

Reverse Osmosis

Water Treatment Plants

B-Series Brackish water applications

Details of the B-Series water treatment plants. The focus of this series' application is to remove dissolved salts from brackish water sources.



SAFWATER

Solutions for Africa



Sub-Saharan Africa is a water scarce region and is classified as semi-arid. It has in recent years also experienced the negative effects climate change which has caused severe droughts throughout the region which is one of the most vulnerable and least adaptable to its side-effects.

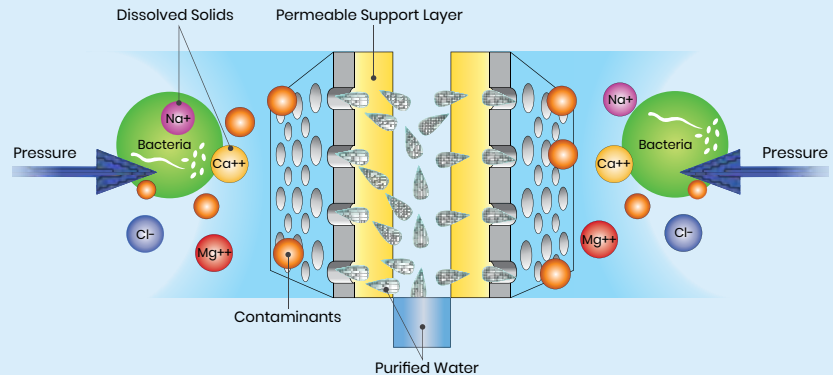
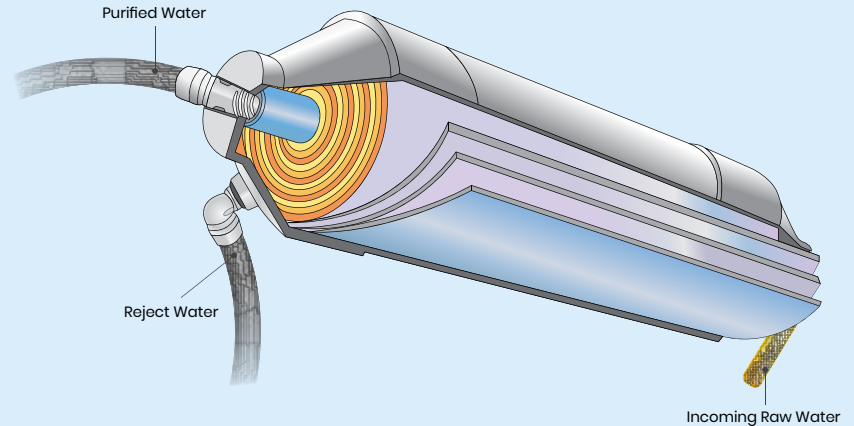
Water is a valuable resource and more organizations are looking to water security and responsible water management by means of extracting and treating ground and surface water and re-using process water. Users are faced with the challenge of having to look to costly water treatment solutions which are narrow in their range of feedwater quality and take a long time to develop.

Enter the B-series of RO plants which offer variable speed drives on their RO pumps for changing feedwater qualities, flexible designs and add-ons to suit the user's requirement, all based on a standard package which is available with shorter delivery time frames. Being part of a standardised range with parts under configuration management, these plants are long term assets offering lowest lifecycle operating cost (in R/kL treated).

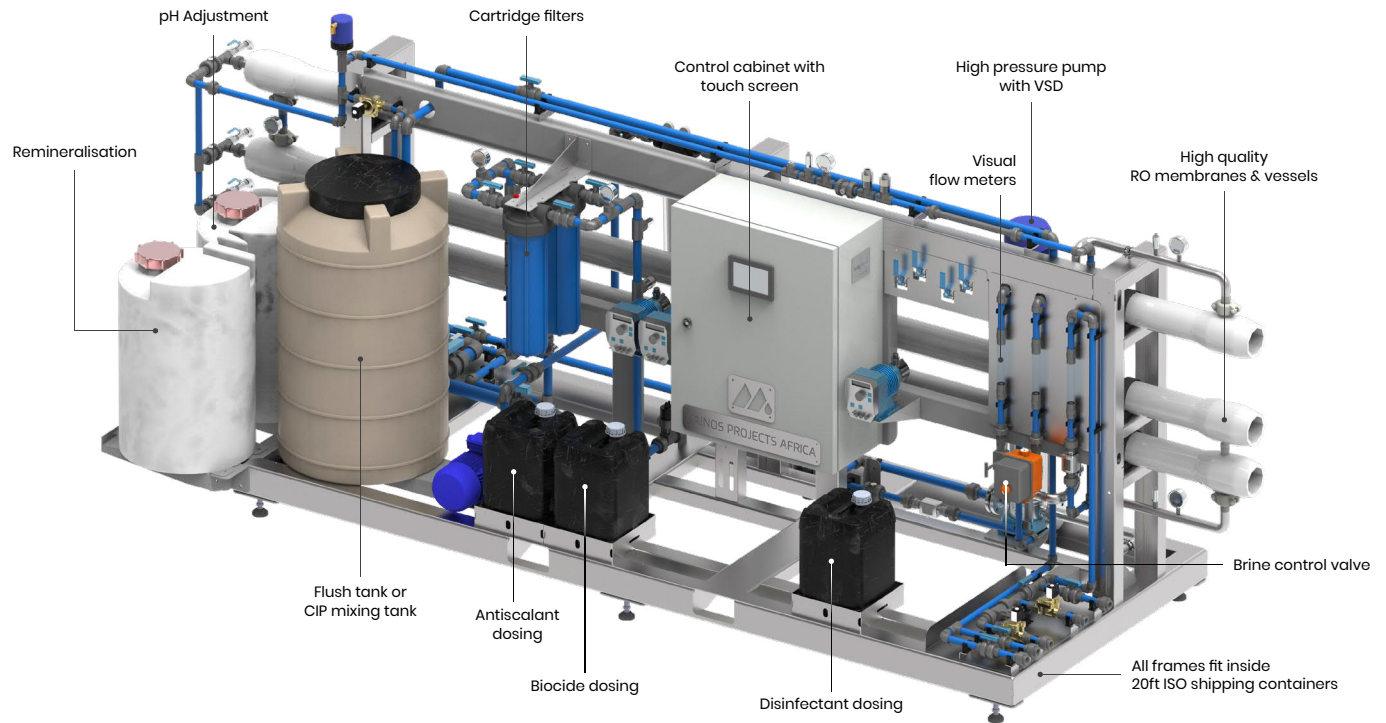
Why Reverse Osmosis?

Reverse Osmosis (RO) is a process widely adopted to reduce dissolved salts and organic contaminants from water. External pressure is applied to the contaminated water, forcing clean water through a semi-permeable membrane and leaving the salts and contaminants behind. The water that passes through the membrane is referred to as permeate (product water), and the water that remains along with the dissolved salts and contaminants is referred to as the concentrate (reject water).

The B-series range of Reverse Osmosis (RO) water treatment skids has been developed to remove dissolved solids from brackish source water with TDS <7,000 mg/l. Typical uses include treating ground water from wells and boreholes for potable use or industrial effluent treatment to meet disposal standards or for re-use. Options are included in this range for any flow rate between 400 l/h and 25,000 l/h. Variable speed drives are included on high pressure pumps which adds to the flexibility of feed water quality and required flow rate.



Reverse Osmosis: B-Series



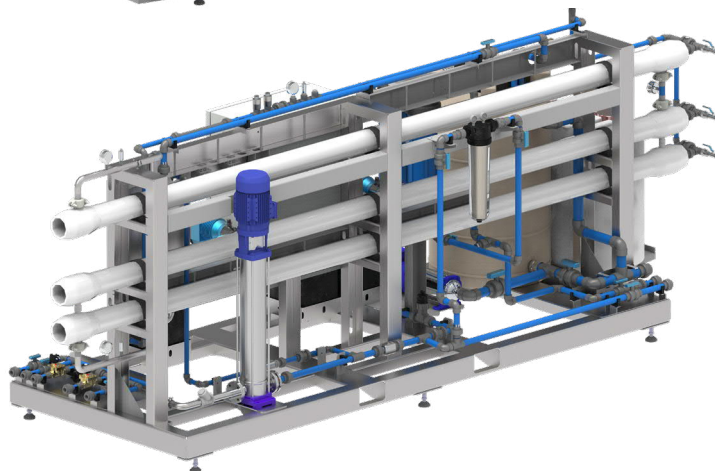
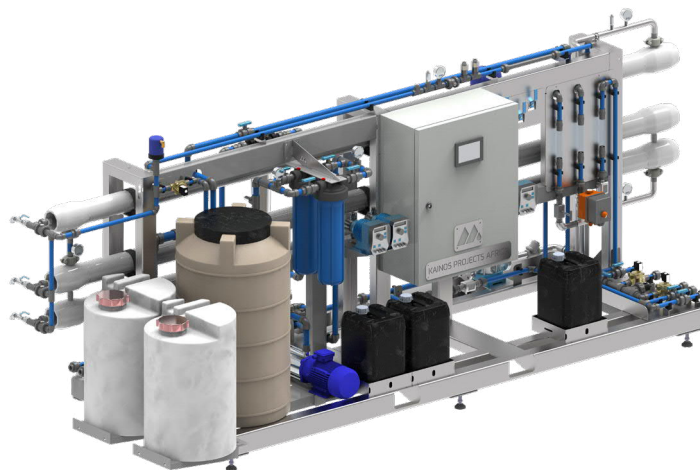
Rendering of a **B0102** water treatment plant.

All plants in this series have been engineered and designed in detail as standard offerings.

B-Series: Main characteristics

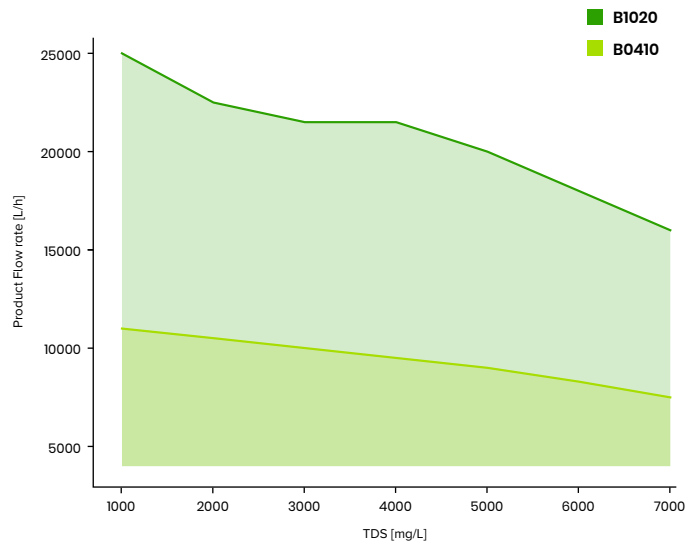
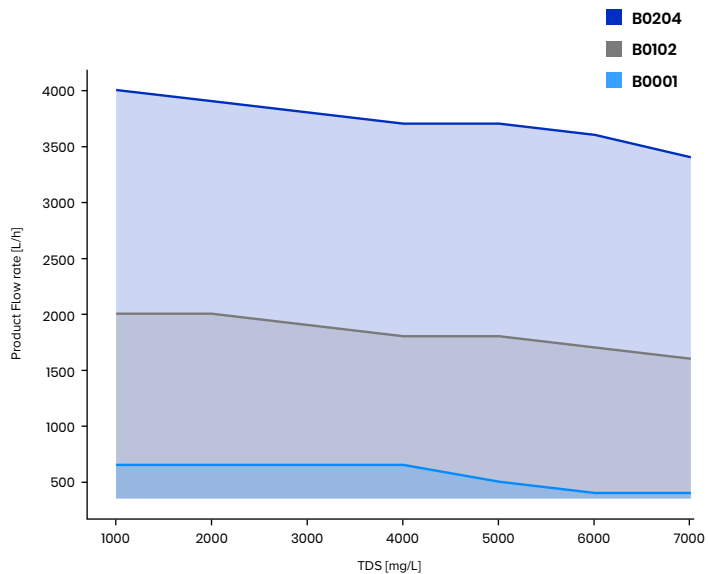
- 400 L/h to 25,000 L/h range
- Treats source water up to 7,000 PPM TDS
- High quality components
- Detail engineered designs
- Focused on reliability & maintainability
- Fits into shipping containers for transport or operation
- Variable speed drives for high versatility
- Complies with international drinking water standards

All plants are automated to a high level for ease of use and higher spec alternatives offer advanced PLCs with touch screens and remote monitoring capabilities. All models include high quality equipment which are accepted by industry to be used for intensive, industrial applications. Simplified models are also available for clients that don't want to compromise on quality but want the cost benefit of simpler controls and less flexibility on feedwater quality.



B-Series: Selection Graphs

Select a model that best suits your needs.



By vertically tracing the total dissolved solids count in your feedwater to one of the diagonal line graphs, the maximum flow rates achievable with the different model options can be determined. Any flow rate is achievable within the coloured areas.

Selection using table

The following table provides a more accurate means of determining the maximum flow rates and recovery rates per model that can be expected based on the salinity of your water source. The maximum flow rates expected from this series at a source of 3000 mg/L:

B0001: ± 650 L/h

B0102: ± 1,900 L/h

B0204: ± 3,800 L/h

B0410: ± 10,000 L/h

B1020: ± 21,500 L/h

The lower the TDS value, the higher the recovery and product flow rate for each alternative. A big advantage to this approach to RO design with variable speed drives is that deteriorating water qualities (which is quite common for unpredictable ground water or process water) can be processed with a very large degree of tolerance. Once we receive you feed water analyses and capacity requirements, we can assist in selecting the right model for your needs.



		Feed TDS [mg/L]	7 000	6 000	5 000	4 000	3 000	2 000	1 000
B0001	Flowrate [L/h]		400	400	500	650	650	650	650
	Recovery		65%	70%	70%	70%	80%	85%	90%
B0102	Flowrate [L/h]		1600	1700	1800	1800	1900	2000	2000
	Recovery		65%	67%	70%	75%	80%	85%	90%
B0204	Flowrate [L/h]		3 400	3 600	3 700	3 700	3 800	3 900	4000
	Recovery		65%	68%	70%	75%	80%	85%	90%
B0410	Flowrate [L/h]		7 500	8 300	9 000	9 500	10 000	10 500	11 000
	Recovery		70%	70%	70%	75%	80%	85%	90%
B1020	Flowrate [L/h]		16 000	18 000	20 000	21 500	21 500	22 500	25 000
	Recovery		80%	80%	80%	80%	80%	85%	90%

B-Series: Options Table

B-Series Options	Core	Premium	Premium +
HP Pump	Multi-stage centrifugal	Multi-stage centrifugal with VSD	Multi-stage centrifugal with VSD
RO Membranes	Low rejection	High rejection	High rejection
RO Vessels	300 PSI	450 PSI	450 PSI
Skid/Frame	Coated mild steel*	Coated mild steel*	304 Stainless Steel
Control & Instrumentation	Semi-automated relay logic	Automated PLC with touch screen	Automated PLC with touch screen & Remote monitoring
Membrane care	Optional	Flush	Flush + CIP
Pre-treatment	1 x Cartridge filter	2 x Cartridge filters	2 x Cartridge filters

* All B-series models can be provided with 304SS skid & frames

Pre-treatment Options:

- Biocide dosing
- pH Adjustment
- Media filtration skid
- Feed pump skid

Post-treatment Options:

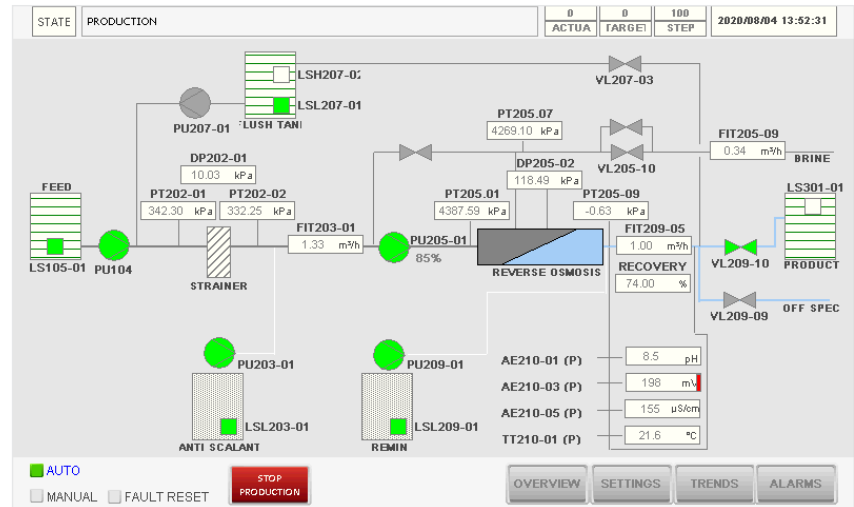
- Remineralisation dosing
- Remineralisation media skid
- Disinfectant dosing

B-Series: Control & Instrumentation

Premium systems are equipped with a Human Machine Interface (HMI) screen that shows the dynamic state of each valve, motor and instrument. All functions and settings can be controlled via the HMI. The system includes high quality and readily available electrical equipment. Plants are fully automated during normal operation. Should a fault occur the machine will shut down to a safe state.

Plant alarms can be sent to a plant operator via email to notify him/her of required system intervention. The system can also be placed in manual mode where all the equipment can be controlled individually for maintenance or special operating conditions.

Our Technical team can remotely connect to the system for troubleshooting or for emergencies. An alarm screen notifies if any faults occur, logs are kept of important operating information to assist in fault diagnostics when needed. Integration with Building Management Systems and tailor made reports can be arranged.



Example screenshot of a HMI main screen

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