

Mobile

Sea Water Desalination

Capacity of 1,000-1,200 L/Hr

1.1 Description

System produces pure and safe water (per WHO standards for drinking and general use purposes) sourced from sea water.

1.2 Feed Water Specifications

The design of the mobile and independent water treatment plant we are offering for this project provides the ability to produce safe drinking water from Sea water with TDS levels up to 36,000 mg/l

As no specific water quality has been provided we have assumed also the following quality parameters to be representative of the raw water feed to the system.

- pH = 6.5 – 8.0
- Iron (Fe) ≤ 0.1 mg/l
- Silica (SiO₂) ≤ 25 mg/l
- Turbidity ≤ 30 NTU
- Presence of micro-organisms such as bacteria, viruses, parasitic worms, protozoa, etc.
- Possible presence of pesticides, herbicides and fertilizers

It should be noted that detailed information on raw water quality was not provided.

1.3 System Capacity

The treated water capacity of the proposed system: between 1,000 to 1200 lit/hr.

Assuming a daily consumption of 15-20 liters/person/day – for drinking and cooking purposes only (per UN guidelines for refugees / displaced people) – each system will be able to provide the needs of 1500 - 2000 people, assuming continuous operation 24 hours per day.

1.4 Produced Water Quality

Under this SOW, the quality of the treated water will meet the following parameters:

- Turbidity < 1 NTU
- TDS < 500 mg/l
- pH = 6.5-7.5
- 0.5-2.0mg/l of residual chlorination to ensure and maintain required microbial quality.

All other parameters comply with the WHO standards for drinking and general use purposes.

1.5 Treatment Process

The purification system includes the following treatment stages:

- Raw water inlet suction and boosting station. Submersible pump installed on a floating pontoon.
- Preliminary mechanical screen filtration to 200 micron – removal of “large” particles from the feed.
- Pre-chlorination to oxidize iron & manganese that may be present in the raw water and to prevent bio-fouling of the media filter.
- Media / sand filter – for removal of suspended solids and oxidized iron, reduction of turbidity and SDI. With automatic backwash.
- Activated carbon filter – for removal of residual organic material that may be present in the raw water and de-chlorination of the feed stream to the RO membranes. With automatic backwash.
- Anti-scalant dosage – to prevent scaling on the RO membranes.
- 5 micron cartridge safety filter – for removal of residual colloidal and organic material present in the RO feed stream.
- RO (Reverse Osmosis) membrane separation, designed for sea water desalination. Includes high pressure pump and 8” sea water RO membranes in pressure vessels.
- CIP (Cleaning In Place) unit to clean and sanitize the RO membranes in place without removal from the unit.
- Post-chlorination to achieve residual disinfection of the treated water.
- pH adjustment of the treated water (controlled caustic soda dosing).
- Pillow-type treated water storage tank, volume = 5,000 lit.
- Treated water delivery pump + tap stand

2 Mode of Supply

The system is supplied as skid-mounted, on a single skid. All auxiliary equipment will be accommodated for on the skid.

Set-up time for the unit is minimal: 15-20 minutes, by 1-2 people.

The systems can operate continuously and automatically, complete with a PLC based control system.

The system is supplied "ready-to-use" after complete validation and fully tested prior to shipment.

The unit comes complete with a comprehensive Operations & Maintenance manual that includes detailed installation, set-up and O&M instructions, process and electrical drawings, technical literature and data sheets for all major components, all in the English language.

The unit can be equipped with an integral diesel generator, approximate size = 35.0kVA, to provide the required power to operate the system.

The system shall not produce treated water during filter backwash cycles.

Operator monitoring of the system is required, to include filter backwashing and re-filling of chemical storage tanks.

3 Additional Supplies

Outdoors installation – The system can be supplied skid-mounted, completely enclosed in a "hard" canopy - of galvanized steel, painted in white color (or any other color upon customer's request).

The hard canopy provides effective protection to the system - from sand, wind, rain etc., and also theft and/or vandalism – thus preventing equipment failure and prolonging the life of the system. The canopy comes with service doors to enable easy access to the equipment for operation and maintenance and is equipped with an internal service light to enable maintenance even in the darkness.