



IDA DESALINATION YEARBOOK

2016 – 2017

ADVANCED FILTRATION TECHNOLOGY FOR REVERSE OSMOSIS PRETREATMENT

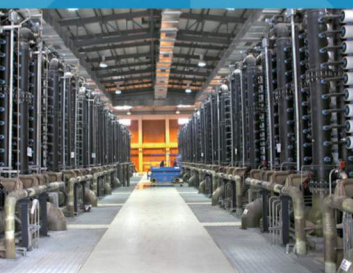
With highly efficient ultrafiltration technology as pretreatment, Pentair brings RO membrane technology to perfection.

Our UF technologies are capable of treating water from almost any source to a quality suitable as RO feed.



FEATURES:

- Equipped with X-Flow membrane modules and Codeline housings
- Highest membrane area to footprint ratio
- Lowest TMP, low energy consumption
- Smallest pore size, reduced number of CIPs
- Operating pressure up to 8 barg, suitable for inline operation



MORE INFORMATION AT
ADVANCEDFILTRATION.PENTAIR.COM

IDA DESALINATION YEARBOOK

2016 – 2017



www.idadesal.org



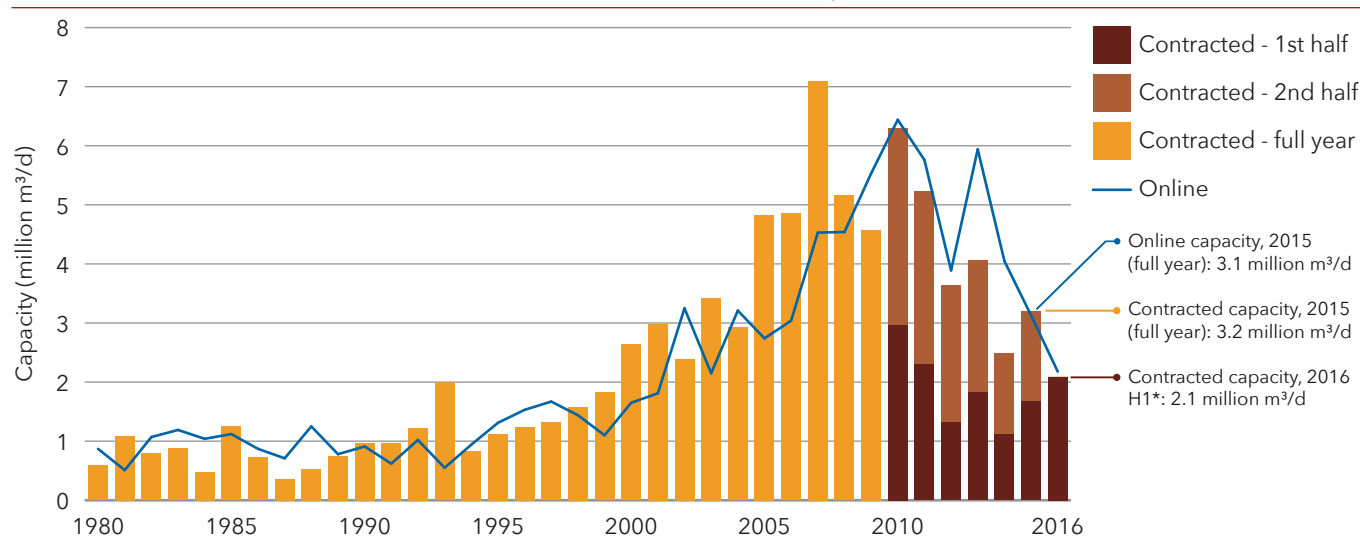
WATER DESALINATION REPORT

1 MARKET PROFILE

Charts, tables and analysis compiled from the GWI / IDA Inventory and DesalData.com

After a disappointing 13-year low in the desalination market during 2014, last year's 28th Worldwide Desalting Plant Inventory provided a glimmer of hope that 2015 would show an increase in activity, based on the mid-year desalination totals, which were up 14% from that time in 2014. This year in the 29th Inventory, this growth has been realised, but must be considered within the context of the general slowdown in the desalination market that has persisted since the bullish years of the late 2000s. It may still take until 2021 and beyond before we see activity reach peak levels again, as forecast by GWI DesalData, in part due to the persistence of stubbornly low commodities prices, and the dependence of certain regional economies on these prices, helping to cancel out some of the increasing demand from factors such as population growth, increased industrialisation, drought and climate factors, and competition for water resources.

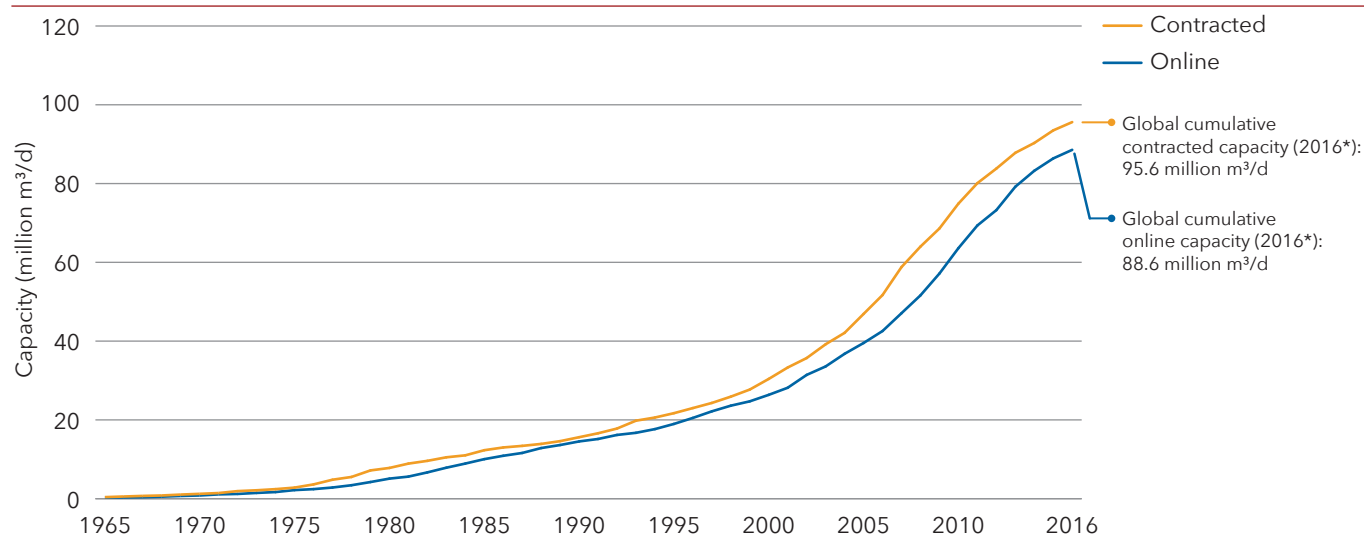
FIGURE 1: INCREMENTAL CONTRACTED AND ONLINE CAPACITY BY YEAR, 1980-2016



* Values through June 2016

Source: GWI DesalData / IDA

FIGURE 2: CUMULATIVE CONTRACTED AND ONLINE CAPACITY, 1965-2016



* Values through June 2016

Source: GWI DesalData / IDA

FIGURE 6: CAPACITY BY FEEDWATER TYPE AND SIZE DISTRIBUTIONS OF SEAWATER DESALINATION, 2014-2016



* Values through June 2016

Source: GWI DesalData / IDA

The brackish desalination market held largely steady in 2015, bolstered by a 60,000 m³/d BWRO for fertiliser production and refining in Nigeria and the 50,000 m³/d Rizal water treatment plant in the Philippines. Significant awards in 2016 include the 100,000 m³/d Putatan 2 plant in greater Manila, which treats water from a nearby bay to drinking water quality. The remaining capacity is largely for satisfying industrial demands in North America and China, with various other smaller-scale industrial and utility projects scattered globally.

Other feedwater streams, such as wastewater or surface water treatment, are near 2014 levels in 2016 after a strong showing in 2015 due to a handful of larger projects, such as a wastewater treatment plant in Saudi Arabia, the Changi NEWater plant II, and a 55,200 m³/d zero-liquid discharge plant for the coal-to-chemicals industry in China. 2016 also includes a 45,000 m³/d utility wastewater reuse project in Koyambedu, India and a 33,520 m³/d reuse project in California. Both industries and municipalities are beginning to fully grasp the benefits of waster reuse projects, either for cost savings and/or environmental benefits and commitments, and this market is set to grow significantly, with desalination positioned as one of the important pieces of technology in the reuse armoury.

Regionally, the largest gains have been seen in the Middle East and North Africa, driven by several large-scale projects in multiple countries throughout the region, with demand outweighing the economic tolls of persistently low oil prices in several countries. Some,

2 FEATURED PLANTS

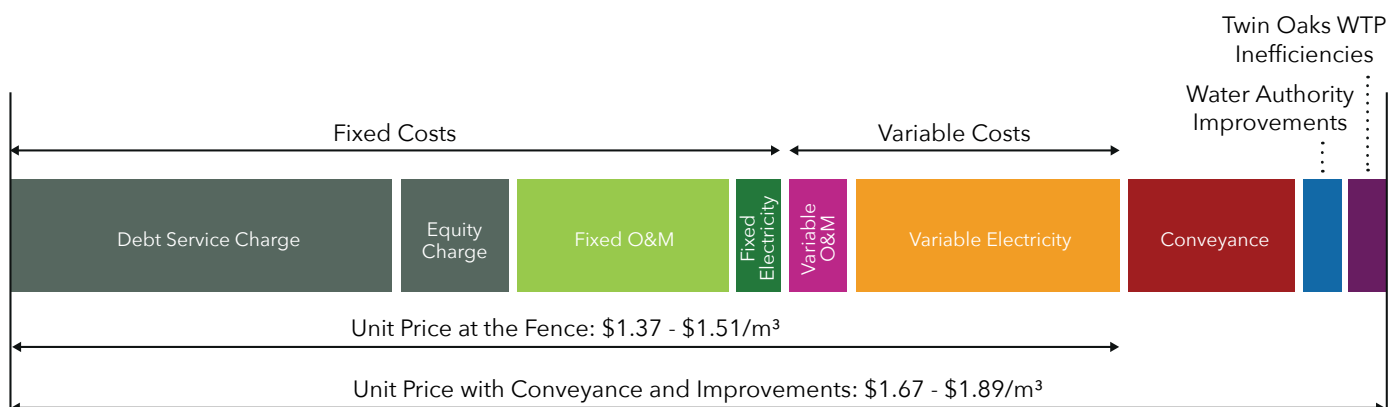
A closer look at some significant desalination plants.

Carlsbad Desalination Plant, San Diego County, United States



Carlsbad Desalination Plant

Total capacity	204,390 m ³ /d
Date awarded	2012
Date commissioned	2015
Feedwater TDS	34,500 mg/L
Product recovery	~50%
Feedwater temperature	14-30°C
RO process description	4-stage, partial two-pass
RO operating pressure	62-bar
Intake	Existing screened shoreline
Concentrate disposal	Blended with cooling water
Pretreatment solids handling	Lamella, DAF, filter press, landfill disposal
Number of trains	14
Energy consumption	<3.3 kWh/m ³ , w/o product pumping
Energy recovery device	Energy Recovery, Inc.
Total water cost	\$1.66-1.86/m ³
Membrane supplier	Dow Water & Process Solutions
Pretreatment	Gravity dual media filters, ferric sulphate
Post-treatment	Calcite filters, pH adjustment, chlorination
Equipment supplier/plant operator	IDE Technologies Ltd.
Procurement model	BOT (30 yrs)
Plant developer/owner	Poseidon Water
Offtaker	San Diego County Water Authority
Capital cost, desal plant only	\$537 million



The Carlsbad unit water price

PROJECT HISTORY

Branded as the largest desalination plant in the Western Hemisphere, the Carlsbad Desalination Plant in San Diego County may only have come into operation in 2015, but it has been well known in the desalting world for many years because of its long development history.

San Diego County lies within a semi-arid region and is the fifth most populous county in the United States, with a growing population currently in excess of 3 million. Previously, imported water from Northern California and the Colorado River had satisfied over 80% of the county's water requirements. One of the key drivers for the construction of the Carlsbad Desalination Plant was therefore to reduce the area's reliance on imported water, which is susceptible to droughts as well as regulatory restrictions.

The development of a municipal desalination plant in Carlsbad was first proposed in 1998. However, the process of obtaining all of the necessary permits and negotiating water purchase agreements with potential offtakers proved to be significantly more difficult than expected.

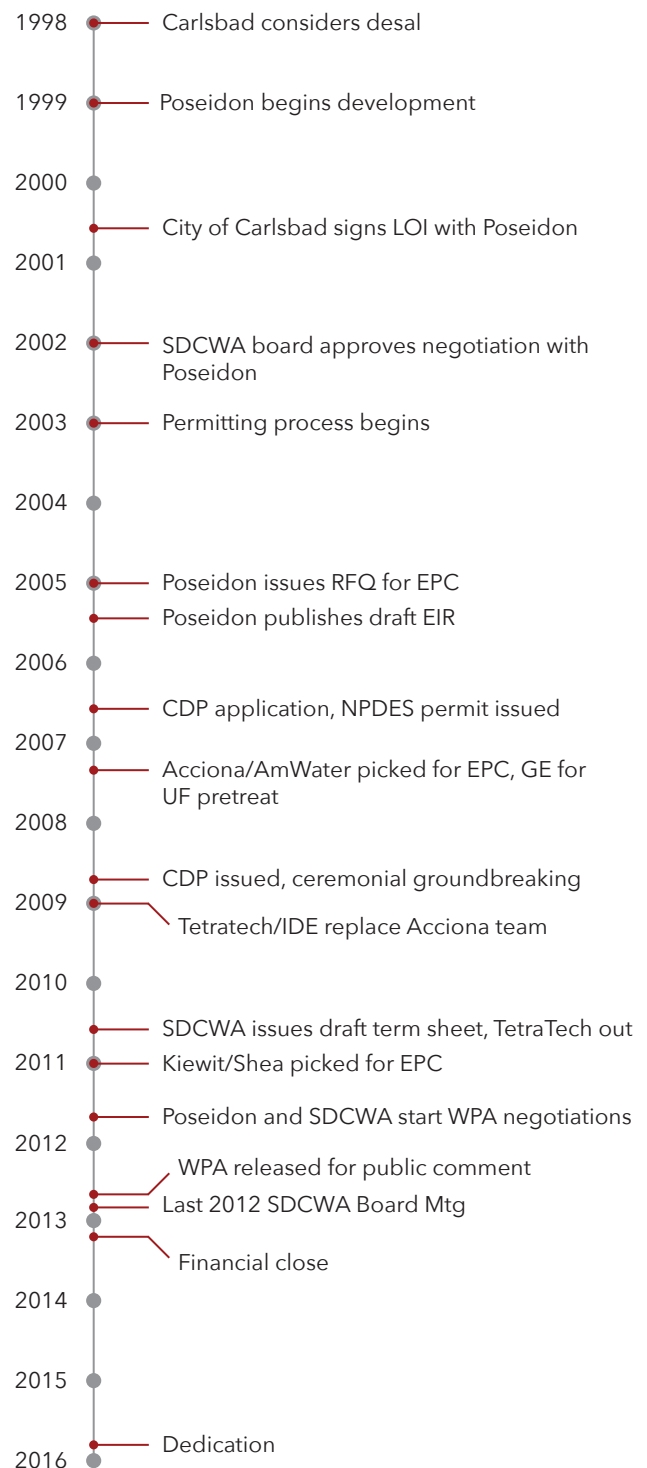
In total the plant faced 13 legal challenges, the last of which was cleared in June 2011. As might be expected, the majority of these lawsuits were environmentally related challenges. In order to mitigate the environmental impacts of the plant's seawater intake, Poseidon agreed to establish 66 acres of wetlands in the San Diego Bay and to purchase carbon emission offsets. After such lengthy administrative delays, construction was quick to get underway once financial close was achieved on the 30-year build-operate-transfer (BOT) contract in early 2013, with IDE designing and operating the plant, and a joint venture of Kiewit Infrastructure and JF Shea constructing the facility. The plant was completed in June 2015, followed by a period of testing before its official dedication in December.

Constructed adjacent to the Encina Power Station, the desalination plant draws water from the Agua Hedionda Lagoon utilising the existing power plant screened intake and cooling water outfall facilities. Feedwater is pretreated with gravity dual media filters and ferric sulphate before being supplied to the 14 RO trains in a 4-stage, partial two-pass configuration. The product is then passed through calcite filters and undergoes a pH adjustment and chlorination post-treatment step.

WATER COST

The 30-year water purchase agreement signed between Poseidon and the San Diego County Water Authority ensures that the cost of the plant's desalinated water will remain constant for consumers throughout the 30-year period. The total water cost (in 2012 dollars) at the plant fence is \$1.37 to \$1.51/m³, and the cost including the new conveyance pipeline and distribution is \$1.67 to \$1.89/m³. As the cost of water imports continues to rise, desalinated water is expected to become the less expensive option.

At the time of writing, the plant has already delivered in excess of 1.5 billion gallons of desalted water to the area since its December 2015 start up, and it will play a major role in ensuring that the residents of San Diego County have a reliable source of water in the future. The water supply from the plant has been declared to be drought-resistant and has thus lowered the regional water



Carlsbad Desalination Plant project timeline

conservation target from 20% to 13%. One third of the clean water produced by San Diego County comes from the Carlsbad Desalination Plant, which supplies 400,000 local residents.

MEMBRANES HAVE ONE LIFE. MAKE THE MOST OF IT.

MAXIMIZE PRODUCTIVITY
OPTIMIZE RECOVERY
EXTEND MEMBRANE LIFE
INCREASE UPTIME
MAINTAIN REJECTION
IMPROVE PERFORMANCE
SUSTAIN RELIABILITY



Membranes can last for days or years, depending on the quality of care they receive.

At Avista® Technologies, our expert process support helps to optimize your system with the right chemistry to help membranes work better and live longer.

FIND YOUR SOLUTION
www.avistatech.com



Creative Chemistry. Smart Solutions.

Corporate offices located in the US and the UK, with distributors worldwide.

HOW WE DO IT

REVIEW



New System Design



System Audit



Chemical Dosing

DIAGNOSE



On-site system
performance
monitoring device



RO & MF/UF
Autopsies



Cleaning
Studies

SOLVE



Report findings and provide chemical
and system recommendations

APPLY



Reliable product delivery,
on-site training and product
application support



Off-site cleaning
and restoration

MAINTAIN



Data Normalization



**Full page
full colour
advert**

ANTISCALANTS • BIOCIDES • CHLORINE SCAVENGING • CLEANERS • COAGULANTS • M

© 2016. Avista Technologies, Inc. All rights reserved.

NEW PLANTS CONTRACTED 2015-2016

A listing of new desalination plants contracted between mid-2015 and mid-2016, drawn from the IDA Inventory and GWI DesalData.

Technologies: RO = Reverse osmosis; MED = Multi-effect distillation; MSF = Multi-stage flash; IX = Ion exchange; ED = Electrodialysis; NF = Nanofiltration; NF/SR = Nanofiltration/Sulphate Removal; O/U = Other/Unknown

Country	Plant name/Location	Capacity (m ³ /d)	Technology	Feedwater	Plant supplier
Albania	Albania	200	RO	Brackish	
Algeria	Algeria	360	RO	Brackish	Temak
Algeria	Algeria	1,680	RO	River/Low conc.	ProMinent
Algeria	Algeria	1,200	RO	River/Low conc.	ProMinent
Angola	Angola	156	RO	Brackish	GE W&PT
Argentina	Argentina	1,308	RO	River/Low conc.	GE W&PT
Argentina	Argentina	1,090	RO	Brackish	GE W&PT
Argentina	Argentina	545	RO	Brackish	GE W&PT
Argentina	Argentina	545	RO	Brackish	GE W&PT
Australia	Broken Hill RO expansion	4,500	RO	Brackish	Osmoflo
Australia	Naval Retrofit	560	RO	Seawater	Salt Separation Services
Australia	Australia	180	EDR	Brackish	GE W&PT
Austria	Austria	1,440	RO	Brackish	Arcade Engineering
Azerbaijan	Gedebey	2,160	RO	Brackish	
Bangladesh	Maitree	18,912	RO	Seawater	Bharat Heavy
Bangladesh	Maitree	1,776	RO	Pure/Tap	Bharat Heavy
Belgium	Belgium	720	RO	River/Low conc.	GE W&PT
Belgium	Belgium	480	RO	River/Low conc.	GE W&PT
Brazil	FIBRIA Novo Horizonte II	16,650	RO	Brackish	Veolia
Brazil	Brazil	2,880	EDI	Brackish	GE W&PT
Brazil	Brazil	2,400	RO	Brackish	GE W&PT
Brazil	Brazil	2,400	RO	Brackish	GE W&PT
Brazil	Tupi 10	2,000	RO	Seawater	Veolia
Brazil	Sao Paulo	1,440	RO	River/Low conc.	
Brazil	Brazil	1,080	RO	Brackish	
Brazil	Tupi 10	1,000	Other	Seawater	Veolia
Brazil	Brazil	545	RO	Brackish	GE W&PT
Brazil	Brazil	528	RO	Brackish	GE W&PT
Brazil	Brazil	360	RO	River/Low conc.	GE W&PT
Brazil	Brazil	216	EDI	River/Low conc.	GE W&PT
Brazil	Tupi 10	37	NF	Seawater	Veolia
Canada	Ontario	2,507	RO	River/Low conc.	GE W&PT
Canada	Municipalité de Chambord	1,552	NF	River/Low conc.	H2O Innovation
Canada	Alberta	1,090	RO	River/Low conc.	GE W&PT
Canada	Canada	1,080	RO	Brackish	GE W&PT
Canada	Nova Scotia	687	EDI	River/Low conc.	GE W&PT
Canada	Hydro Quebec - La Romaine	53	NF	River/Low conc.	H2O Innovation
Canada	Ontario	1	RO	River/Low conc.	GE W&PT
Chile	Chile	12,960	RO	Brackish	Vigaflow
Chile	Red Dragon	3,000	MED	Wastewater	Veolia
Chile	PIEM thermoelectric plant	3,000	MED	Seawater	Entropie S.A.S.

Southmost, Cameron, Texas, United States of America 2005
28,400 m³/d RO
Solucar solar thermal plant. PS10-PS20, Seville, Spain 2005
1,800 m³/d RO
Solucar solar thermal plant. PS10-PS20, Seville, Spain 2005
800 m³/d RO
Hermosillo combined cycle plant, Mermosillo, Mexico 2005
480 m³/d RO
Babilafuente bioethanol plant, Salamanca, Spain 2005 375 m³/d RO
La Sara, Willacy, Texas, United States of America 2004 4,750 m³/d RO
Campo de golf de Les Fonts, Barcelona, Spain 2003 5,000 m³/d ED
Carboneras, Almeria, Spain 2002 120,000 m³/d RO
Barranco Seco II, Gran Canarias, Spain 2002 24,300 m³/d ED
El Sauz combined cycle plant, El Sauz, Mexico 2002 480 m³/d RO
Galicia bioethanol plant, Galicia, Spain 2002 300 m³/d RO
Castejón combined cycle plant, Navarra, Spain 2001 960 m³/d RO
Son Reus combined cycle plant, Mallorca, Spain 2000 3,120 m³/d RO

www.abengoa.com

ACCIONA Agua

Avda. Europa, 22 Parque Empresarial La Moraleja, Alcobendas,
28108 Madrid, Spain
T: +34 91 790 7700
F: +34 91 790 7712



ACCIONA Agua provides comprehensive solutions which contribute to sustainable development in the water sector. The projects and contracts executed by the Company since its creation contribute to treating, processing, reusing, desalinating and managing water for over 90 million people in 25 countries on five continents, always to the highest standards of quality, innovation and sustainability. ACCIONA Agua has placed its name on over 400 drinking water and waste water treatment plants and over 75 desalination plants. It also operates and maintains a full range of water treatment plants and provides end-to-end water services in over 180 cities. Innovation and the application of cutting-edge technologies are among the cornerstones of ACCIONA Agua's business. One example of this commitment is the R&D and innovation center in Barcelona, which has a multidisciplinary team of 30 highly-qualified professionals with extensive experience.

Our project portfolio includes some of the world's foremost Water treatment facilities:

- One of the largest desalination plants in Australia, in Adelaide (South Australia) (300,000 m³/d).
- The Copiapo desalination plant in Chile, to guarantee the water supply for the regions mining operations (51,840 m³/d).
- The Fujairah desalination plant, in Fujairah, UAE (total capacity 137,000 m³/d).
- The Umm Al Houl desalination plant, in Qatar (284,000 m³/d).
- The Ras Abu Fontas A3 desalination plant, in Qatar (164,000 m³/d).

Our work on major treatment facilities in Spain and overseas includes the following plants:

- The Atotonilco WWTP in Mexico, with a capacity of 3,024,000 m³/day - the biggest WWTP in the world.
- The DWTP in Saint John, Canada, with a capacity of 75 million liters per day and storage capacity of 33 million liters.
- The Bello WWTP in Medellin, Colombia, has a total capacity of 440,000 m³/d.
- The Mundaring WTP - capacity: 165,000m³/d in Perth, Australia.
- The Oum Azza WTP - capacity: 432,000m³/d in Rabat, Morocco.


SELECTED REFERENCES: DESALINATION PLANT SUPPLIER

Isla de Sal, Cape Verde 2014 5,000 m³/d RO
Sao Vicente, Cape Verde 2014 5,000 m³/d RO
Fujairah 1, Fujairah, United Arab Emirates 2012 137,000 m³/d RO
SWRO-4 (Al-Jubail), Eastern Providence, Saudi Arabia 2012
100,000 m³/d RO
Adelaide, SA, Australia 2010 300,000 m³/d RO
Paraguaná, Venezuela 2010 75,000 m³/d RO
Tordera Ext., Barcelona, Spain 2009 28,800 m³/d RO
San Antonio, Ibiza, Spain 2009 17,500 m³/d RO
Torrevieja, Alicante, Spain 2008 240,000 m³/d RO
Fouka, Algeria 2008 120,000 m³/d RO
Reggio Calabria, Italy 2007 25,000 m³/d RO
Guia, Spain 2007 5,000 m³/d RO
Beckton, London, U.K. 2006 150,000 m³/d RO
Tampa, FL, U.S.A. 2006 108,831 m³/d RO
Cartagena Ext., Spain 2006 65,000 m³/d RO
Menorca - Ciutadella, Spain 2006 10,000 m³/d RO
Telde Phase II, Spain 2005 16,000 m³/d RO
Martos, Spain 2004 15,552 m³/d RO
Canal de Alicante, Spain 2003 65,000 m³/d RO
Sureste, Spain 2003 33,000 m³/d RO
Arucas-Moya Phase I & II, Spain 2003 15,000 m³/d RO
Tordera, Barcelona, Spain 2002 28,800 m³/d RO
Javea, Alicante, Spain 2002 26,000 m³/d RO
Praia, Cabo Verde 2002 5,000 m³/d RO
Talara, Peru 2002 2,200 m³/d RO
Carboneras, Spain 2001 120,000 m³/d RO
Cartagena, Spain 2001 65,000 m³/d RO
Almeria Capital, Spain 2001 50,000 m³/d RO
Campo Dalias, Spain 2001 20,000 m³/d RO
Las Palmas III Extension, Canary Islands, Spain 2001 6,700 m³/d RO
St. Eulalia, Spain 2001 1,075 m³/d RO
Milan, Italy 2000 6,480 m³/d RO
Naples, Italy 2000 1,728 m³/d RO
Barcelona Expansion, Spain 2000 480 m³/d RO
Copiapo, Chile 51,840 m³/d RO

www.acciona-agua.es

Extended entry listing
A plant listing in the
directory section with
a colour logo and
200 word profile.

Full page
full colour
advert

 @acciona_en
www.acciona.com



EVERY DROP COUNTS IN CHANGING THE WORLD

ACCIONA Agua is present at every stage of the water management cycle. We work ceaselessly to ensure the responsible use of water, improving each of our services all of the time, from capture and purification to return to nature.

We handle a resource that is essential to us all. Every citizen of the planet needs, and has the right to enjoy, water. Water. Vital to life. Vital to human progress.



INFRASTRUCTURES

WATER

SERVICES

RENEWABLE ENERGIES

Bahía de Alcudia, Mallorca, Spain 2005 14,000 m³/d RO
 Cuevas de Almanzora, Almería, Spain 2003 30,000 m³/d RO
 Xeresa Golf, Benidorm, Spain 2003 5,000 m³/d RO
 Planta de Oliva, Pulpí, Spain 2003 2,000 m³/d RO
 Nules, Castellón, Spain 2002 6,000 m³/d RO
 Pulpí, Almería, Spain 2002 6,000 m³/d RO
 Calpe, Alicante, Spain 2002 4,000 m³/d RO
 Burriana, Castellón, Spain 2001 4,000 m³/d RO
 Vera, Almería, Spain 2001 3,000 m³/d RO
 Urcisol, Águilas, Murcia, Spain 2000 3,000 m³/d RO
 Urcisol, Águilas, Murcia, Spain 2000 2,500 m³/d RO
 Primafior, Almería, Spain 2000 2,000 m³/d
 Campo Cartagena, Murcia, Spain 2000 2,000 m³/d RO

www.sacyr.com

www.valoriza-agua.com

Veolia Water Technologies

L'Aquarène, 1 place Montgolfier, 94417, Saint Maurice, France

T: +33 (0)1 45 11 55 55

F: +33 (0)1 45 11 55 00

E: contactcom.watertech@veolia.com



With more than 100 years of experience, numerous patented technologies and extensive knowledge in desalination, Veolia Water Technologies is the world leader in assisting municipalities and industries implement desalination strategies. Every day, Veolia's state-of-the-art technologies produce more than 12.9 million cubic meters of desalinated water from a variety of raw water sources. With more than 2300 projects performed in 108 countries, ranging in size and complexity, from large-scale design-build execution to engineering and equipment supply, Veolia is able to successfully meet each client's needs.

Our all-encompassing range of solutions and technologies is dedicated toward increasing the value of water resources. Combined with local presence and a worldwide network of experts, we ensure our clients the best possible environmental solutions to supply high quality water, manage brine concentrates, produce or recover energy, extract raw materials and capitalize on byproducts.

Veolia utilizes three types of desalination solutions: Multiple Effect Distillation (MED), Reverse Osmosis (RO), and Hybrid desalination – which couples MED and RO technology.

Part of the Veolia Water Technologies group, Sidem and Entropie are recognized leaders in MED with more than 250 projects successfully delivered which represent more than 80% market share.

SELECTED REFERENCES: AFRICA-MIDDLE EAST

Aradah Valley Dam WTP, Riyadh, Baha, Saudi Arabia 2016
 40,000 m³/d WTP

King Faisal Specialist Hospital & Research Centre Project, Jeddah,
 Saudi Arabia 2016 2,650 m³/d RO

Zouk, Lebanon 2016 1,440 m³/d MED
 New Cement Line, Jeddah, Saudi Arabia 2016 1,200 m³/d BWRO
 Dala Water & Juice, Riyadh, Wadi Al Dawaser, Al Kharj, Saudi Arabia
 2016 1,000 m³/d BWRO
 Lathath Water Factory, Riyadh, Sudair, Saudi Arabia 2016
 720 m³/d BWRO
 KAP4, Riyadh, Saudi Arabia 2016 680 m³/d BWRO
 Aquat Food Industries Co., Jeddah, Saudi Arabia 2016
 600 m³/d BWRO
 Hazardous Waste, Dubai, UAE 2016 600 m³/d RO
 Hail Power Plant, Riyadh, Hail, Saudi Arabia 2016 432 m³/d BWRO
 Construction of Aramco Khurais Facilities, Dammam, Khurais,
 Saudi Arabia 2016 380 m³/d BWRO
 Takasussi Road, Riyadh, Saudi Arabia 2016 200 m³/d BWRO
 Al Rabwa Villa, Riyadh, Saudi Arabia 2016 150 m³/d BWRO
 Hayat Hotel, Riyadh, Saudi Arabia 2016 120 m³/d BWRO
 Syrah Resources, Mozambique 2016 100 m³/d RO
 Arab National Bank, Riyadh, Saudi Arabia 2016 100 m³/d BWRO
 Alyan Dates Factory, Riyadh, Tebrak, Saudi Arabia 2016
 100 m³/d BWRO
 Radisson Blue Hotel RO Plant, Dammam, Al Khobar, Saudi Arabia
 2016 100 m³/d BWRO
 Alrajhi Palace RO, Dammam, Saudi Arabia 2016 100 m³/d BWRO
 Oman Sur expansion, Oman 2015 48,187 m³/d RO
 Khouribga BWRO phase 1, Morocco 2015 28,512 m³/d RO
 Kowie river, Port Alfred, South Africa 2015 9,000 m³/d RO
 ArcelorMittal Vanderbijlpark Zero Effluent Discharge (ZED),
 Vanderbijlpark, South Africa 2015 7,200 m³/d RO / EDI
 Takoradi Thermal Power complex, Aboadze, Ghana 2015
 6,000 m³/d RO
 Sinai, MOD, Egypt 2015 6,000 m³/d RO
 Moda, TABUK, Tabuk, Saudi Arabia 2015 5,370 m³/d BWRO
 Ghana 2015 3,360 m³/d RO / Mixed Bed IX
 Al Marai-CPP, Riyadh, Al Kharj, Saudi Arabia 2015
 3,000 m³/d BWRO
 Jeddah, Saudi Arabia 2015 2,800 m³/d RO
 Western Cape, South Africa 2015 1,500 m³/d RO
 Dubai, United Arab Emirates 2015 1,200 m³/d RO
 Dammam, Saudi Arabia 2015 1,200 m³/d RO
 Addar Water Factory, Jeddah, Madinah, Saudi Arabia 2015
 1,000 m³/d BWRO
 Porto Marina, North Coast-Alex, Egypt 2015 1,000 m³/d RO
 Porto South Beach, Ain Sokhna, Egypt 2015 1,000 m³/d RO
 Porto Sharm, Sharm El Shikh, Egypt 2015 1,000 m³/d RO
 Riyadh, Saudi Arabia 2015 1,000 m³/d RO
 Al Kharj, Riyadh, Saudi Arabia 2015 1,000 m³/d RO
 Khobar Aziziyah, Dammam, Saudi Arabia 2015 1,000 m³/d RO
 Rabab Harweel Integrated Project, Muscat, Oman 2015 927 m³/d RO
 Shaybah, SEPCO III, Saudi Arabia 2015 921 m³/d RO
 RSNF Dammam RO Plant, Dammam, Saudi Arabia 2015
 750 m³/d BWRO
 Namib Poultry, Namibia 2015 660 m³/d RO
 Henkel, Riyadh, Saudi Arabia 2015 600 m³/d BWRO
 Riyadh, Saudi Arabia 2015 600 m³/d RO
 Dhahran Techno Valley, Dammam, Dhahran, Saudi Arabia 2015
 576 m³/d BWRO
 Jazan Economic City, Gazan, Beash, Saudi Arabia 2015
 500 m³/d BWRO
 Anantara, Qatar 2015 500 m³/d RO
 Shaybah, Dammam, Saudi Arabia 2015 500 m³/d RO
 Abu-Bakir Al-Sadiq Road Project Phase 1, Riyadh, Saudi Arabia 2015
 450 m³/d BWRO
 Abi Bakr As Siddique Road Phase II, Riyadh, Saudi Arabia 2015
 450 m³/d BWRO
 Bottling Al Furat, Riyadh, Saudi Arabia 2015 432 m³/d BWRO
 Mahmood Saeed Beverage Cans & Ends Ind. Co. Ltd, Jeddah, Saudi
 Arabia 2015 400 m³/d BWRO
 Riyadh, Saudi Arabia 2015 350 m³/d RO
 Riyadh, Saudi Arabia 2015 350 m³/d RO



Discover our key solutions to fight water scarcity

WATER TECHNOLOGIES

Our modern world needs a desalination expert with unique, comprehensive knowledge of water treatment technologies. With more than 100 years of experience in desalination and numerous references worldwide, Veolia is the world leader in implementing desalination strategies.

Every day, Veolia's state-of-the-art technologies produce more than 12.9 million cubic meters of desalinated water from a variety of raw water sources. With projects ranging in size and complexity, from large-scale design-build execution to engineering and equipment supply, Veolia is able to successfully meet each client's needs.

www.veoliawatertechnologies.com

Resourcing the world



Arizona, United States of America 2014 16,000 m³/d RO
 Canada 2014 16,000 m³/d RO
 Southeast Asia 2014 12,000 m³/d RO
 Mexico 2014 10,000 m³/d RO
 California, United States of America 2014 8,400 m³/d RO
 India 2014 8,000 m³/d RO
 Florida, United States of America 2014 8,000 m³/d RO
 Bahrain 2014 8,000 m³/d RO
 Africa 2014 4,000 m³/d RO
 Arizona, U.S.A. 2013 72,000 m³/d RO
 California, U.S.A. 2013 42,000 m³/d RO
 China 2013 38,000 m³/d RO
 Colorado, U.S.A. 2013 26,000 m³/d RO
 Egypt 2013 19,000 m³/d RO
 Virginia, U.S.A. 2013 15,000 m³/d RO
 California, U.S.A. 2012 224,000 m³/d
 CA, U.S.A. 2012 84,000 m³/d RO
 India 2012 80,000 m³/d RO
 AZ, U.S.A. 2012 80,000 m³/d RO
 Arizona, U.S.A. 2012 76,000 m³/d
 CO, U.S.A. 2012 72,000 m³/d RO
 FL, U.S.A. 2012 60,000 m³/d RO
 Central and South America 2012 52,000 m³/d
 China 2012 48,000 m³/d RO
 United Arab Emirates 2012 48,000 m³/d
 Egypt 2012 40,000 m³/d RO
 South America 2012 40,000 m³/d RO
 Southeast Asia 2012 40,000 m³/d RO
 Korea 2012 40,000 m³/d RO
 China 2012 40,000 m³/d
 Egypt 2012 40,000 m³/d
 Colorado, U.S.A. 2012 30,000 m³/d

India/Pakistan 2012 24,000 m³/d
 United Arab Emirates 2012 20,000 m³/d RO
 Indonesia 2012 20,000 m³/d RO
 Mexico 2012 20,000 m³/d RO
 Southeast Asia 2012 20,000 m³/d
 Canada 2012 20,000 m³/d
 Saudi Arabia 2012 12,000 m³/d
 Bahrain 2012 4,000 m³/d RO
 United Arab Emirates 2010 240,000 m³/d RO
 CA, U.S.A. 2010 103,500 m³/d RO
 Egypt 2010 96,000 m³/d RO
 TX, U.S.A. 2010 76,000 m³/d RO
 Bahrain 2010 66,000 m³/d RO
 CO, U.S.A. 2010 56,000 m³/d RO
 Mexico 2010 50,000 m³/d RO
 China 2010 48,000 m³/d RO
 OH, U.S.A. 2010 46,000 m³/d RO
 AZ, U.S.A. 2010 42,000 m³/d RO
 South America 2010 31,000 m³/d RO
 Central Canada 2010 30,000 m³/d RO
 FL, U.S.A. 2010 30,000 m³/d RO
 Central America 2010 25,000 m³/d RO
 India 2010 25,000 m³/d RO
 UT, U.S.A. 2010 23,000 m³/d RO
 Philippines 2010 15,000 m³/d RO
 Pakistan 2010 10,000 m³/d RO
 Abu Dhabi, United Arab Emirates 2009 114,000 m³/d RO
 CA, U.S.A. 2009 95,000 m³/d RO
 CO, U.S.A. 2009 66,000 m³/d RO
 Mexico 2009 38,000 m³/d RO
 China 2009 38,000 m³/d RO
 Egypt 2009 38,000 m³/d RO

KURITA provides solution

Since 1949, we provide solution for water by chemicals, facilities and maintenance service.

Half page
full colour
advert

Water treatment chemicals

We help prevent problems by various chemicals
 For boiler, cooling water, wastewater, RO membrane and more.

For contact, Please see KURITA's directory.

Taprogge

Schliemannstrasse 2-14, D-58300 Wetter, Germany
T: +49 2335 7620
F: +49 2335 762 245



TAPROGGE as a long term partner of IDA, DME and EDS has been representing innovation and competence in the special field of optimisation of water circuits for more than a half of a century. Our IN-TA-CT® (Integrated Taprogge Concept) and IN-TA-S® (Integrated Taprogge Services) modules have been proven with more than 15,000 applications in more than 100 countries. Our IN-TA-CT® and IN-TA-S® guarantees the highest efficiency and quality of all TAPROGGE components and services, for this reason, to the benefit of our clients.

Clean-Technology is our philosophy – Efficiency in Energy & Water we provide already.

With TAPROGGE innovative Water Intake Systems, High Performance Debris Filters and Online Condenser Tube Cleaning Systems we are capable of significantly increasing performance ratios (i.e. in MSF plants from 7-15% higher output) and reduce emissions of CO₂, NO_x and SO₂ in the power generation.

TAPROGGE also provides innovative concepts and technology for water reuse, recycle and reduction schemes whereby in our chemical-free thermal desalination unit, waste-, solar- and geothermal heat are the sources for our Multiple-Effect Humidification (MEH) system.

SELECTED REFERENCES: TUBE CLEANING SYSTEMS AND DEBRIS FILTERS

Ras Abu Fontas A 2, Qatar 2013 MSF
Dubai Aluminium, United Arab Emirates 2013 MSF
SWCC Al Khobar, Saudi Arabia 2012 MSF
Ras Al Kafji, Saudi Arabia 2011 MSF
Shuaiba North, Kuwait 2010 MSF
Rabigh, Saudi Arabia 2010 MED
Al Lith, Saudi Arabia 2010 MED
Al Khobar, Saudi Arabia 2010 MSF
Farasan, Saudi Arabia 2010 MED
Al Wajh, Saudi Arabia 2010 MED
Qunfuda, Saudi Arabia 2010 MED
Umm Luj, Saudi Arabia 2010 MED
Jebel Ali M, Dubai, United Arab Emirates 2009 MSF
Rabigh, Saudi Arabia 2009 MSF
Ghubrah Unit 5-8, Oman 2008 MSF
Ras Laffan C, Doha, Qatar 2008 MSF
Ras Abu Fontas A I, Qatar 2008 MSF
Ras Abu Fontas B II, Qatar 2007 204,000 m³/d MSF
Al Taweelah B, United Arab Emirates 2007 204,000 m³/d MSF
Ras Abu Fontas B II, Qatar 2007 75,500 m³/d MSF
Al Taweelah B, United Arab Emirates 2007 75,500 m³/d MSF
Jeddah Barge, Saudi Arabia 2007 RO
Jeddah Unit II, Saudi Arabia 2007 MSF
Shuwaikh, Kuwait 2007 MSF
Jubail I, Saudi Arabia 2007 MSF
Sitra, Bahrain 2007

Al Kafji, Saudi Arabia 2007 MSF
Shuaiba, South Kuwait 2006 MSF
Al Lith, Saudi Arabia 2006 MED
Qunfuda, Saudi Arabia 2006 MED
Farasan, Saudi Arabia 2006 MED
Al Wajh, Saudi Arabia 2006 MED
Umm Luj, Saudi Arabia 2006 MED
Rabigh, Saudi Arabia 2006 MED
Ras Laffan, Doha, Qatar 2006 MSF
Umm Al Nar, Abu Dhabi, United Arab Emirates 2004
945,600 m³/d MSF
Arzew, Algeria 2004 249,600 m³/d MSF
Shuweiha Unit 1, Abu Dhabi, United Arab Emirates 2003
204,000 m³/d MSF
Shuweiha Unit 2, Abu Dhabi, United Arab Emirates 2003
204,000 m³/d MSF
Shuweiha Unit 1, Abu Dhabi, United Arab Emirates 2003
75,500 m³/d MSF
Shuweiha Unit 2, Abu Dhabi, United Arab Emirates 2003
75,500 m³/d MSF
Shuweiha Unit 3, Abu Dhabi, United Arab Emirates 2003
75,500 m³/d MSF
Shuweiha Unit 4, Abu Dhabi, United Arab Emirates 2003
75,500 m³/d MSF
Shuweiha Unit 5, Abu Dhabi, United Arab Emirates 2003
75,500 m³/d MSF
Shuweiha Unit 6, Abu Dhabi, United Arab Emirates 2003
75,500 m³/d MSF
Az-Zour South Phase 2, Kuwait MSF
Umm al Houl IWPP, Qatar MSF
Aden Refinery Evaporator, Aden, Yemen MSF
Barka I, Oman RO

www.taprogge.de

Tebodin

P.O. Box 2652, Abu Dhabi, United Arab Emirates
T: +971-2-6778400
F: +971-2-6727406

www.tebodin.com

Tech Universal (UK) Ltd

2A Alexandra Gate, Ffordd Pengam, Cardiff, CF24 2SA,
United Kingdom
T: +44 (0) 2920 448160
E: info@techuniversal.com

www.techuniversal.com