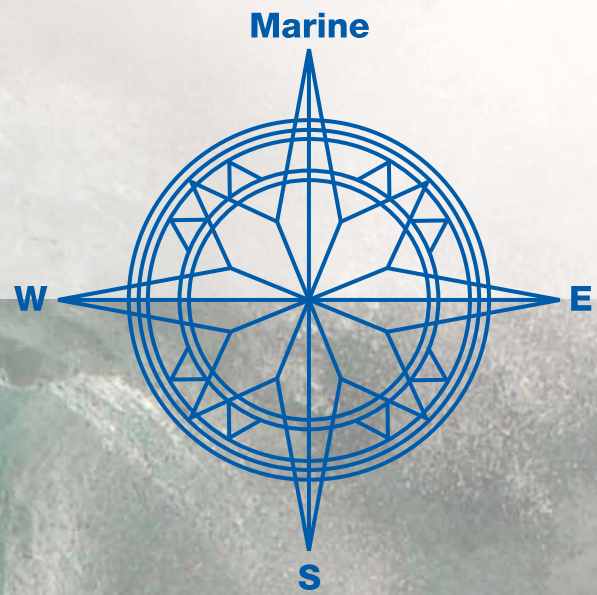




Pall Corporation



Freshwater Generation Without Limits

Operate Anywhere with Pall Integrated Membrane Systems



Operate Anywhere Freshwater Generators

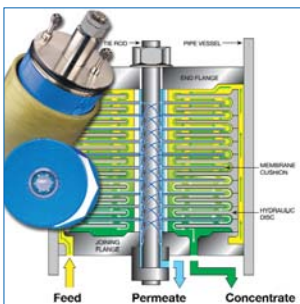
Industry leading technology from Pall Corporation enables mobile water purification from virtually any water source. Our Integrated Membrane Systems (IMS) remove bacteria, protozoan cysts, viruses, dissolved components and other contaminants to provide pure, safe drinking water and/or all water utility purposes.

Pall has designed, manufactured and qualified a series of automated IMS water purification systems that are proven to perform with feedwater supplied from open sea, including littoral areas, river mouth, rivers and harbour areas. The feedwater could have extremely high-suspended solids (500NTU) and salt concentrations, which often deter ship operators from making water in these areas for safety and practical reasons.



Pall Aria™ Modules

Suspended solids and organisms in the feedwater are removed by a 0.1 micron hollow fibre membrane filtration system. The pore size of the membrane controls the fraction of the particulate matter that is removed. These robust PVDF microfiltration (MF) membranes 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 level of and wide range of suspended solids, without the need to use replaceable cartridge filters.



Pall Disc Tube™ Module Reverse Osmosis System

Reverse osmosis (RO) membranes are used to remove the dissolved salts contained in the sea or brackish feedwater. The membrane technology enables the reduction of dissolved salts in excess of 98.5% while the Pall Disc Tube (DT) configuration with short open channel feed flow paths impart turbulent flow to minimise concentration polarisation and hence reduce 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 but are typically applied in larger applications where higher flow rates are in excess of 50m³/day. The modules feature an extremely high membrane area to hold-up volume ratio. With feedwater optimally pre-treated when combined with Aria in an IMS, spiral wound modules provide excellent reliability with greatest output of potable water and smallest footprint together with minimal energy use.



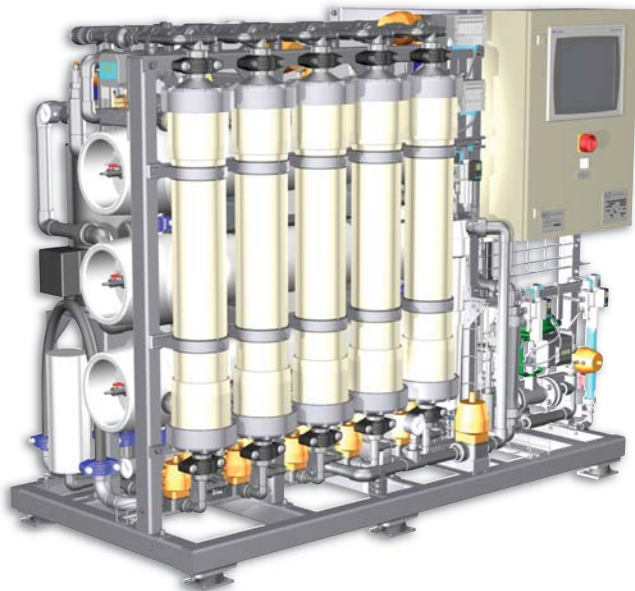
Pall IMS Water Purification Systems

A range of MF and IMS water purification systems producing up to 500 m³ of potable water

Pall Aria MF Membrane Filter Stand-alone

Example of an independent MF unit with Pall Aria filtration membrane modules:

- For upgrading existing RO based systems
- Provision of sterile bunker water
- Maintenance free automated system
- Automated dosing of cleaners and disinfectants
- Automated backwash and airscrub routine
- Segmented design available for retrofit requirements
- Tailored for specific customer needs



Pall IMS Freshwater Generator

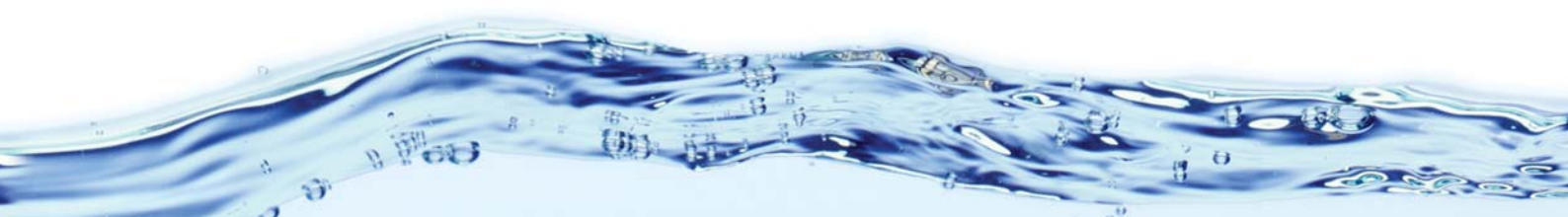
AT32 IMS unit consisting of Aria pre-filter and reverse osmosis membranes. The unit has a desalination capacity of 40 m³/day. The unit can also provide sterile bunker water from a shoreside source at a rate of 160 m³/day.

- MF pre-treatment with the PVDF hollow fibre MF membranes
- Fully automated minimal maintenance water production
- 15" Operator Machine Interface
- Easy to operate
- Minimal cost of operation
- Microfiltration (MF) Mode
- Typical post treatment options include remineralisation bed and CO₂ dosing unit and chlorination
- Third stage RO enhancement unit option for technical water

ILS and Operator Training

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

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



Pall IMS Water Purification Systems

Outline Specifications

Treatment Technology	Product Flow Range [tpd] (Seawater at 36g/l TDS@25°C)	Nominal Dimensions (m)	Weight (Tonne)	Power Requirements (KW)
MM/Cartridge/DTRO	2-4	0.8 x 0.5 x 1.1	0.2	2
MM/Cartridge/DTRO	5-10	1.2 x 0.6 x 1.5	0.7	4
IMS AT25	10-18	2.5 x 1 x 1.6	0.5	15
MM/Cartridge/DTRO	10-14	1.3 x 1.1 x 1.5	0.6	7
IMS AT32	20-40	1.8 x 1.0 x 2.1	1.4	19
MM/Cartridge/DTRO	15-30	1.8 x 0.8 x 2	1.9	20
IMS AT40	35-60	~	~	~
MM/Cartridge/DTRO	35-60	3 x 1 x 2.5	2.8	30
IMS WTS100	70-100	20' ISO Container	~	~
MM/Cartridge/DTRO	70-100	4 x 5 x 3	10	40
IMS WTS500	500	20' ISO Container	~	~
MM/Cartridge/DTRO	500	9.5 x 3.5 x 3	20	175

MM = Multimedia, tpd = tons/day, approximates to m³/day



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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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