

Pall Membrane Filtration Reverse Osmosis (MFRO) Freshwater Generators

Freshwater. Anywhere. Anytime.



AEBROMARINEEN

Operate Freshwater Generators Anywhere

Pall's MFRO freshwater generators are a combination of hollow fiber membrane filtration (MF) with reverse osmosis (RO) desalination membranes in a fully automatic system.

These systems are especially suited for many types of marine platform including cruise ships, commercial and military vessels.

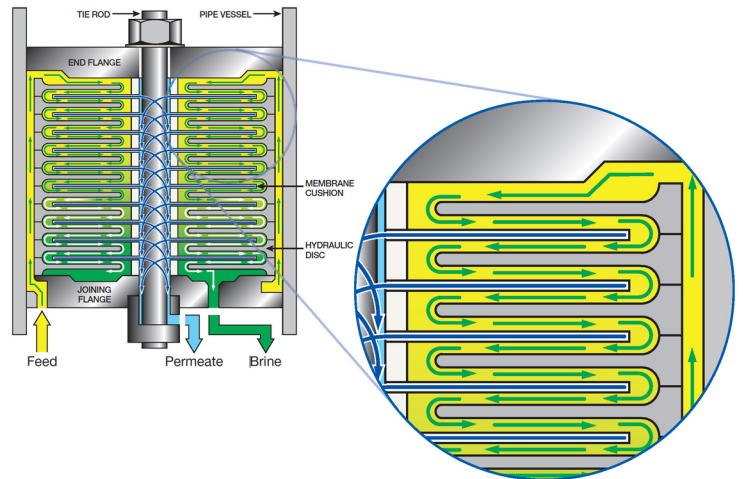
PALL MEMBRANE FILTRATION MODULES

Suspended solids, bacteria, protozoan cysts and viruses in the feedwater are removed by a hollow fiber membrane filtration system. The pore size of the membrane controls the fraction of the particulate matter that is removed. These very robust hollow fiber based membrane filtration retain particulate matter, while the water and its soluble components pass through the membrane as filtrate, or filtered water. The retained solids, in concentrated form, are discharged from the membrane system as a waste stream periodically during a reverse filtration flush. This technology allows the system to cope with feedwater, which has a high concentration and wide range of suspended solids, without the need to use replaceable cartridge filters.

PALL DISC TUBE REVERSE OSMOSIS MODULES

Reverse osmosis (RO) membranes are used to remove the dissolved salts contained in the sea or brackish feedwater. The membrane technology reduces the dissolved salts down to a maximum of 500mg/l while the Pall Disc Tube (DT) configuration with short open channel feed flow paths impart turbulent flow to minimise concentration polarisation and hence reduce

Industry leading technology from Pall Corporation enables ship operators to produce freshwater from virtually any water source. Locations such as littoral waters, estuaries, rivers and harbours can exhibit extremely high-suspended solids and other contaminants which often deter ship operators from making water in these areas.



membrane scaling and fouling. The compact and flexible construction gives long membrane life, easy access and lower replacement costs.



PALL SPIRAL WOUND REVERSE OSMOSIS MODULES

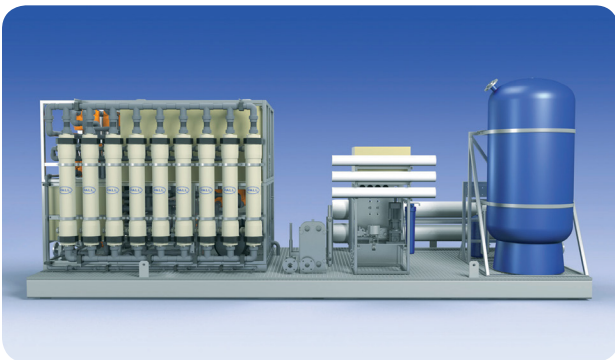
Spiral wound RO modules perform the same function as DT modules but are typically applied in larger applications where flow rates are in excess of 70 m³/day. These modules feature an extremely high membrane surface area to hold-up volume ratio. Feedwater is

optimally pre-treated by membrane filtration, enabling spiral wound modules to provide excellent reliability with greatest output of potable water and smallest footprint together with minimal energy use.

Pall Freshwater Generators

PALL MEMBRANE FILTRATION (MF) STAND-ALONE WATER TREATMENT SYSTEMS

For vessels that already have reverse osmosis systems fitted on-board, Pall offers an MF stand alone system as an upgrade to achieve full capability.

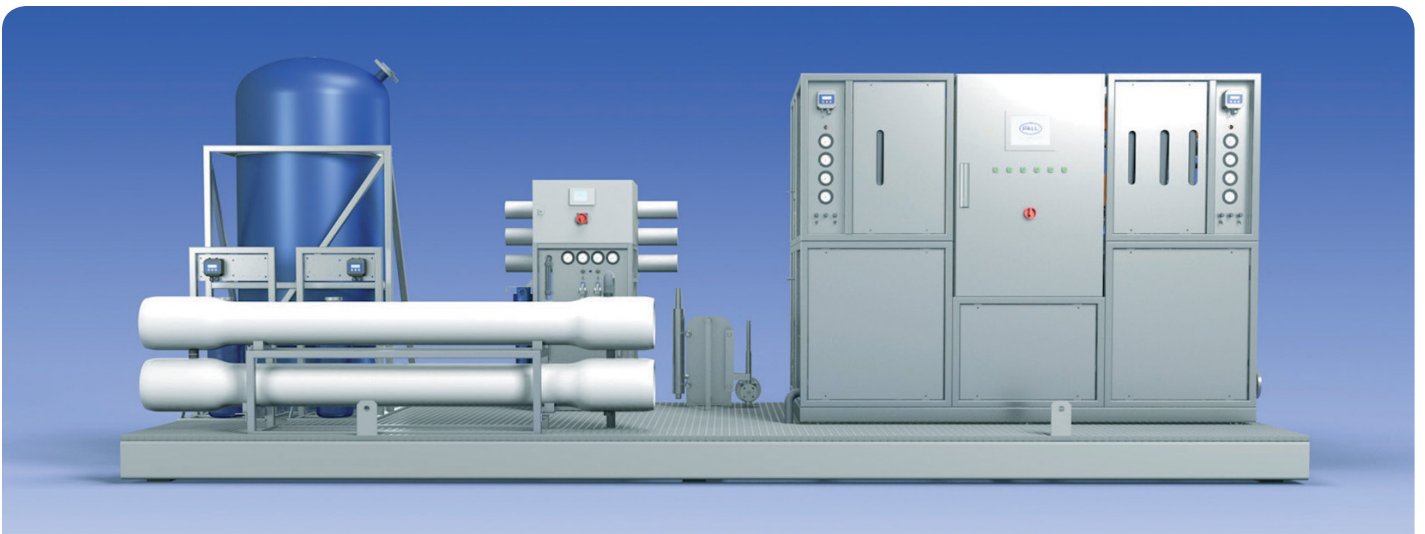


Pall MFRO Freshwater Generators

Pall's **Freshwater Generators** combine MF and RO technologies, arranged in a self contained automated package.

- Greatly increase the availability of fresh water from virtually any water source.
- Allow ships to remain 'on station' in all environments resulting in greater availability of the vessel.
- Are fully automated and easy to operate via a touchscreen panel.
- Provide safe and consistent water quality.
- Rely less on port authority bunker water saving cost and time in port.
- Require lower levels of maintenance resulting in reduced operational costs and a shorter return on investment.
- Can be manufactured to military grade specification meeting all relevant naval standards.
- Are modular in design and supplied in sections to aid transit through vessels in retro fit situations.
- Are ideal for smaller military ships
- Are supplied and supported by the Pall Corporation, a trusted supplier to industry, governments and multiple navies for over sixty years.

The Pall Membrane Filtration technology promotes an enhanced ship board capability, availability of fresh water.

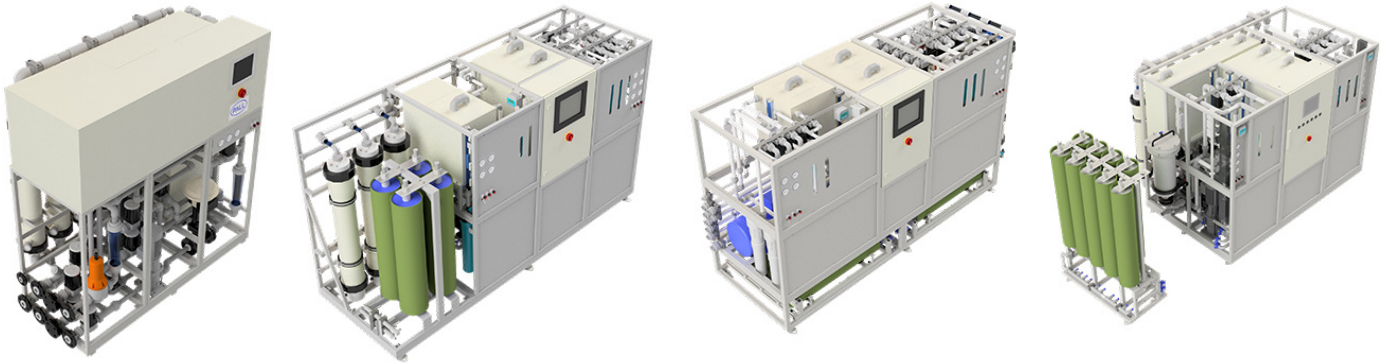


Integrated Logistic Support (ILS)

Pall Corporation has a broad installation base of over 2000 RO units operating in Military and Commercial shipping applications with a worldwide service structure providing complete Integrated Logistics Support and technical assistance.

NATO codified sub components.

Fully documented training packages that can be tailored to individual customer needs.



With Pall, your operations are supported by a company with the experience, commitment, R&D, people and service you deserve.

Pall Corporation provides critical filtration, separation and purification solutions to meet the demanding needs of a broad spectrum of industrial customers around the globe.

Our expertise is in defining the correct filtration or fluid processing solution for your marine systems and customizing our products to suit your applications.

Research and Development

Working with equipment and component manufacturers in these markets, Pall custom designs products and purification systems that are fully integrated into marine applications. These optimised products extend component service life, enhance safety of occupants, and improve the operating reliability of all fluid systems.

Scientific and Laboratory Services

A principal element in Pall's customer support operations is our Scientific and Laboratory Services (SLS) Department. Filtration problems arising at sea can be assessed and simulated in the laboratory. Close monitoring by Pall scientists can determine the engineered solution to your filtration, separation and contamination problems and advise accordingly.



Sales and Support

The sales and support team comprises a group of experienced specialists located in Europe, Australia, Asia and the Americas and distributors and representatives worldwide. We offer a comprehensive sales and support service to all manufacturers and operators of marine and associated dockside support equipment, wherever their location.



Quality

The policy of Pall Marine is to endeavour to design and manufacture products to the highest standards of quality, safety and reliability.

Please contact Pall for details of applicable ISO 9001 certificates.



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Pall Corporation has offices and plants throughout the world. To locate the Pall office or distributor nearest you, visit www.pall.com/contact.

The information provided in this literature was reviewed for accuracy at the time of publication. Product data may be subject to change without notice. For current information consult your local Pall distributor or contact Pall directly.

IF APPLICABLE Please contact Pall Corporation to verify that the product conforms to your national legislation and/or regional regulatory requirements for water and food contact use.

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