

About Biwater:

Biwater provides water and wastewater treatment solutions for clients across the World. Since its inception in 1968, Biwater has gained recognition for innovative approaches aimed at overcoming the World's most pressing water-related challenges. Throughout its history, the company has grown to meet the demands of many water-stressed countries and their burgeoning populations. It has a successful record of accomplishment, having completed over 25,000 projects in over 90 countries – financing, consulting, process engineering, designing, constructing, operating, maintaining and owning water and wastewater facilities – in both rural and urban environments.

Offices:



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Ground Water Reliability Improvement Project (GRIP), California



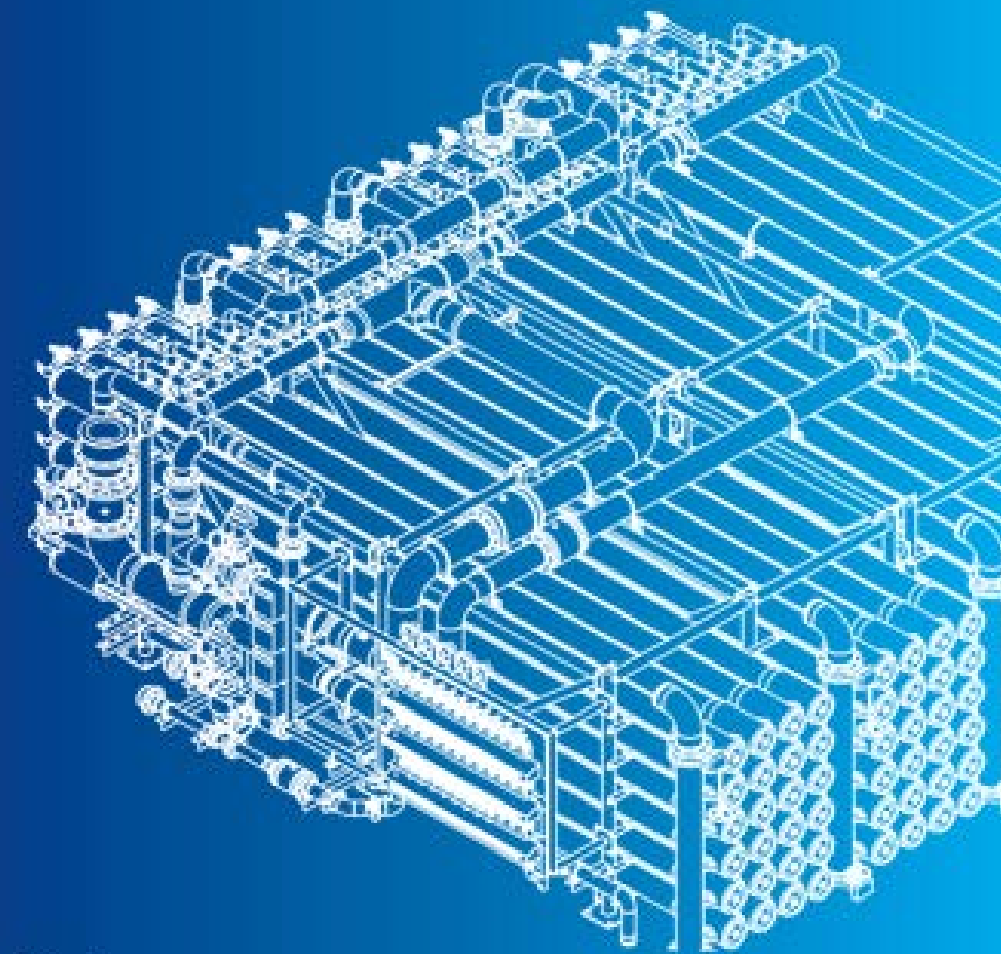
H2Oaks Centre, San Antonio, Texas



Chino Desalter Phase II, California



Biwater Membrane Treatment Desalination and Water Reuse



biwater.com

Biwater Membrane Treatment Desalination and Water Reuse

Introduction

Biwater is a world leader in providing customised membrane treatment for desalination and water reuse.

Our in-house applications, engineering and systems design expertise provides safe, efficient and reliable systems that today's water managers demand.

Biwater are unique amongst major membrane treatment plant builders as we combine our vast knowledge of water and sewage treatment. Biwater are then able to propose the plant to best meet your needs.

Biwater Service engineers are available for technical support to ensure that your system is always operating and producing water as designed and built.

Advantages of Membrane Processes

- Versatile for a wide variety of applications including:
 - Filtration
 - Softening
 - Disinfection
 - Organics removal
 - Desalination
- Reliable and simple operation with minimum maintenance requirements
- Proven design
- Robust and efficient process
- Modular design for overseas transportation
- Rapid installation
- Small footprint
- A range of units suitable for varying requirements
- Exceeds conventional filtration process performance as the treatment process creates a physical barrier between the contaminants in the feed water and the treated water.
- Systems are suitable for small facilities including residential neighborhoods, discretely blended into the surrounding area



Desalination by Reverse Osmosis

Desalination is the removal of salts and ionic species from water. Biwater has been building reverse osmosis systems since the late 70's, installing one plant 59 MLD (15.6 MGD) in Saudi Arabia in 1978 which represented 10% of the world's reverse osmosis capacity. Since then, Biwater have continued to build many reverse osmosis plants around the World.

Our custom Reverse Osmosis systems are designed specifically for the application and will comply with any client specifications or Biwater's recommended specification.

Key Factors in Designing a Reverse Osmosis Plant:

- Desired Product Capacity
- Feed Water Quality and Temperature
- Product Water Quality Requirement
- Power cost
- Plant availability required
- Location
- Raw water intake location and type
- Wastewater / concentrate disposal limitations

Water Reuse – Advanced Water Purification

Advanced water purification systems, incorporating membrane treatment technologies, are increasingly being used to develop new indirect and direct potable reuse plants that can treat and reuse wastewater for potable consumption.

Biwater has supplied membrane systems to some of the World's leading advanced water purification facilities from Changi NEWater, Singapore to Orange County, California.

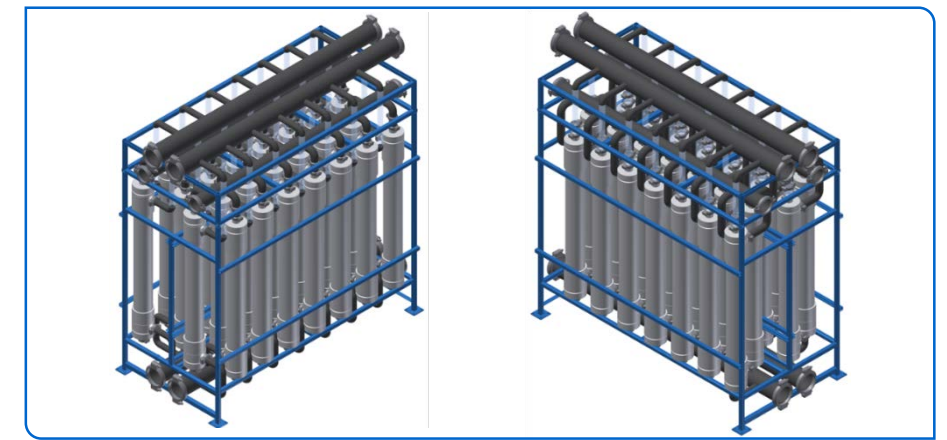
Microfiltration and Ultrafiltration

MF and UF are pressure driven membrane processes that are used to remove solids from water. Ultrafiltration membranes are slightly "tighter" with a pore size in the range of 0.001 to 0.1 micron whereas MF membranes have a pore size range of 0.1 to 1 micron.

Consequently, both types of membranes are capable of removing bacteria and cryptosporidium oocysts with ultrafiltration membranes having the additional capability of removing virus. UF and MF is also used as a pretreatment stage before reverse osmosis plants. Biwater has experience with both pressurised and immersed MF/UF systems..

Biwater's Open Platform Ultrafiltration System

Biwater's Open Platform rack system is designed to accommodate a variety of different ultrafiltration modules providing an open market for membrane selection and replacement.



Supporting Systems and Equipment

Biwater also provides many of the supporting systems and equipment for its membrane systems including:

- Auto-strainers
- Advanced Oxidation/Ultraviolet
- Chemical Dosing Systems
- Cartridge Filtration
- Clean-In-Place Systems
- Backwash Systems
- Plant Control Systems and Integration

Service and Maintenance

Biwater's qualified field service personnel can assist the Owner's operators via phone support or on-site calls 24/7. Biwater can provide custom programs for:

- Operation and Maintenance services
- Supervision and Training

