Electrodialysis Reversal Technology

Representative Installation List

Note: GE Water & Process Technologies purchased Ionics in 2005.

GE EDR Technology has been in service in thousands of facilities for a variety of industrial and public infrastructure applications. Here are a few representative locations and applications:

Forest Resort, Australia
Commissioned 2007
66,000 gpd (250 m^3/d) plant with 90% recovery

The Ballarat Area has been hit hard by water scarcity and the water alternative for Forest Resort was well-water with variable salinity. The resort selected EDR technology to create a consistent water quality while creating a very small waste volume.

Spring Gully, Australia
Commissioned 2008
151,000 gpd (570 m^3/d) plant with 78% recovery

The greater Bendigo Area embarked on a reuse project to delivery water to farmers who had restrictions on their government-regulated water allocations. EDR technology is used as part of an integrated EDR-RO system, where EDR desalinated RO concentrate and dramatically reduces the size of the evaporation disposal pond which costs $1 MM AUD per percentage water recovery.

Samsung Motors, Korea
Commissioned 1998
555,000 gpd (2,100 m^3/d) plant with 95% recovery

Due to environmental requirements of the industrial Complex, Samsung was required to build its own municipal wastewater treatment system for the Complex. A double pass EDR was adopted as part of the plant water reclamation system.

LG Phillips LCD, Kumi plant, Korea
Commissioned 2001
6.9MGD (25,940 m^3/d) plant with 85% recovery

Due to strengthened environmental regulation and an increase in water costs, LG Phillips integrated EDR as part of a wastewater reclamation system, and was the EDR was expanded in 2003 & 2004 up to 6.9MGD (25,940 m^3/d) capacity.

LG Phillips LCD, Paju plant, Korea
Commissioned 2005
2.9MGD (11,120 m^3/d) plant with 85% recovery

Due to strengthened environmental regulation and increased water price, LG Phillips integrated EDR as part of a wastewater reclamation system. It was expanded in 2007 to 2.9MGD (11,120 m^3/d) capacity.

Consejo Insular de Aguas de Gran Canaria, Spain
Commissioned 2002
4.8M (18,000 m^3/d) plant with 85% recovery

Agriculture is a big business in the Canary Islands, but production growth and yields are challenged by the lack of high quality water. The EDR plant at Barranco Seco desalinates the salty reclaimed municipal wastewater to a water quality that enhances the yield and size of tomato and banana crops.

ATLL, Spain
Commissioned 2008
53MGD (200,000 m^3/d) plant with 90% recovery

The existing river water treatment plant did not meet the finished drinking water limits for trihalomethanes set by the European Union. After a 2-year demonstration program, EDR was selected to reduce dissolved solids and the organic material

a product of
ecomagination℠

responsible for trihalomethane formation. The plant is under construction and it will be the largest EDR in the world when commissioned in 2008.

Consejo Insular de Aguas de Tenerife, Spain
Commissioned 1996
3.2MGD (12,000 m³/d) plant with 88% recovery

On this island, both tourism and agriculture are thriving industries. To supply enough water for a golf course and banana farming, EDR is used to desalinate reclaimed municipal wastewater. The original EDR plant was installed in 1996, and then expanded in 1998 and 2002 to 3.2MGD (12,000 m³/d).

Aguas de Valencia, Spain
Commissioned 2005
8.5M gpg (32,000 m³/d) plant with 90% recovery

The well water has nitrates that are above the acceptable level for drinking water. Two EDR facilities, the Falconera and Alcodar plants, were constructed each at 4.2 gpd (16,000 m³/d) capacity and operating at 90% water recovery to reduce nitrates to meet drinking water quality objectives.

Heineken, Spain
Commissioned 1988
2.5MGD (9,500 m³/d) plant with 85% recovery

Raw water TDS to this brewery in Valencia was above acceptable levels. An EDR plant was first installed in 1988 to create high quality water, and EDR was expanded in 2003 and 2005 to 2.5MGD (9,500 m³/d) capacity.

Comision Federal de Electricidad (CFE) Tula, Mexico
Commissioned 2001
1.3MGD (4,745 m³/d) plant with 90% recovery

With local water very scarce, water is pumped from over 12.4 miles (20 km) away to serve the plant. But due to the high TDS of the water, conventional ion exchange system operated inefficiently. EDR was installed to remove a majority of the TDS to reduce the ion exchange operating chemicals and wastewater volume.

Quilmes, Argentina
Commissioned 1996
5.4MGD (20,520 m³/d) plant with 80% recovery

The ability to use a specific quality of water is important in creating a consistent beer quality. At the Cerveceriay Malteria brewery, a mobile 1MGD (3,800 m³/d) EDR plant was used, and a full-scale plant was installed to reduce and control the dissolved solids.

Polar, Venezuela
Commissioned 1997
3.3MGD (12,480 m³/d) plant with 85% recovery

Water at the Cerveceria Modelo brewery suffers from elevated and especially sodium as a result of seawater intrusion of the local aquifer. Water conservation is key to long-term water resources sustainability. To reduce the water demand on the aquifer and to create consistent high quality water for brewing, EDR was installed at this facility. The ability to control the water quality without blending or the addition of chemicals is also an important operations aspect at the plant.

Grupo Modelo S.A., Mexico
Commissioned 2004
7.7MGD (29,280 m³/d) plant with 90% recovery

After 20 years of EDR experience at the Compania Cervecera del Tropico Corona brewery, a larger EDR plant was installed to reduce the TDS of the well water. EDR is able to operate at 90% water recovery even in the presence of very high silica.

Backus & Johnson S.A., Peru
Commissioned 1993
2.4MGD (9,120 m³/d) plant with 90% recovery

The raw water to this Cristal beer brewery has elevated levels of sulfate and it could adversely affects the taste of the product. EDR removes a majority of the sulfate and dissolved solids to provide a consistent, high quality water for brewing operations.

City of Melville, Canada
Commissioned 1991
475,000 gpd (1,799 m³/d) plant with 85% recovery

In order to expand the fresh water supply, the City of Melville looked toward the brackish Hatfield aquifer. EDR was selected after an EDR & RO demonstration. High water recovery was an important consideration as the concentrate water is sent to a

deep well for injection. As of 2007, over 85% percent of the original membranes are still in service after 16 years.

Mason City, Iowa, USA
Commissioned 2004
9.5MGD (36,000 m^3/d) plant with 85% recovery

The well water in Mason City suffered from high levels of radium and hardness. In 2004, a 9.5MGD (36,000 m3/d) EDR plant was put on line in 2004 to reduce hardness and reduce the radium levels to drinking water standards.

Magna Water, Utah, USA
Commissioned 2008
6MGD (22,727 m^3/d) plant with 85% recovery

The local well water contains naturally occurring arsenic and perchlorate from a pollution source. EDR was selected as the most cost-effective treatment technology after a demonstration pilot. The plant will be commissioned in 2008.

City of Suffolk, Virginia, USA
Commissioned 1990
13.7 MGD (51,515 m^3/d) plant with 94% recovery

Well waters in Suffolk have fluoride levels that exceeded maximum allowable level. An EDR design at 94% water recovery rate was installed in 1990 to reduce fluoride to an acceptable level, and the plant was expanded in 2006 and 2008.

Sarasota County, Florida, USA
Commissioned 1995
12 MGD (45,455 m^3/d) plant with 85% recovery

This growing community required additional water resources but only brackish wells were available. After an EDR and RO demonstration program, an evaluation by a consulting group recommended EDR over RO technology due to EDR's low well withdrawal rate (high water recovery) and low life cycle costs.

City of Sherman, Texas, USA
Commissioned 1993
5.7 MGD (21,590 m^3/d) plant with 85% recovery

The local well water resources were not able to keep up with the drinking water demand and an EDR plant was constructed to desalinate brackish Lake Texoma source to reduce chloride and sulfates to acceptable levels. The plant was expanded in 1996 to 5.7 MGD (21,590 m^3/d).