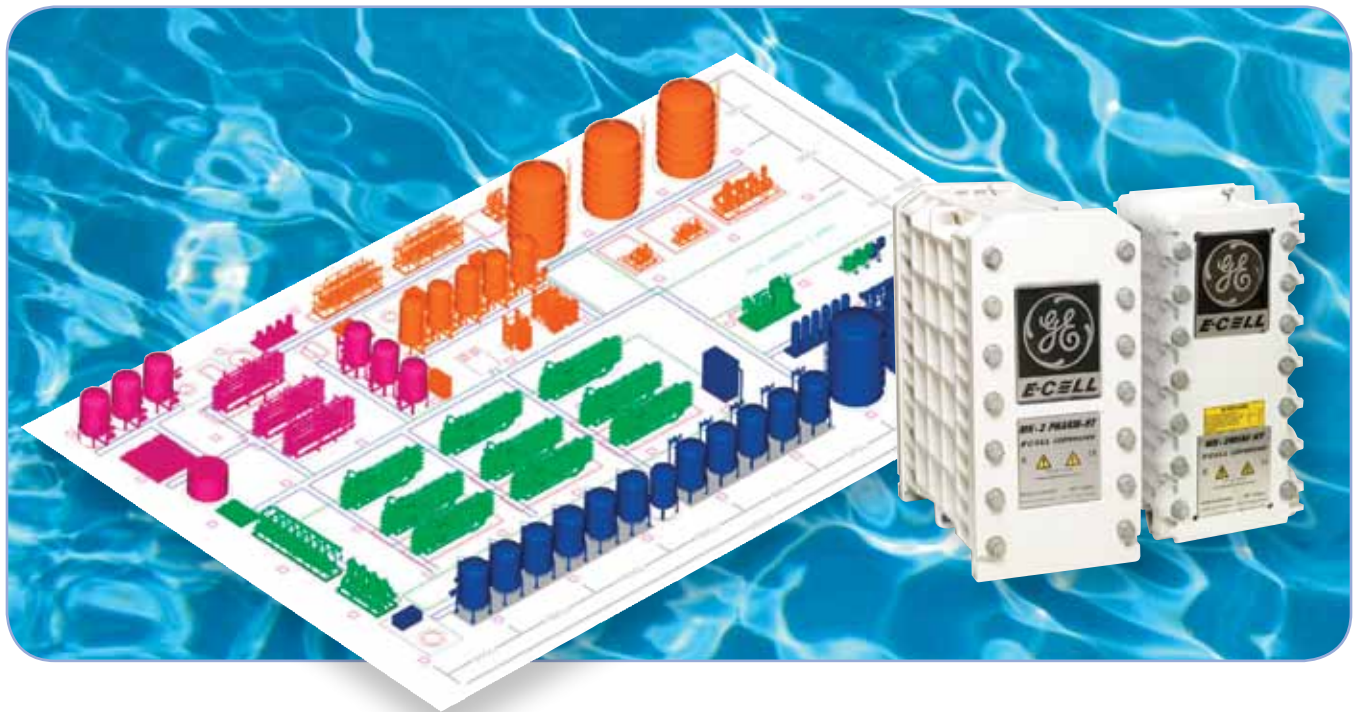


GE Power & Water
Water & Process Technologies

Ultrapure Water Solutions



imagination at work

What GE offers

GE offers a broad portfolio of water and process technologies, including: separation equipment; membrane and filtration technology; monitoring solutions; analytical instruments; specialty chemicals; mobile water capabilities; service; and financing. We focus on difficult-to-treat water and wastewater, and implementing water reuse solutions to provide customers with the quantity and quality of water they need for their applications. For example, our installed Ultrapure Water (UPW) systems purify and reclaim more than two billion gallons (eight million cubic meters) of water a day for a variety of purposes, including power generation, industrial processes, municipal drinking water, commercial and institutional uses, and landscape and agricultural irrigation.

We have:

- 50+ years of experience in the design, installation, operation, and maintenance of membrane-based water treatment systems
- 1600+ Reverse Osmosis (RO) installations worldwide
- 80+ RO and Electrodionization (EDI) installation sites producing high quality deionized water.
- 30+ High Efficiency Reverse Osmosis (HERO⁺) installations producing semiconductor grade deionized water

The performance you expect

- Primary manufacturer of world-class RO and EDI systems and components.
- High-quality components and material of construction selected for long-term reliability
- Integrated technologies with a single-source supplier provides fast delivery and reliable operation
- Modular design easily adapts to site and project specifications for a unique technical solution
- Comprehensive documentation package often available prior to bidding
- Global engineering and field services at your disposal to design, commission, or start up systems

Why GE Water?

Technology Innovation:

- Environmentally friendly solutions that operate virtually chemically free
- Reliable and consistent performance to ensure that you get an absolute barrier that will not get depleted overtime
- Proven technology with lower life-cycle cost compared to conventional solutions.

Commercial and fulfillment options:

- Capital Sales, Build-Own-Operate (BOO), and Design-Build-Own-Operate (DBOO) types of projects
- Worldwide manufacturing in state of the art facilities for quality and quick delivery
- Pre- and post-treatment, clean-in-place, chemical feed injection systems

The GE Advantage



Speed

- Quick delivery
- Solid documentation
- Pre-engineered
- Configurable options
- Worldwide manufacturing on four major continents

Reliable Performance

- Largest provider of membranes and membrane systems in the world
- World-class designs
- Thousands of RO installations

One Source

- Systems integration
- Vertical technology integration
- Trusted performance
- Technical expertise

UPW systems designed for you

No matter if your UPW need is boiler feedwater (low to high pressure), ingredient water, process water or rinse/clean water, GE offers UPW systems platforms to meet your distinct quality needs.

RO+EDI Series:

Flow rates: 163-3000 m³/day (30-550 gpm)

The RO+EDI Series consists of integrated RO and EDI solutions with ancillary equipment. These units are designed to operate and provide a water quality of 16-18 megOhm resistivity and less than TDS <50 ppb; silica <10 ppb; sodium <3 ppb. They are fully engineered for quick delivery and provide a number of standard options and customization capabilities.

Flexible configuration:

- Feedwater salinity: > 5000 mg/L
- Designs: 65% or 80% recovery
- Electrical control packages: Basic or Premium

Package features:

- Pre-designed systems
- Pre-filtration cartridge filters
- Pre-configured options



HERO Platform:

Single skid flow rates: 50-400 m³/h (220-1761 gpm)

The HERO Platform is a pre-engineered plant for semiconductor quality UPW production in capacities starting from 50 m³/h (220 gpm) to multi-train systems > 3,000+ m³/h (>13209+ gpm).

Benefits:

- Overall project schedule reduction in key areas
- Common project risk reduction with enhanced predictability
- Flexible and modular designs
- Balance-of-plant and services offering



TITAN, PROPAK and PRO Series:

Flow rates: 100 to 2500 m³/day (20-460 gpm)

The TITAN, PROPAK and PRO Series consist of medium to large size skid-mounted platforms of RO systems and ancillary equipment. They are fully engineered for fast delivery and provide a number of standard options and customization capabilities.

Flexible configuration:

- Feedwater salinity: 500 to 5000 mg/L
- Designs: 50% or 80% recovery
- Electrical control packages: Basic or Premium

Package features:

- Pre-designed systems
- Integrated energy recovery systems
- Pre-filtration cartridge filters
- Pre-configured options
- Remote central control system
- Complete instrumentation set



A success story

Semiconductor grade UPW

Challenge: SunPower Manufacturing in Malaysia wanted to increase their ultrapure water production in order to meet the needs of its next generation manufacturing facility for their new solar cell fabrication plant.

Solution: GE supplied an ultrapure water system. GE will design, supply and install an advanced ultra pure water system featuring the internationally patented High Efficiency Reverse Osmosis (HERO) process. The system, operating on a challenging and variable feedwater source, will provide 2,400 gpm (545 m³/h) of ultra pure water for manufacturing.

Results: The GE solution will save more than 230 million gallons (870,645 m³) of water, relative to other technologies—sufficient to meet the daily water needs of more than 8,300 community residents key for this water constraint region. The unique solution removes 98.8%+ TDS from the water and recovers 90%+ of the water. It is also able to treat impaired waters with high silica.

A success story

Boiler feedwater

Challenge: Daramic, the world's largest producer of battery separators, needed to produce high quality boiler feedwater from water high in alkalinity.

Solution: GE installed a PRO 150 Reverse Osmosis (RO) system to control the alkalinity concentration and increase boiler cycles. GE also provided a chemical RO pretreatment to treat the high iron content and remove chlorine.

Results: The combination of RO and chemicals eliminates the need to use their water softeners on a daily basis, which reduces their salt consumption. The RO also increases the cycles of operation on the boilers which saves water and lowers the load on the wastewater plant. Daramic estimates US\$110,000 savings per year with the GE solution.

A success story

High purity water

Challenge: A Columbian petrochemical company needed high purity water for the fine mist used to cool their GE Energy LM6000 turbine.

Solution: GE provided a multi-step process to transform the local well water into the high purity water needed. GE used a multi-media filter, activated carbon filter, a PRO Series RO machine, an E-Cell Electrodeionization (EDI) system and chemical treatment for cleaning.

Results: The high purity water system allows the turbine to operate more efficiently and protects it from damage from scaling that occurs when minerals are not removed from the water. The high purity water also contributes to a longer life for the turbine with more reliable operation.

Meeting your unique needs

The GE Ultrapure Plant provides you with equipment, services, balance of plant, and more. For more information on how GE can provide you with a UPW system, contact your GE account representative or visit us at www.ge.com/water.



Find a contact near you by visiting www.ge.com/water and clicking on "Contact Us."

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