits in Kuhdom area in Kashan are good candidates for polymetal exploration. The first phase of the project is data gathering of the latest studies and compilation data for detecting promising areas. The second phase of the project is prospecting and geochemistry study in the promising areas after analyzing mineral samples. Finally, exploration report and geodatabase in GIS format will be provided.

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 is concerned with research, planning, power system and feasibility studies, renewable energy, energy management, electricity market and economic studies as well as training and consultancy in all above mentioned fields.

The ESSC accomplishes the mission through its continued commitment to innovative research and power system studies, while provide professional consultations to local and international institutions and conduct various projects in the power sector. Additionally, the ESSC provides training for the specialists and professionals currently working in the related sectors. The research and study team at the ESSC consists of highly-accredited and specialized experts from related fields.

The team's experience is diverse and covers most areas of electric power systems, energy management, energy efficiency, renewable energy and the global environment as well as economic aspect of energy.

The major objective of the center is to provide solutions to problems faced by power producers and consumers. In this regard, the ESSC conduced various local and foreign projects that some of them are explained in the following.

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.

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.

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 Power System Studies Group etc.

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.

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.

Major Ongoing Projects

Power System Studies and Protection Coordination for Qarn Alam Co-Generation Project

Start Date: 2020

Finish Date: 2021

Location: Oman, PDO Network

Client: Petrofac E&C Oman LLC

Description: Qarn Alam Power Plant, located in the independent power system of Petroleum Development Oman (PDO), intends to install and commission a new GEF9E Gas Turbine Generator Package with one Heat Recovery Steam Generator in order to enhance oil extraction near the site. In keeping with this task, Monenco's scope will include the performance of modelling, static analyses, dynamic analyses, and protection coordination for the electrical network of the newly added unit in order to ensure the security and suitability of design for operation in PDO's grid.

Description of Actual Services Provided by Monenco:

- Collection of Data
- Network Modelling of the Power Plant in DIgSILENT Power Factory
- Load Flow Studies
- Short Circuit Studies
- Testing of the Unit and Dynamic Parameter Identification of the Unit's and its Controller Systems
- CT/VT Sizing Calculations
- Dynamic Studies
- Motor Starting Studies
- Protection Relay Setting Calculations
- Protection Coordination Study
- Review of Design Documents

Feasibility Study for Interconnection of Power Grids of Azerbaijan, Iran and Russia

Start Date: 2020

Finish Date: Ongoing

Location: Azerbaijan, Iran and Russia

Client: Azerenerji (Azerbaijan) / Tavanir (Iran) / FGC UES (Russia)

Description: The countries of Azerbaijan, Iran, and Russia owning to their proximity and special circumstances are envisioning an interconnection between the countries to be able to facilitate the trade of electricity and sharing of resources between them. The interest stems from various reasons within the countries that results in different prices for electricity within these countries diversity which in turn creates the opportunity for countries to exploit the differing electricity prices internationally for meeting the demand within their own country.

In these circumstances, the countries tend to look for neighboring countries in nearby vicinity that require low costs for interconnection in order to profit from the non-simultaneousness of electricity demand and improve the efficiency of supply.

Additionally, with countries moving towards increasing their renewable resources and sustainable development of their grids, international interconnections are able to provide an opportunity for the sharing of resources and allow the increase of penetration within those grids for renewable generation resources.

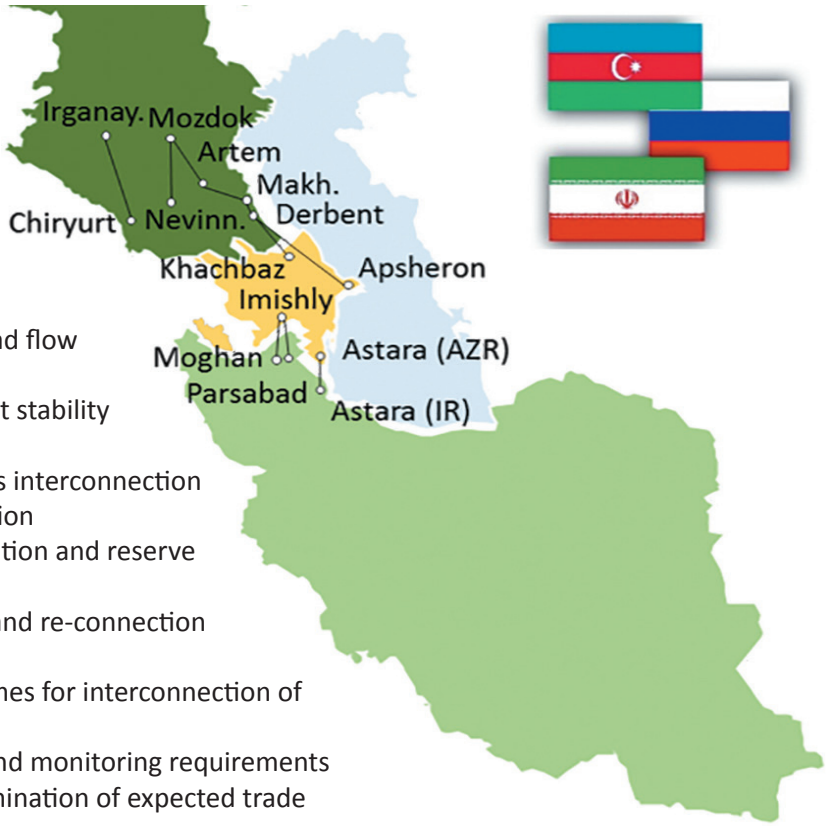
Meanwhile, by providing a vessel for sharing of reserves within the countries, the countries can take advantage by reducing the costs associated with reserve procurement while maintain the reliability and security of their networks also counteracting the inflexibility which is a characteristic of high renewable resources penetration without needing high cost equipment.

In such terms, Monenco was selected as the joint consultant of the clients in order to carry out a technical and economic feasibility study for establishing an interconnection between Azerbaijan, Iran, and Russia and to provide the overview of the design for such an interconnection and to provide guidelines regarding the operation of the interconnection.

Description of Actual Services Provided by Monenco:

This project is to conduct the following main tasks:

- Data collection and network review of Azerbaijani, Iranian and Russian Grids
- Review and selection of the interconnection technology
- Technical studies including load flow studies, short circuit studies, contingency analysis, transient stability analysis, small signal stability
- Definition of non-synchronous interconnection components and cost estimation
- Definition of frequency regulation and reserve requirements
- Definition of grid Separation and re-connection requirements
- Definition of protection schemes for interconnection of the networks
- Definition of data exchange and monitoring requirements
- Economic analysis and determination of expected trade



Outlook of Energy and Economy in World, Middle-East, and Iran

Start Date: 2020

Finish Date: Ongoing

Location: Iran

Client: MAPNA Group

Description: MAPNA group is lead industrial group in Iran which do business in electric, oil and gas, railway transportation, healthcare, and financing sectors. In such a sense, emerging and future trends and factors in the framework of macro-environment should be identified and analyzed to make a judgment on their impacts on MAPNA's businesses. Those macro-environment factors include COVID-19 pandemic, macro-economic growth status of world and Iran, and outlook of energy (electricity, oil, and gas) in world, Middle-East, and Iran and their alignment. After doing so, emerging threats and opportunities imposed to businesses of MAPNA will be identified and appropriate strategic management approaches will be proposed. This to minimize the threats imposed and maximize benefit gain out of emerging and future trends and opportunities.

The main duties in this project include the following items:

- **Phase 1:** Impacts of COVID-19 pandemic on MAPNA's businesses and strategic approaches to reduce the negative impacts
- **Phase 2:** Analyzing economic growth and other macro-economic factors in world and Iran and assessing their impacts on MAPNA's businesses
- **Phase 3:** Outlook of energy and related businesses in world and future roadmap of electricity, oil, and gas sectors in world
- **Phase 4:** Outlook of energy and related businesses in Middle-East
- **Phase 5:** Analysis of energy sector in Iran

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

Start Date: 2018

Finish Date: 2020

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 for this project.

Load Decomposition Analysis and Demand Side Management in Tehran Regional Electric Company

Start Date: 2019

Finish Date: 2020

Location: Iran

Client: Tehran Regional Electric Company

Description: The ever-increasing electricity consumption and peak demand has caused electric power utilities to face incremental investment in generation and transmission systems in order to fulfill consumption needs and achieve generation and load balance. In other words, power systems are traditionally built and operated under a 'supply follows demand' philosophy so that the balancing of electricity supply and demand is performed only by increasing or decreasing the electrical output of power plants which can be criticized for a variety of reasons such as:

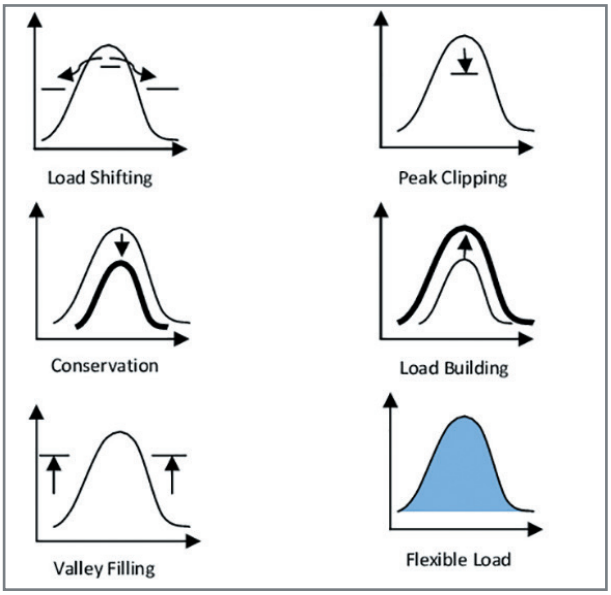
- Power system expansion requires large investments in capital-intensive facilities which is time consuming
- Average and peak load differ significantly therefore extra generation and transmission capacity

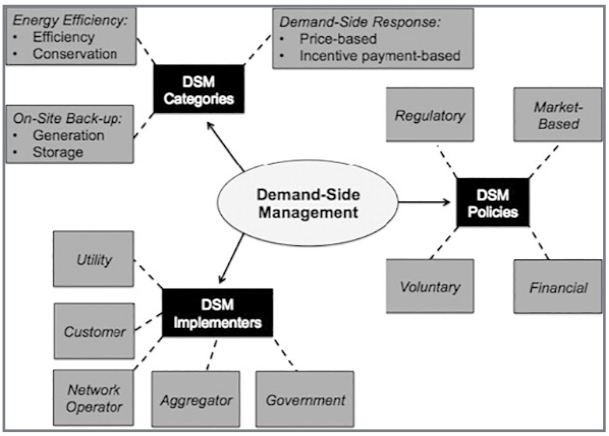
must exist just to supply the peak demand resulting in infrequent and inefficient use which requires more cost

- Increase of fuel consumption and air pollution
- Maintenance cost increase
- Increase in cost of equipment procurement
- Discouragement of end-users from "demand to follow supply" by isolating customers from supply side matters

The existing problems in 'supply follows demand' philosophy have created a growing interest, particularly from high-level policy makers, to explore the potential for demand side resources to contribute to the supply-demand balance. In this regard, Demand Side Management (DSM) comprised of Energy Efficiency (EE) and Demand Response (DR) is increasingly seen as an important demand-side resource to augment efficiency and assist in achieving this balance.

DR can play an important role in meeting some of the challenges faced by electric power utilities so that it can be used to improve system reliability and security, reduce costs for both customers and utilities, and mitigate environmental damage.





Tehran Regional Electric Company territory area, with about 20% of the country's electricity consumption, is considered to be the largest and most important center of electricity consumption in the country.
Given the sensitive political, social, cultural, religious, economic and security situation of the region covered by Tehran Regional Electric company (including Tehran, Qom and Alborz provinces) and the irreversible effects and consequences that could have unintended blackouts in this area, comprehensive studies for demand side management is needed in this area.
In view of the above, the necessity of conducting detailed studies on Demand Side Management in the area covered by Tehran Regional Electric Company has been taken into consideration. Accordingly, the mentioned project was defined and awarded to Monenco.

Development of Comprehensive Plan for Expansion of Iran's Electricity Cross-Border Trade

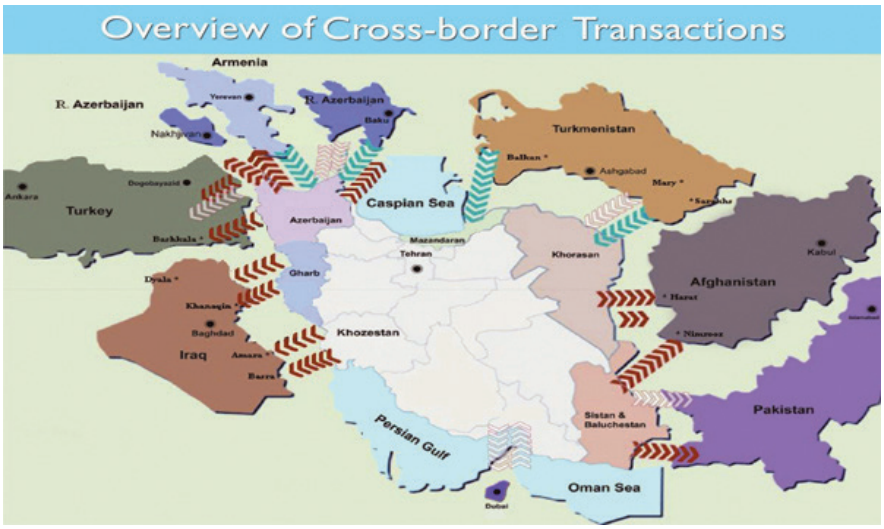
Start Date: 2019

Finish Date: 2020

Location: Iran

Client: Sistan & Balouchestan Regional Electric Company

Description: Paying attention to the development of the country's electricity exchanges with other countries and launching regional electricity markets can be a great support to increase efficiency in power system. In Iran, electricity exports have been considered as a strategic issue in recent years. At present, Iran has electrical connections with most of its neighbors, which can be greatly developed.
Considering the importance of foreign electricity trade and in order to achieve a comprehensive and sustainable plan for the development of Iran's electricity exports and identify the potential of neighboring countries to increase electricity trade, the following steps will be taken in this project:



- Gathering the required information and forming a database
- Investigating the situation of electricity trade in the world and Iran's position in this field
- Identifying the marginal price of electricity in Iran considering different time and different location
- Identifying the regional electricity markets and neighboring countries and the opportunities for development electricity trade
- Investigating the infrastructure needed to develop electricity trade to neighboring countries
- Proposing the organizational and functional structure needed to facilitate and develop the cross-border electricity trade
- Preparation of a comprehensive plan for Iran's cross-border electricity trade

Electrical Study of Fajr Petrochemical Company

Start Date: 2018

Finish Date: 2020

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.

Development of a Master Plan for Transmission and Sub-Transmission Network of Gharb Regional Electric Company

Start Date: 2019

Finish Date: 2020

Location: Iran

Client: Gharb Regional Electric Company

Description: The main aim of this project is to provide a development planning for transmission and sub-transmission network of Gharb 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 made 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

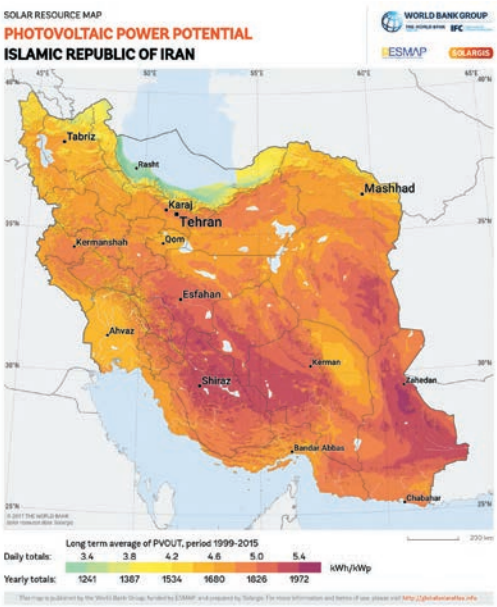
Research and Development (R&D) in Monenco aims to apply new ideas in energy industries in order to enhance efficiency, reliability and productivity. We help industries to meet their demands, make a better use of available resources, reduce the environmental impact and optimize maintenance costs. The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

Major Ongoing Projects

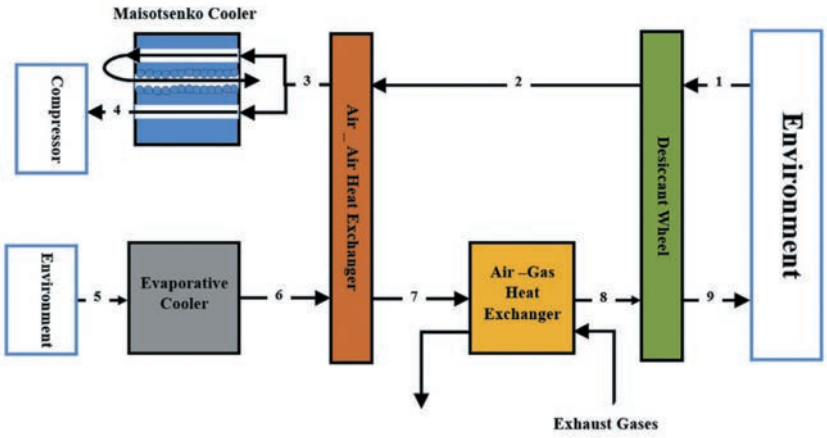
Large Utility Scale PV Power Plant Optimum Site Selection in Iran Using GIS Analysis

Iran is ranked 20th in the world in terms of land area and also enjoys excellent solar irradiation throughout its land area. Although at first glance site selection for large utility scale PV power plant in Iran seems a trivial task only limited by closeness to electrical grid, roads, points of electrical consumption, site meteorological data, etc. further examination reveals that parameters such that slope of the site, direction of the slope, site altitude, large scale sand and dust storms, local sand and dust storms, etc. have a direct influence on the performance of the PV power plant as well as the CAPEX and OPEX of the power plant. This project aims to emphasize the parameters that are usually ignored in the process of site selection of large utility scale PV power plants.

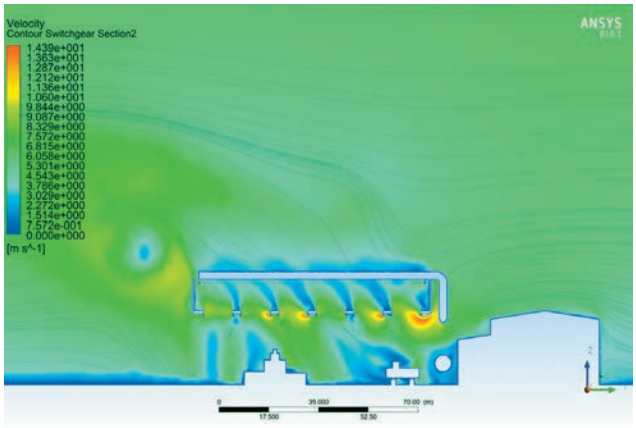


Inlet Air Cooling Technology for Gas Turbine Power Plants in Iran

The purpose of this project is to investigate and present a methodology for the selection of hybrid cooling systems in thermal power plants for humid regions of Iran such as Abadan with the approach of water recovery and increase of power, which are two major problems of the country at present. This new hybrid system combines different combinations and arrangements of desiccant (liquid and solid), chiller (absorption and condensation) followed by evaporative cooling (direct and indirect). At first phase of project, complete analysis of current cooling methods is performed by modeling each method at the selected power. At the second phase, by evaluating the feasibility of applying different methods (priority and delay arrangement and combination of systems) to recover water and increase power, the effects of the proposed scheme on net output, efficiency and water consumption are investigated.



Investigating the Effect of the Switchgear Building Height on the ACC Performance of Zanjan II Power Plant



Description: In this project the effect of changing the level of the switchgear building on the performance of the ACC unit has been investigated. This study shows that a change in the height of a building does not have a significant effect on the performance of the cooling unit and its effect on the performance characteristics of the unit is less than 0.3%, while normal wind flow has more than 5% effect on the performance characteristics of the complex.

Technical and Financial Study of Replacing Yazd CSP (Parabolic Through) with a PV Power Plant

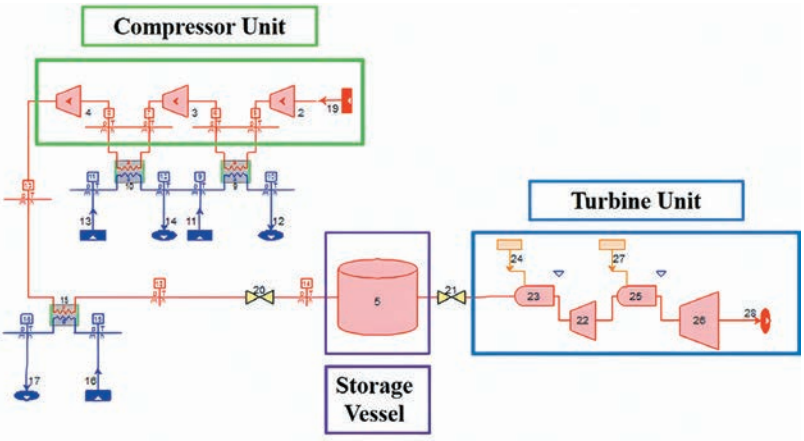
The objective of this project is to study the past, present and future technical aspects of a CSP power plant to that of an equivalent PV power plant and show the advantage and disadvantage of each system. Then each type of the power plant are compared from investment rate of return and levelized cost of electricity. The client can then decide about the type of the power plant to be constructed.

Study of Water Spray on Inlet Air of ACC Cooling Systems Performance 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.

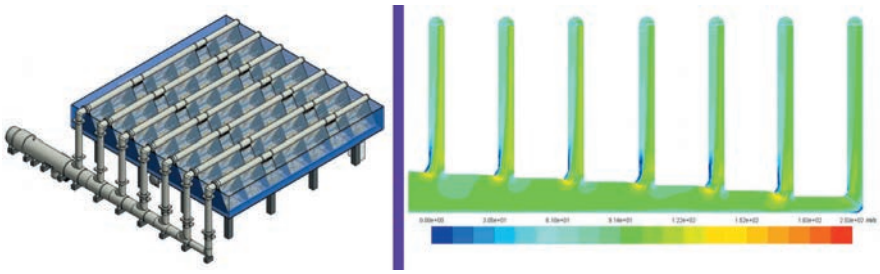


Performance Improvement of Air-Cooled Condensers Tube Bundles

The main challenges of the air-cooled condensers employed in the power plants of our country face are efficiency and thermo-hydraulic performance improvements, as well as weight reduction in terms of economics. This project is presented in light of the extensive studies conducted on the performance of the fins employed in the air cooled condensers of the power plants, as well as the studies on the use of nanostructure coatings and the thermal properties of nanocomposites, while taking into account the feasibility of upgrading the design of the air cooled condensers used in the combined cycle power plants by employing the new generation F-class gas turbines.

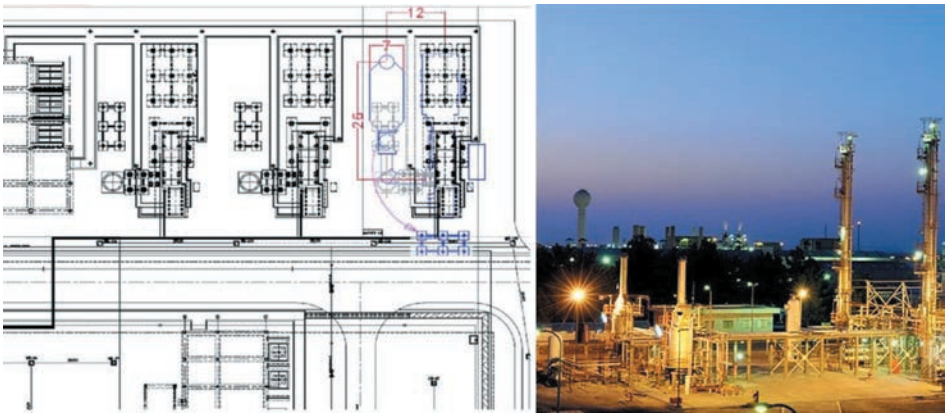
Steam Manifold Modification of Roodshoor Combined Cycle Power Plant

A CFD analysis was carried out on the existing steam manifold of the air-cooled condenser of Roodshoor Combined Cycle Power Plant with unequal distribution of steam flow rate into seven branches. The purpose of this study was to decrease the local pressure drop at the Tee-junctions, in order to modify the flow field and equally distribute the steam flow between all branches. Doing so, a configuration of guide vanes was proposed to be installed in each Tee-junction. CFD results showed that the new design (with guide vanes) can effectively restrain the flow separation at the entrance of the Tee-junction, lowering the steam pressure drop. By careful design of the geometry of the guide vanes, mass flow rates of the steam leaving each branch were almost equal. One can also take advantage of reduced turbulent kinetic energy of the flow which is important in terms of lowering fluid-born vibration.



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.



Maintenance of Electrical Substation

Recently, the life cycle of power grid equipment has been one of the most challenging issues in electrical systems. The life of this equipment will vary greatly in the structure of reliability calculations and economic asset management analysis. Therefore, we will first focus on the concepts and principles of equipment asset management. Then we will introduce the definitions of maintenance planning and models of this preventive maintenance. In the following, by introducing the configuration of substation, we will provide important equipment in this part of the network. According to this, we will consider two equipment of Circuit Breaker (CB) and power transformers. In the following report, we will introduce the failure modes of each of these equipment. Then, by considering the two methods of RCM and CBM for preventive maintenance of equipment, we will determine the information required for this method of analysis and then we will explain the methods of collecting this information. Standards for preventive maintenance

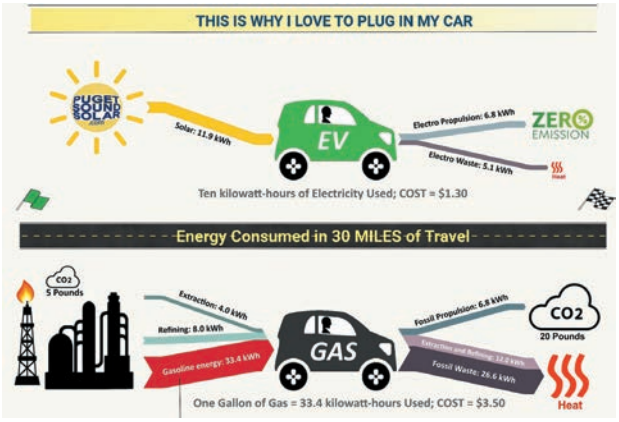
planning are also an important issue that needs to be addressed in this report. In the following, modeling of equipment life estimation, which will give us a method and overview, is given for analysis by CBM method, and at the end of the report, a brief introduction of preventive maintenance planning software is provided.

Analyzing the Business Environment in the field of Electric Vehicles (EV) and Determining Business Opportunities for the Organization

In this project, the main goal is to find a way to enter the field of electric vehicles (EVs) for Monenco in order to make a profit with the least risk. In this regard, the present project in four phases is defined as follows:

- Technical inspection of electric vehicles and charging systems
- Explore opportunities and challenges
- Analysis of the country's business environment
- Financial and economic analysis

In the first phase, the technical part related to electric vehicles and charging stations was fully described. In the second phase, according to the economic, political and social conditions of the country, the opportunities and challenges in the field of electric vehicles have been examined. After reviewing the first two phases, it was determined that the best option to enter the field of electric vehicles is consulting, design and investment of charging stations. Therefore, in order to investigate the possibility of entering the field of electric car charging stations, in the third phase, we have analyzed the business environment in the country.



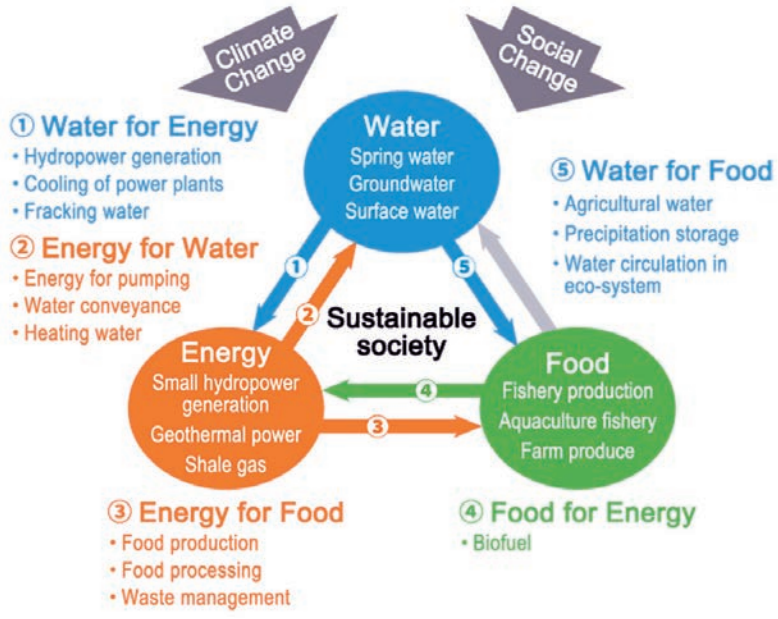
After examining the country's business environment and ranking the important indicators announced based on DOING BUSINESS items, in 2019, Iran was ranked 154th out of 187 DB member countries. Therefore, investing in the country in the field of electric vehicles with the current business conditions is very risky. In the fourth phase, in order to reduce the risk, the use of government incentives and finding a way to use the budget related to the field of electric vehicles is considered as the main proposal. Article 12 of the Budget Law is proposed among the financing funds for government credits. By investing in the construction of an EV charging station and after using the national budget, the return on investment will occur in 4 years.

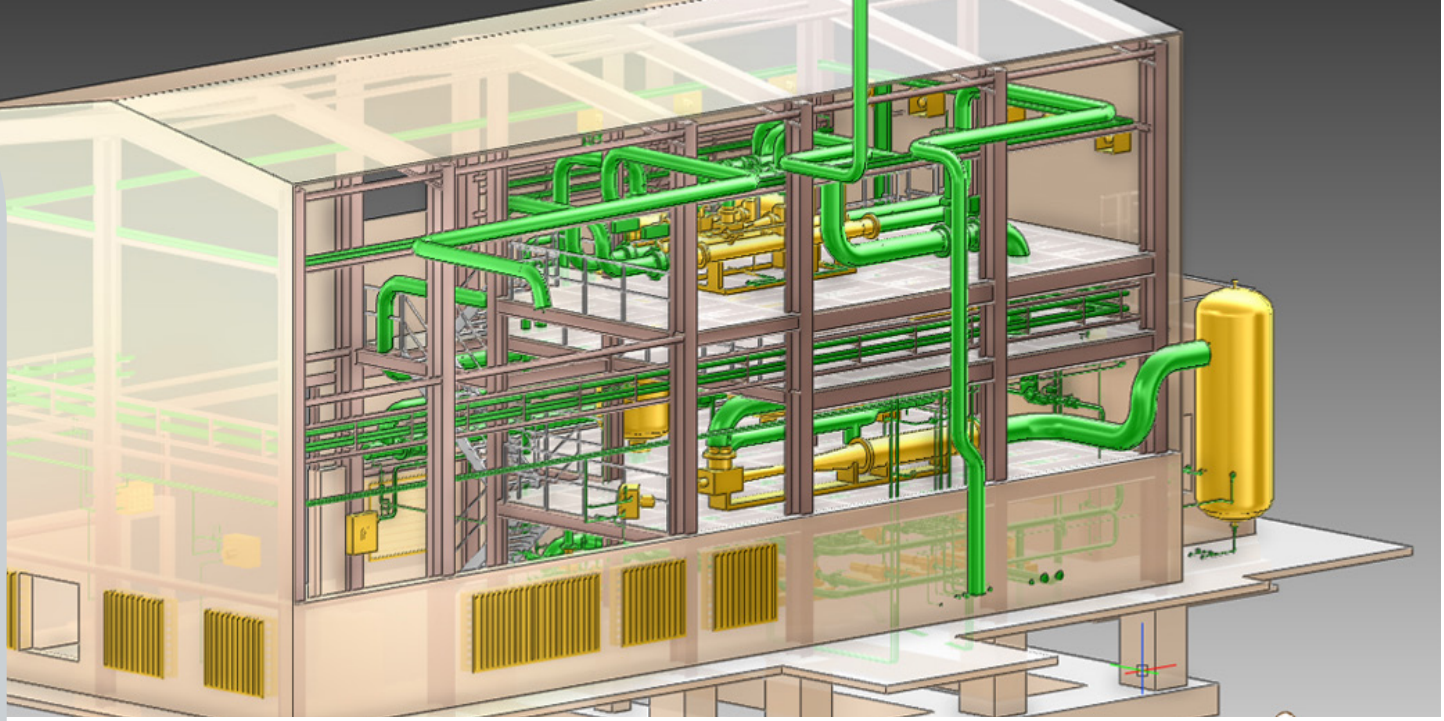
Techno-Economic Feasibility Study of Energetic Greenhouse Next to a Thermal Power Plant with an Attitude to Water, Environment, Food & Energy Nexus (WEFEN)

Water, energy and food are essential for human well-being, poverty reduction and sustainable development. Global projections indicate that demand for freshwater, energy and food will increase significantly over the next decades under the pressure of population growth and mobility, economic development, international trade, urbanisation, diversifying diets, cultural and technological changes, and climate change.

Agriculture accounts for 70% of total global freshwater withdrawals, making it the largest user of water. At the same time, the food production and supply chain consumes about 30% of total energy consumed globally. Energy is required to produce, transport and distribute food as well as to extract, pump, lift, collect, transport and treat water. Cities, industry and other users, too, claim increasingly more water, energy and land resources, and at the same time, face problems of environmental degradation and in some cases, resources scarcity. As demand grows, there is increasing competition for resources between water, energy, agriculture, fisheries, livestock, forestry, mining, transport and other sectors with unpredictable impacts for livelihoods and the environment.

In this context, the Water-Energy-Food Nexus has emerged as a useful concept to describe and address the complex and interrelated nature of our global resource systems. It presents a conceptual approach to better understand and systematically analyses the interactions between the natural environment and human activities, and to work towards a more coordinated management and use of natural resources across sectors and scales. In the current project a techno-economic feasibility study will be carried out for a large scale greenhouse built in proximity of a MAPNA combined cycle power plant, the greenhouse will utilize the concept of Nexus by acquiring all of its needs (water, heat, electricity, CO2 gas for optimum plant growth, land, etc.) from combined cycle power plant directly. As an example all of the greenhouse water requirements will be met by recycling water waste of the combined cycle power plant (with use of appropriate systems to water treatment systems).





Engineering Division

Engineering Division has a highly qualified and experienced team of engineers and provide a wide range of capabilities and engineering solutions for different types of projects carried out in Monenco. 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.

Engineering Division consists of six professional departments: Civil & Structural, Mechanical, Piping, Process & Environmental, Electrical, Instrumentation & Control (I&C) engineering and one department for quality control. The specialized experts of this division design, review, endorse and modify all engineering documents if needed, based on Monenco contractual scope of work, standards, project specification and client technical requirements and offer clients a variety of services including initial concept design, basic and detailed design, design review, evaluation of technical proposals, preparing tender specification and purchase specifications based on each expertise as mentioned afterwards:

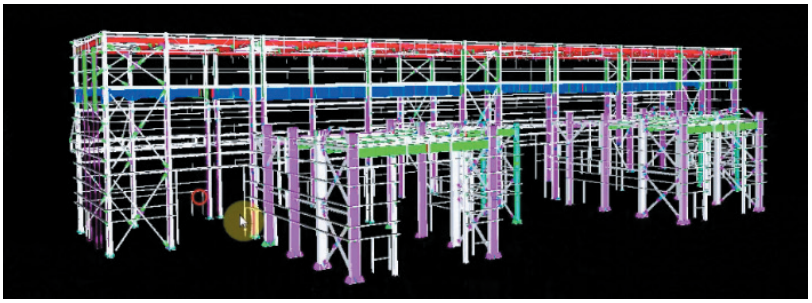
Civil & Structural Engineering Department

- **Structural Engineering**

  Development of basic and detailed design of major machinery and equipment foundation and industrial buildings structure as well as non-industrial buildings, reinforced concrete water storage tanks, pumping stations, using the state of the art software tools and methods. This sub department is specifically renowned for the foundation design of gas and steam turbine generators (E and F class) and steel or concrete structural design of huge various cooling systems such as Heller Cooling Towers and Air Cooled Condensers for power plants, oil and gas and petrochemical industries.

  Also in the field of Urban / Hospital structural design, variety of projects could be assigned to the structural expert team of Monenco.

  Besides in the field of steel complexes and pelletizing plants structural development team investigated studies around these type of projects for design and are ready for new projects in the mentioned field.



- **Civil Engineering**

  Development of site layouts, site grading, site mobilization all aspects of infrastructure design including drainage, service requirements, access road and junction improvements, pavement and retaining walls, pipe racks and pipeline sleepers.

- **Architectural Engineering**

  Development of basic and detailed architectural design, aesthetical and facade design, exterior and interior design for industrial and non-industrial buildings as well as site landscaping

  Also in the field of Urban / Hospital structural design, variety of projects could be assigned to the structural expert team of Monenco.

  Besides in the field of steel complexes and pelletizing plants structural development team investigated studies around these type of projects for design and are ready for new projects in the mentioned field.

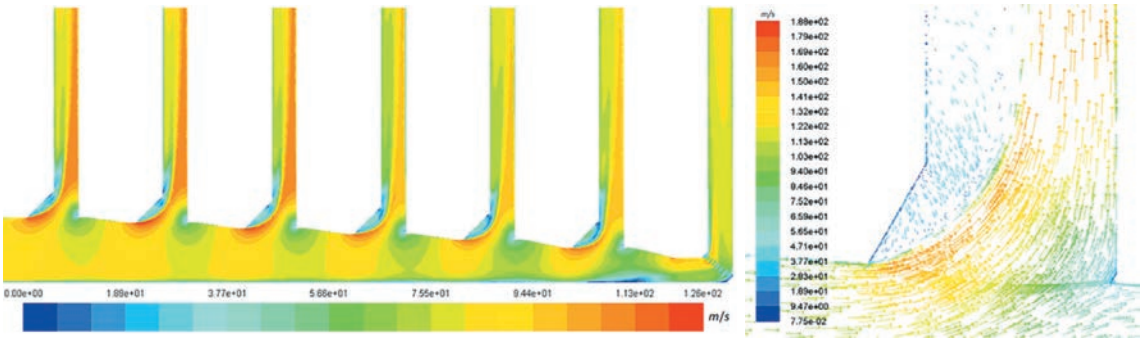
Civil & Structural Engineering Software Tools

SAP2000, SAFE2000, ETABS, MathCad, LimCon, PLAXIS, Aveva BOCAD, Revit Architecture, ABAQUS, OPENSEES are used as the main calculation and analysis programs as well as 3D modeling representation software tools.

Mechanical Engineering Department

Mechanical engineering department with high experienced experts offers whole services for the following subjects:

- Conceptual/basic/detail design of Industrial cooling systems (Heller, ACC, Once thorough and Hybrid)
- Wet cooling tower retrofit
- Concentrated solar power (CSP) system design
- Evaluation end selection of gas and steam turbines
- Computerized maintenance management systems (CMMS)
- Rehabilitation of power plants
- Mass and energy balance for CHP systems
- CFD analysis

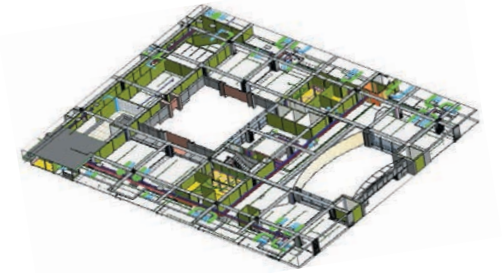


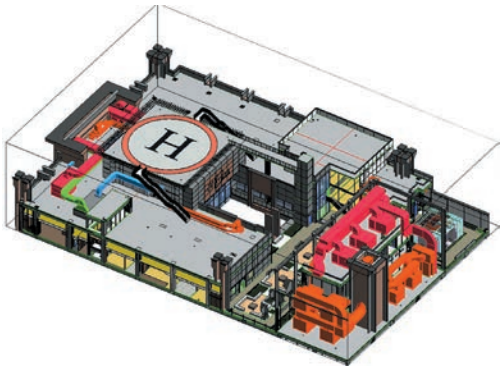
Other services of this department are listed as the following categories and represented in a broad range of documents and drawings including P&IDs, mechanical datasheets, and mechanical shop drawings, purchase technical specifications for equipment and calculation sheets.

- Firefighting systems (gaseous and water base)
- HVAC systems for industrial and non-industrial projects and buildings
- Utility cooling systems
- Utility steam production and distribution
- Rotary equipment
- Fixed equipment (Pressure Vessel/Storage Tank/Heat Exchanger)
- Compressed air production and distribution systems

Mechanical Engineering Software Tools

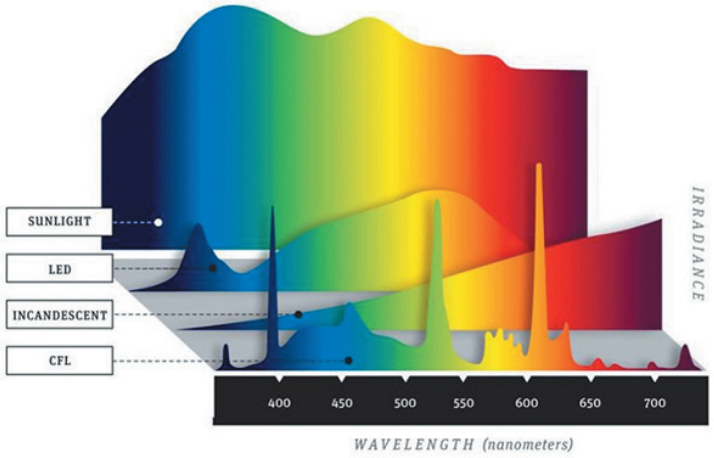
PV Elite, Compress, AMETank, Fluent, Aspen Workbench, Aveva P&ID, Revit Mep, PDMS





Electrical Engineering Department

- Specialized services for cables and switchgear
  - Designing power supply network protection systems and medium and low voltage switchboards and performing calculations of all switchboard protection relays and relay coordination
  - Design of all industrial LV&MV Switchgear and motor control drive
  - Designing logic and schematic diagram of LV&MV Switchgear
  - CT&PT Calculation at all voltage levels of power plants and other industrial projects
  - Design, sizing and arrangement of bus ducts at different voltage levels
  - Cable route & Cable Tray designing for inside and outside building with the considerations of other main systems of the desired industry
- Specialized services for electrical equipment:
  - Design of the secondary grounding system of power plants and other industrial projects
  - Sizing calculations and arrangement of transformers for power plants and other industrial projects
  - Designing and calculation of Electrical Heat Tracing systems
  - Design and provide technical specifications of starting systems and motor drives
  - Designing and provide technical specifications and arrangement of diesel generators
  - Designing of essential power systems (AC-DC) including configuration and Battery sizing, AC UPS and related technical specifications
- Specialized services for electrical installations:
  - Designing of electrical installations including indoor & outdoor lighting, yard, telephone & paging systems, power supply of HVAC systems, crane power supply, elevator…..
  - Design of the main grounding system
  - Designing of lightning protection system for power plants and other industrial projects
  - Designing and calculation of cathodic protection system for underground tanks and pipe lines
  - Designing and calculation of Photovoltaic solar systems
  - Designing and calculating capacitive banks and providing their complete technical specifications
  - Designing and provide complete technical specifications of Fire Stop system
  - Planning for Reduction of consumption of electrical installations



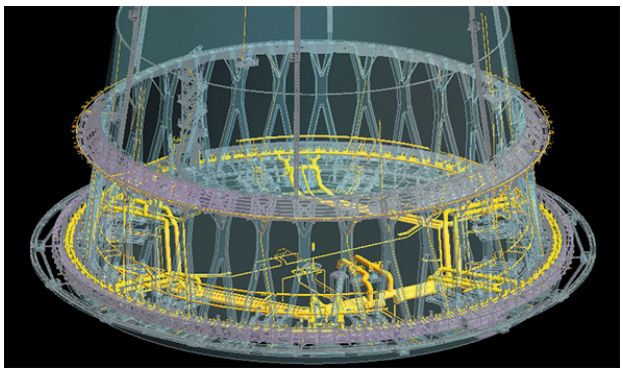
Electrical Engineering Software Tools

CYME- PSAF : (For Load Flow, Short Circuit, Motor Starting), CYME- GRID: (For Grounding System Calculation), DIGSILENT: (For Load Flow, Short Circuit, Cable Sizing), ETAP: (For Load Flow, Short Circuit, Motor Starting), DIALUX : (For Lighting Calculation, CALCULUX: (For Lighting Calculation), ELECDES: (For Cable Routing), D.O.C. WIN ABB: (For Sub-Distribution Cabling Calculation), SAFT BaSiC & WINSIZE: (For Battery Sizing), INDELEC: (For E.S.E Lighting Calculation), DEHN: (For Faraday Cage Lighting systems Calculation), TRACE CALC: (For Electrical Heat Tracing Of Raychem), ELTHERM DESIGNER : (For Electrical Heat Tracing), PDMS: (For 3D Modeling), REVIT Electrical.

Piping Engineering Department

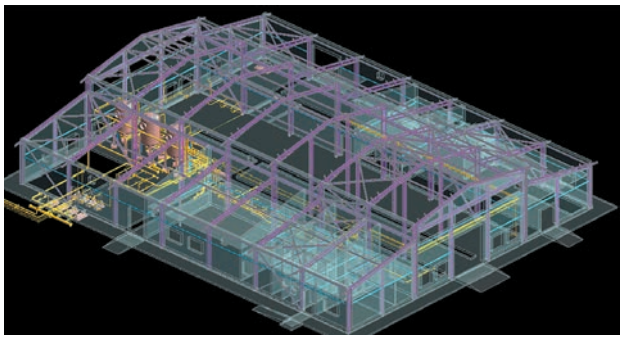
This department totally works under a three dimensional environment and submits executive documents including:

- Plan, ISO and MTO for all above ground and underground piping inside and outside the buildings
- Stress analysis of piping and pipelines either in yard areas or inside buildings of industrial plants
- Pipe routes
- Input civil works (ICW) and equipment arrangements inside turbine hall and other building
- Cooling systems piping design and stress analysis for Heller, ACC, Hybrid and once through cooling systems
- Steam transferring duct design and stress analysis for cooling systems and other industrial processes
- Piping material specifications (PMS) for all services required for industrial plants



Piping Software Tools

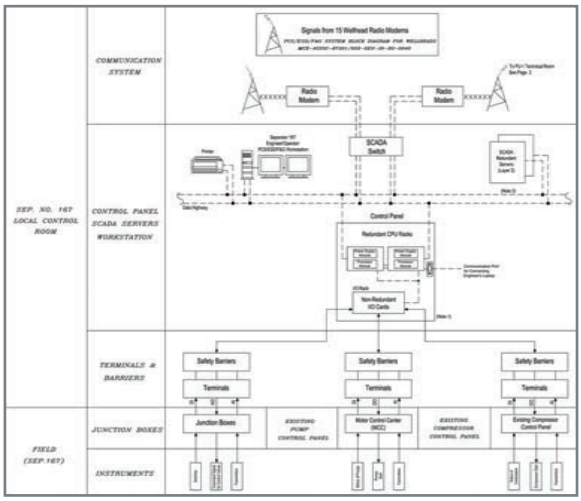
Piping department by relying on its experienced personnel and valuable experiences in the field of three-dimensional design software, has launched a number of engineering software of AVEVA Company while upgrading the PDMS 12.1 to E3D and Revit. Using this software tools causes integration among engineering data plus reducing the time and cost of the projects. Providing a three dimensional (3D) model for plants creates several benefits such as an integrated design as well as providing accurate purchase documents, eliminating interference, and increasing the design speed. In addition, providing links between these software tools and stress analysis and support design software such as Caesar II, Solidworks, Abaqus and Algore are very helpful in order to prevent reworking while designing in 3D mode.



Instrumentation and Control Engineering Department

The main activities of this department in the sections of design (basic and detail), design review, consulting, can be classified as follows:

- Fire alarm and explain its connections with fire extinguisher systems and ESD
- Building management systems (BMS)
- Instrumentation and Control systems (technical specification, sequence chart, instrument list, I/O list, control philosophy, hook-up, cable list, cable route, loop wiring diagram, connection diagram, location layout, M.T.O, cause and effect, logic diagram, data sheet, ...) for main cooling system (Heller, ACC, Hybrid, Once thorough), Aux. cooling system (ACC, Once thorough), water treatment plants, HVAC, central hot water, fire alarm, air compressed systems, fuel (gas, gas oil), and steam
- IP-BASED CCTV system, LAN system, Telephone system, Paging system, Access system
- Design of dimensions and arrangement of panels, equipment and tables in the control room based on process standards and environmental and safety conditions
- Designing control system configuration diagram and explaining the philosophy of control systems in local, via unit control board and CCR
- Control systems (DCS, FCS, ESD, F&G)
- Purchase and tender document
- Wireless technologies
- Re-Instrumentation, revamping



Instrumentation and Control Engineering Software Tools

INtools, InstruCalc, Conval, Aveva Instrumentation for control valve sizing, orifice sizing and flowmeter

IP Video system design tool for CCTV layout

NAVIS, PDMS, REVIT for instrument location, instrument cable tray & cable layout

Process and Environmental Engineering Department

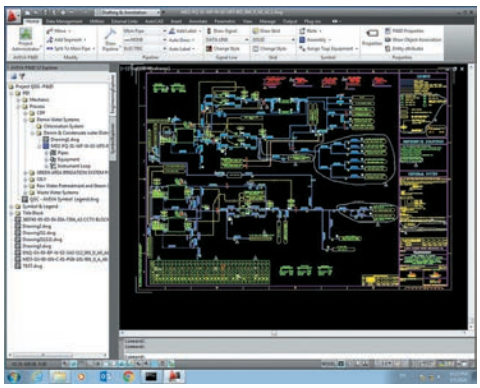
This department works on basic and detailed design, review of contractor documents, preparation of tender documents and selection of contractor, preparation of technical proposals and consulting in the field of water and wastewater and preparation of environmental reports considering the latest environmental standards and other specific consultancies as mentioned bellow:

- Water Pretreatment Systems
- Reverse Osmosis Systems
- Demineralization Plants (Ion Exchange System, CEDI Systems)
- Desalination Plants (MLD, SWRO and MLD/RO)
- Condensate Polishing Plant (CPP) (Precoat Filter, Cartridge Filter, Mixed Bed Filter)
- Industrial/Oily/Chemical Wastewater and Sewage Treatment Systems
- Potable Water Supply and Distribution Systems
- Irrigation and Service Water Systems
- Water Transfer and Distribution Systems
- Boiler Blowdown Collection and Reuse system
- Chemical Regime of the Steam & Water Cycle
- Environmental Impact assessments in Conceptual Design for Power Plants and Other Industrial Plants
- Air Pollution Modeling for Industries
- Design of Green Belt and Selection of Vegetation for Industrial Plants for both Environmental and Aesthetical Purposes

- Environmental impact assessments in conceptual design for powerplants and other industrial plants
- Air pollution modeling for industries
- Design of Green belt and selection of vegetation for industrial plants for both environmental and aesthetical purposes

Process and Environmental Engineering Software Tools

Inge System Design, ROSA, IXCalc, WAVE, PIPENET, WATERGEMS, SEWERCAD, AERMOD, ASPEN B-JAC, HYSYS, PSV Calc.



Quality Control Department

Quality control department is a multi-task department based on the different functions which can be conducted for quality management and project control.

The first one is referred to the quality management including coaching the new employments and conducting the quality control programs. In the second type of the functions in this department all of the produced documents are controlled based on the standards and procedures. In addition, the 3D model which is made by the PDMS program, is controlled and all of the clashes are reported to the related departments. Because of this, different disciplines experts are worked to obtain the best results on the engineering product quality. Hence, different types of control are considered for the documents control.

Type 1: The 3D model, which is made in the other professional departments, is checked based on the 2D documents to confirm the accuracy of the model.

Type 2: The other control can be performed in this department is associated to daily IDC (internal discipline check). Documents that are produced in the other departments are checked with the 3D model to coincide the different documents of the different departments.

Type 3: The third type of quality control is related to the double checking of the engineering documents. In this way, the accuracy of the calculations and the other DWG's can be controlled.

Type 4: The other type of the control is related to the conformity of the engineering documents based on the basic documents such as ICW's or design criterias.

Type 5: Providing of the clash reports according to the percentage of project progress (30-60-90%) as well as island or building-wise reports on the request of project managers.

In the other section of this department, all engineering activities are controlled weekly and regularly. The related reports are provided and the departments' activities are monitored.

Finally, in addition of the mentioned functions, the other programs such as development program and knowledge program are provided and controlled.

Quality control department Software Tools

SAP2000, SAFE2000, ETABS, NAVIS WORK, PDMS.

Development Program

In order to stay up to date and innovative in the engineering services, the engineering division arranges an annual development plan and takes participation in several national and international conferences, seminars and webinars in diverse technical subjects as well as collaboration with R&D department.

Due to COVID19 pandemic, a platform for teleworking has been provided as an option for the personnel and most of the meetings have been taking place virtually since then.

In addition, as our social responsibility, a technical report was provided and published as a guidance to how HVAC equipment should be operated during COVID19 pandemic. In addition, in 2020 the piping engineering department received the first patent certificate of Monenco Iran entitled: "Tee mounted Pressure balance expansion joint with internal tie rods used in steam turbine exhaust".


گواهی نامه ثبت اختراع

Monenco Consulting Engineers LLc(Soltanate of Oman)

We served clients globally across the energy and power sectors and provide local services in our core markets. In the past year, Monenco has been very active in Sultanate of Oman as one of the leading companies in the region; our focus sectors were power generation and transmission & distribution. Across several successful bidding in last year we won new tender for consultancy services for design and supervision of Nahada 400/132 kv grid station with OETC providing various engineering services right across the Sultanate.

Also, Monenco was able to penetrate new markets in the fields of Oil and Gas serving major clients such as Petroleum Development of Oman Company (PDO) and Petrofac as per our defined mission. Previously, we were awarded a prestigious Golden Certificate of Appreciation for 2 million safe man hour from Oman Electricity Transmission Company (OETC) for our 132/33 KV Wadi Bani Auf Grid Station project and its associated OHL works.

Also, Golden Certificate for more than 1.5 million safe man hour from OETC for our 132/33 KV Ghala Package Grid Stations and its associated four Circuit 132 kv, UG Cable works and being shortlisted as one of the recognized consultant providing consultancy engineering services in field of Oil and Gas by achieving JSRS certificate. Also, received DCRP certification from January 2018 which it will be valid until 2021.

Some of our major ongoing and commissioned projects are as follow:

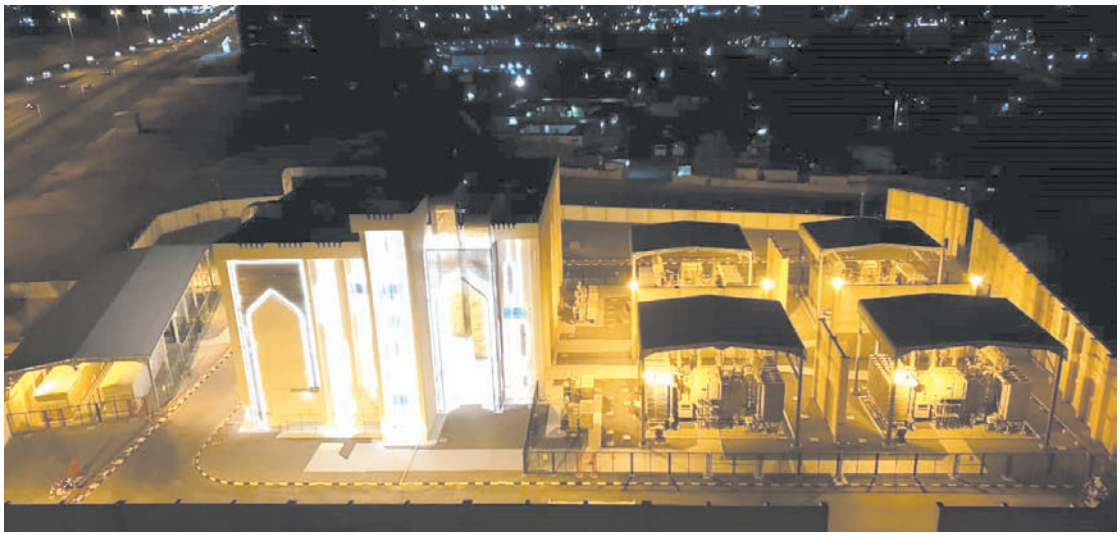
Ongoing Projects:

- Consultancy Services for New 132kv Double Circuits Overhead Lines from Rustag-Alawabi-Nakhal with a new 132/33kv GS at Al Awabi
- Consultancy Services for Design and Supervision of New 132/33kv Mabella Industrial Grid Station and its associated LILO works
- 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
- Consultancy Services and Supervision Services for Implementation Project of Replacement SCADA/ DMS Master System and Cyber Security of MAJAN Electrical Company

- Calculation for Qarn Alam Power Plant Network with Petrofac & PDO Monenco Overseas 109Monenco Overseas
- Consultancy Services and Design of 33/11 kv PSS for AHRL Mining Area as Private Firm and Designing of 33 kv OHL/ UG Cable from 132/33 Kv Mudhaibi Grid Station to the AHRL PSS
- Consultancy Services and Design of 33/11 kv PSS for TANWEER in Duqm Area
- Consultancy Services for Providing Supervision Services on Test and Commissioning of Dhofar Power Company (DPC) 33/11 kv Network in Dhofar Region

Commissioned Projects:

- Detailed Engineering Services for Construction for Upgrade Shinas 33/11 kV Primary Substation from 2X20 to 3X20 MVA (Majan Electricity Company (SAOC)
- 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 ASalam Grid Station
- Detailed Engineering Services for Construction of Construction of Dhafrat Power Plant for (RAECO)
- 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 of New 3X20 MVA, 33/11kV Primary Substation at AlKhuwair South – Muscat Electricity Distribution Company (MEDC)

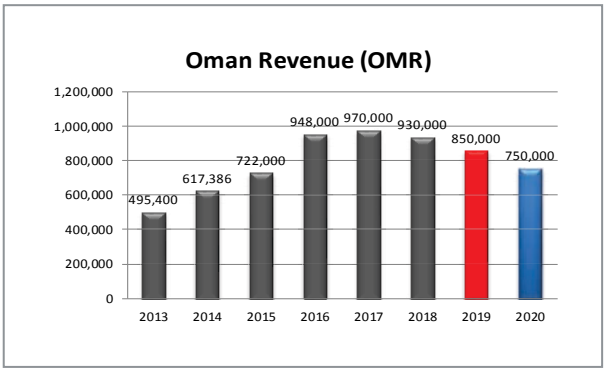


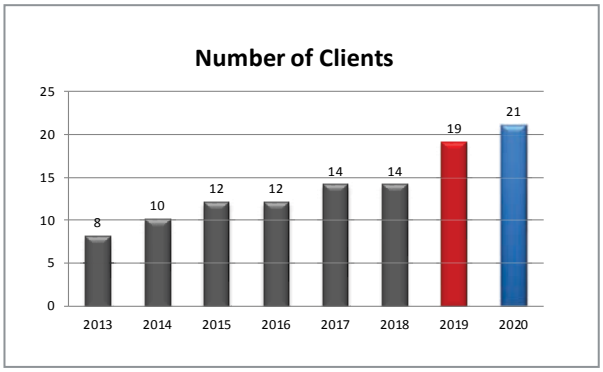
- Consultancy Services for Construction and Supervision of Upgrading of 33/11 kV Qairoon Hairi PSS from 2x10 MVA to 2x20 MVA Capacity Consultancy Services for Design & Supervision of New 132/33 kV Jebreen Grid Stations
- Load Cycle Study of Electric Arc Furnace (EAF) for Modern Steel Mills
- Consultancy 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
- 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 MWA 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 Detailed Engineering Services for Construction for of 132/33kV Liwa Grid Station
- Detailed Engineering Services for Construction of 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 New 132/33kv Airport Height 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

Monenco Consulting Engineers 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 2020
Oman Electricity Transmission Company (OETC)	10
Muscat Electricity Distribution Company (MEDC)	6
Modern Steel Mills (MSM)	2
Majan Electricity Company (MJEC)	3
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)	7
Atlas International Engineering Consultants Co.	2
Bahwan Engineering Company (BEC)	2
Global Chemical Industries (Global)	3
Larsen & Tubro Company (LTO)	1
Afaq Al Musnaa	1
Petrofac	1
PDO	1
Al Hadeetha Resource Company LLC (AHRL	1
Mazoon Electricity Company (MZEC)	1

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: 2022

Location: Oman

Client: Oman Electricity Transfer Company (OETC)

Scope of work: 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 and Supervision Services for Implementation Project of Replacement SCADA/DMS Master System and Cyber Security of MAJAN Electrical Company

Start Date: October 2019

Finish Date: October 2021

Location: Oman

Client: Majan Electricity Company (MJEC)

Scope of work: Monenco will be the client Consultant, project manager, design reviewer and supervisor of the project, to carry out consultancy services and supervising on the activities which will be implementing by OSI as EPC contractor of the project, Monenco main Scope of works on this project can be summarized as following:

- Consultancy services for design review and supervision on implementing project of replacing existing SCADA master system with new SCADA/DMS system including backup control system for Majan Electricity Company (MJEC)
- Consultancy services for design reviewing and supervision on implementation of Cyber Security requirements for Majan Electricity Company (MJEC) and NAMA Group as its holding company

Description: Based on the project background, existing SCADA system of MAJAN has passed most of its based on the project background, existing SCADA system of MAJAN has passed most of its lifetime and it is reaching the end of its life cycle. Therefore, the system may experience problems, defects and impairments. So that the client decided to replace it with new SCADA system to cover its developing requirements, According to Monenco experiences and capabilities as a well reputed international consulting engineer and through a very competitive conditions in an international Tender, Monenco archived highest technical and financial score, and selected by the client (MJEC) to take over the responsibility for providing consultancy services and supervision on implementation of the above-mentioned project.

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.

Consultancy Services for Design and Supervision of 400/132 kV Grid Station with 2X500 MVA Transformers

Start Date: 2018

Finish Date: 2022

Location: Oman

Client: Oman Electricity Transfer Company (OETC)

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

Description: This project is a 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.

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Also providing the telecommunication system in order to connect with central SCADA is in the scope of work as well.

Monenco Germany Outlook

Monenco Germany GmbH was officially registered according to the German Law in May 2016 and started its business activities as a multidisciplinary consulting engineering company. The main activities of Monenco Germany 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

The main goal of the company is the cooperation between the main shareholders (Monenco and PUT GmbH) in order to participate in national and international projects. To achieve this goal Monenco Germany began to participate in ADB funded projects since 2019.

In 2020, Monenco Germany signed a contract with Nasb Niroo Company to provide engineering services for Zob-Ahan Industrial Wastewater Treatment Plant.

Monenco Germany GmbH provides below services to its national and international clients:

- 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) has been providing consultancy and engineering services with focus on energy sector since 2010 in Nigeria and has contributed significantly in developing projects within the country as a strong and professional consulting engineering company. 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. 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 service quality from very beginning to the end and have assisted them from investment to the commissioning. Monenco has been shortlisted in the following opportunities in 2020:

- "Consultancy Services for National Technical Specifications and Standardization" under Kenya Electricity Modernization Project (Kemp) in Kenya
- "Regional Study on the Identification and Pre-Feasibility Assessment of Investment Projects for Development of Energy Storage (Batteries), Copper and Mining Inputs Regional Value Chains" under Southern African Development Community (SADC) in Botswana
- "Selection of a Consultancy Firm for the Feasibility Study of the Regional Project for the Electrification of 20,000 Villages in West Africa (Prodel 20,000)" under ECOWAS Commission in Nigeria
- Monenco Nigeria has won following tenders:
- Evaluation of EPC tenders for 2010-20 transmission projects
- Feasibility studies of Small and Medium Hydro-Power Plant at Dadinkowa Dam and associated 132kV transmission line
- Feasibility study and project engineering for super grid (765 kV Transmission Lines and Associated Substations)
- Consultancy service, project management & site supervision of 132kV transmission line and a sociated 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

Due to the successful business development in Africa a strategic project of design and construction supervision for almost 20% of Kenya power transmission lines titled "Consultancy services for engineering design and contract documentation, soil investigation and engineering survey for transmission lines including 540 Km transmission line, 6 new HV substation and extension of 6 HV substation" has been awarded to Monenco by Kenya Electricity Transmission Co. Ltd. (KETRACO).

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 categories: 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

MIR Management Consultancy Company

For over 12 years, MIR Management Consultancy Company, as a fully owned subsidiary of Monenco Iran Consulting Engineers has worked closely with its clients to tackle their most important problems and empowering their organizations to grow, build sustainable competitive advantage, and drive positive societal impact. We believe that we grow only by helping our clients to grow. We deliver our professional consultancy in diverse business areas rendering the following services:

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

Management Consultancy

Management Consultancy services, we offer the unique combination of an analytical approach with an empathic attitude to co-create value with our clients. In 2020 MIR provides a number of consulting services to different clients in different filed of works that some of important projects are as follow:

- Providing a road map and action plan for development of "Institute for Color Science and Technology"
- Evaluating and assessment of sales and marketing processes of Power Division of MAPNA Group based on PST model and framework

It is worth mentioning that in addition to active projects, MIR has sent several proposals to potential clients such as risk management of National Information Corporation, improving of productivity of Esfahan province power distribution Company and organizational diagnosis study of BEHSHAHR Holding Company for cleaning and hygiene industry that are under negotiation with clients.

Also as part of our core values and community commitment, during last year MIR prepared and published a white paper with subject of "Management Consultancy In Iran: Necessity or Choice?". In this paper the importance and necessity of management consultancy for improving the productivity of Iranian companies and industries was addressed and methodology of management consultancy projects was describe based on international best practices.

Information and Communication Technology (ICT):

The changes around the world despite pandemic happened, are happening too fast; specially in ICT field. Digital transformation and security of information offers galactic potential to make the companies smarter, safer and more agile.

Mir ICT department is committed to play its roll in moving forward. In this regard, these are some of our project:

- Internal Audit ISMS in Monenco Iran Company.
- Implementing BI dashboards in MAPNA Power Plants Construction & Development Company (MD-1)
- Presenting special report on "Second Party ISMS Audit in holdings" and providing consulting services in this regard.

General and Professional Training Services:

In 2020, MIR Company rendered various services in the field of training which some of them are as follow:

- Prepared a white paper entitled "Methods of holding training courses and virtual seminars using LMS"
- Published an article entitled "Theories of education and their application in e-learning" in 8 international and the 14 national conference on e-learning and e-teaching
- Held "AVEVA Diagram" course for Mapna Turbine Engineering and Manufacturing Company
- Held "electricity market" course for Persian Gulf Mining and and Metal Industries Special Economic Zone
- Held 13 industrial courses for about 215 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

Iranian National Committee for Electric Power Studies, CIGRE-Iran, is a branch of International Council on Large Electric Systems (CIGRE) which started its activities in 1989 and represents Iran's interest in the work of CIGRE.

At first, Moshanir Company was responsible for secretariat affairs of CIGRE-Iran, and in 2016, at the request of Mr. Falahatian, the former Deputy to Minister of Energy also former chairman of CIGRE-Iran, Monenco Iran was appointed as the Secretariat of CIGRE-Iran.

Executive Congress

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

Major Activities in 2020

- Holding 18 SC technical sessions
- Renew Over 50 Iranian memberships in Cigre
- Participating in Cigre e-Session 2020

3 papers presented at the e-session. The titles of papers are:

- Migration to Packet Switched Networks in Iran National Grid Dispatching Center
- Selecting Equipment for Construction of Overhead Lines Based on CO2 Emissions Calculation
- 3D Simulation of The Electric Field of A Sample Of 230 kV Composite Insulator and Analysis of Its Results and Its Correlation with The Results of Laboratory Tests of Corona

Active Cigre Iran Study Committees

Technical Reports

No.	Name of the Technical Report
1	Solutions for Minimizing of Dimensions & Cost for Power Substations
2	Reducing Development Costs & Improving Power System Stability with UsingPMU-Based & Special Protection Schemes
3	New Metering Devices for HV and MV Substations Operation
4	Electricity Supply to Recluse Areas - Voltage and Power Transformers in One Unit
5	Challenges of Implementing FIDIC Contract Formats in Domestic Projects
6	Development and Application of Superconducting Technologiesin Modern Power Transmission and Distribution Network
7	Comparative Evaluation of Fire Alarm Systems in Power Sub-stations
8	Power Transformers Life Time Estimation
9	Protection System Challenges in Photovoltaic Solar Farms
10	Resilience Assessment and Enhancement in Distribution Networks
11	Big Data in Smart Grid
12	Energy Management of Smart micro-grid with Load Response
13	Distributed Generation Power Electronic Interfaces and Controllable Loads
14	Control Structures for Microgrids
15	Placement, Station Capacity, Economic and Transactions of Electric Charge Stations
16	Energy Hubs in Power Distribution Systems
17	Technological Requirements of Active Distribution Networks
18	Maximal Operation of Conventioal Conductors On Transmission Lines
19	Exchange of Electrical Power with Equipment and Industries Located on Offshore
20	Technical and Economic Studies of Power OHL Transposition based on Loss Cost
21	Costs Associated With Fires under Power Overhead Lines
22	Comparative Evaluation of Material Standards for Lattice Power Transmission Towers
23	Cathodic Protection of High Voltage Cables and Related Eqiupment in Power Network
24	Comparison of American & Europian Standards for Design of Lattice Transmission Towers
25	Tower Earth Resistance Measuring Techniques For Transmission Lines Under Operation
26	Design of Steel Shear Wall in Industrial Buildings and Power Substations
27	Standing Seam Roofing System in Buildings with Openings and High Ceilings
28	A Passive Defense Approach to Design of Building Facades
29	Smart City Solutions Against the Corona Virus Crisis
30	Comparative Evaluation of Intelligent Technologies In Management and Optimization of Energy Consumption
31	Application of Building Information Modeling in Project Management, Operation and Maintenance
32	The Causes and Consequences of Changes in Quantity & Price in Contracts with Contractors and Renovation Strategies
33	Methods of Retrofitting Structures
34	Top-Down Method in Construction Underground Structures and Comparision with Common Methods
35	Integration of Electrical Urban Trains in Smart Grids
36	Application of Moving Block System in Operating Subway Lines
37	BIM Technology and It's Application In Subway Industry
38	Using of Dynamic Compaction for Improving the Geotechnical Conditions of the Railway Natural Ground
39	Signaling Systems and Necessary Safety Aims in Railway Transportation Systems
40	Air Using of Subway Tunnels for Production of Geothermal Energy and Conditioning
41	Increase to Lateral Resistance of Steel Sleepers in the Ballast Tracks of Railway Lines with Stiffeners
42	Foundations & Structures Type Used in Overhead Catenary Systems
43	New Methods of Design and Implementation of Power Substations
44	Partial Discharge in Power Transformers
45	Power Transformers Lifetime Estimation

No.	Name of the Technical Report
46	Methods for Replacement of the Existing Ovehead Distribution Lines by Modern Underground Distribution Networks
47	Resilience Assessment and Enhancement in Electric Distribution Networks
48	Hybrid HVDC/HVAC Overhead Lines
49	The Reactive Power Compensation in HVAC Submarine Power Transmission Cables
50	Low DELTA – T Syndrome in HVAC Industry
51	Semi Top-Down Method Combined With Earth-Bank The Effective Method for Basement Construction
52	Smart Grid Integration in Railway Systems
53	Application of Data Mining in Electricity Distribution Networks
54	The Impact of 5G Cellular Technology on Industries
55	Condition Monitoring of Key Industrial Components Using Data-driven Approaches in Industry IV
56	Application of Block-chain in Smart Grid,
57	The IEC61850 in Electric Industry,
58	Advanced Distribution Management System (ADMS)
59	Investigation of Steel and Cement Industry and Evaluation of Feasible Projects
60	Optimization of Maintenance Program based on RCM Principles
61	Forced Draft Fan Design Method for Power Plant Boilers
62	Study of Odor Pollution Control Technology, Sources of Air Pollutants and Greenhouse Gases and Determination of the Share of Pollutants in Industries
63	Coatings and Smart Materials
64	Study of 3D Printing and its Application
65	Extraction of Compounds in the Brines of Qom Namak
66	LNG Regasification Process
67	LNG Regasification Process Monenco Insights
68	kermanshah bioetanol production plant project
69	Retrofitting Structures by Using Textile Reinforced Concrete (TRC)-(TRC)
70	Benefits of Independent System Operator (ISO) in Power Sector
71	Analysis of Cryptocurrency Miners Load Pattern Their Effects or Power System and Methods of Detection
72	Reliability Risk Assessment and Management in Transmission Networks
73	Corona and its Environmental Effects on Iran and the World
74	Maintenance of Substation Equipment
75	Business Plan for Electric Vehicle
76	(RCM) Reliability Centred Maintenance
77	Integrated Intelligent Communication and Supervision System in Industrial Uunits
78	Control and Monitoring of Industrial Plant Through New Communication Platforms
79	Emergency Shut Down Systems in Industrial Plants
80	Provisions to Reduce Manufacturing and Instalation Cost of Power Plants Steam Ducts in Design Stage
81	Increasing the tolerance limits in duct installation by Predicting provisions in design stage
82	Selection & Design of Ulrafiltration (UF) for Water Pretreatment Systems
83	Determination of the Qualitative Parameters in Municipal Wastewater and Design of Suggested Treatment Processes
84	Introducing the New Membrane Degasifier Method for Removing CO2 from Water
85	Architectural Design based on Renewable Energies
86	On the Design of Foundation for the New Classes of Turbines and Generators
87	Digital Operation and Maintenance
88	Operation of HVAC System during COVID-19 Pandemic
89	Optimization of Dry Cooling Systems by Thermo-Hydraulic and Mechanical Considrations
90	Industrial Project Optimal Execution Management
91	“Methods of holding training courses and virtual seminars using LMS”

Articles

No.	Name of the Article	Issue Information	Authors
1	Analysis of Substation Protection System Failures and Reliability	15th International Conference on Protection & Automation in Power System Shiraz University	Seyed Ahmad Hoseini
2	Investigating the Challenges of Development of Control Systems of in Geographically Expanded Power Grids and Present a State of the Art Control Solution	15th Conference on Protection and Automation in Power System -Shiraz University	Aliakbar Kosari , Davood Hasanifar, Hojatolah Dezfouli, Faramarz Ghelichi, Hamid Zamanian
3	Dealing with Protection Non-Coordination due to Current Transformer Saturation in Microgrid with Grid-connected Mode using Fault Current Limiter	15th Conference on Protection and Automation in Power System of Shiraz University	Alireza Sadeghi Fakhr, Faramarz Ghelichi, Ali Tofighi, Hojatolah Dezfouli, Davood Hasanifar
4	Designing and Calibration of Slip Mode in Active Parallel Filters in Order to Reduce Harmonic Distortion in Microgrids	Sixth Mechanical and Electrical Conference	Khodayar Javani, Davood Jalali, Faramarz Ghelichi
5	State-of-the-art Structure for Fault Current Limiters in order to Prevent Load Shedding in Industrial Plants	15th Conference on Protection and Automation in Power System	Khodayar Javani, Sara Namdar , Faramarz Ghelichi
6	Evaluating and Comparison of the Methods for Measurment of Ground Resistance Transmission Line Towers based on Impedance Matching	15th Conference on Protection and Automation in Power System	Hamed Vasheghani Farahani, Hamid Javadi, Masoud Abdolhossein Pour, Majid Roustaei
7	Corona Discharge Analysis of a 400kV Overhead Line at Its Tower Windows and Line	41st SYMPOSIUM, LJUBLJANA, 1- 4 JUNE 2021 SLOVENIA	M.A. TABATABEI, H. JAVADI, M. ABDOLHOSSEINPOUR, F. GHELICHI
8	Technical and Economical Assessment of IoT Applications in Smart Cities.	Smart Grid Conference	Nahid Mokhtari, Sanaz Nouri, Siamak Khalaj
9	Application of Laser Scanning Technology in Building and Industrial Projects: An Experimental Study in the Power Plant Industry	Fourth Scientific Conference of Applied Research in Science and Technology of Iran	Fatemeh Hezarkhani
10	Water & Wastewater Management in Cogeneration Power & Water Plant (Case Study)	International Conference on Environment and Natural Science (ICENS) Frankfurt, Germany. 4th - 5th December, 2020	Farzaneh Geramiraz
11	Intelligence of Water and Sewage Network Based on BIM and IoT	IRAN water & Wastewater Sience Engineering Congress	Fatemeh Hezarkhani
12	The cause of Eutrophication in lakes and ways of prevention and treatment	7th National Congress of Biology and Natural Sciences of Iran. 2020	Susan Hayeri Yazdi
13	Water Design Consideration in co-Generation Power & Water Plants	3 th Iran water, wastewater sience and engineering , 24-26 Nov. 2020, Siraz Iran	Farzaneh Geramiraz
14	A Review of Modeling the Effects of Climate Change on the Quality and Quantity of Groundwater	4th International New York Conference on evolving trends in interdisciplinary research and practices 2021	Susan Hayeri Yazdi
15	Eutrophication in Surface Waters, how can it be managed?	5th International Congress of Developing Agriculture, Natural Resources, Environment and Tourism of Iran 2021	Susan Hayeri Yazdi
16	Investigation of Effective Parameters on Crude Oil Desalination Process in Electrostatic Desalination	Journal of Chemical Engineering	Somayeh Ahmadpour
17	Geological Characteristics of Coal Layers and Resource Estimation, Estel-Kenar, Central Alborz, Iran	Journal of Geological Resource and Engineering	Mohammad Parchekani and Delnaz Talakoob

No.	Name of the Article	Issue Information	Authors
18	A Study of Fuel Grade Bioethanol Production Using Agricultural Waste and Description of the First Bioethanol Petrochemical Complex in Iran	The 11th National Conference on New Research in Chemical Sience and Engineering(NCCSE 2020)	Mohammad Majidi Ahooyi Faride Mohamadi
19	Selecting of Vaporizer in LNG Regasification Plant	The 11th International Chemical Engineering Congress & Exhibition (IChEC 2020) Fouman, Iran, 15-17 April, 2020	M. Ebrahimi Gardeshi, M. A. Shobeiri
20	Effect of HPC on Ternary Mixed Oxide Coatings Containing Ti, Ru, Ir by Sol-Gel Method on Titanium		Iman Pouladvand
21	A New Structure for Risk Management of Iran Transmission Power System by Using Risk Matrix	6th International Reliability and Safety Engineering Conference	Yasin Hosseindoost, Seyed Saeed Heydari Yazdi, Seyed Mohsen Aliabadi, Rahim Zeinali
22	Techno-economic Analysis of Memberane Distillation to Provide Potable Water to the Island of Hormozgan	The 2nd International Conference on	Ramin Khoshko Mohammad Namazizadeh
23	Evaluating Water Saving and Power Output of Different Alternatives for an Exsiting wet cooling system	The 2nd International Conference on	Aliasghar Poursarvandi Ramin Khoshkho Mehdi Fateh
24	Economic Assesment of Battery Storage in Iran Power Network and Conceptual Design of Suitable Battery Storage System for Comparison with Gas Power Plant in Peak Load Conditions	The 8th Conference on Renewable Energies and Scattered Production	Farnaz Daliri, Ramin Haghighi Khoshkho, Rahim Zeinali, Seyed Babak Mozaffari
25	Develop a Planning Procedure for Maintenance of Electrical Equipment Based on CBM and RCM Methods	15th Conference on Protection and Automation in Power Systems	Ali Arani Zadeh, Seyed Babak Mozaffari, Ramin Khoshkho, Mohamad Namazi Zadeh
26	Optimal Design and Operation of a V2G Electric Vehicle Charging Station in Network Connection Mode	The 8th Conference on Renewable Energies and Scattered Production	Ashkan Nadimi, Seyed Babak Mozaffari, Ramin Haghighi Khoshkho, Mohamad Namazi Zadeh
27	Technical-Economic Comparison of Replacing the Solar Part of Yazd Solar Thermal Power Plant with Photovoltaic Power Plant	The 28th Iranian Society of Mechanical Engineers (ISME)	Seyed Mohamad Reza Hoseini, Ramin Haghighi Khoshkho
28	Comparison of PIPENET and WaterGEMS Software in Potable & Service Water Distribution Systems of Urmia Combined Cycle Power Plant	3rd Iranian Congress of Water and Wastewater Science and Engineering Shiraz Universityv	Omolbanin Khalili, Mirfarid Attarchi
29	Use of Suitable Types of Stainless Steels in Water Industry	3rd Iranian Congress of Water and Wastewater Science and Engineering Shiraz University	Mirfarid Attarchi
30	Investigation of Different Treatment Methods of Effluents Containing Drugs with a Focus on Antibiotics	7th International Conference on Chemical and Chemical Engineering	Sahar Hamzezadeh Nakhjavani, Seyed Parham Akhlaghi
31	Speed Controller of Interior Permanent Magnet Synchronous Motor Using PI and Fuzzy Logic Controllers	6th National Conference on Knowledge and Technology of Mechanical and Electrical Engineering of Iran	Majid Bakhtiari, Kasra Ghobadi
32	An Algorithm for Rapid Fault Detection and Fault Location In DC Microgrid By Extracting Fault Current Path Inductance.	15th Conference on Protection and Automation in Power Systems Shiraz University	Hamid Zamani, Maziar Tajahmadi, Sadegh Jamali
33	Improvement of Grounding System in Wind Farms Regarding the Permissible Potentials	15th International Conference on Protection & Automation in Power System- Shiraz University- December 31, 2020 - January 1, 2021	Paniza Shabgard Foumani Seyede Zahra Toosi

No.	Name of the Article	Issue Information	Authors
34	Design of series reactor used in a distribution network connected to PV resources to achieve the best protection coordination and maximum PV contribution	15th International Conference on Protection & Automation in Power System- Shiraz University- December 31, 2020 - January 1, 2021	Hossein Zamanpour Abyaneh Javad Rezaeifar
35	Automatic Generation Control of Hydro-Thermal Power System Using SMES	3rd conference on Electrical Engineering	Mohammad Ali Hadi
36	Control of an Industrial Plant Through new Communication Platforms	The National Conference on Electrical and Electronic Industry	Reza Zare, Shahram Adlkhast, Saeedeh Hasan Zadeh
37	Design an Adaptive Sliding Mode Controller for six DOF Robot	The National Conference on Electrical and Electronic Industry	Reza Zare, Shahram Adlkhast, Saeedeh Hasan Zadeh
38	Risk Based Thinking Implimentation in Piping Design Process	10th Annual National and Student Conference of Mechanical Engineering of Iran	Saeed Falahi, Nasrin Alvandi, Ahmadreza Abediyan
39	Design of New Pressure Balanced Expansion Joint for Power Plant Steam Duct	The 28th Iranian Society of Mechanical Engineers (ISME)	Mohammad Ebrahimi, Ahmadreza Abediyan
40	Ali Nayeb Aghaee, Gholamreza Ghezelasheghi, and Amir Azimi	The Second International Conference on New Research in Electrical, Computer, Mechanical and Mechatronics Engineering in Iran and the Islamic World	Seyed Ali NayebAghaie, Gholamreza GhezelAsheghi, Amir Azimi
41	Pressure Drop and Fluid Flow Modification inside the Main Steam Manifold of an Air-Cooled Condenser	Fourth International Conference on Mechanical Engineering, Industries and Aerospace	Sepideh Esmaeilirad1, Reza Ghezelasheghi, Ramin Khoshkho and Ali Nayeb Aghaee
42	The Impact of Corona Virus on Engineering and Executive Projects in terms of General Conditions of Contracts and Solutions to Get over theImpacts	The Second National Conference on 1399-Entrepreneurship and Industrial Engineering	Vahid Kamyabi, Mohammad Javad Rezaie
43	Risk Management Analysis in Monenco Iran Consulting Engineering by Implementing Data Mining Techniques	17th Iranian international Industrial Engineering Conference -1399	Melika Akhlaghi, Fatemeh Haghiri
44	Extending Strategic Planning to the Project Portfolio Budgeting Management Process in Project-oriented Companies	17th Iranian international Industrial Engineering Conference -1400	Maral Mohaghegh Nazari
45	Solving A bi-objective Bid / No Bid Decision Making Model Using Fuzzy Goal Programming Method	17th Iranian international Industrial Engineering Conference -1401	Sina Masomzadeh
46	A New Approach For Productivity Calculation Of Staff Departments In Organizations	4th international conference on mechanical, cunstruction industial and civil engineering	Farinaz Zargar
47	Application of Mathematical Models to Evaluate Customer Satisfaction+F57:F62F56F57	4th national conference on management of accounting and industial engineering	Elham Karimi

Profit (Loss) Statement at 20 March 2020

	1398 (at 20 March 2020) Million Rials	1399 (at 20 March 2021) Million Rials
Services income	1,395,143	1,913,614
Services finished price	(1,185,353)	(1,678,699)
Gross profit	209,790	234,915
General and administrative costs	(114,936)	(176,060)
Other operating Income	44,837	220,878
	(70,099)	44,818
Operating profit	139,691	279,733
Financial costs	(11,775)	(8,922)
Other non -operating Incom	14,831	52,720
	3,056	43,798
Profit before tax	142,747	323,531
Tax on Income	(15,335)	(62,958)
Net profit	**127,412**	**260,573**
accumulated profit / loss acCount turnover		
Net profit	**127,412**	**260,573**
Accumulated profit in the beginning	417,245	527,402
Annual modification	-	-
Accumulated profit in the beginning modifiied	417,245	527,402
Profit dividend	(17,255)	(12,755)
	399,990	514,647
Profit distibution	527,402	775,220
Appropratеion of profit		
legal reserve	-	-
Accumulated profit in the final period	**527,402**	**775,220**

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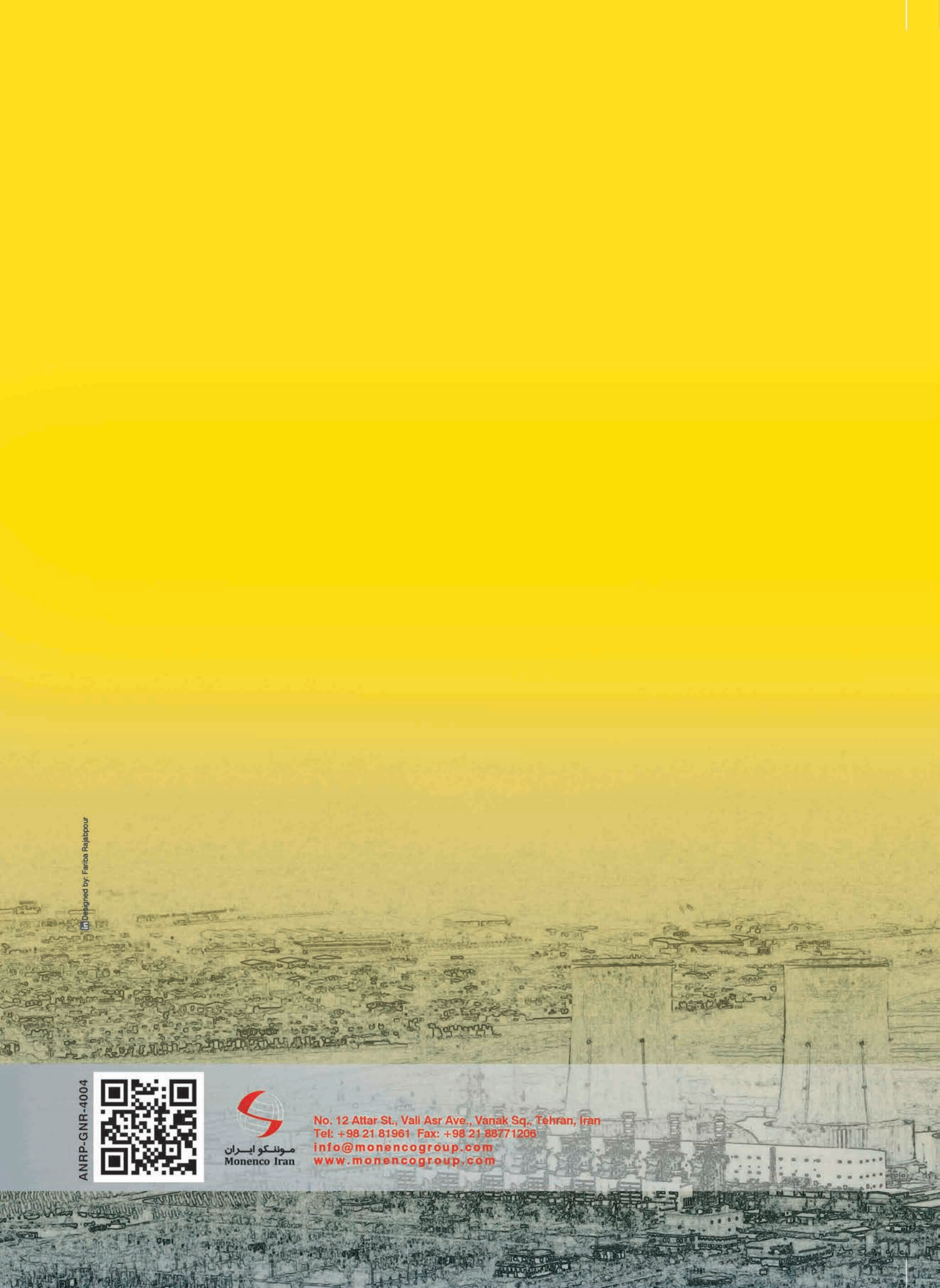

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