



Desalination Ship

*‘ship to shore
mobile
desalination
solutions’*



The Biwater AEW desalination ship will provide a completely self-contained water treatment system.

As an indication of the completeness of the ship's design it will include:

- Seawater intakes with traveling grates and screens, etc.
- Multiple intake pumps.
- Rack mounting for chlorine gas cylinders and both manual and automatic chlorinators. Storage and mixing facilities for feeding wetted polyelectrolyte, alum, sodium sulfite, and sulfuric acid.
- The design concept allows for variations in the quality of seawater as the above chemicals are added before the water is filtered or put through the desalination systems.
- A battery of automatic horizontal pressure filters with media carefully selected for the anticipated filtering application.
- Prefeed pumps for the cartridge filters.
- Diesel or optional electric driven high pressure reverse osmosis feed pumps with energy recovery system using impulse turbines.
- Seawater reverse osmosis membranes for converting pretreated and filtered seawater to fresh drinking water. The reverse osmosis membrane was first introduced in 1973 and is the only commercial desalination membrane capable of meeting World Health Organization standards in the production of water from seawater in a single pass.
- The existing integral design of the ship will provide electric generating power capacity to drive all the pumps and controls with the exception of the reverse osmosis pumps. The ship will be complete with all water, chemical and fuel storage tanks necessary for long term continuous operation.

Crew quarters

The crew quarters will be adequately sized to provide for their complete needs, including work area, recreational area, and residential quarters. It will also feature a complete galley with required stores, refrigeration, and air-conditioning. Provisions will be made for all maintenance necessary to provide continuous operation, including capabilities for mechanical, electrical, and instrument work. The completely self-contained crew quarters and residence will allow respect for and non-interference with the local society and customs.

Helipad

There will be a helipad at the bow of the ship for the safe and convenient transportation of supplies and personnel.

Net production design

The desalination ship has been initially designed on the basis of 38 Mld net production (10 million U.S. gallons per day). Sizes 27 Mld (7 million U.S. gallons per day) and 11 Mld (3 million U.S. gallons per day) capacity are also possible.

Pre-tested

The ship will be completely outfitted and tested in the U.S.A. by experienced craftsmen prior to setting sail and will be capable of producing fresh potable drinking water shortly after arrival at its destination. It will require a minimum of civil work.

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Advantages of shipboard reverse osmosis desalination system:

Quickest source of fresh water - The concept of a completely shipborne reverse osmosis desalination unit means that time between the ordering of the system and the production of fresh water is minimised.

Lowest erection cost - Saves cost and time of expensive civil works thus reducing the installation cost.

Savings in startup engineering service - This plant will be completely debugged before shipment, and therefore the period of engineering start-up will be reduced.

Built-in power plant - The ship's main propulsion equipment will be utilised as a power plant to operate the reverse osmosis desalination plant. This means there will be no need to draw on the local electric energy sources.

Built-in maintenance facilities - The ship will contain a complete electrical, mechanical, and instrument shop. It will have all facilities for maintaining the reverse osmosis desalination system.

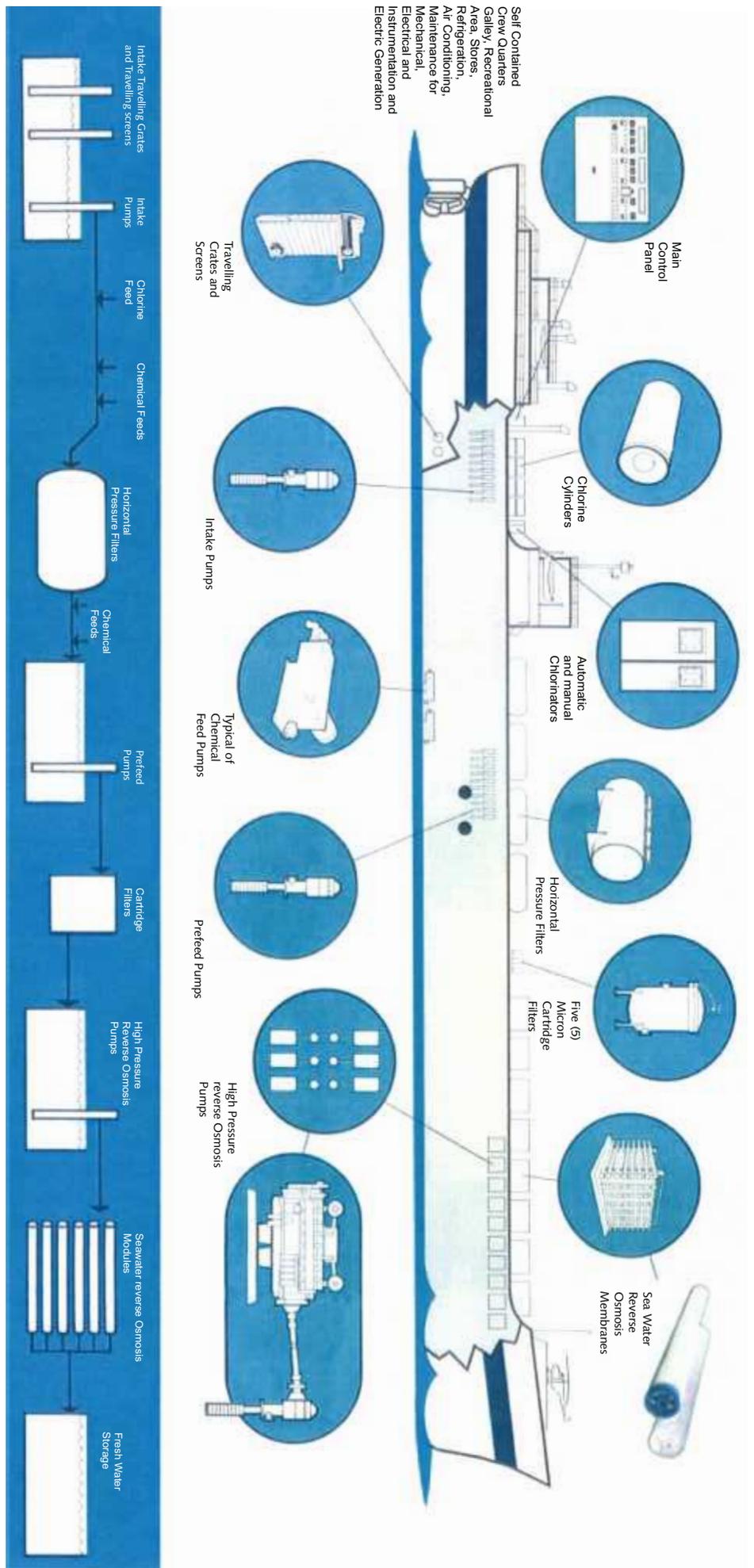
Built-in storage for spares - In addition to the operating units, the ship will include shelf spares for at least two years operation. An adequate number of spare reverse osmosis modules will also be provided.

Fresh water pumps - The ship will include the necessary transfer pumps to transfer fresh water to the shore.

Storage for chemicals - Adequate storage for all the chemicals used in the pretreatment of seawater will be provided. This will include storage for chlorine, polyelectrolyte, alum, sodium sulfite and acid.

Provisions for cleaning and sterilisation - The ship will include permanent facilities for periodic cleaning of the reverse osmosis modules. It will also include facilities for periodically sterilising the reverse osmosis modules.

Permanent location - An area can be dredged, the ship moved to that area, and the area around the ship backfilled, thus creating a permanent onshore installation. This will have all the advantages of a permanent installation plus the advantages mentioned above.



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