COMPANY PRESENTATION

Established in 1998, De Dizayn Teknoloji İnşaat ve Sanayi Tic. Ltd. Şti is proudly celebrating its 27rd anniversary in 2025 in the watertreatment sector. Growing world population and rapid advancements in technology result in contamination and extinction of natural sources which increases demand for water treatment systems with each passing day. Consequently, rational design, project preparation and choice of correct treatment technologies are of great importance. Our company is proud of bridging this gap in the water treatment sector by providing its esteemed customers with optimum engineering solutions, long-life design and safe process and feasibility studies, installation and turn-key delivery up to the World standards.

Since its establishment, De Dizayn Teknoloji İnşaat ve Sanayi Tic. Ltd. Şti is focused on providing professional engineering solutions, relying on its knowledge accumulated over 18 years and experienced sales and professional technical staff, expanding its sales and after-sales services within Turkey and on the global scale, continuously developing its infrastructure and training its staff to master continuously advancing technological innovations in the field.

The company, values its services provided to the customers as the beginning of solid cooperation which will last for years; concious that, the company provides suitable, durable and real solutions to fit the needs. De Dizayn Teknoloji İnşaat ve Sanayi Tic. Ltd. Şti, has all necessary experience, quality and proficiency to treat seawater, surface water and well water with water treatment systems installed in Turkey and worldwide up to the national and international standards. Today De Dizayn Teknoloji İnşaat ve Sanayi Tic. Ltd. Şti is active in water and waste water treatment sector providing its over 1,000 customers with engineering services as well as turn-key project deliveries providing permanent solutions; provides all of them with technical service and 450 of them with maintenance service.

Founding Philosophy:

Established with 100% local capital,De Dizayn Teknoloji İnşaat ve Sanayi Tic. Ltd. Şti is active in water treatment sector in Turkey; it sets principles keeping up

with global technological advancements and engineering with strong focus on honesty and solution partnership. The company answers challenges coming from growth target and demand of the market by investing on work force, engineering infrastructure and hardware and software upgrading. The company vision aims at becoming a local market leader at first and transform into the global company of the sector. It is accepted as an School of Environmental Engineering with environmental engineers working for it and trained for the sector. The company has gained confidence of investment and contractor companies as a reference in quotation comparing and evaluation thanks to its choice of quality equipment, maximal design life and optimum solution focused approach since its first days in the market.

De Dizayn Teknoloji İnşaat ve Sanayi Tic. Ltd. Şti has proven its strength in being a major player in domestic market with establishing solution partnership with major players in different sectors of the domestic market. During this process:

- Has taken its place in iron steel industry with Tos Çelik and Yol Bulan Çelik projects.

- Provided added value to the national economy in the Defense Industry sector and by undertaking water treatment systems solutions for the war ships in scope of National Ship Project became first class workshop for the Undersecretariat for Defense Industries.

- It has shown its capability of realizing global projects by cooperating with global construction companies.

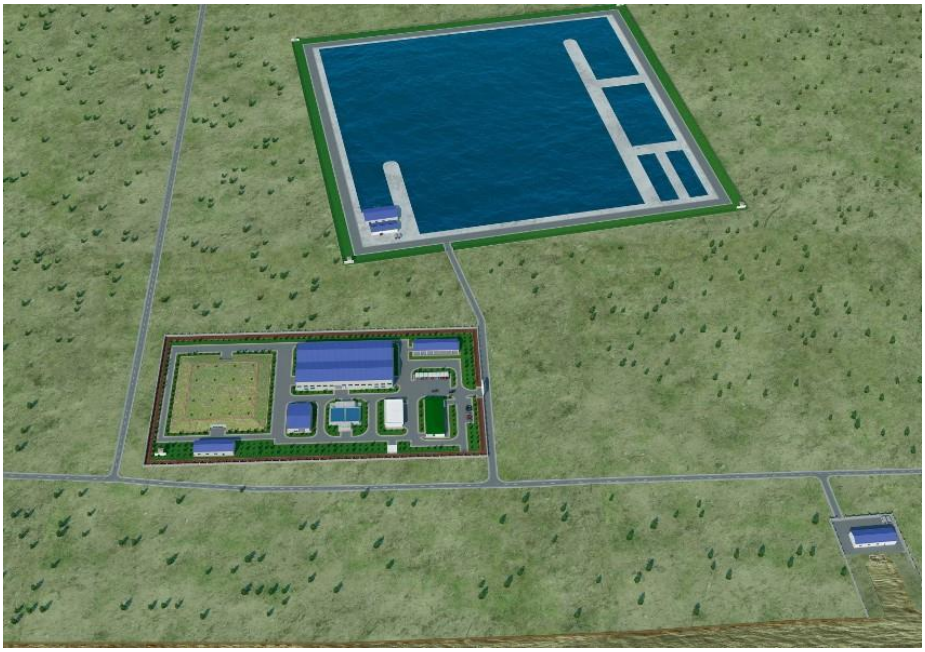
- It has shown great experience and knowledge by participating in tens of Coca Cola's projects who is unarguable leader of the World beverage industy.

- The company felt happiness resulted from realising projects with Azerbaijan Energy Ministry, Turkmenistan Water Mınistry, Water Administration of Federal Kurdish State of Irak with professional process and engineering solutions, project preparations, documentations, production quality and capacity.

- Today, the company generates added value for the national economy by supplying equipment, project preparation and technical services to 44 countries over 4 continents ; process solutions, project preparations, domestic equipment production, startup, installation and supervision services generates employment in the domestic market.

- Headquartered in Istanbul, having technical service division in Istanbul, offices . DeDizayn Teknoloji İnşaat ve Sanayi Tic. Ltd. Şti offers strong, reliable and analytic solutions in the water and waste water treatment sector.

Sector: Municipal
Location: Ferhar Zahmet Turkmenistan
Raw water source: Channel water
Capacity: 50.000 m3/day



FERHAR ZAHMET CITY DRINKING WATER

The aim of Ferhar Zahmet project is to treat Mash Channel water at 50 000 m3/hour rate by filtration and reverse osmosis system to obtain drinking and potable water needs up to GOST standards.

Water from Mash Channel is pumped to the 1st and 2nd precipitation pools for precipitation by the 100% backuped submersible pumps with 1400 m3/hour capacity of 1st pump station after rude and fine screens which are part of water intake system. Water from the pools will be stored in a pond with 250,000 m3 volume for necessary storage. Fine screening of the water intake system from the pond will prevent particles to reach treatment system. 2nd pump station which consists of 8 pumps, two of them as standby, will pump 2460 m3 water per hour from the pond to the treatment system. Before horizontal automatic multi layer sand filters 2.85 m in diameter and 12 m in length which combines low filtration velocities with high performance and minimal space requirement, water is tested for contamination and output by the water quality measurement stations. Before and after 9 sand filters combined in parallel and with 30,44 m2 surface area each and 9 carbon filters combined in parallel and with 23,17 m2 surface area and 9 m in length each, turbidity will be monitored to control system performance. Filtered water will be stored at water storage of 700 m3 volume and fed to the reverse osmosis system by the 3 rd pump station; possible performance decline of the filters that might result from high physical contamination in water will be prevented by cleaning using filtered water as well.

Reverse osmosis feed pumps are designed to feed 573 m3/hour water at proper pressure and with their standby's. This will enable to direct certain amount of water to the reverse osmosis systems designed in 2 parallel lines and with 288 membranes each, and the rest will be send to cartridge filters with total capacity of 825 m3/ hour for sensitive filtration after which both water will be mixed in treated water storage. Water quality measurement stations before reverse osmosis and on the mixing lines will monitor the performance of the system. Reverse osmosis systems will work without any performance drop thanks to automatic cleaning and rinsing units. Treated water will be disinfected by chlorination at the place with 14 000 gr/ hour capacity and stored in clean water tank. Water from clean water tank will be pumped to municipal distribution lines by 4th pumps station's 8 pumps 2 of which are standby's with the capacity of 360 m3/hour and at 120 mss pressure to provide drinking and potable water needs of
the city.

Project components are as follows:

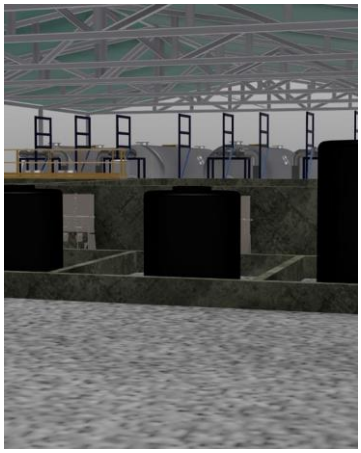
- Electric, mechanic, static and architecture projects of all main and supplementary buildings of the treatment facility
- Mechanical and electric installation materials
- Screens and penstocks of channel and pond water intake systems
- Supply of raw water from channel 2xDN 700
- 3000 kW energy, transformer and generator building
- 2 chlorine production units with 14 000 gr/hour capacity
- Laboratory building and equipment
- Mechanical workshop building and equipment
- 4 pump station buildings
- Transfer of clean water to the municipal water set

Water treatment system components will be as follows:

- Water intake structure from the channel (penstock and mechanical linear screens)
- 1st pump station (4x1440 m3/hour at 1.5 bar)
- 1st and 2nd precipitation pools and the pond (250,000 m3)
- Water intake structure from the pond (penstock and mechanical linear screens)
- 2nd pump station (filtration feed pumps, 8x410 m3/hour @ 5bar)
- 9x270 m3/h horizontal sand filters (2.85 m in diameter x 9m in length)
- 9x270 m3/hour horizontal active carbon filter (2.85 m in diameter x 9m in length)
- Filtered water tanks (2x700 m3)
- 3 rd pump station (4x390 m3/h @ 2 bar, 6x573 m3/h @ 3bar)
- 2x250 m3/h reverse osmosis system
- 2x875 m3/h mixed line cartridge filters)
- Membrane cleaning and rinsing unit
- 2x6000 m3 clean water water tank
- 4th pump station (8x360 m3/h @ 12 bar)
- Dosing and control units

The project which includes its own energy source with 3000 kW generator and transformer center, all administrative and supplementary buildings, mechanical workshop, laboratory and chemical building will be constructed on the total area of 140, 000 m2 and completed by 2016.

Sector: Settlement
Location: Zakho /Iraq **Raw water source:** Khabur River Water
Capacity: 12.000 m3/day



ZAKHO DREAM CITY PROJECT

A surface water treatment system is designed to provide Dream City residence project in Zakho city with drinking and potable water using nearby Khabur River as raw water source.

In the project, 2 submersible pumps with 325 m3/hour capacity each, are feeding river water which shows seasonal changes to the surface water treatment system. Sedimentation units designed in parallel uses coagulation, flocculation and lamella and have capacity of 265 m3/hour each.

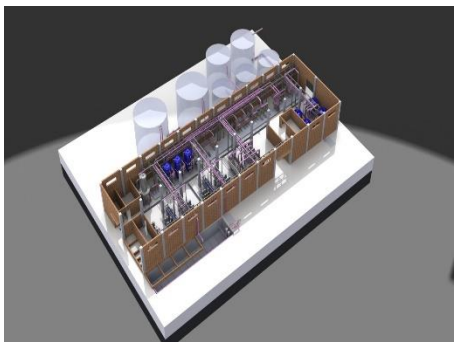
Coagulation is designed along with polyelectroltic preparation and dosage units to get maximum efficiency from softening, sedimentation and coagulation. Water from sedimentation unit is transferred to the intermediate transfer tank. To provide low velocity filtration, horizontal filters 12 m in lenght and 2.85 m in diameter are designed. The system is designed as two parallel lines, after sand filters remove suspended solids, turbidity and deposition, active carbon filters remove taste, odor and organic contamination. Cartridge filters with 10 micron sensitivity will treat water before storage in clean water tanks. River water and treated water will be disinfected using gas chlorine. The system will work in fully automatic regime and with the help of three pumps 250 m3/hour capacity each water will be distrubuted for demands of residence at 145 mss pressure.

The project includes below mentioned components:

1) Water intake pump station: 2 x 325 m3/hour
2) Clean water pump station: 3 x 250 m3/hour @ 145 mss
3) Supply pipe: DN400 2 400 m steel pipe
4) Service route: 2600 m stabilized route
5) Total construction area 1350 m2
6) Steel-construction fi tration room where 2 x 250 m3/hour treatment system is installed
7) 400 m2 supporting area
8) 2x500 kw transformer and 500 kw generator room
9) 750 tonnes and 500 tonnes reinforced concrete water storages
10) Static, Mechanical, Architechtural and Electrical projects of the whole facility
11) Administrative and Supporting Buildings
12) Turn key delivery including construction, mechanical and electrical installation material and workmanship
13) Delivery of clean water to utilization points - 2,5 km DN 400

The project which includes 42 m steel bridge for water transfer to the system, 500 kW transformer and generator building, 135 m2 steel-construction treatment building and 400 m2 reinforced-concrete supporting facilities is under construction and planned to be finished by the end of 2015.

Sector: Energy Industry
Location: Azerbaijan
Raw water source: Kura River
Capacity:
7608 m3/day Sand Filter System
6672 m3/day Ultra filtration System 5664 m3/day 1st Step Reverse Osmosis System 4800 m3/day 2nd Step Reverse Osmosis System 4800 m3/day Demineralization System



"JANUB" COMBINED CYCLE POWER STATION / AZERENERGY

The water treatment system designed and installed for "Janub" Combined Cycle Power Station provides the station with 4800 m3 dematerialized water daily using ultra filtration, 2 step reverse osmosis and demineralization systems.

Raw water is chlorinated for disinfection; coagulation is applied to increase productivity of sand filters and the ultra filtration system. After chemical dosage application raw water is stored and is fed into the 2 mechanical filters with GRP housing using 2 feed pumps with 157m3/h capacity each. Automatic multi layer sand filters made from carbon steel and coated with epoxy, filter 317 m3 each hour which is collected in clean water storage. Water is fed into the ultra filtration system using frequency controlled ultra filtration feed pumps designed in two parallel lines with 3200 m2 membrane surface area each for advanced filtration. Ultra filtration system is designed to realize chemical cleaning automatically and periodically.

Water from ultra filtration treatment is stored in product water tank to feed 2 step reverse osmosis system. Three feed pumps of reverse osmosis system have capacity of 157 m3 each and are working as 2 services, 1 standby combination. After antiscalant dosage to prevent clogging on the membrane surfaces, 1 step reverse osmosis system works at 75% efficiency and product water is stored at intermediate storage tank to feed 2 step reverse osmosis system; reverse osmosis systems are designed in parallel and each has 114 membranes. 1st step reverse osmosis product water is fed to the 2nd step reverse osmosis system after pH adjustment and antiscalant dosing. Efficiency of the 2nd step reverse osmosis system is designed to be 85%. Product water from 2nd reverse osmosis system is treated by a degasifier for pH adjustment and carbon dioxide removal, is stored at product water tank and fed to the demineralization system by 2 service and 1 standby pumps with 100 m3/hour capacity each.

Demineralization system is designed to produce 4800 m3 dematerialized water daily with automatic acid and caustic regeneration units and one standby storage tank. Water from chemical backwash is neutralized with acid and caustic before discharge and is discharged by two 100m3/hour capacity discharge pumps each.

The water treatment system with remote control unit supplies "Janub" Combined Cycle Power Station with dematerialized water with 0.1 micro Siemens conductivity and silica content less than 0.02 ppm.

Sector: State owned social facility
Location: Baku/Azerbaijan
Raw water source: Seawater
Capacity: 2400 m3/day

NATIONAL FLAG SQUARE / AZERBAIJAN

National Flag Square hosts one of the tallest flag towers in the world, as well as multi-purpose Baku Crystal Hall where 2012 Eurovision Song Contest took place and is situated on the Caspian Sea shore, water for this huge facility is obtained by treating seawater.

Water taken from 4 onshore wells at 200 m3/day flow rate, is stored at the reinforced concrete tank whose volume is 500 m3 and disinfected and oxidized by chlorination. Water from the storage is fed into the sand and active carbon filters of 285 cm diameter using two 316 stainless steel pumps; in order to remove all particles larger than 20 micron filtration rate is intentionally kept slower resulting in high performance.

Filtered water is further stored in 250 m3 storage volume of reinforced concrete to be used in backwashing of filters and fed into reverse osmosis system. Seawater reverse osmosis system designed as two parallel lines, each can produce 50 m3/hour product water with 50% efficiency and fed by 316 stainless steel pumps with 100 m3/hour capacity.

The reverse osmosis system consists of 72 seawater resistant membrane; high pressure pumps and pipes are made from special duplex stainless steel. The system is provided with pressure exchanger and booster pumps which enable recovery of energy consumed for obtaining high pressure. Analyzers and sensors are making online measurements at certain points of the system to control water quality at each step of the treatment process. The system has automatic cleaning and rinsing unit which prevent any possible clogging and accumulation. Finally, water pH value is adjusted and necessary disinfection is done to make water ready for use.

Project has converted seawater with 13,000 mg/lt of total dissolved solids into water at WHO standards with TDS value of less than 150 mg/lt to meet water needs of National Flag Square.

Sector: Energy and oil
Location: Iraq
Raw water source: Artesian Water
Capacity: 250 m3/h

ERBİL LANAZ BITUMEN & OIL RAFINERY

The Erbil Lanaz project focuses on the treatment and purification of artesian water to ensure a reliable and high-quality water supply for various applications. The system is designed to handle a capacity of 250 cubic meters per hour, utilizing artesian water as the raw water source.

The raw water, sourced from artesian wells, undergoes initial treatment involving chlorination for disinfection and oxidation to remove contaminants and pathogens. The water is then pumped into sand and activated carbon filters using two 316 stainless steel pumps. These filters have a diameter of 285 cm and are designed to remove particles larger than 20 microns. The filtration rate is intentionally kept slower to enhance performance.

Following filtration, the water undergoes a softening process to reduce hardness by removing calcium and magnesium ions. This step is essential for preventing scale formation and ensuring the water is suitable for various applications.

The system is equipped with online analyzers and sensors to monitor water quality at each stage of the treatment process, ensuring optimal performance. Additionally, the system includes an automatic cleaning and rinsing unit to prevent clogging and accumulation. As well as a backwash pump for periodic backwashing to maintain filter efficiency.

Finally, the pH value of the treated water is adjusted, and further disinfection is carried out to make the water suitable for use. This project successfully converts artesian water into high-quality water with a total dissolved solids.

Sector: Chemical Industrial
Location: Kazakhstan
Raw water source: River + Well Water
Capacity: 105 m3/h

HIMPLUS FACTORY WATER PURIFICATION SYSTEM

The water treatment project designed for the HIMPLUS Chemical Factory operates in conjunction with the factory's process lines and offers a comprehensive treatment process to meet the general water needs. This project includes various treatment steps to convert raw water from wells into high-quality purified water.

The factory's general water need of 105 m³/hour is chlorinated with a chlorine dosing pump to oxidize heavy metals and disinfect the water. This step plays a critical role in ensuring that the water is safe and clean. The chlorinated water is passed through a mechanical filter with a sensitivity of 100 microns to remove physical contaminants. This step separates larger particles and sediments from the water.

The water passing through the mechanical filter is passed through a sand filter to be cleaned up to a sensitivity of 20 microns. Sand filters increase the clarity of the water by removing finer particles. It is passed through an active carbon filter to remove color, odor, taste and organic substances in the water. These filters improve the taste and smell of water by adsorbing organic pollutants and chemical substances. For general purpose use, water is passed through a softening system with a capacity of 25 m³/hour to remove calcium and magnesium ions. The softening process is carried out using cation exchange resins. Cation exchange resins replace calcium and magnesium ions, which cause hardness of water, with sodium ions, thus reducing the hardness of water.

In order to obtain the low conductivity water required for the steam boiler, water is passed through DI (anion and cation) exchange resins with a capacity of 30 m³/hour. Anion exchange resins capture negatively charged ions in the water, while cation exchange resins capture positively charged ions. As a result of this process, deionized water with a quality of 1.3 microsimens is obtained. The DI system is also complemented by a mixed bed polisher, achieving a product water conductivity of less than 5 µS/cm and processing 95 m³ of water per hour.

In order to obtain the water required for human consumption, the water is purified using a 40 m³/h RO system. The RO system effectively removes dissolved salts and other impurities from the water using semi-permeable membranes. The membrane technology allows the passage of water molecules, while preventing the passage of larger ions and molecules. This process provides high purity water and greatly reduces harmful substances in the water. The water treatment system of the HIMPLUS Chemical plant is designed to meet the needs of industrial water supply. The system can process up to 105 m³ of water per hour and has an average feed flow rate of 105 m³/h.

This comprehensive treatment process provides the plant with high quality, reliable and industry standard water. It also ensures that the factory’s water supply is managed efficiently and complies with the necessary health and safety regulations.

Sector: Water treatment and bottling
Location: Kosovo
Raw water source: Spring water
Capacity: 84 m³/h

KOSOVO BOTTLING PLANT WATER TREATMENT SYSTEM PROJECT

The Kosovo Bottling Plant has a water treatment system designed to meet the region's drinking water needs by processing natural spring water. The facility has a production capacity of 84 m³/h uses natural spring water as its raw water source.

The main components of the system include pre-treatment, ultrafiltration, and ozonation units. Raw water is stored in a 200 m³ concrete or stainless steel raw water tank. The water is fed to bag filters using 316 stainless steel system feed pumps. The coagulation of the water is achieved with a coagulant dosing unit.

The pre-treated water is processed at a capacity of 75 m³/h through the ultrafiltration system. The ultrafiltration system uses hollow fiber UF modules and is equipped with 316 stainless steel backwash and CEB pumps.

Water from the ultrafiltration system is treated at a capacity of 65 m³/h by a fully automatic ozonation system. Equipped with components such as an ozone generator, dryer, ejector, and circulation pump, the system disinfects the water and continuously monitors water quality with a residual ozone analyzer.

Water from the ozonation system is transferred to the bottling line via bottling line pumps. Additionally, the carbonated beverage line is supported by feed pumps and UV devices to ensure water quality. Stainless steel housing cartridge filters provide precise filtration of the water.

This system enables the Kosovo Bottling Plant to produce and distribute high-quality water for both the drinking water and carbonated beverage lines. The system aims to meet the country water needs by producing water that complies with WHO standards and it is also designed to support export requirements and meet the growing demand for bottledwater.

Sector: Tourism
Location: Ayada/Maldives
Raw water source: Seawater
Capacity: 140 m3/day

MAGUDHDHUVA RESORT HOTEL

Magudhdhuva Resort Hotel is the only hotel in Ayada, Maldives. Treated water for the hotel personnel and its guests drinking and potable water need is obtained from seawater.

Water treatment system which produces 140 m3 of water per day includes reverse osmosis unit which treats seawater of 38.000 ppm salinity obtained from onshore wells. Before feeding water treatment system, water is stored and is fed to the multi-layer sand filters with the help of 316 stainless steel pumps at the rate of 11.6 m3/ hour. Before reverse osmosis system, pH value of water is adjusted and is fed to the cartridge filters with fiberglass housing for sensitive filtration.

Reverse osmosis system is provided with the recovery unit to gain back energy consumed for obtaining high pressure needed for high degree of contaminant removal. The osmosis system which consists of 12 membranes and works with 50% efficiency has automatic rinsing unit which can be used as a cleaning unit as well.

140 m3/day reverse osmosis product water is passed through remineralization unit for pH adjustment and addition of necessary minerals. Product water is disinfected with chlorination unit and stored in 140 m3 storage to be fed into the drinking- potable pipelines.

The system enables the only and ultra-luxury Magudhdhuva Resort Hotel in Ayada to provide its guests with water at WHO standards.

Sector: Tourism
Location: Cyprus
Raw water source: Seawater
Capacity: 2 x 300 m3/day

ACAPULCO HOTEL / CYPRUS

To meet needs of Acapulco Hotel personnel and its guests in Cyprus, seawater treatment system is designed to treat seawater with 40,000 ppm salinity.

Seawater is fed to the system using 2 service and 2 standby pumps made from 316 stainless steel at the rate of 35 m3/hour and 4 bars. Water passes through sand filters arranged in two parallel lines each with seawater resistant FRP housing and surface piping and providing 20 micron sensitivity filtration.

Seawater reverse osmosis systems are designed along with chemical dosage units and 24 seawater membranes each to produce 300 m3 of product water daily. Seawater reverse osmosis system has cleaning and rinsing units and analyzers and sensors before and after the system to control water quality. Product water of reverse osmosis system is fed to demineralization system to add minerals and improve water parameters to the drinking-potable water standards.

Thanks to the system, the hotel and its guests are provided with drinking and potable water with the TDS value less than 450 ppm which is obtained from high salinity seawater.

Sector: Food and Beverages
Location: Nara-ken/ Japan
Raw water source: Well water
Capacity: 720 m3/day

EISHIN SHOJI SOFTDRINK NARA FACTORY / JAPAN

30 m3 of well water is converted into the drinking water hourly by the treatment system delivered turn-key for EISHIN SHOJI SOFTDRINK NARA FACTORY in Nara-ken city in Japan.

100 m3 of well water which is used as raw water source is stored and pressurized for pre-filtration using stainless steel bag filters. Water, after undergoing filtration with 20 micron sensitivity is directed to the ultra filtration unit with the capacity of 30 m3/hour and stainless steel housing, which provides advanced filtration and rejects all possible bacteria and virus contamination.

The ultra filtration system realizes backwashing process with the dosing units automatically. Filtered water is stored in tanks of 10 m3 volume made form 316 stainless steel for disinfection before filling. Disinfection is realized by ozonation system with the capacity of 40 gr/hour.

Project is delivered under turn-key condition and 0.5-1.5-5-10 L pet bottles are filled with the treated water.

Sector: Food and Beverage
Location: Sapanca/Turkey
Raw water source: Spring water
Capacity: 2880 m3/day

NİDA SU / SAPANCA

With the help of the treatment system designed and installed for Nida Su in Sapanca, spring water is prepared for bottling without changing its composition.

As a first step of the process, at the point where raw water is fed into the system, water quality is kept under control by the online turbidity meter; if the turbidity is over the determined limit, water is discharged into the valley. Otherwise, water is stored in storages. From the raw water storages, water is passed through bag filters for pre-filtration with the help of frequency controlled ultra filtration feed pumps functioning as 2 service and 1 standby. Bag filters are on the four lines and made from 316 stainless steel. For advanced filtration, ultra filtration systems with the capacity of 60 m3/hour of product water are used; they are designed as 2 parallel lines and completely reject any viruses and bacteria that might exist.

Product water of ultra filtration systems is stored in two product water tank with volume of 30 m3 each and made from 316 stainless steel. Water from product water tanks feeds 2 service and 1 standby coronation systems with 80 gr/hour capacity. Pressure pumps for each line feed 0.5L, 1.5L, 5L and 19L filling lines and cup lines from ozone contact tank.

Coronation system installed for dispenser size water bottle washing and shaking lines disinfection, has capacity of 8 gr/hour and its performance and ozone concentration is controlled by residual ozone, environment ozone, dew point and ozone removal analyzers and sensors.

All equipment used in the project is manufactured from 316 stainless steel in accordance with hygienic and food sector norms. The system is very good example of most recent technology, engineering and high standards serving food and beverages sector.

Sector: Food and Beverages
Location: Baku/Azerbaijan
Raw water source: Spring water
Capacity: 1680 m3/day

AYAN LLC "GOLDEN WELL" BEVERAGES FACTORY

Hygienic filtration system designed for Golden Well factory in Azerbaijan, includes active carbon filtration system made from 316 stainless steel suitable for food and drinking industry has capacity of 70 m3/hour and regenerates by steam.

The project delivered as a turn-key project and spring water is filtered by steam regenerated active carbon filters with surface piping, each with capacity of 35 m3/ hour after filtered by multi-layer sand filter. Internal structure of the active carbon filter is suitable for steam regeneration.

Steam regeneration eliminates any possibility of clogging and organic matter accumulation and provides extra hygiene.

Scope of the Project

- Automatic multi-layer sand filters with FRP housing
- Automatic active carbon fi ters made from 316 stainless steel with steam regeneration
- Turn key delivery including mechanical and electrical installation

Sector: Food and Beverage
Location: Kirkuk / Iraq
Raw water source: Well Water
Capacity: 12360 m3/day Reverse Osmosis System and pre-Treatment, 360 m3/day Ultra Filtration System, 37 gr/hour Ozonation System

KARWANCHI GROUP / IRAQ
KARWANCHI ALTINKOPRU

For Altınkopru beverage factory which belongs to Karwanchi Group in Iraq a treatment system is designed and installed to treat well water to be used in carbonated soft drinks production.

In the process, well water is stored in raw water tanks is passed through full automatic multi layer sand filter for pre-treatment to remove turbidity. After sand filter, water is treated by active carbon filter for organic matter removal causing odor.

After pre-treatment, reverse osmosis system treats water further to reduce conductivity and to remove dissolved solids. Before water is directed to carbonated drink filling process, a UV unit disinfects water.

Water from the same line is treated by ultra filtration with 360 m3/day capacity to be used in filling lines. Ultra filtration product water is disinfected with the 37 gr/hour capacity ozonation system before mixing and directed to the filling lines.

The treatment system designed and installed for Mina Water Bottling factory of Kerwanchi Group converts municipal water into drinking water for bottling. In the process municipal water is passed through 316 stainless steel bag filters before 2520 m3 capacity ultra filtration system to reduce turbidity and remove bacteria and viruses.

Ozonation system of 37 gr/hour is used to provide disinfection in the filling line and its performance is controlled by online residual ozone, environmental ozone, dew point and ozone removal analyzers and sensors.

Sector: Food and Beverage
Location: Iraq
Raw water source: Municipal water
Capacity: 720 m3/day

TAMEEM COLA

Municipal water is treated for Tameem Cola of Kerwanchi Group to be used in the process.

Water from the raw water tanks is passed from multi layer sand filter to remove turbidity. Water from sand filter passes through active carbon filter to remove organic matter and odor. Reverse osmosis system of 720 m3/day capacity further removes dissolved solids and conductivity.

Quality water for Tameem Cola is obtained from municipal water by proper design and equipment used in treatment process.

Sector: Iron and steel industry
Location: Algeria
Raw water source:
Municipal water
Capacity:
1. Plant: 2400 m3/day
2. Plant: 4080 m3/day

CVS MACHINERY / TOSYALI HOLDING

Water for cooling in the 1st and 2nd steel mills which belong to Tosyali Holding and established in Algeria by CVS Machinery who is active in steel and iron industry, is obtained from well water which is treated for open and closed circulation systems.

Cooling water used for cooling machinery is carried by open and closed loops which are fed by makeup water treated in the 1st mill; in the process designed for this mill water after disinfection by chlorination is fed into the reverse osmosis system with 108 membranes and 100 m3/hour capacity to supply water for mould loop. Product water is fed into the mould loop after pH adjustment. In the process which is designed for the 2nd mill, reverse osmosis system is installed as two parallel lines with 90 membranes and 170 m3/hour total capacity fed with 227m3 water hourly. Cartridge filters just before reverse osmosis systems provide 5 micron sensitive filtration.

On the same chassis, there are 2 high pressure service pumps made from 316 stainless steel and with 56.6 m3/hour capacity each, are 50% backuped and provide reverse osmosis system with pressurized water. Reverse osmosis is designed to clean and rinse automatically without performance drop thanks to its automatic cleaning and rinsing units. RO product water is stored after pH adjustment to provide open and closed loops.

In the project, tower blow down is also taken into account. Cooling tower loops are controlled by biocide dosing, corrosion inhibitor dosing and solid-liquid emulsion breaking units. As a result, besides chemical control of cooling tower blow downs, water losses from evaporating is also compensated and cooling water treatment is realized by reverse osmosis method.

Sector: Construction
Location: Suleimania / IRAQ
Raw water source: Well water
Capacity: 1200 m3 / day

LAFARGE GROUP / IRAQ

The aim of this project was to improve process water quality for the leader of the world cement sector-Tasluja Cement Factory of Lafarge Group.

Prismatic water tank with 844 m3 volume is installed to store raw water. Raw water is fed to automatic multi-layer sand filters by system feed pumps made from 304 stainless steel with 67 m3/hour capacity each. Feeding system includes service and standby pumps.

Disinfection is realized online. Sand filter has automatic, time-controlled backwash system. All controls of filtration system are realized by PLC and solenoid panels. After removal of physical contaminants from raw water, water is passed through reverse osmosis for removal of ions by the membrane technology. Reverse osmosis system is designed according to the raw water quality and can produce 50 m3 of treated water per hour with the 75% efficiency. The performance of the whole process is controlled by water parameters measurement at certain points of the process.

Product water is stored and after pH adjustment, pressurized to feed the lines. The system has 48 membranes and membrane cleaning unit as well and provides Lafarge Tasluja Factory with process water.

Sector: Energy Industry
Location: Ankara/Turkey **Raw water source:** Municipal water
Capacity: 360 m3/day

BILKENT HOLDING BILKENT ENERGY PRODUCTION INDUSTRY AND TRADE INC. / ANKARA

The system is designed and installed in Bilking University campus to provide steam generators of power production station with water for steam generation which is used to produce the university's electric energy, energy for production facilities of the shareholders of the company, Meteksan Paper Factory's operational steam demand and steam for heating all the buildings inside the campus. The deionized water used in steam generation is obtained by 2 step reverse osmosis system and mixed bed deionization system.

As a first step, municipal water is fed to the automatic multi layer sand filter with fiberglass housing and surface piping with 25m3/hour filtration capacity and to the carbon filter for pre-filtration using two pumps with 25m3/hour capacity and working at 5-7 bars.

Before 1st step reverse osmosis system, filtered water is adjusted for pH value and filtered by cartridge filters providing sensitive filtration. Further, water is passed through reverse osmosis system which has 18 membranes using high pressure pumps.

Product water of 1st step reverse osmosis system is pH adjusted and stored to be directed to the 2nd reverse osmosis system using transfer pumps with 18.75 m3 capacity each at 3 bars. To protect anydecrease inmembrane performance both systems have membrane cleaning unit. Water after the second step reverse osmosis system is degasified for carbon dioxide removal and stored for feeding demineralization unit. Mixed bed deionization system is designed in tandem and provides 15 m3 deionized water continuously. Chemical regenerations are realized automatically, the system is controlled in online regime. The system is designed to provide deionized water with conductivity less than 0.2 micro Siemens at constant output for 2 years.

Two step reverse osmosis system and mixed-bed deionization system are designed to work together to provide steam generation unit with deionized water.

Location: Kirikkale/Turkey
Raw water source: Kizilirmak River
Capacity: Filtration capacity: 19200 m3/day
Reverse Osmosis capacity: 4800 m3/day

MECHANICAL AND CHEMICAL INDUSTRY CORPORATION KIRIKKALE

Kirikkale Arms Factory, which belongs to Mechanical and Chemical Industry Croporation, is provided with the treated water from Kizilirmak River for utilization as process and cooling water in its new steel mill.

Raw water taken from Kizilirmak River passes through mechanical filters with 200 micron sensitivity at 1000 m3/hour rate and is chlorinated for disinfection and stored in raw water storage of 2000 m3 volume. With the help of 10 pumps 100 m3/ hour capacity each, water at 40-50 mss pressure is passed through 8 multi-layer sand filters with 100 m3/hour capacity each to achieve filtration of 20 micron sensitivity. 400 m3 of filtered water is stored at 2000 m3 water storage volume to be used for general purposes.

Another 400 m3 of water is fed into the reverse osmosis system designed in two parallel lines with 100 m3/hour capacity each. Product water with 50 micro Siemens conductivity is stored at clean water storage of 1000 m3 volume. Treated water is distributed accordingly to be used as a process water of steel mill.

Project was designed to include a filtration system with 800 m3/hour capacity and reverse osmosis system with 200 m3/hour capacity; equipment of the project is manufactured and delivered to Mechanical and Chemical Industry Corporation in 2013 to supply process water for this heavy industry factory.

Sector: Food and Beverages
Location: Luleburgaz / Turkey
Raw water source: Well water
Capacity:36 m3/day

EFES BEVERAGE GROUP / LULEBURGAZ

Boiler feed water for the Efes Beverage Group factory is provided by reverse osmosis system.

In the process, reverse osmosis system with the capacity of 36 m3/day installed after existing water treatment system provides boiler feed water at the necessary volume. Before reverse osmosis system, filtered and pressurized water at 4 bars and 2.5 m3/ hour volume provided by the factory is passed through 304 stainless steel bag filter for sensitive filtration.

In front of the water treatment system UV disinfection system is installed to prevent any possible bacteriological contamination. Reverse osmosis system with 8 membranes and membrane cleaning unit operates in automatic regime thanks to its operator panel and mini PLC control panel.

The system designed and installed for the Efes Beverage Group factory provides low-conductivity water as boiler feed water.

Sector: Tourism
Location: Moscow/Russia
Raw water source: Municipal water
Capacity: 4800 m3/day

HOLIDAY INN HOTEL / MOSCOW

Drinking and potable water demand of the personnel and guests of Holiday Inn hotel in Moscow, Russia is supplied by treating municipal water.

During the treatment process, raw water is passed through 2 service and 1 standby sand filters with 100 m3/hour capacity each. Treated water utilization is separated according to areas; for the 1st Area, 25 m3/hour softened water is obtained using softening system designed in tandem which supplies soft water continuously. Softener regeneration is realized by salt water and adjusted according to time and softened water capacity, thanks to the design, softened water can be mixed with potable water to keep water hardness at the desired level. For the 2nd and 3rd Areas, softened water demand is 15 m3/hour and softener capacity is determined by this volume.

As a result, municipal water with 10 F hardness is treated to supply all water usage areas with the treated water.

Sector: Pharmacology
Location: Kocaeli / Turkey
Raw water source: Well water
Capacity: 240 m3/day

ILSAN PHARMACOLOGY / GEBZE

For Ilsan Pharmacology Factory, a new water treatment system is designed and installed and the existing system is revised and upgraded to function together to provide factory with the treated water.

As a first step, sand filter, active carbon filter, iron and manganese filters and softening filters are used for pre-treatment; water stored in a soft water storage and mixed with concentrated water from the reverse osmosis system installed on the process line which passes from 1 micron cartridge filter. Reverse osmosis system which has 12 membranes and 240 m3/day capacity installed right after soft water storage to achieve low conductivity product water.

After reverse osmosis system which is designed along with chemical dosage units and membrane cleaning units product water pH value is adjusted and stored in 150 m3 clean water storage.

Water demand of the factory is provided from well water up to TSE 266 standards level thanks to the new system and revision and upgrades to the existing system and fed to the process.

Sector: Chemical industry
Location: Kocaeli/ Turkey
Raw water source: Well water
Capacity: 156 m3/day

BETEK PAINT, CHEMICALS AND INDUSTRY INC. / KOCAELI

Demand for process water in Betek paint factory in Kocaeli, is supplied from well water by updating the existing system and installing new water treatment system for production capacity increase.

As a first step, raw water is disinfected by automatic chlorination system and stored to be fed into the system. Necessary disinfection of existing pipelines is done this way as well. For the new treatment system, color, odor, taste and organic contaminations are removed by active carbon filter with 20 m3/day capacity.

Before feeding the reverse osmosis system with the water with necessary pressure given by 304 stainless steel high pressure pumps, water is made to flow through 5 micron cartridge filters which provide sensitive filtration. After the reverse osmosis system which consists of 8 membranes water parameters are measured to control water quality.

Updates to the existing system and new treatment system provides Betek factory with high quality water in production of its high quality products.

Sector: Marine
Location: Turkey
Raw water source: Seawater
Capacity: 10 m3/day

SUBMARINE DEFENSE MILITARY AND SURVEY PATROL SHIP (MILGEM) PROJECT

The MILGEM project, is an important contribution to our country's defense industry; it is a new dimension in the advancement of Naval forces, increases Turkish Armed Forces capabilities further, contributes to the regional peace and especially a cornerstone in developing and applying most advanced technologies in homeland thus leading to self sufficiency.

The project scope includes supplying completed ships "Heybeliada" and "Buyukada" and 3rd and 4th ships which are under construction with treatment systems for drinking-potable water and water with special application.

The project will provide the patrol ship personnel and certain systems of the ship with water obtained from seawater using reverse osmosis method while navigation. Water taken from sea is passed from bag filters and cartridge filters installed on the reverse osmosis line for sensitive pre-filtration.

High pressure pumps feed reverse osmosis system with 5 membranes to remove salts from seawater. Product water of reverse osmosis system is remineralized to upgrade it as drinking-potable water. Drinking water is collected in cisterns and disinfection is provided by ultraviolet system. Besides drinking water, a separate line from reverse osmosis system is directed to the manual mixed bed deionization system to get water for special application.

Taking into consideration the fact that while the ship is waiting or under maintenance near the shore, it will get its water from onshore, shore filling circuit is designed as separate facility and necessary actions are taken with the help of mechanical filters and disinfection systems.

While designing, all possible situations while navigation is considered and necessary precautions are taken with the help of finite elements modeling and shock analysis. Seawater with 42,000 ppm of salinity at 250C temperature is converted to the drinking water of 10 m3/day suitable for needs of military personnel, for operational and maintenance needs using reverse osmosis and remineralization systems, and 0.5m3/day of special usage water for cleaning of gas compressor details with deionizing mixed bed systems.

Sector: Social facility
Location:
Kirikkale – Mugla / Turkey
Raw water source: Greywater
Capacity: 62,4 m3/day

YAHSHIYAN DORMITORY

In the dormitories in Kirikkale and Mugla greywater from washstands, bathrooms, kitchens and laundries is treated by ultra filtration and used to water garden.

Greywater is chlorinated as pre-disinfection and basket-type screen is used to remove big particles. After physical contamination removal from greywater by using screen water is stored and fed into the bag filter with stainless steel housing for pre- filtration. Bag filters provide filtration with 100 micron sensitivity; water from bag filters is directed to the multi layer sand filter with FRP housing and 2.6 m3/hour capacity. After sand filter, 2 active carbon filters connected in series and with FRP housing provide odor and organic matter contamination. 2.1 m3 water is filtered by package ultra filtration each hour to obtain sensitive filtration of water with dense and fluctuating contamination load. Water from ultra filtration is chlorinated and stored in product water tank.

Greywater in student dormitories is treated to water garden and landscape.

Sector: Waste Water Industry
Location: Iraq
Raw water source: Industriel Waste Water
Capacity: 700 m3/day

ZANA GROUP / IRAQ

The system will be used to treat wastewater with a daily flow of 700 m3.
The wastewater entering from the penstock at the head of the system first passes through a coarse screen and than fine screen.

Waste water passing through the grids is transferred to the sand trap with the help of a submersible pumps. The wastewater, which is partially separated from its particles in the sand trap, is taken to the sand removal unit. The particles in the wastewater kept here settle to the bottom and the water purified from the particles (supernatant) remains at the top of the tank. While the treated water is being filled into the lifting tank, the particles settled on the bottom of the sand removal unit tank are removed from the tank with a sand scraper.

The water purified from particles is transferred to the balancing tank by the pump in the pumping tank. An air blower is used for the homogenized mixture of the wastewater in the tank. The stabilized wastewater is conveyed to MBBR systems by submersible pumps with in the balancing tank.

There are 4 MBBR systems in the facility. The wastewater from the balancing tank enters the primary settling tank before passing into the MBBR tank. Here, the waste water is kept and the particles that may still be present in it are precipitated. The water that is free from particles passes into the MBBR tank. The sludge layer accumulated at the bottom of the tank is sent to the common sludge collection tank by means of air lifting.

Activated sludge (bacteria) is fed to the wastewater taken into MBBR tanks. Bacteria, which start to grow with the nutrient sources in the wastewater, adhere to the surfaces of the media with which is the characteristic of the MBBR system. At the same time, air is supplied to the diffusers at the bottom of the tank for a homogeneous mixture of wastewater by means of a blower. The water, which has been purified by the bacteria's consumption of the impurities in the wastewater, passes into the secondary settling pool. And Than treated water is transferred to the chlorine contact tank. The clean water from the 4 MBBR system enters the treated water tank with a common collector.

Sector: Waste Water Industry
Location: Iraq
Raw water source: Industriel Waste Water
Capacity: 700 m3/day

KARWANCHI GROUP / IRAQ

The system will be used to treat wastewater with a Daily flow of 700 m3. This wastewater contains 690 m3 of carbonated beverage and 70 m3 of milk and buttermilk wastewater.

The carbonated beverage wastewater entering from the coarse screen at the head of the system first passes through a grill structure in order to retain the large particles that may be present in it. Milk &Buttermilk wastewater entering from DAF unit and after that both wastewater mix inside the first tank. Then, this wastewater is transferred to the equalization tank with the help of a pump. Air is given to the wastewater here.

After the aeration process, the wastewater is transferred to the coagulation tanks by lifting pumps. Coagulant (FeCl3) is dosed into the wastewater in the coagulation tank and mixed with the help of a mixer at 80-100 rpm.

The wastewater mixed with the coagulant is taken to the flocculation tank, and the bacterial flocs formed with the help of the coagulant are mixed with a slow speed mixer at 20-30 rpm and precipitated on the bottom of the tank.

The water remaining on the surface of the tank is taken from the transition structure to the clarifier tank. Here, the wastewater is kept and the particles remaining in it are allowed to settle to the bottom, the partially clean water (supernatant) remaining on the tank surface passes into the bioreactor tank with the transition structure.

The final treatment is provided by giving air to the wastewater taken into the bioreactor tank with a blower of 335 m3/h. The water passing from the bioreactor tank transition structure to the biological settling tank is kept here and the last particles that may have remained in it are precipitated. The supernatant taken from the surface of the biological settling tank with the transition structure is filled into the treated water tank. Disinfection is achieved by chlorinating the water between the biological precipitation tank and the treated water tank.

The water is transferred from the treated water tank to the sand and activated carbon filters with the help of filtration pumps. Here, the smallest particles and organic substances that may have remained in the water are removed.
The treated water is transferred to the last treated water tank to be given to the system. Waste sludge collected from tanks from certain parts of the system is sent to the filterpress unit with the help of sludge pumps and dewatering is performed.

Sector: Food
Location: Cameroun
Raw water source: Well water
Capacity: 75 m³/h

CAMEROUN PROJECT WASTE WATER TREATMENT SYSTEM

The system treats raw well water with a flow rate of 75 m³/h.

Treated water is stored in a 100 m³ tank. It is then pumped through multi-layer sand filters, activated carbon filters, and an iron adsorption unit.

Raw water from the well is dosed with chlorine for oxidation.

It is passed through 2 filters with a diameter of 2 x 240 cm to remove turbidity and sediment from the water by means of a 2 x 75 m3/h pump.

It is passed through 2 x 240 cm carbon filters to remove chlorine, color and organic matter from the water. It is passed through 2 x 240 cm iron filters to remove unoxidized iron from the water.

In order to prevent the formation of any microorganisms, the water is passed through a 316 stainless steel UV filter.

Finally, a degasifier is used to remove CO2 from the water. In this way, the water is purified and brought into compliance with the appropriate standards.