



Culligan®

Water treatment &
water infrastructure



Culligan.[®]

About Culligan



Founded in 1936 at Chicago, U.S.A. Culligan - an integrated water treatment equipment and systems designer and manufacturer firm - is a leader in the world focusing on turn-key water treatment systems and plants and water infrastructure. In the years since, Culligan has evolved into a world leader, creating innovations that have helped shape the water industry while setting standards for quality improvement and customer service. Today, Culligan is proud to have provided world-class service and innovative water treatment solutions for the last 80 years, from the simplest filtration system to complex industrial and municipal water solutions. We globally deliver process design, design and build, build-operate, detailed engineering, equipment manufacturing, EPC contracting, construction management and other professional services to municipalities, government agencies as well as private sector customers.

- We have
- Global network of over 800 locations in 90 countries
 - Strong global brand - the largest pure play Water Treatment Business
 - Manufacturing facilities in Chicago, Bologna-Italy and Dubai
 - Overseas Operation Centers across Italy, Spain, France, UK, Turkey, Argentina, Canada, China, Middle East (UAE) and Rwanda
 - Over 5000 employees
 - Over 10 million Customers
 - Strong in-house Engineering and R&D capabilities.

Worldwide network of over 90 countries

Over 800 Culligan locations in
more than 90 countries

Culligan Corporate Headquarters

Chicago, USA

Global Headquarter)

Italy

Canada

France

Argentina

Belgium

China

Dubai

Qatar

Spain

Turkey

Rwanda

- Algeria
- Angola
- **Argentina**
- Australia
- Austria
- Bahamas
- Bahrain
- Belarus
- **Belgium**
- Belarus
- Bermuda
- Cambodia
- Cameroon
- **Canada**
- **China**
- Congo
- Costa Rica
- Croatia
- Cyprus
- Czech Republic
- DR Congo
- **Dubai**
- Ecuador
- Egypt
- Estonia
- Finland
- **France**
- Germany
- Ghana
- Guam
- Guatemala
- Haiti
- Hong Kong



- Hungary
- Indonesia
- Ireland
- **Italy**
- Ivort Coast
- Jamaica
- Japan
- Jordan
- Kenya
- Korea
- Kuwait
- Laos
- Latvia
- Lebanon
- Libya
- Lithuania
- Malta
- Mexico
- Morocco
- Netherlands
- New Zealand
- Nigeria
- Nothern Cyprus
- Norway
- Oman
- Pakistan
- Philippines
- Poland
- Portugal
- Puerto Rico
- Qatar
- Rwanda
- Russia
- Saudi Arabia
- Serbia
- Singapore
- Slovak Republic
- Slovenia
- **Spain**
- Sri Lanka
- Sudan
- Sweden
- Switzerland
- Tahiti
- Tanzania
- Taiwan
- Thailand
- Tunisia
- **Turkey**
- UK
- Ukraine
- **USA**
- Venezuela
- Vietnam
- Virgin Islands

Sectors We are Serving



MUNICIPAL



INDUSTRIAL

Process design, detailed engineering,
EPC Contracting for:

- Water and Wastewater Treatment Plants
- Pipelines
- Water and sewage network for cities
- Pump stations
- Reservoirs
- SCADA Systems
- Reuse for irrigation

- Oil & Gas
- Power
- Food & Beverage
- Chemical Industry
- Microelectronics
- Manufacturing
- Steel Works
- Buildings and Institutional
- Animal Breeding
- Agriculture



HEALTHCARE



HOSPITALITY



MARINE

- Hospitals
- Dialyses Units

- Hotels, Resorts and Spas
- Public Sports Centers
- Private and public Swimming Pools

- Cruises
- Ro-Ro and Cargo Ships

Global Service Capability



With a dedicated service team and a network in over 90 countries Culligan is able to respond and support service needs anywhere in the world 24x7 all around the year. All of our Service Support Team are multi-lingual and experienced in on-site installation, commissioning and repairs.

Our Service Capabilities Include:

- Start up & commissioning
- Routine maintenance
- Troubleshooting
- Key spares & consumables held in stock.

So Culligan pays a service visit to a customer somewhere on average 6000-9000 times a day and there are over 3,000 Culligan Authorized Service Technicians worldwide

Some of Our References



Municipal



Containerized
Solutions



Industrial



Healthcare



Hospitality



Marine



ARSENIC REMOVAL PLANT, 270.000 M³/DAY IZMIR, TURKEY

*THE LARGEST ARSENIC REMOVAL PLANT IN THE WORLD.

PROJECT DETAILS	
CUSTOMER	IZSU-izmir Water and Sanitation Administration
DURATION	2008 - 2009
CAPACITY	270.000 m ³ /day
RAW WATER SOURCE	Underground water (Sarikiz Wells in Muratli area)
PROJECT CONTENT	Raw Water Reservoirs: 1 x5000 m ³ ,2x 1000 m ³ Pump Station : 11.700 m ³ /h Culligan Special Design Hi Flo9 UFP 480 Arsenic Removal Units Treated Water Reservoir: 3000 m ³ Arsenic Waste Treatment Unit Settlement Tank Sludge Collection Thickening Culligan Hi Flo9 UFP 360 Filtration Units Filter-press Arsenic pellets for removal Filtration and administration buildings PLC&SCADA Systems

With over 3 million population, Izmir is one of the largest cities in west of Turkey. Main water source are the wells located Muratli Area about 40 km east of the city. All underground waters contains high Arsenic content in the area, which is over 80 ppb. Because of Turkey's very rich agricultural production region regulations never accepts any waste water disposal to the rivers and canals in the area. Project designed not only for removal the high content of arsenic, but building a wastewater treatment plant and make ready to burn the toxic arsenic as dried pallets. Since Culligan has a great experience for removing arsenic from drinking water sources in Europe, after the great competition, Culligan has awarded for the project by IZSU in 2008. Plant inaugurated in 2009.

Raw Water Arsenic Content >80ppb
 WHO required arsenic content <10ppb
 Culligan Achieved Results 3-6ppb



MUNICIPAL WATER TREATMENT PLANTS, 164.000 M³/DAY LAS GDANSKI, POLAND



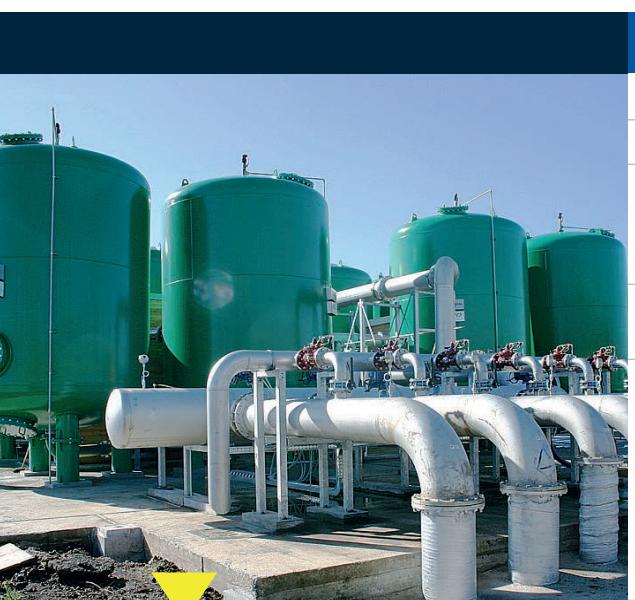
PROJECT DETAILS

CUSTOMER	Wodropol SA Waterworks Company Poland Hydrobudowa Waterworks Company Poland
DURATION	2000 - 2009
RAW WATER SOURCE	Various
CAPACITY OF THE CITIES	Reda : 43.200 m ³ /day Jezewo : 7.200 m ³ /day Radom Slawno : 24.000 m ³ /day Ostroleka : 14.400 m ³ /day Las Gdanski : 42.000 m ³ /day Piotrow Kujawski : 3.800 m ³ /day Eblag : 15.000 m ³ /day Stalowa Wola : 14.400 m ³ /day
PROJECT CONTENT	Turbidity, Ammonia, Iron and Manganese treatment plants

Reda, Jezewo, Radom Slawno, Ostroleka, Las Gdanski, Piotrow Kujawski, Eblag and Stalowa Wola are Polish cities around the country. There are various types of water sources, which have problems of high turbidity, ammonia, iron and manganese content. The quality of water supplied to the cities showed high values outside the normal range in terms of turbidity and colour, iron, ammonia and manganese and required treatment plants that could reduce these elements to meet legal limits. The waterworks authorities of the Poland awarded Culligan for building water treatment plants that could solve the problems of the 8 cities between 2000 and 2009. Water treatment plants, however, was rather complex due to these critical water values. In addition, highly energy-efficient technologies were installed, which are fully automatic and monitored by central control systems. With these treatment plants, all parameters outside the normal range were brought down to the levels required (Turbidity 0 - Colour 1 0 - Ammonia < 0.5 - Iron < 0.05 - Manganese < 0.02) and, through pumping stations, pure water was fed into the networks and then supplied to the cities and the local waterworks.



ACQUALATINA ARSENIC REMOVAL PLANTS, 82.000 M³/DAY APRILIA, ITALY



PROJECT DETAILS

CUSTOMER	ACQUALATINA, Aprilia - Italy
DURATION	2012 - 2013
CAPACITY	Carano Giannettola : 51.800 m ³ /day Sorgenti del carano : 22.400 """/day Dante Alighieri Station: 7.800 m ³ /day
RAW WATER SOURCE	Well Water
PROJECT CONTENT	Acidification with proportional dosing of carbon dioxide Culligan UFX 560 series filters containing Granular Ferric Hydroxide (GFH) as granular filter media SOFREL remote control with PLC automation

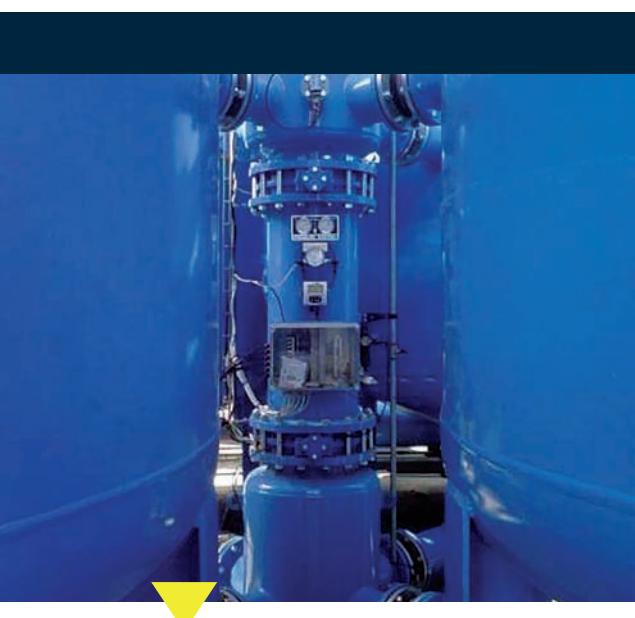
Groundwater in the southern Lazio region features arsenic concentration above the limits allowed by European and Italian legislation. Legislative amendments introduced in 2001 have affected the municipalities of certain areas of Italy, which, in turn, have been forced to make operational specific water treatment plants for the removal of this pollutant. Accordingly, Acqualatina S.p.A. the local water distribution company, has implemented a plan to deal with arsenic in the Latin area, requiring an investment of 17 million Euro, a substantial financial commitment, which allowed the installation of as many as 9 arsenic removal plants and the construction of a 11 km-long water pipeline, permitting the distribution of drinking water from Ninfa to Cisterna di Latina. Culligan provided Acqualatina with a complete solution to remove arsenic from drinking water, installing and commissioning three arsenic removal plants in the following locations:

- Carano Giannettola (Municipality of Aprilia, in the province of Latina): flow capacity of 51.900 m³/day
- Sorgenti del Carano (Municipality of Aprilia, in the province of Latina): flow capacity of 22.300 m³/d
- Dante Alighieri Station (municipality of Cisterna di Latina, Latina): flow capacity of 7.800 m³/day

Culligan provided comprehensive services, ranging from preliminary design to final testing, as well as a 3-year management plan. Arsenic removal plants in the aforementioned areas are necessary to ensure the permanent solution of issues relating to arsenic in groundwater. Culligan's solution proved to be particularly robust, since its goal was to manage the arsenic fluctuations in water, even in the face of strong variations in the amounts of water collected, and, in particular, during summer or, in any case, during periods of high consumption. The installed plants perform arsenic removal by relying upon a process of adsorption on iron oxide-hydroxide-based GFH (Granular Ferric Hydroxide) mineral, with direct filtration (without any need for additional intermediate pump stations, and, thus, reducing energy consumption). Water is collected from aquifers and sent directly to 4 filtration lines, each consisting of 4 filters arranged in a cloverleaf configuration. The system does not use chemical products, with the exception of carbon dioxide required for the arsenic removal process, and sodium hypochlorite for disinfection, and, therefore, operating costs are minimized. With the commissioning of these facilities, the arsenic problem was resolved permanently throughout the affected geographical areas within the limits imposed by EU legislation.



CAMPO POZZI LUFRANO WATER TREATMENT PLANT, 76.800 M³/DAY CASORIA, ITALY



PROJECT DETAILS

CUSTOMER	ARIN S.p.A.- Casoria Municipality
DURATION	2009 - 2010
CAPACITY	76.800 m ³ /day
RAW WATER SOURCE	Well Water
TREATMENT PROCESS	Filtration
PROJECT CONTENT	Drinking Water

Casoria is an Italian town of 77,357 inhabitants in the province of Naples, in the Campania region. It is part of the coastal hills of Naples, and located in the middle of ancient reclaimed swamps. The aqueduct that brings water to the city was inaugurated in 1885 and has been managed for more than 20 years by ARIN, the client who commissioned the Culligan water treatment plant. The application of a specific treatment system was required by the company to reduce pollutants in water. In 2010, after three years of work, the treatment plant developed by Culligan was inaugurated. The plant's purpose was to bring manganese values below 10 ppb and of Trichloroethylene and Tetrachloroethylene below 5 ppb. In the last twenty years, groundwater used as drinking water showed growing levels of pollutants, due to increase in consumption (lowering of groundwater levels) and the presence of anthropogenic pollution, resulting from human activity. Until 2009, drinking water supplied locally presented values of manganese, Tricloretillene and Tetrachlorethylene above the legal limit (50 ppb of manganese and 10 ppb Tri + Tetrachloroethylene), levels that prevented water distribution to local utilities. The turnkey solution developed by Culligan, namely, from preliminary design to testing, consists of a pressurized filtration system that relies on two-stage filtration: the first uses catalytic material for the removal of manganese, with previous disinfection with sodium hypochlorite, and subsequent filtration through granular activated carbon for the adsorption and removal of Tri and Tetrachlorethylene.



MUNICIPAL WATER TREATMENT PLANT, 340.000 M³/DAY OPORTO CITY, PORTUGAL



PROJECT DETAILS

CUSTOMER	Aguas do Douro e Paiva SA
DURATION	2002 -2003
CAPACITY	340.000 m ³ /day
RAW WATER SOURCE	River - Douro
PROJECT CONTENT	River Water Intake Culligan HF9 UFP480 FILTRATION UNIT Motor Control Center Filter Feed Pump Station PLC&SCADA System

The Aguas Do Douro Paiva Company (ADDP) responsible for assuring the water supply to the City of Oporto, submitted a particularly difficult task to Culligan: that of filtering large quantities of water from Douro River without the use of any chemical products. The pre-existing yet recently constructed water treatment plant had often been unable to cope with the turbidity peaks of the Douro, leading to drastic decreases in capacity and serious problems to the regular supply of water to the City. A solution therefore needed to be found for water filtration to ensure that a constant treated water quality even when river water reaches turbidity peaks of 200 NTU. There were two critical factors in the project: the first was the prohibition of chemical products for disinfection and flocculation (which would require separate treatment for filter backwashing water before it could be released into the river); the second was the lack of information on the actual nature and dimensions of turbidity particles. The supplier would therefore be required to ensure a qualitatively constant result, without being fully acquainted with the conditions in which the plan would be operating. Several water treatment companies invited for test studies including Culligan. At the conclusion of the test period, Culligan was chosen for the contract, having been the only company to have passed the tests conducted. The contract awarded to Culligan and inaugurated on 3rd November, 2003.

MUNICIPAL WATER TREATMENT PLANT, 110.000 M³/DAY SAKARYA,TURKEY



PROJECT DETAILS

CUSTOMER	Adapazari Municipality
DURATION	1998-1999
CAPACITY	110.000 m ³ /day
RAW WATER SOURCE	Sakarya Lake
PROJECT CONTENT	Pump Station : 4.500 m ³ /h Steel Pipeline : 121800 8.5 km Raw Water Reservoir : 5000 m ³ PLC&SCADA System Treatment Building Administration Building Lab

Sakarya is an industrialized city 150 km east of Istanbul with the population of 600,000 people. Sakarya Lake is about 8 km far from the Water Treatment Plant. Plant is located on the top of the Maltepe Hill, which is the highest point of the city for gravity distribution. Turbidity of the Sakarya Lake changes between 200 - 2,000 NTU depend on the rainy and dry seasons. The type of the process used in treatment plant is disinfection and filtration (Culligan HI FLO 6 Technology). Treated Water Quality is 0.1- 0.3 NTU.

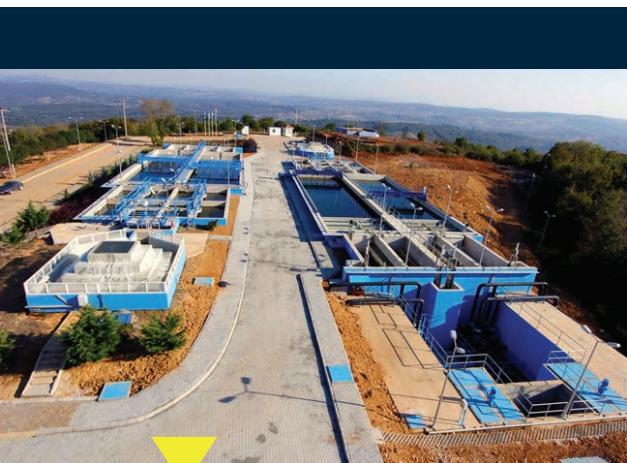
MUNICIPAL WATER TREATMENT PLANT, 11,500 M³/DAY WEJEHEROWO, POLAND



PROJECT DETAILS	
CUSTOMER	PEWIK GDYNIA Sp.o.o.
DURATION	2013-2014
CAPACITY	11.500 m ³ /day
SUPPLY SOURCE	Well
ISSUE	0,78 mg/l iron 0,10 mg/l manganese
RESULTS ACHIEVED	<0,03 iron < 0,01 mg/l manganese
PROJECT CONTENTS:	Culligan HF6 UF 480 (OFSY configuration) Culligan HF9 UR 480

Wejherowo is a Polish city of about 50,000 residents located in the voivodeship of Pomerania. PEWIK GDYNIA Sp.o.o. is a utility company that distributes water throughout the voivodeship of Pomerania and in 2013 commissioned to Culligan the reconstruction and expansion of the water collected from Cedron, the only source of water supply in the Wejherowo area. The plant, inaugurated on 1 August, 2014, ensures the production of high quality water, in compliance with Polish and EU standards, and in line with the requirements of the World Health Organization (WHO), thus improving the conditions of the local population. Water contained high amounts of iron and manganese (Fe 0.76 - Mn 0,10 mg/l) and required a treatment system for the reduction of these two elements (final water quality = Fe <0.03 - Mn <0.01). Thanks to this investment, the Wejherowo residents finally have access to clean and healthy water, which the old plant could no longer provide as a result of decades of the city's industrial development. The characteristic feature of this project is a new water treatment system, whose high efficacy was already demonstrated with the previous modernization of PEWIK GDYNIA. The modern systems for water filtration and treatment meet EU requirements. The application of advanced solutions in automation, control and telemetry allows monitoring basic processes, as well as technical and technological parameters, so that the station can operate in an unmanned mode. The investment implemented by the water supply company has guaranteed the reliability of the water supply system in Wejherowo.

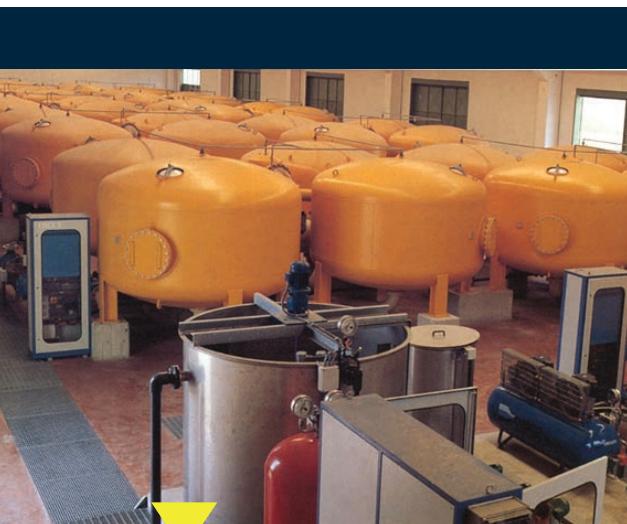
MUNICIPAL WATER TREATMENT PLANT, 15.000 M³/DAY KOCAELI, TURKEY



PROJECT DETAILS	
CUSTOMER	Kocaeli Municipality
DURATION	2010
CAPACITY	15.000 m ³ /day
RAW WATER SOURCE	Kandira Creek
TREATMENT PROCESS	Water Intake Coagulation-Flocculation Unit Sedimentation Unit Conventional Filtration Chlorination-Disinfection Administration Building PLC&SCADA System

Kandıra is a town and district of Kocaeli Province with a population of 50,000 in the Marmara region of Turkey. Water source is Sarisu Creek, which has 200-2000 NTU turbidity. Plant designed with a conventional process technology. Water intake followed by coagulation-flocculation and sedimentation. After the filtration by means of conventional gravity sand filters, water is disinfected by chlorination. Administration building and all auxiliary buildings included the contract. Entire plant is operating by centralized PLC&SCADA system.

SECCHIA WATER TREATMENT PLANT, 128.000 M³/DAY REGGIO EMILIA, ITALY



PROJECT DETAILS

CUSTOMER	AGAC Water and Gas Consortium of Reggio Emilia
DURATION	1986
CAPACITY	128.000 m ³ /day
RAW WATER SOURCE	Secchia River
TREATMENT PROCESS	Pre-treatment, sedimentation Pump Station :5.500 m ³ /h Culligan OFSY 560 Filtration System Culligan Cullar 100 Carbon Filters Administration Building PLCSysytem

The Sassuolo Region is more than famous in Italy and abroad for its production of ceramic tiles. Hundreds of factories of variable importance and size are concentrated there in an area of a few square kilometers. Water is fundamental importance in the manufacture of ceramics, in the preparation of mix, in the definition of the glaze colors and all phases of the process. Raw water source is Secchia River, which has high turbidity levels. Plant designed for the requirement of ceramic industries and drinking water for the population. The plant has been operating by AGAC, the local Gas and Water Consortium. When the plant starts operation in 1986, it was the largest pressurized direct filtration systems in operation in Europe.

ARSENIC REMOVAL PLANT, 38.400 M³/DAY SUBOTICA, SERBIA



PROJECT DETAILS

CUSTOMER	Ministry of Electric and Water Supply
DURATION	2004
CAPACITY	38.400 m ³ /day
RAW WATER SOURCE	Well Water
TREATMENT PROCESS	Activated Sludge
PROJECT CONTENT	Pre-chlorination Coagulation Culligan UFP Mechanical Filtration Administration Building PLC/CSCADA System

Subotica is a city of Serbia has over 100.000 population. Beside Arsenic the well water contains a substantial amount of iron (0.7/0.8 mg/l) and ammonium (0.6-0.7 mgN) • and chlorine gas used here for pretreatment to oxidize arsenic and oxidize iron, remove ammonium, the first two reactions are particularly important for the removal of arsenic, since this coagulated - absorbed on the iron precipitate simultaneously with oxidation. The resulting compound is then trapped in the filtering medium by means of contact flocculation.

MUNICIPAL WASTE WATER TREATMENT PLANT, 25.000 M³/DAY KILIS, TURKEY

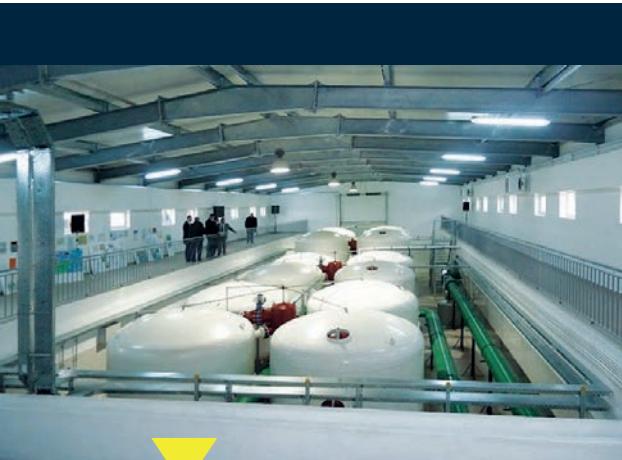


PROJECT DETAILS

CUSTOMER	Kilis Municipality
DURATION	2015
CAPACITY	25.000 m ³ /day
RAW WATER SOURCE	Activated sludge
PROJECT CONTENT	Inlet pumping station Coarse and fine screens Grit chamber Anaerobic tank Aeration tanks Blower building Sludge dewatering decantor building Sludge recycling pumping station Administration building

Kilis ia a southeastern city of Turkey at the border of Syria. The population of the town is 110.000. Culligan has awarded for building the main waste water treatment plant of the city in 2014. The project works include 25.000 m³/day municipal waste water treatment plant, 1400 mt rainwater network pipeline, 13.4 km sewer network line and related other infrastructure. Project successfully completed in 2015.

MUNICIPAL WATER TREATMENT PLANT, 12.000 M³/DAY ODORHEIU SECUIESC (SZEKELYUDVARHELY), ROMANIA



PROJECT DETAILS

CUSTOMER	Aqua Nova Hargita SRL.
DURATION	2008 - 2011
CAPACITY	12.000 m ³ /day
RAW WATER SOURCE	Kukullo River
PROJECT CONTENT	Culligan OFSY Filtration Units For removal of turbidity Culligan Cullar Activated Carbon Units For removal of taste and odour

Odorhei Secuiesc is the second largest city in Harghita County, Transylvania, Romania with a population of approx. 35.000. The customer is the Waterworks Company of Hargita that is responsible for producing treated water from the Kukullo river water and supplying drinking quality water to the city of Odorhei Secuiesc (Szekelyudvarhely). Problems to solve were high turbidity and the variability of raw water characteristics. Required capacity was 12.000 m³/day. The Waterworks needed a water treatment system, which was able to cope with the turbidity peaks of the Kukullo river. They needed to ensure a constant treated water quality supply in every circumstances to the town of Odorhei Secuiesc, even when the river turbidity reached its max (2000 NTU) level.

GAMI WATER TREATMENT PLANT, 150.000 M³/DAY ASHGABAT, TURKMENISTAN

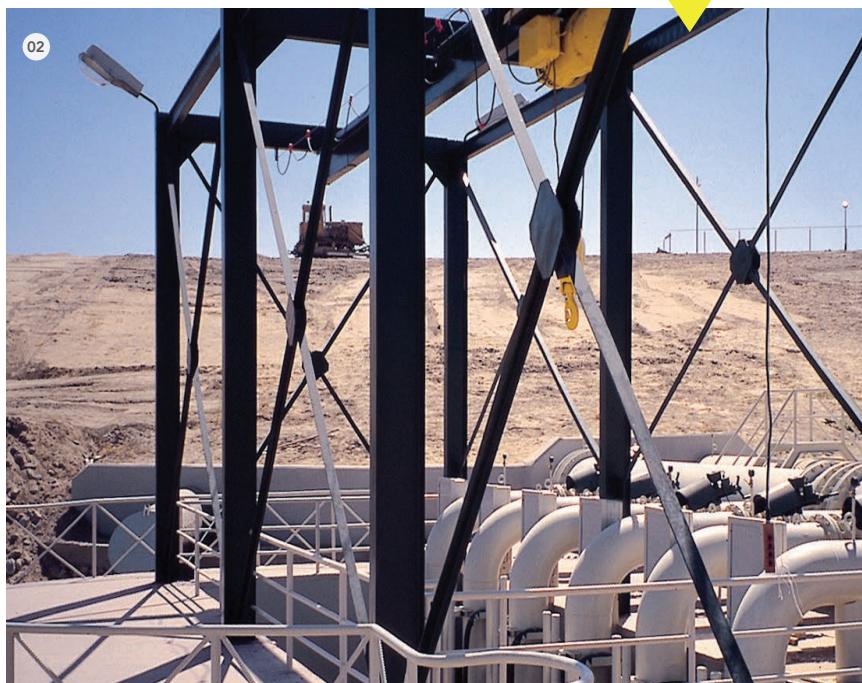


PROJECT DETAILS

CUSTOMER	Turkmenistan Government
DURATION	1993-1994
CAPACITY	150.000 m ³ /day
RAW WATER SOURCE	Karakum Canal
PROJECT CONTENT	Water Intake from Karakum Canal Pre-treatment and Sedimentation Capacity : 24.000 m ³ OFSY 560 Special Filtration Units Pump Station : 3 x 6.500 m ³ /h Reservoirs : 2 x 10.000 m ³ Water supply pipeline Diameter : 01020 Length : 19 km Type : Steel Treatment and Administration Buildings Anti corrosive steel pipe "Insulation Plantll Diameter : 0300 - 02200 PLC& SCADA Systems

Ashgabat, the Capital City of Turkmenistan at south of Karakum Desert has a population over 500,000. The only water source is an artificial canal (Karakum) from Amu Darya River. Karakum Canal, 1400 km long and pass through the Karakum Desert has a very high content of suspended solids (4000 mg/l-1BOOO mg/l) and turbidity. First Phase of Ashgabat treatment plants is located at the Giemi area, which is at the east of the city. Pre-treatment and sedimentation unit is one of the largest in the world with 7,000 sq/mt and 2B,000 m³ capacity. After pre-treatment unit, raw water is send directly to Culligan patented special OFSY Filtration systems. OFSY system achived as low as 0.OB NTU treated water quality with a minimum chemical and energy consumption. Treated water has been pumping with a 19 km 1020 mm diameter steel pipeline to the 2x10.000 m³ treated water reservoirs. Half of the city gets the treated water by gravity from these reservoirs.

01. Turkmenistan President Saparmurat Niyazov inaugurated the plant in 1994.
 02. Karakum Canal water intake submersible pump station.



GYPJAK WATER TREATMENT PLANT, 200.000 M³/DAY ASHGABAT, TURKMENISTAN



PROJECT DETAILS

CUSTOMER	Turkmenistan Government
DURATION	1996-1998
CAPACITY	200.000 m ³ /day
RAW WATER SOURCE	Karakum Canal
PROJECT CONTENT	<p>Water Intake from Karakum Canal Pre-treatment and sedimentation Capacity: 28.000 m³ OFSY 560 Special Filtration Units Pump Stations : 3 x 9.150 m³/h Reservoirs : 2 x 10.000 m³ Water supply pipeline Diameter: 1211220 -1211409 Length : 23 km Type : Steel Gypjak City pipe network Diameter: 12163 -121300 Length : 67 km Type : HDPE Treatment and Administration Buildings PLC& SCADA Systems</p>

Ashgabat, the Capital City of Turkmenistan at south of Karakum Desert has a population over 500.000. The only water source is an artificial canal (Karakum) from Amu Darya River. Karakum Canal, 1400 km long and pass through the Karakum Desert has a very high content of suspended solids (4000 mg/l-18000 mg/l) and turbidity. Second Phase of Ashgabat treatment plants is located at the Kipchak area, which is at the west of the city. Pre-treatment and sedimentation unit is one of the largest in the world with 7.500 sq/mt and 80.000 m³ capacity. After pre-treatment unit, raw water is send directly to Culligan patented special OFSY Filtration systems. OFSY system achieved as low as 0.08 NTU treated water quality with a minimum chemical and energy consumption. Treated water has been pumping with total 23 km of 1220 mm and 1400 mm diameter steel pipeline to the 2 x 10.000 m³ treated water reservoirs at a high elevation point of the city. The rest of the city gets the treated water by gravity from these reservoirs.

- 01. Pretreatment - Sedimentation Unit
- 02. High Pressure Treated Water Pump Station 9,020 m³/h
- 03. OFSY 560 Special Filtration Building



NZOVE 1 & 2 MUNICIPAL WATER TREATMENT PLANTS, 80.000 M³/DAY + 25.000 M³/DAY KIGALI, RWANDA



PROJECT DETAILS

CUSTOMER	WASAC Water and Sanitation Corporation of Rwanda
DURATION	2016 - 2017
CAPACITY	First Phase: 40.000 m ³ /day Second Phase: 65.000 m ³ /day
RAW WATER SOURCE	Nyabarongo River
TREATMENT PROCESS	Sedimentation, Disinfection, Culligan OFSY Filtration
PROJECT CONTENT	<p>Water Intake Intake pump station: 1.750 m³/h + 4.565 m³/h Sedimentation Culligan OFSY 480 Filtration System Treated Water reservoirs 1 x 1.000 m³ 2 x 2.000 m³ 1 x 5.000 m³ Treated Water Pump Stations 1 x 4.565 m³/h 1 x 1.750 m³/h Hypochlorite Production Plant Main water supply pipeline 7.5 km (0400-0600) PLC&SCADA System Administration Building</p>

Kigali is the capital City of Rwanda with a population over 1 million. Nyabarongo River is one of the main water sources of the city for drinking water. Water shortage is one of the main issues for the city. Nyabarongo River water has a main problem of high content of iron and manganese besides high turbidity and suspended solids. Culligan built a pilot plant to test best technology for treating iron and manganese and turbidity in 2014. After the successful test results process designed accordingly and Culligan OFSY 480 Filtration units upgraded and modified according to treat high iron and manganese content. Due to high water demand, first phase of the project completed within 6 months and inaugurated in 2016. Second phase inauguration projected for July 2017.

01. Pretreatment and OFSY Filtration Building. Nzove-1 Plant.

02. OFSY Filtration Building. Nzove-1 Plant.

03. His Excellency Paul Kagame, President of Rwanda, US Ambassador and Culligan Executives, during the inauguration of Nzove-1 Water Treatment Plant.

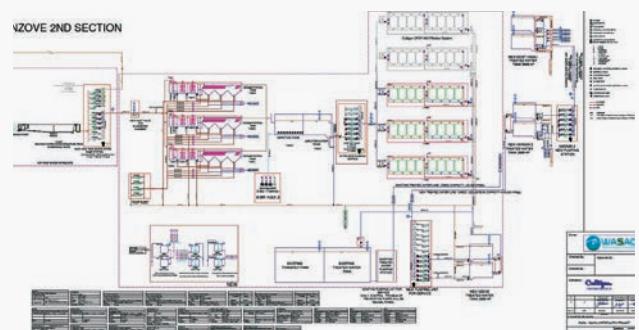
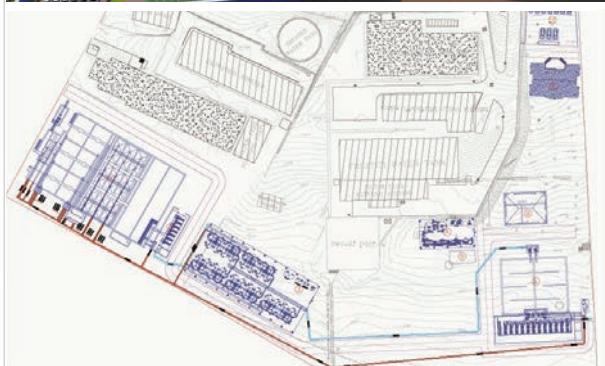


NZOVE 1 & 2 WATER TREATMENT PLANTS (PHASE 2)

PROJECT DETAILS

CONTENT OF NZOVE-2 PROJECT

- Extending the capacity of Nzove-1 Plant from 25.000 m³/day to 40.000 m³/day
- OFSY Treatment Plant 65.000 m³/day
- Raw water intake from Nyabarongo river
- Pre-treatment - sedimentation
- 2.000 m³ Nzove treated water reservoir
- 2.000 m³ Karama Hill treated water reservoir
- 5.000 m³ Mount Kigali treated water reservoir
- 5 km NO 600 steel pipe line
- 2.8 km NO 400 steel pipe line
- 2 x High Pressure pump stations
- Hypochlorite production plant
- Administration building
- PLC & SCAOA System



01. General Layout of Nzove-2 Water Treatment Plant.
02. Plant Layout Nzove-1-2 Projects.
03. Construction of the 2000 m³ Nzove Treated Water Reservoir and 4,375 m³/h high pressure treated water pump station. Nzove-2 Plant Content



JEBEL ALI RE-MINERALIZATION PLANT, JEBEL ALI, 230.400 M³/DAY DUBAI, U.A.E.

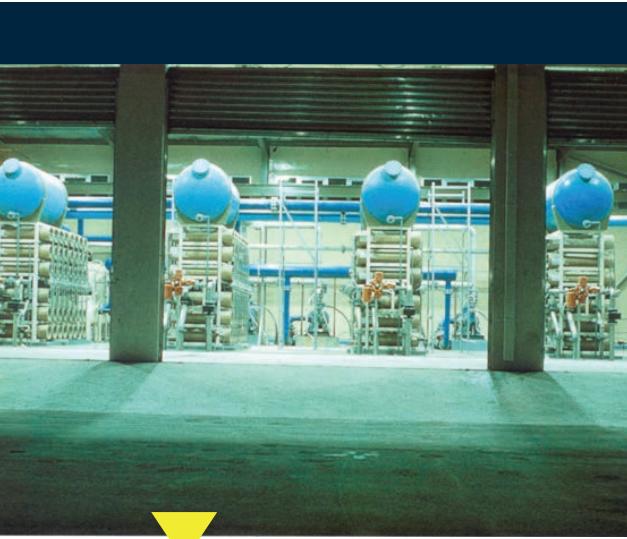


PROJECT DETAILS

CUSTOMER	Jebel Ali Power Authority
DURATION	1991
CAPACITY	230.400 m ³ /day
RAW WATER SOURCE	Ssa Water
TREATMENT PROCESS	MSF Evaporation, Deionization, Rs-mineralization

The high-pressure boilers of the power station in Jebel Ali, United Arab Emirates, are fed with seawater distilled by three MuHistage Flash (MSF) evaporators and polished by a Mixed Bed Deionizer. The steam produced by the boilers feeds turbines and alternators for the production of electrical power as well as MSF Evaporators. These are oversized so as to distil more water than it used by the boilers. Suitable minerals are added to the excess distilled water in order to attain the quality established by WHO Standards for potable use. The Culligan re-mineralization System in Jebel Ali has been installed in two different phases: The first phase for 96.000 m³/day and the second phase 134.400 m³/day. The drinking water produced by the two installations is then conveyed to the Dubai City.

UMM AI QUWAYN SEA WATER DESALINATION PLANT, 9.000 M³/DAY UMM AI QUWAYN, U.A.E.

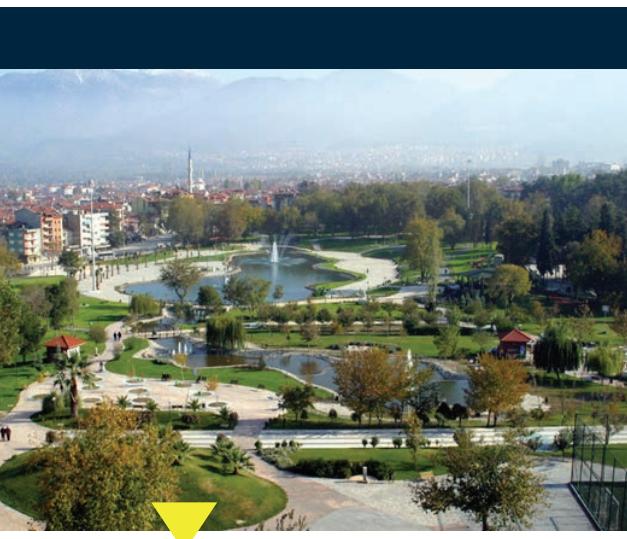


PROJECT DETAILS

CUSTOMER	Ministry of Electric and Water Supply
DURATION	1986
CAPACITY	9.000 m ³ /day
RAW WATER SOURCE	Sea Water
TREATMENT PROCESS	Activated Sludge
PROJECT CONTENT	Pre-treatment Culligan Hi Fl06 UF-UR 84 Culligan SW Reverse Osmosis Post Treatment Treated Water Storage Tank: 4.500 m' Elevated Storage Tanks : 2 x 2.300 m' Pumping Stations Mimic Control Panel Administration Building

The only source of water in Umm-Al Quwayn, one of the seven Arab Emirates which back in 1971 formed a single independent State, is sea water from Arab Gulf. In 1983 the Ministry of Electricity and Water Supply of the U.A.E. called for international bids for the supply and commissioning of an RO desalination plant and supply the 15.000 inhabitants of Umm Al Quwayn with 9.000 m³/day of potable water. Only 22 out of the 27 companies pre-qualified and on the 6th June 1984 the tender was assigned to Culligan. In summer 1986 the desalination plant was handed over to the operators of the Ministry of ElectriCity and Water and is now delivering all the potable water required for distribution by the local waterworks.

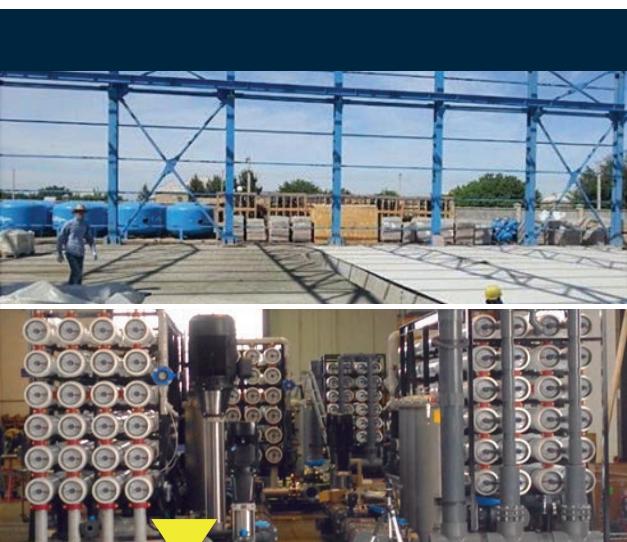
MUNICIPAL ARSENIC REMOVAL PLANT, 70.000 M³/DAY MANISA, TURKEY



PROJECT DETAILS	
CUSTOMER	Manisa Water and Sanitation Administration
DURATION	2010
CAPACITY	70.000 m ³ /day
RAW WATER SOURCE	Well Water
PROJECT CONTENT	Raw Water Reservoir : 2.000 rn3 Pump Station : 3.100 m ³ /h Arsenic Treatment Plant: Culligan Special Hi RoS UFP 480 Units Treated Water Reservoir: 2000 rn3 Treatment Plant buildings and administration building. PLC&SCADA System

Manisa is one of the well industrialized city with about 350.000 population in the west of Turkey. Main water sources are the wells located around the city. All underground water sources contain high Arsenic content in the area, which is over 80 ppb. Raw Water Arsenic Content >80ppb WHO required arsenic content <10ppb Culligan Achieved Results 3-6ppb

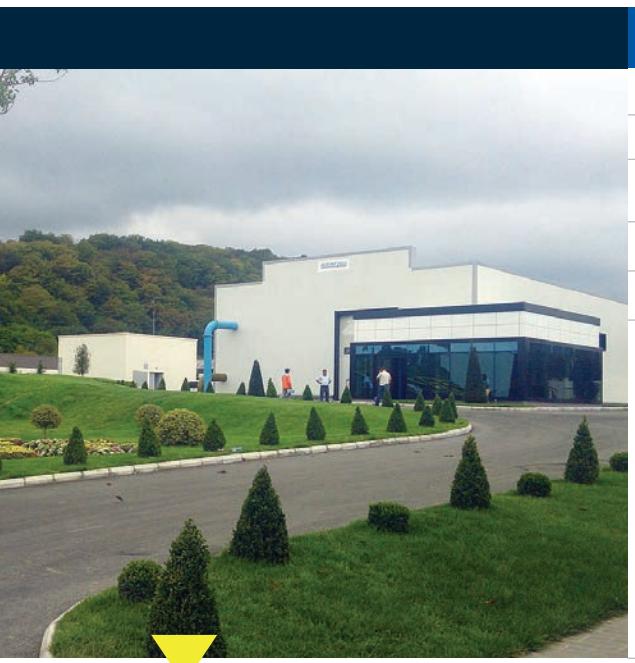
MUNICIPAL WATER TREATMENT PLANT, 30.000 M³/DAY MARY, TURKMENISTAN



PROJECT DETAILS	
CUSTOMER	Mary City Water Adminisb'alion
DURATION	2014 - 2016
CAPACITY	30.000 m ³ /day
RAW WATER SOURCE	Murghab River
TREATMENT PROCESS	Filtration + Reverse Osmosis
PROJECT CONTENT	Water Intake from Murghab River Inlet Pumping Station Culligan OFSV 480 Filtration System Culligan IV RO Reverse Osmosis Systems Treated Water Reservoir: 3.000 m ³ On-site Hypochlorite Manufacturing Plant PLC&SCADA System Administration building

The ancient city of (Mary) was an oasis city on the. Mary is one of the largest city in Turkmenistan with a population of 123.000 in the Southeastern Province of Turkmenistan. Murghab River is one of the important water sources in the city. The main problem in the Murghab River water is turbidity and high TOS level, especially high sulfate content. Chosen Culligan process for the plant Is high efficient patented OFSV flltraUon units for high turbidity and followed by Culligan IV RO Reverse Osmosis units for high TOS and sulfate. Culligan also built an on-site Hypochlorite Manufacturing Plant from salt (NaCl)nearby the plant having a capacity of 272kglday Cl. Culligan has awarded in 2014 and plant completed inaugurated in 2016.

MUNICIPAL WATER TREATMENT PLANT, 20.000 M³/DAY QUBA, AZERBAIJAN



PROJECT DETAILS	
CUSTOMER	AZERSU Azerbaijan Waterworks Company
DURATION	2012-2013
CAPACITY	20.000 m ³ /day
RAW WATER SOURCE	Quba River
TREATMENT PROCESS	Disinfection + Culligan OFSY Filtration
PROJECT CONTENT	Raw Water Reservoir: 2.000 m ³ Sedimentation Culligan OFSY 4BO Filtration System Treated Water reservoir 2.000 m ³ Pump Station 1 .000 m ³ /h PLC&SCADA Sytem Administration Building

Quba is a city in and the capital of the Quba Rayon (district) of Azerbaijan. It has a population of 4B.000. Raw water source is Quba River which has very high turbidity and suspended solids. Turbidity level of Quba River is always between 200-2000NTU. Treated water quality always between 0.1- 0.3 NTU Culligan has awarded in 2012 and plant completed inaugurated in 2013.

MUNICIPAL WASTE WATER TREATMENT PLANT, 20.000 M³/DAY ORHANGAZI, TURKEY



PROJECT DETAILS	
CUSTOMER	BUSKI, BURSA city water and sanitation administration
DURATION	2016
CAPACITY	20.000 m ³ /hour
RAW WATER SOURCE	Well Water
TREATMENT PROCESS	Activated sludge
PROJECT CONTENT	Inlet pumping station Coarse and fine screens Grit chamber Anaerobic tank Aeration tanks Blower building Sludge dewatering decantor building Sludge recycling pumping station Administration building

Orhangazi is a rural district of in . Orhangazi Town is in a high industrialized area and has a population of 60.000 people. Municipal wastewater has been one of the main environmental issues for years in the region. Plant designed and built for the wastewater collected from city sewer network and surrounding industrial zones. Treatment is by activated sludge process using fine bubble diffusers in aeration tanks to reduce the COD and BOD parameters reaching the acceptable discharge limits to river. Culligan won the tender in 2015 and plant completed in 2016.

VEZIRKOPRU WATER INFRASTRUCTURE PROJECT, 57.000 M³/DAY SAMSUN, TURKEY




PROJECT DETAILS	
CUSTOMER	Vezirkopru District Waterworks
DURATION	2008 - 2009
CAPACITY	57.000 m ³ /day
RAW WATER SOURCE	River
CITY WATER PIPING NETWORK	165.338 mt.
PROJECT CONTENT	River water intake Cascade ventilation pond Fast and slow mixing units Sedimentation Culligan OFSY Filtration units Chlorination-disinfection
	Reservoirs 2 x 3.000 m ³ 2 x 2.500 m ³ 1 x 2.000 m ³ 2 x 1.500 m ³ 4 x 1.000 m ³ Pipeline 134.351 mt PVC 13.400 mt HDPE 17.586 mt Steel PLC&SCADA System

Vezirkopru is a district of Samsun Province of Turkey with a population of 102.000 people. Vezirkopru Basalan Group Drinking Water Treatment Plant and Related Infrastructure Project tender was won by Culligan in 2008 and completed in 2009. Project includes 57.000 m³/day water treatment plant, 165 km water distribution network and all related infrastructure works.

INDUSTRIAL WASTE WATER TREATMENT PLANT, 24.000 M³/DAY USHAK, TURKEY



PROJECT DETAILS	
CUSTOMER	Ushak Leather Industrial Zone
CITY	Ushak, TURKEY
YEAR	2004
CAPACITY	24.000 m ³ /day
TREATMENT PROCESS	Leather Industrial Waste Water Treatment
PROJECT COMPONENTS	Inlet pumping station Coarse and fine screens Grit chamber Anaerobic tank Aeration tanks Blower building Sludge dewatering decanter building Sludge recycling pumping station Administration building

Ushak is a city in the interior part of the Aegean Region of Turkey. The city has a population of 500.000 and is the capital of Ushak Province. Ushak is one of the most famous leather fabrication location in the world. Ushak Organized Leather Industrial Zone has 194 leather factories. The region is very rich in terms of farming and agricultural production. So, it was very important to protect the natural water sources from industrial waste. Project was one of the most important investment in the Ushak. Culligan awarded in 2002 and project completed in 2004.

CULLIGAN CONTAINERIZED WATER TREATMENT UNITS FOR CHALLENGING ENVIRONMENTS

Culligan's water treatment systems can be installed into containers to create self-contained water treatment systems. Thanks to Culligan's modular equipment designs entire water treatment systems can be installed that are tailored to your feed water parameters.

Culligan Container Systems are ideal for:

- Water treatment for drinking water in remote locations where municipal supplies are not available. Up to 20.000 population.
- Providing drinking water and sanitization for camps of workers building large industrial plants.
- Emergency response in areas hit by natural disasters where the water network has been damaged
- Army Camps
- Mobile drinking water units for Refugee Camps, Red Cross and other institutions
- Temporary water treatment during plant shutdowns or emergency repairs
- Wastewater treatment systems for small communities, hospitals, hotels, commercial complexes, etc.
- Industrial process water treatment plants

DISINFECTION	Chlorine, C102, Ozone etc
FILTRATION	Micro, Multi-Media, Ultrafiltration
REVERSE OSMOSIS	Brackish Water, Sea Water
DEIONISATION	PEDI, CEDI, Automatic OI
ORGANIC MATTER, TASTE, ODOR	Activated Carbon, GAC
SOFTENING	Cationic Resin
WASTEWATER TREATMENT	Biological, Chemical, BOD, COD
WASTE WATER REUSE	MBR

Culligan Containerized Water Treatment Units can be designed for any raw water sources such as:

- River
- Dam
- Lake
- Sea
- Underground water
- Storm water

CUSTOMIZED SOLUTIONS

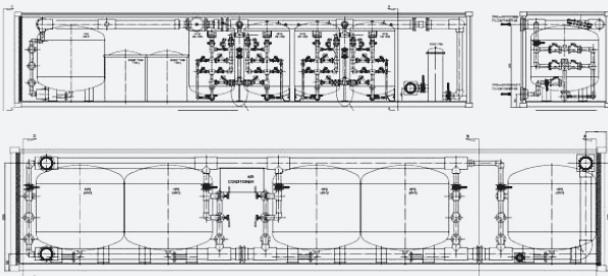


12 X CONTAINERIZED WATER TREATMENT PLANTS, 25.000 M³/DAY MOSCOW, RUSSIA



PROJECT DETAILS

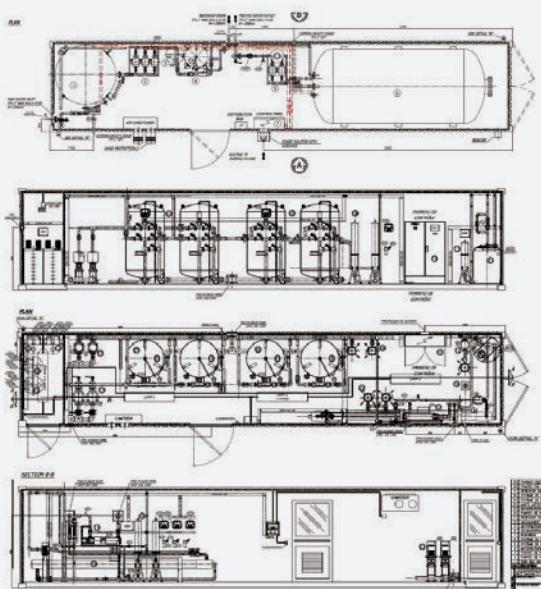
CUSTOMER	Mosvodokanal
CITY	Moscow RUSSIA
CAPACITY	25,000 m ³ /day
QUANTITY	12 x Containerized Treatment Plants (20-284 m ³ /h)
EQUIPMENT	Pressure Filters, Softeners, Reverse Osmosis, Disinfection, Remote Monitoring
MARKET	Municipal



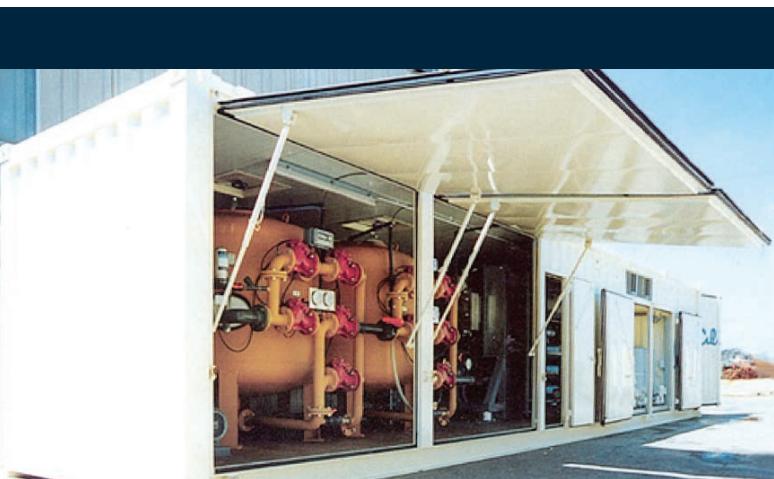
4 X CONTAINERIZED DRINKING WATER TREATMENT PLANTS, 4 X 336 M³/DAY ARMY CAMPS, ALGERIA

PROJECT DETAILS

CUSTOMER	Petrofac for Algerian Army
APPLICATION	Drinking water for army camp
WATER SOURCE	Well water
EQUIPMENT	4 containers - HF9 filtration and disinfection
LOCATION	ALGERIA
SIZE	4 x 336 m ³ /day



2 X CONTAINERIZED SEA WATER DESALINATION PLANTS, 2 X 240 M³/DAY ARMY CAMPS, EGYPT



PROJECT DETAILS

CUSTOMER	The Army Water Department
COUNTRY:	Egypt
CAPACITY	2 x 240 m ³ /day
RAW WATER SOURCE	SEAWATER
PROJECT CONTENT	Hi Flo 6 Filtration Reverse Osmosis (R.O) Membranes Disinfection PLC&SCADA System



The Army Water Department of Egypt chose a logical, economic and flexible solution of the problem of drinking water need of the troops: two systems for the desalination of seawater, assembled in containers easily transported by truck and each having capacity of delivering 240 m³/day of potable water. The place at the border area in the desert area to supply water to the troops, each container is fully self-contained and it includes the whole water treatment plant from the pump drawing raw water, to the pump distributing treated water, the system can deliver treated water to WHO Standards after 30 minutes from arrival on site.

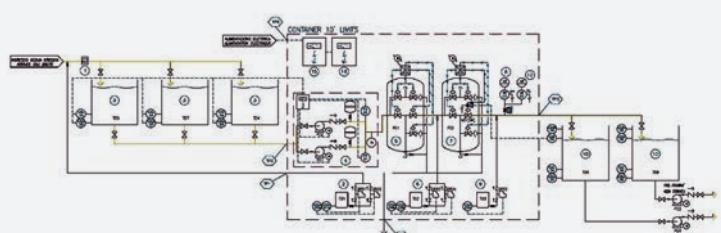


CONTAINERIZED DRINKING WATER TREATMENT PLANT, 50 M³/DAY TRIPOLI AIRPORT, LIBYA



PROJECT DETAILS

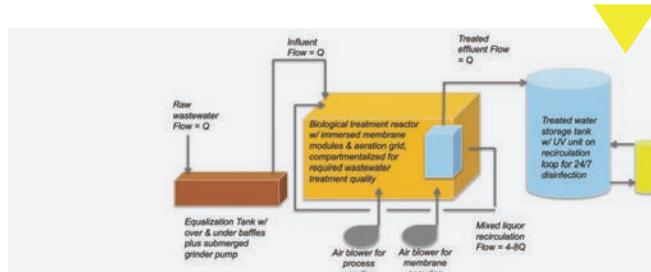
CUSTOMER	Bonatti
APPLICATION	Drinking Water
WATER SOURCE	Well Water
LOCATION	Tripoli Airport Construction Camp Site
CAPACITY	50 m ³ /day, potabilization



CONTAINERIZED MEMBRANE BIO REACTOR MBR WASTE WATER TREATMENT SYSTEM

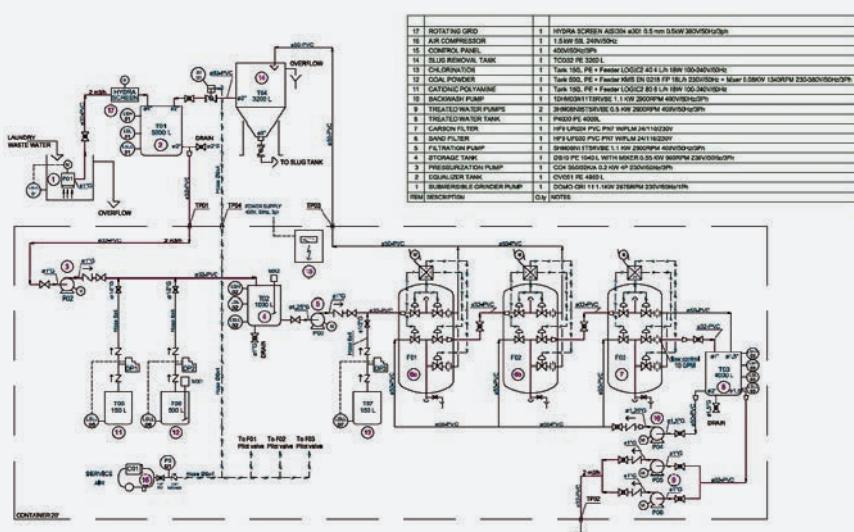


The Culligan MBR system uses flat sheet membranes with a pore size of just 0.15 μm resulting in a clear, highly purified effluent that is suitable for reuse or further treatment by other Culligan technologies such as reverse osmosis. The MBR process is stable across a range of conditions and can manage high levels of variability. Culligan's containerized MBR systems are available in two standard models of 25 m^3/day and 50 m^3/day flow rates and are fully installed within standalone 20 - or 40 - foot containers. The MBR can be used for a variety of applications such as commercial sites including shopping malls, hotels/resorts and sports centers; small municipal communities; food & beverage, chemical and pharmaceutical industries; treating water for reuse as irrigation in agriculture for irrigation; and relief aid and military camps.



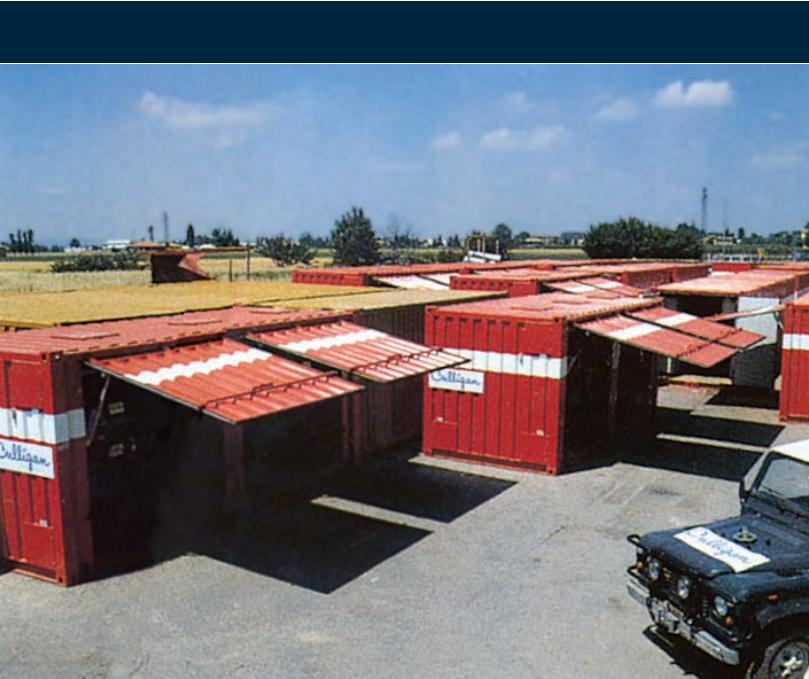
CONTAINERIZED WASTE WATER TREATMENT PLANTS, 4 X 10 m^3/DAY ARMY CAMPS, LIBYA

PROJECT DETAILS



CUSTOMER	Bonatti
APPLICATION	Waste Water Treatment
EQUIPMENT	4 containers - HF9 filtration and disinfection
LOCATION	Tripoli Airport Construction Camp Site, LIBYA
CAPACITY	4 x 10 m^3/day Waste Water Treatment Plants

11 X CONTAINERIZED EMERGENCY DRINKING WATER TREATMENT PLANTS, 17.920 M³/DAY MINISTRY OF CIVIL DEFENSE, ITALY



With the aim of reinforcing its system for the emergency treatment of drinking water, in 1990 the Ministry of Civil Defence of Italy called a tender for the supply of mobile plants capable of making surface water (from, rivers, lakes, ponds, etc.), brackish water and sea water potable, safe and pleasant-tasting. The Culligan offer was considered outstanding from the point of view of the technical solutions, reliable and economically competitive as well as supported by experience in the supply of similar plants all over the world. Culligan was therefore awarded the contract for the supply of:

- 7 containerized potabilization plants for fresh water, with output capacity of 2.160 m³/day each
- 2 containerized potabilization plants for brackish water, with output capacity of 700 m³/day each
- 2 containerized potabilization plants for sea water, with output capacity of 700 m³/day each

All the potabilization plants were designed and tailored to the real needs of the customer who better than anyone else knows the actual operation conditions in emergency situations. The plants undergo regular, methodical maintenance to ensure that they are always in good working order whenever it becomes necessary to put them to use.

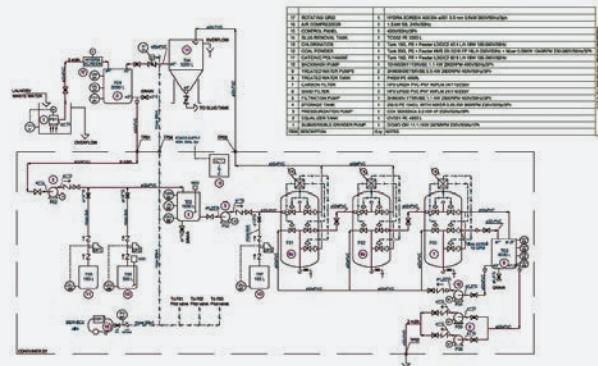
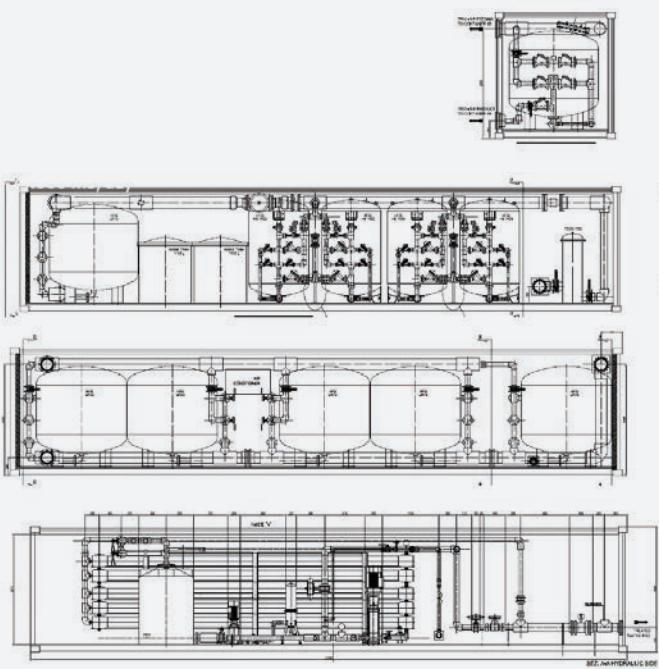
PROJECT DETAILS

CUSTOMER	Ministry of Civil Defense
DURATION	1990 - 1991
CAPACITIES	7 x 2.160 m ³ /day from surface water sources 2 x 700 m ³ /day from brackish water sources 2 x 700 m ³ /day from sea water
RAW WATER SOURCE	Surface Water, Brackish Water and Sea Water
TREATMENT PROCESS	Sedimentation, Disinfection, Culligan OFSY Filtration
PROJECT CONTENT	<p>7 x Potabilization Plants for Surface Water 7 x 20' containers Disinfection Flocculation, coagulation OFSY Filters Power Generation Control Panel</p> <p>2 x Potabilization Plants for Brackish Water 2 x 40' containers Disinfection pH adjustment Flocculation, coagulation OFSY Filters Dechlorination High Pressure pumps 2 Reverse Osmosis Systems for Brackish water Power Generation Control Panel</p> <p>2 x Potabilization Plants for Sea Water 2 x 40' containers Disinfection pH adjustment Flocculation, coagulation OFSY Filters Dechlorination High Pressure pumps Reverse Osmosis Systems for Sea Water Power Generation Control Panel</p> <p>2 x Potabilization Plants for Sea Water 2 x 40' containers Disinfection pH adjustment Flocculation, coagulation OFSY Filters Dechlorination High Pressure pumps Reverse Osmosis Systems for Sea Water Power Generation Control Panel</p>

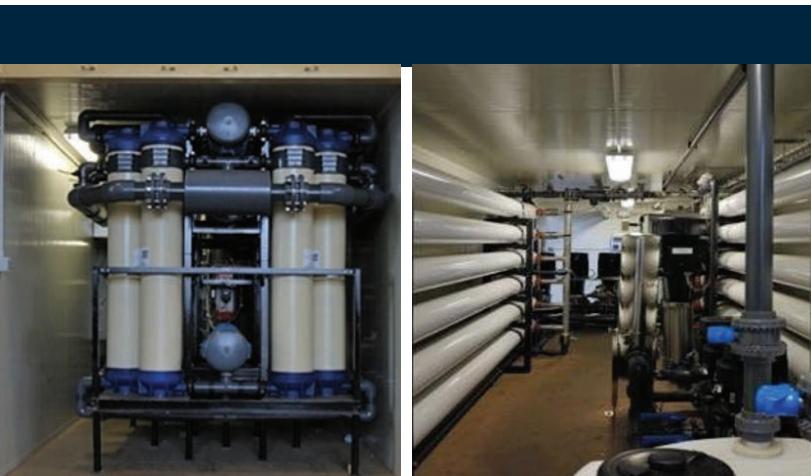
3 X CONTAINERIZED INDUSTRIAL PROCESS WATER TREATMENT PLANTS, 3 X 2.760 M³/DAY CANADA

PROJECT DETAILS

CUSTOMER	CRNL
APPLICATION	Industrial/Oil Sands recovery
CAPACITY	3x2.760 m ³ /day containerized plants
EQUIPMENT	Pre-treatment Double Pass Reverse Osmosis
LOCATION	Western CANADA
CONTAINER SIZE	3 x 40' Containers



ULTRAFILTRATION PLANT, 4,320 M³/DAY FRANCE



PROJECT DETAILS

CUSTOMER	Arcelor Mittal Steelworks, France
APPLICATION	Process Water - Cooling
EQUIPMENT	Ultrafiltration - Reverse Osmosis
MARKET	Industry - Steelworks
LOCATION	France
CAPACITY	4.320 m ³ /day

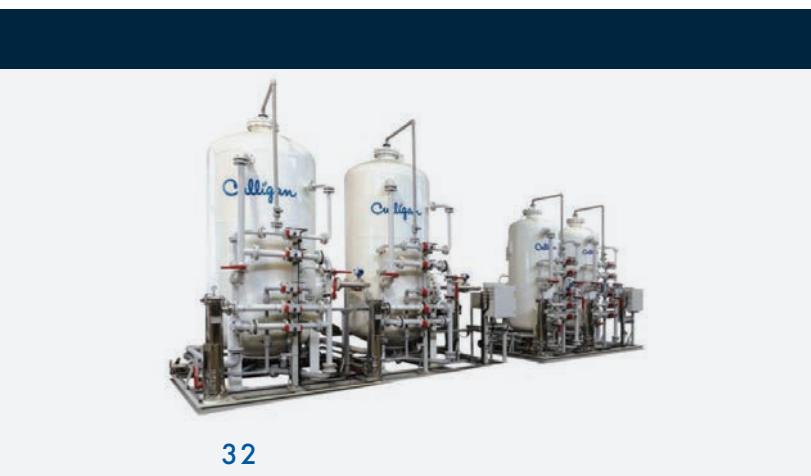
SEA WATER REVERSE OSMOSIS UNIT, 336 M³/DAY LIBYA



PROJECT DETAILS

CUSTOMER	ENI
APPLICATION	Drinking Water & Heating
EQUIPMENT	Filtration - Reverse Osmosis
MARKET	Oil & Gas - Off-shore
LOCATION	Libya
CAPACITY	336 m ³ /day

ULTRAPURE WATER PRODUCTION PLANT, 960 M³/DAY CHILE



PROJECT DETAILS

CUSTOMER	Endesa
APPLICATION	Ultrapure water
EQUIPMENT	Filtration - Demineralization
MARKET	Power
LOCATION	Chile
CAPACITY	960 m ³ /day

REVERSE OSMOSIS PLANT 240 M³/DAY KAZAKHSTAN

		PROJECT DETAILS
		CUSTOMER Isir
		APPLICATION Process Water & Heating
		EQUIPMENT Filtration - Reverse Osmosis
		MARKET Oil & Gas - Off-shore
		LOCATION Caspian Sea - Kazakhstan
		CAPACITY 240 m ³ /day

SEA WATER REVERSE OSMOSIS PLANT, 720 M³/DAY FAR EAST

		PROJECT DETAILS
	CUSTOMER Vivendi	
	APPLICATION Power Station	
	EQUIPMENT Double Pass R/O	
	MARKET Power	
	LOCATION Far East	
	CAPACITY 720 m ³ /day	

REVERSE OSMOSIS – DEMINERALIZATION, 7,680 M³/DAY ALGERIA

		PROJECT DETAILS
		CUSTOMER ASS - Saipem / Sonatrach
		APPLICATION Process and Potable Water
		EQUIPMENT Reverse Osmosis - Demineralization
		MARKET Oil & Gas
		LOCATION Algeria
		CAPACITY 4 x 1.920 m ³ /day
		Page Number 33

FILTRATION AND REVERSE OSMOSIS – DEMINERALIZATION PLANT, 60 M³/DAY NORTH SEA



PROJECT DETAILS

CUSTOMER	Maersk
APPLICATION	Potable Water Production
EQUIPMENT	Multimedia & Sand Filtration, Microfiltration, Sea water Reverse Osmosis
MARKET	Oil & Gas (offshore)
LOCATION	North Sea Oil Platform
CAPACITY	60 m ³ /day

OIL PLATFORM WATER TREATMENT PLANT, 2 X 288 M³/DAY KAZAKHSTAN



PROJECT DETAILS

CUSTOMER	Isir-Italy
APPLICATION	Potable water production
EQUIPMENT	Sea water RO
MARKET	Oil & Gas (offshore)
LOCATION	Kazakhstan oil platform
CAPACITY	2 x 288 m ³ /day

ULTRA-SOFTENER PLANT, 1.080 M³/DAY CANADA



PROJECT DETAILS

CUSTOMER	Petrobank
APPLICATION	Oil Sands Recovery
EQUIPMENT	Ultra-Softener
MARKET	Oil & Gas
LOCATION	CANADA
CAPACITY	1.080 m ³ /day

REMINERALIZATION PLANT, 230.400 M³/DAY DUBAI, U.A.E.

PROJECT DETAILS	
CUSTOMER	Dubai Electricity
EQUIPMENT	Remineralization
MARKET	Power
LOCATION	United Arab Emirates
CAPACITY	96.000 m ³ /day (phase 1) 134.400 m ³ /day (phase 2)

SOFT DRINKS PRODUCTION WATER SUPPLY PLANT, 1.200 M³/DAY ANGOLA

PROJECT DETAILS	
CUSTOMER	Refriango
APPLICATION	Soft Drinks Production
EQUIPMENT	Ultrafiltration - Reverse Osmosis
MARKET	Food & Beverage
LOCATION	Angola
CAPACITY	1.200 m ³ /day

ULTRA–PURE WATER TREATMENT PLANT, 336 M³/DAY ITALY

PROJECT DETAILS	
CUSTOMER	Cabot S.pA
APPLICATION	Ultra pure water
EQUIPMENT	Filtration - Reverse Osmosis - Electro deionization
MARKET	Power
LOCATION	Italy
CAPACITY	336 m ³ /day

PULP & PAPER INDUSTRY DEMINERALIZATION PLANT, 1,680 M³/DAY PORTUGAL



PROJECT DETAILS

CUSTOMER	Enkrott / Portucel Co.
APPLICATION	Water treatment for power plant in paper plant
EQUIPMENT	Demineralization
MARKET	Pulp & Paper
LOCATION	Portugal
CAPACITY	1,680 m ³ /day

AVOCADO FARM CHLORIDE REDUCTION PLANT, 528 M³/DAY CALIFORNIA, U.S.A.



PROJECT DETAILS

CUSTOMER	Avacado Farm
APPLICATION	Chloride Reduction in an Avocado Farm
EQUIPMENT	Reverse Osmosis
MARKET	Agriculture
LOCATION	California, U.S.A.
CAPACITY	528 m ³ /day

ULTRA-PURE WATER PRODUCTION PLANT, 108 M³/DAY TEXAS, U.S.A.



PROJECT DETAILS

CUSTOMER	Colgate - Palmolive
APPLICATION	Ultrapure Water
EQUIPMENT	Pre-treatment & Double Pass RO
MARKET	Manufacturing
LOCATION	Texas
CAPACITY	108 m ³ /day

ULTRA-PURE WATER FOR CHEMICAL INDUSTRY, 528 M³/DAY KAZAKHSTAN



PROJECT DETAILS

CUSTOMER	Uhdenora
APPLICATION	Ultra-pure water
EQUIPMENT	Filtration & Demineralization
MARKET	Chemical
LOCATION	Kazakhstan
CAPACITY	528 m ³ /day

ULTRA-PURE WATER TREATMENT PLANT FOR CHEMICAL INDUSTRY, 3.840 M³/DAY PERU



PROJECT DETAILS

CUSTOMER	Uhdenora
APPLICATION	Ultra-Pure Water
EQUIPMENT	Ultrafiltration - Reverse Osmosis - Demineralization
MARKET	Chemical
LOCATION	Peru
CAPACITY	3.840 m ³ /day



ULTRA-PURE WATER PRODUCTION PLANT FOR MICRO-ELECTRONICS INDUSTRY, 480 M³/DAY ITALY



PROJECT DETAILS

CUSTOMER	X-Group
APPLICATION	Ultra-Pure water
EQUIPMENT	Filtration - Reverse Osmosis - Electrodeionization
MARKET	Electronics
LOCATION	Italy
CAPACITY	480 m ³ /day

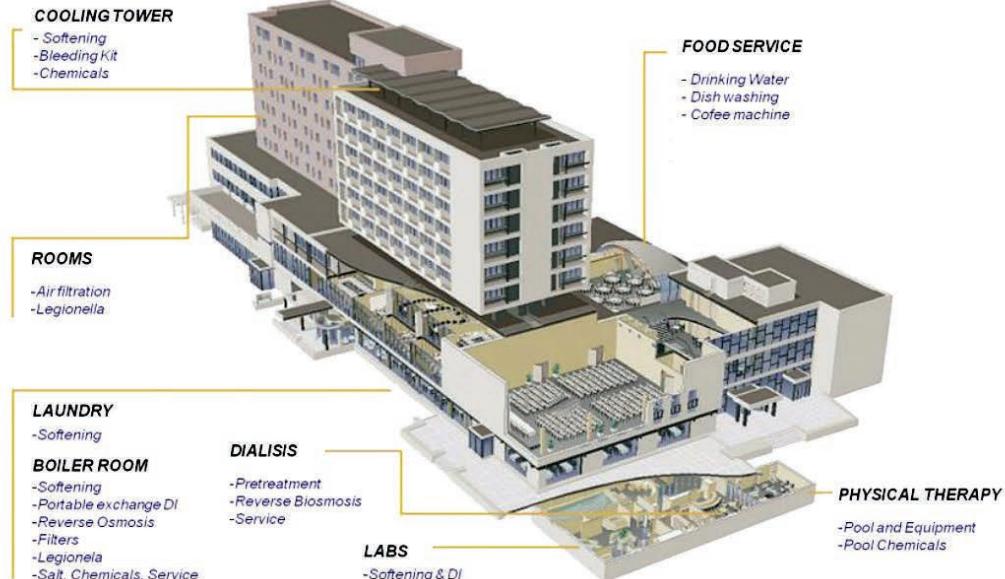
ULTRA-PURE WATER PRODUCTION FOR STEEL INDUSTRY, 2.160 M³/DAY EGYPT



PROJECT DETAILS

CUSTOMER	Danieli
APPLICATION	Ultra-Pure water
EQUIPMENT	Ultrafiltration - Reverse Osmosis - Demineralization
MARKET	Industrial - Steelworks
LOCATION	Egypt
CAPACITY	2.160 m ³ /day

CULLIGAN PROVIDES TOTAL WATER TREATMENT SOLUTION FOR HEALTHCARE FACILITIES. EQUIPMENT/CHEMICALS/SERVICE



AMERICAN HOSPITAL, DUBAI, U.A.E.



PROJECT DETAILS	
CUSTOMER	American Hospital Dubai
EQUIPMENT	Central Filtration & Softening System RO for Hemodialysis, Flushing of chilled water
MARKET	Healthcare
LOCATION	Dubai, UAE

UTE BELLVITGE HOSPITAL BARCELONA, SPAIN



PROJECT DETAILS	
CUSTOMER	UTE Bellvitge
EQUIPMENT	General softened water and water for hemodialysis Equipment: 4 x softeners and reverse osmosis unit
MARKET	Healthcare
LOCATION	Spain, Barcelona
CAPACITY	Softened water flow 3600 m ³ /day Hemodialysis water flow 2270 l/h

RIOVENA HOSPITAL, RIOVENA, SPAIN



PROJECT DETAILS

CUSTOMER	Facilita Riovena (hospital facilities management company)
APPLICATION	Water treatment for hemodialysis, ring main system & Thermal disinfection system
EQUIPMENT	Double pass RD for ultra-pure water, ring main and control system
MARKET	Healthcare
LOCATION	Spain
CAPACITY	3500 l/h dialysis water via 42 dialysis stations

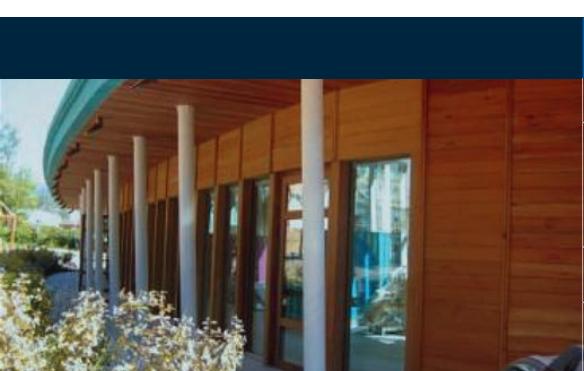
NAVARRA HOSPITAL, NAVARRE, SPAIN



PROJECT DETAILS

CUSTOMER	Navarre Health Service (Navarra Hospital)
APPLICATION	Water treatment for hemodialysis, acid dosing system
EQUIPMENT	3x Reverse Osmosis Units (1 x1 st stage, 2 in parallel 2 nd stage)
MARKET	Healthcare
LOCATION	Spain
SIZE	1500 l/h via 20 dialysis stations

PISTOIA HOSPITAL, PISTOIA, ITALY



PROJECT DETAILS

CUSTOMER	Pistoia Hospital
EQUIPMENT	Central Filtration & Softening System, Hemodialysis, Ring main system, Flushing of chilled water
MARKET	Healthcare
LOCATION	Pistoia Hospital, Italy

SAN ANDREA HOSPITAL, ROME, ITALY



PROJECT DETAILS

CUSTOMER	San Andrea Hospital
EQUIPMENT	Central Filtration & Softening System, Water treatment for Hemodialysis Ring main system.
MARKET	Healthcare
LOCATION	San Andrea Hospital, Rome, Italy

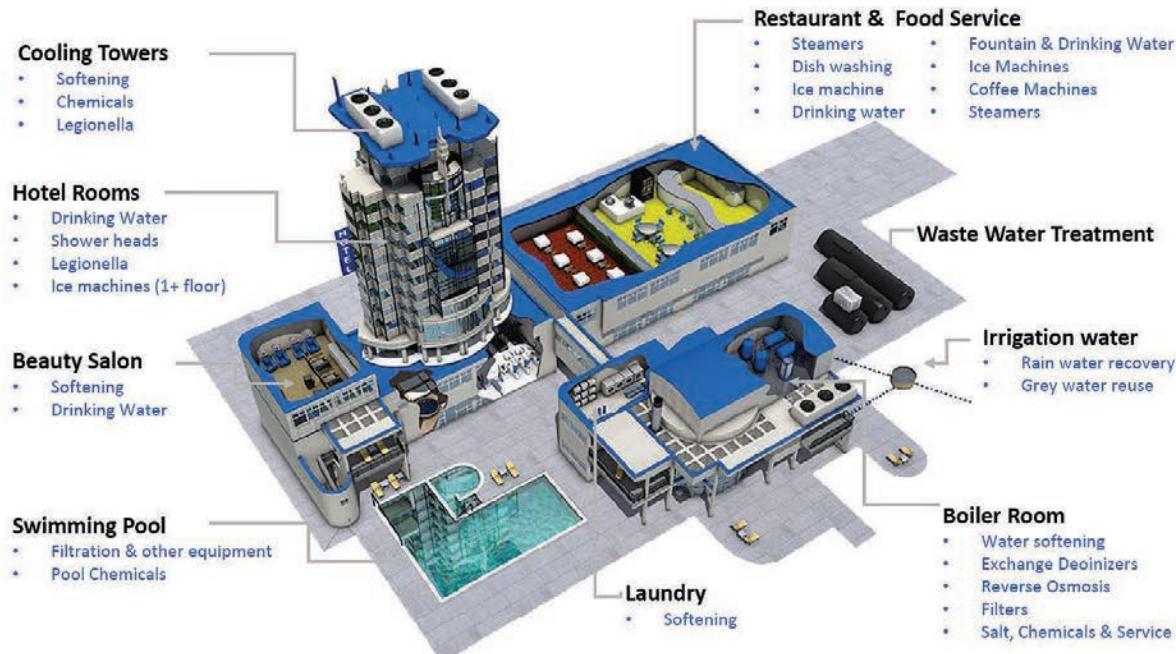
86 X SOCIAL SECURITY INSTITUTION HOSPITALS TURKEY



PROJECT DETAILS

CUSTOMER	Ministry of Health
EQUIPMENT	Central Filtration & Softening System, Water treatment for Hemodialysis Ring main system
MARKET	Healthcare
LOCATION	86 Government Hospitals all around TURKEY

CULLIGAN PROVIDES TOTAL WATER TREATMENT SOLUTIONS FOR HOTELS, RESORTS AND PRIVATE DEVELOPMENTS.



SOFITEL HOTEL, DUBAI, U.A.E.



PROJECT DETAILS

CUSTOMER	Novotel Hotel
LOCATION	Dubai
APPLICATION	Grey Water Recovery Project
EQUIPMENT	OFSY Carbon Filtration Ultrafiltration Reverse Osmosis

SWISSOTEL THE BOSPHORUS, ISTANBUL, TURKEY



PROJECT DETAILS

CUSTOMER	Swissotel
LOCATION	Istanbul
EQUIPMENT	Central Filtration System Disinfection System

BURJ AI ARAB HOTEL, DUBAI, U.A.E.



PROJECT DETAILS

CUSTOMER	Burj Al Arab Hotel [7 star hotel]
LOCATION	Dubai
EQUIPMENT	Central Filtration System Boiler Water Treatment Point of use filters Softeners for coffee machines, ice machines etc.

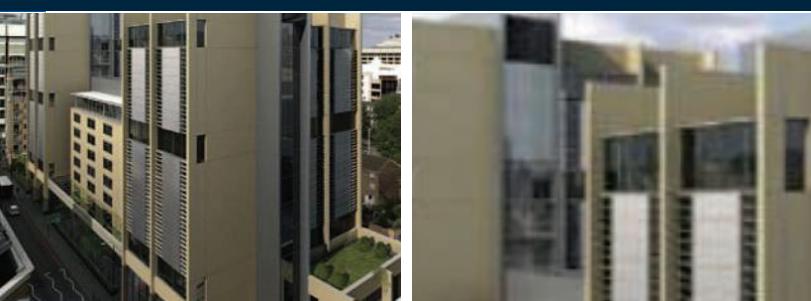
THE GRANGE ST. PAUL'S CITY HOTEL, LONDON, UK



PROJECT DETAILS

CUSTOMER	The Grange London
LOCATION	London
EQUIPMENT	Central Softening System Chlorine Dioxide Treatment Borehole water filtration Borehole to Potable system

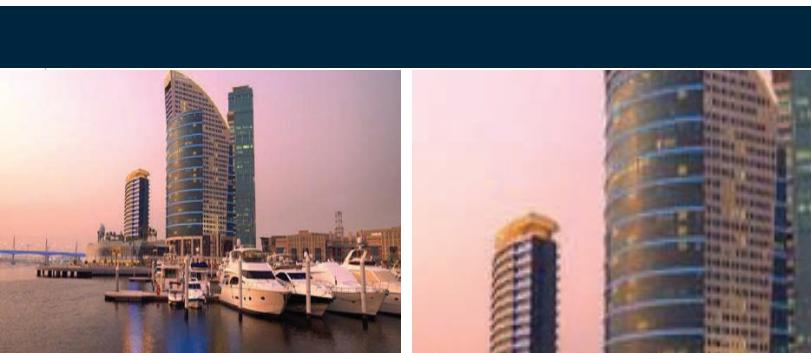
THE GRANGE TOWER BRIDGE HOTEL, LONDON, UK



PROJECT DETAILS

CUSTOMER	The Grange London
LOCATION	London
EQUIPMENT	Central Softening System Chlorine Dioxide Treatment Borehole water filtration Borehole to Potable system

INTERCONTINENTAL HOTEL, DUBAI, U.A.E.



PROJECT DETAILS

CUSTOMER	Intercontinental Hotel
LOCATION	Dubai
EQUIPMENT	Central Filtration System Boiler Water Treatment Swimming pool water treatment program

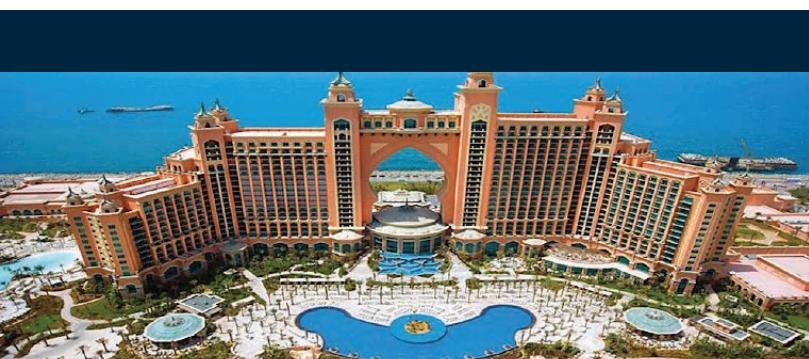
JUMEIRAH BEACH HOTEL, DUBAI, U.A.E.



PROJECT DETAILS

CUSTOMER	Jumeirah Beach Hotel
LOCATION	Dubai
EQUIPMENT	Central Filtration System Boiler Water Treatment Point of use filters Softeners for coffee machines, ice machines etc.

ATLANTIS HOTEL, DUBAI, U.A.E.



PROJECT DETAILS

CUSTOMER	Atlantis Hotel
LOCATION	Dubai
EQUIPMENT	Central Filtration System Flushing of condenser and chilled water lines Chemical treatment program for domestic, Chilled and condenser water, Water treatment program for ice machines, dishwashers, coffee machines.

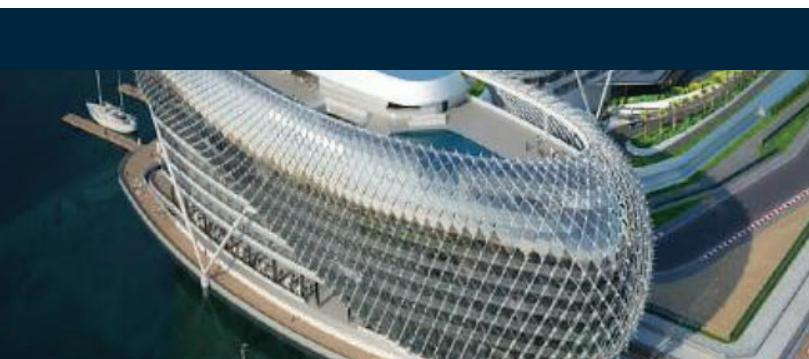
SOFITEL HOTEL, DUBAI, U.A.E.



PROJECT DETAILS

CUSTOMER	Sofitel Hotel, Dubai
LOCATION	Dubai
EQUIPMENT	Central Filtration System Water Treatment program for ice machines, dishwashers, coffee machines

VAS MARINA HOTEL, ABU DHABI, U.A.E.



PROJECT DETAILS

CUSTOMER	Vas Marina Hotel
LOCATION	Abu Dhabi UAE
WORK BY CULLIGAN	Central Filtration System, UV Sterilization, Point of use filters, softeners for ice machines, dishwashers, coffee machines etc.

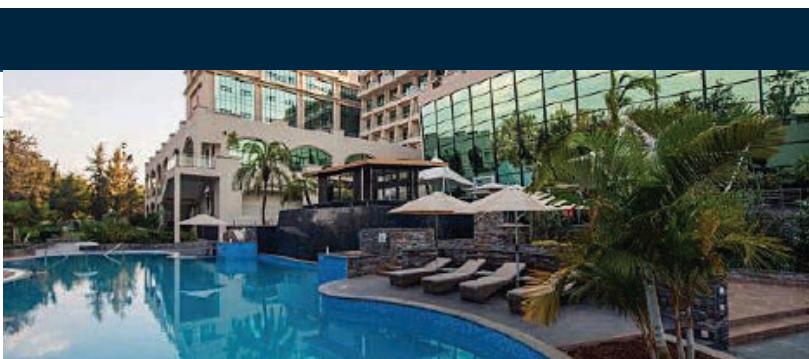
BURJ KHALIFA TOWER, DUBAI, U.A.E.



PROJECT DETAILS

CUSTOMER	Burj Khalifa Tower
LOCATION	Dubai
EQUIPMENT	Central Filtration System, Chilled Water Condenser Water Treatment Service Program for water systems

MARRIOTT HOTEL, KIGALI, RWANDA



PROJECT DETAILS

CUSTOMER	Marriott Hotels
LOCATION	Kigali, Rwanda
EQUIPMENT	Central Filtration System

DEDEMAN HOTEL, ISTANBUL, TURKEY



PROJECT DETAILS

CUSTOMER	Dedeman Hotels Group
LOCATION	Istanbul
EQUIPMENT	Central Filtration System Activated Carbon Filtration Disinfection System

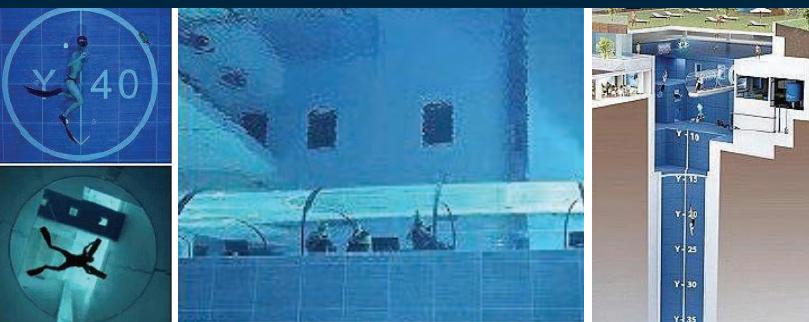
HAPIMAG RESORT, BODRUM, TURKEY



PROJECT DETAILS

CUSTOMER	Hapimag Resort
LOCATION	Bodrum, TURKEY
EQUIPMENT	Swimming Pool Filtration Systems

Y-40, THE DEEP JOY DIVING POOL, MONTEGROTTO, ITALY



PROJECT DETAILS

CUSTOMER	Y-40, The Deep Joy
LOCATION	Montegrotto, ITALY
EQUIPMENT	Swimming Pool Filtration Systems

Y-40 is at page 8th of the new book of GUINNESS WORLD RECORD 2016 as the world's deepest diving pool. Y-40 has an area of 21 x18 mt, the maximum depth is 42.15 meters w~h several intermediate depths and caves for technical activ~ies. The pool contains 4.300 m³ thermal water kept at a temperature between 32-34 °A 1 C.

WHITE CITY, BAKU, AZERBAIJAN



PROJECT DETAILS

CUSTOMER	White City
LOCATION	Baku, AZERBAIJAN
EQUIPMENT	Central Filtration System Swimming Pool Filtration Systems Outdoor Fountains Filtration Systems

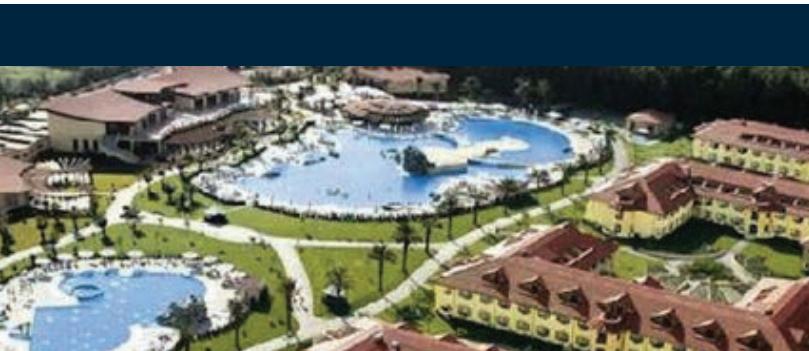
TRUMP TOWER, BAKU, AZERBAIJAN



PROJECT DETAILS

CUSTOMER	Trump Tower
LOCATION	Baku, AZERBAIJAN
EQUIPMENT	Central Filtration System Activated Carbon Filtration Systems Central Water Softening Systems UV Disinfection

ROCCA NETTUNO GARDEN RESORT, TROPEA, ITALY



PROJECT DETAILS

CUSTOMER	Rocca Nettuno
LOCATION	ITALY
WORK BY CULLIGAN	Swimming Pool Filtration Systems

GRAND HOTEL PRINCIPE DI PIEMONTE, VIAREGGIO, ITALY



PROJECT DETAILS

CUSTOMER	Principe di Piemonte
LOCATION	ITALY
EQUIPMENT	Swimming Pool Filtration Systems

GRAND HOTEL PALAZZO, LIVORNO, ITALY



PROJECT DETAILS

CUSTOMER	Grand Hotel Palazzo
LOCATION	ITALY
EQUIPMENT	Swimming Pool Filtration Systems

VILLA CAMILLA SPORTS CENTRE, BARI, ITALY



PROJECT DETAILS

CUSTOMER	Villa Camilla
LOCATION	ITALY
EQUIPMENT	Swimming Pool Filtration Systems

GRAND IMBAT HOTEL, KUSADASI, TURKEY



PROJECT DETAILS

CUSTOMER	Imbat Hotels Group
LOCATION	TURKEY
EQUIPMENT	Central Filtration System Activated Carbon Filtration Reverse Osmosis System Disinfection System

CULLIGAN ON THE BOARD

THE HARMONY OF THE SEAS. THE LARGEST CRUISE SHIP IN THE WORLD ...

The Harmony of the Seas made by Royal Caribbean is the largest cruise ship in the world. It set sail from Saint Nazaire, France, for first acceptance tests with 500 people on board, although it can carry up to 6.300 passengers with 2.200 crew members. On board of the Harmony of the Seas, Culligan has provided all facilities for the treatment of the pools and whirlpools for a total of 23 plants, including 12 whirlpools whose shapes and patterns have been researched and produced by Culligan specifically for this ship. Harmony of the Seas joins three other ships of the Royal Caribbean fleet which are equipped with water treatment systems supplied by Culligan, the ships were built in the Meyer Werftshipyard in Germany and the third, Ovation of

the Seas, is going to be delivered to the Ship-owner. Even if smaller than Harmony of the Seas, with their 180,000 tons, they are still among the largest cruise ships ever built. Culligan has already won the contract for the Harmony II and the Culligan Marine Division department is in process of closing the contract even for Harmony III. Another record for Culligan's board. After the tallest building in the world Burj Kyhalifa and the deepest pool of the world Y-40, once again the CULLIGAN's technology and know-how are a key of another world record, ensuring that passengers of the largest ship of the world can enjoy their holidays immersed in swimming pools and whirlpools not only pleasant but totally safe.



MORE THAN 80% OF TRANSATLANTIC CRUISER SHIPS AROUND THE WORLD HAS CULLIGAN WATER TREATMENT SYSTEMS.

Water Treatment Plants on board following cruisers

	 PRINCESS	 CARNIVAL CRUISE LINE	 COSTA CROCIERE	 DISNEY CRUISE LINE	 RADISSLON CRUISE LINE	 FESTIVAL CRUISE LINE	 CRYSTAL CRUISES	 MSC	 CELEBRITY CRUISES	 SILVER CRUISES
PRINCESS CRUISES	   	   	   	   	   	   	   	   	   	   
CROWN PRINCESS	●	●	●	●	●	●	●	●	●	●
1990 Fincantieri										
REGAL PRINCESS	●	●	●	●	●	●	●	●	●	●
1991 Fincantieri										
SUN PRINCESS	●	●	●	●	●	●	●	●	●	●
1995 Fincantieri										
DOWN PRINCESS	●	●	●	●	●	●	●	●	●	●
1997 Fincantieri										
GRAND PRINCESS	●	●	●	●	●	●	●	●	●	●
1998 Fincantieri										
SEA PRINCESS	●	●	●	●	●	●	●	●	●	●
1999 Fincantieri										
OCEAN PRINCESS	●	●	●	●	●	●	●	●	●	●
2000 Fincantieri										
GOLDEN PRINCESS	●	●	●	●	●	●	●	●	●	●
2001 Fincantieri										
STAR PRINCESS	●	●	●	●	●	●	●	●	●	●
2002 Fincantieri										
SAPHIRE PRINCESS	●	●	●	●	●	●	●	●	●	●
2003 Mitsubishi Heavy Ind.										
DIAMOND PRINCESS	●	●	●	●	●	●	●	●	●	●
2004 Mitsubishi Heavy Ind.										
CORAL PRINCESS	●	●	●	●	●	●	●	●	●	●
2002 Chantiers de l'Atlantique										
ISLAND PRINCESS	●	●	●	●	●	●	●	●	●	●
2003 Chantiers de l'Atlantique										
CARRIBBEAN PRINCESS	●	●	●	●	●	●	●	●	●	●
2004 Fincantieri										
GRAND CLASS	●	●	●	●	●	●	●	●	●	●
2005 Fincantieri										
HOLLAND AMERICA LINE										
STATENDAM	●	●	●	●	●	●	●	●	●	●
1993 Fincantieri										
MAASDAM	●	●	●	●	●	●	●	●	●	●
1993 Fincantieri										
RYNDAM	●	●	●	●	●	●	●	●	●	●
1994 Fincantieri										
VEENDAM	●	●	●	●	●	●	●	●	●	●
1996 Fincantieri										
ROTTERDAM	●	●	●	●	●	●	●	●	●	●
1997 Fincantieri										
VOLLENDAM	●	●	●	●	●	●	●	●	●	●
1999 Fincantieri										
ZAANDAM	●	●	●	●	●	●	●	●	●	●
2000 Fincantieri										
AMSTERDAM	●	●	●	●	●	●	●	●	●	●
2000 Fincantieri										
ZUIDERMAN	●	●	●	●	●	●	●	●	●	●
2002 Fincantieri										
OOSTERDAM	●	●	●	●	●	●	●	●	●	●
2003 Fincantieri										
WESTERWEDAM	●	●	●	●	●	●	●	●	●	●
2003 Fincantieri										
NORDERDAM	●	●	●	●	●	●	●	●	●	●
2005 Fincantieri										
CUNARD										
QUEEN VICTORIA	●	●	●	●	●	●	●	●	●	●
2004 Fincantieri										
QUEEN MARY 2	●	●	●	●	●	●	●	●	●	●
2004 Chantiers de l'Atlantique										

Washing water Production System

Drinking water Production System

Swimming-pools

Whirlpool



Culligan.[®]

Culligan – water treatment & water infrastructure

Worldwide Corporate Headquarter

9399 W. Higgins Road

Rosemont, IL 60018 U.S.A

Phone +1 (847) 430 2800

Websites www.culliganafrica.com - www.culliganmatrixsolutions.com

Culligan international

Address Via Gandolfi 6 - 40057 Cadriano di Granarolo Emilia (BO) - Italy

Phone +39 0516017111

Websites www.culligan.com - www.culligan.it

Culligan®