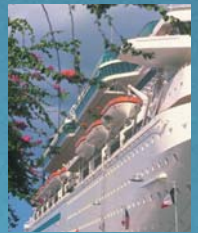




Pall Corporation

reverse osmosis systems
pure water from any source



the world at
sea drinks
Pall Marine

Filtration. Separation. Solution.SM

AEROSYSEN

Water is indisputably the most essential natural resource the earth has to offer the human race. It is essential to sustain life itself.

Unfortunately over 97% of it is distributed across our oceans and seas as saltwater, rendering it unsuitable for general use so the majority of the worlds drinking and cleaning water is taken from rivers, lakes, and groundwater systems.

When pure water sources cannot be tapped, such as in the case of long-term sea going vessels, the only options are either excessive storage and complex handling procedures or to have a means of extracting pure water from the sea.



Introducing...



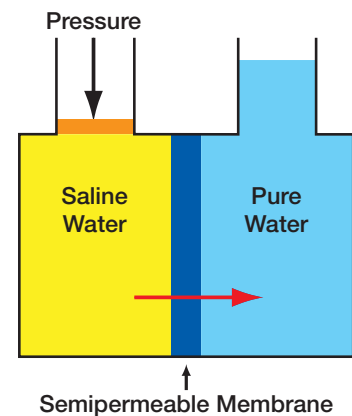
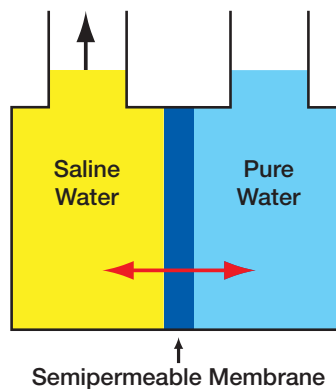
Pall Marine have developed proprietary advanced design reverse osmosis (RO) technologies to provide high grade drinking water from seawater or other source in a single automated process, without the need for chemical cleaning or pre-treatment.

Pall Marine clean drinking water systems have been employed in over 2000 applications globally on all types of craft including modern cruise liners, leisure, merchant and military vessels.

What is Osmosis?

Natural osmosis in seawater occurs when two fluids of different salinity are separated by a semi-permeable membrane. The fluid with the lower salinity will pass through the membrane until the salt solution becomes equal on both sides of the membrane.

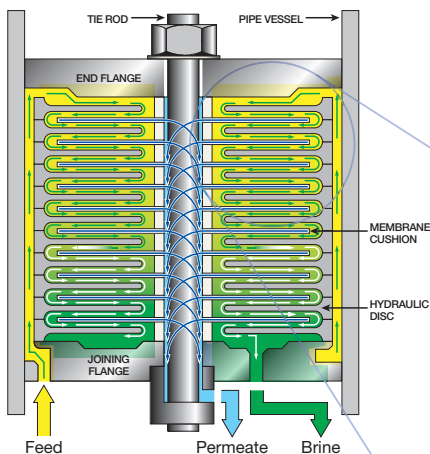
If pressure is exerted on the higher salinity solution the membrane allows desalinated, de-mineralised water to pass into the pure solution whilst it rejects the dissolved impurities, a process known as 'reverse osmosis'.





The Pall Marine Disc Tube™ (DT) Module System

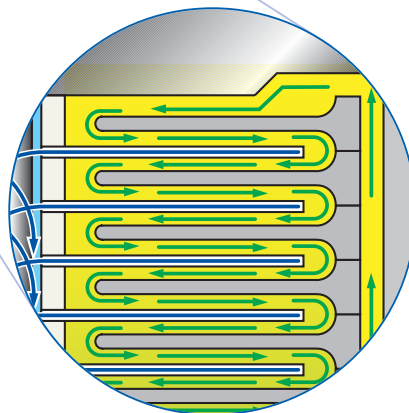
The modular design consists of individual thin film composite membranes cushioned between hydraulic cover discs, stacked, and assembled about a centre tension rod and effectively sealed between metal end flanges.



The open channel created by the membrane cushion enables fully turbulent feedwater and permeate flow. It can also operate on sea water with a silt density index (SDI) as high as 20 without risk of fouling the RO membranes.

DT Module Operation

- Seawater flows down passages between the disc stack and the pressure vessel and enters the flow chamber from beneath the bottom disc.
- The flow is directed up and over each membrane cushion allowing pure water to pass through the semi-permeable membrane and be collected by the permeate collector.
- Feedwater contamination is prevented by O-ring seals fitted to the hydraulic discs.
- As the pure water is removed, the strongly concentrated feed is taken away to discharge.



Features and Benefits

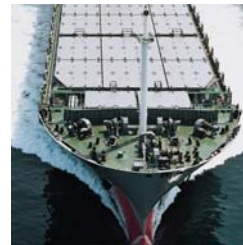
The Pall Marine DT Module is designed to overcome many of the problems associated with existing reverse osmosis desalination systems:-

- High performance and low operating costs.
- Modular construction for installation into available spaces.
- Worldwide service network with 20 years experience on membrane systems.
- Unrestricted, open channel, turbulent feedwater flow.
- No chemical pre or post treatment required.
- High permeate recovery rates.
 - 30% from seawater.
 - 50% from 'brackish' water.
- Low environmental impact.
- Integrated self cleaning system.
- Simple and flexible maintenance procedures.
- Expected membrane life – 5 years plus.
- Automated failsafe operation.
- Quick, simple installation.
- Wide range of semi-standard systems capable of producing up to 500,000 liters of pure drinking water a day.

A wide range of systems capable of producing up to 500,000 litres of pure drinking water a day are available or alternatively systems can be engineered to meet your individual needs.

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

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



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 England, France, Germany, Italy, Australia, Asia and the USA and distributors and representatives worldwide. We offer a comprehensive sales and service support to all manufacturers and operators of marine and associated dockside support equipment, wherever their location.

Quality

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

To implement this policy, the organisational structure and the procedures by which Pall Marine operates are fully defined and approved to ISO 9001.



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Pall Corporation has offices and plants throughout the world. For Pall representatives in your area, please go to www.pall.com/contact

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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