

# Containerised Water Treatment Plants



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Our Containerised Water Treatment Plants are designed in-house by Veolia's team of Mechanical, Electrical Control & Instrumentation (EC&I) and Process Engineers. Each container is assembled and tested in our workshop.

Our customised solutions include: • Design • Management • Fabrication • Operation • Maintenance

## Our operational advantages:

- Plant automation
- Flow monitoring & control
- SCADA integration
- Testing

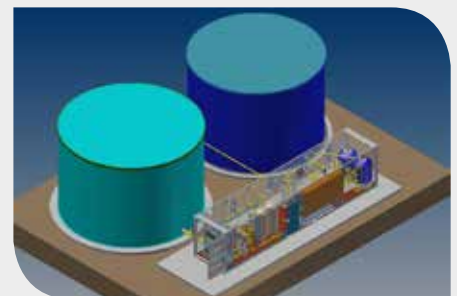
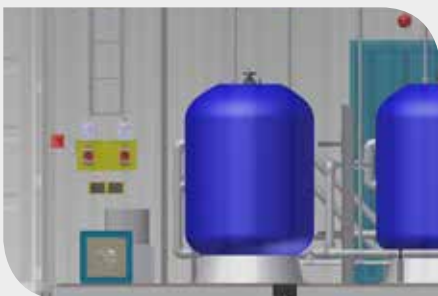


## Benefits:

- Pre-assembled in-house
- Factory Acceptance Tested (FAT) in-house
- Compact design
- Short lead times
- Quick start-up
- Plug-and-play
- Small footprint
- Easy environmental integration
- Separate dosing section to meet health & safety requirements
- Full MCC, PLC and HMI
- Forced ventilation
- Configured to client specifications

## Design:

- Designed to treat water to client specifications including potable, softened, demineralised, etc.
- Robust and complete design results in minimal on-site work
- Complete in-house design with associated documentation
- Custom-designed to meet specific requirements
- Designed to meet water quality specifications for any application
- Full parametric modelling using Inventor software to reproduce exact site conditions, and minimise integration and installation risk



## Installation and maintenance:

Local after-sales service and support teams offer preventative and corrective maintenance programmes to ensure long term, efficient operation of installed plants.



Our Containerised Water Treatment Plants (CWTP) are designed to treat any raw water source to supply treated water to isolated communities and remote locations.

We can supply a 100% complete CWTP, customised to meet the various industry and municipal requirements utilising:

- Pressure vessels
- Strainers
- Chemical dosing
- Clarifiers
- Filtration systems
- Ion exchange
- Iron removal filtration
- UV disinfection
- Membrane plant
  - Nanofiltration
  - Ultrafiltration
  - Reverse osmosis

We are ISO 9001:2008 certified and utilise a strict Quality Management System to ensure quality parameters are monitored and controlled from start to finish.



# Our Containerised Potable Water Treatment Plant Process

## 01 Raw water supply:

Raw water from the dam or reservoir is pumped to the container at sufficient pressure and flow rate, ready for dosing.



## Flocculant Dosing: 02a

This is particle coagulation which requires a mechanical input of gentle mixing. These flocculated particles have an even larger settling velocity, allowing for greater Total Suspended Solids removal.

## Coagulant Dosing: 02b

Electrical charges are chemically moved from suspended solids allowing them to amalgamate. The contents of the first chamber of the lamella clarifier is recirculated using a pump with coagulant dosed into its suction side.

## Sodium Hypochlorite Dosing: 02c

This ensures disinfection of the water and a chlorine residual concentration that will prevent growth of bio-matter in the pipelines, unit operations and break tanks.



## 03 Lamella Clarifier:

The dose feed water passes through an inline mixer promoting complete mixing. This reduces Total Suspended Solids concentration before being transferred to the lamella clarifier (inclined-plate clarifier), designed to remove particulates from liquids, i.e Total Suspended Solids removal (max. inlet TSS 3 000 mg/l).



## Sand Filtration System: 04

Water is then pumped to the sand filtration system to further remove suspended solids. Trapped suspended solids are removed through a backwash sequence that also prevents channelling and compacting of the media bed.



## 05 Activated Carbon Filtration:

This filtered water is directed to the activated carbon filter to reduce Total Organic Carbons. It removes any remaining solids entrained in the water and any residual-free chlorine or organics, taste, odour and colour that may be in the water stream.



## Treated Water: 06

The product water is then dosed with sodium hypochlorite before leaving the container for further distribution.





# Capabilities

**Our Containerised Potable Water Treatments Plants (CPWTP) are designed to treat source water such as surface, borehole, sea or brackish water.** We have the ability to treat water for the reduction or removal of turbidity, taste, colour and odour. Raw water quality will determine the configuration of the plant.

## Basic Configuration:

- Coagulation
- Flocculation
- Clarification
- Sand filtration
- Activated carbon filtration
- Chlorine disinfection
- Full MCC with HMI
- Fully automated

## Options:

- Raw water feed pump (duty/standby)
- Filter feed pump (standby)
- Dosing pumps (standby)
- pH correction



**Note:** Depending on water source quality, other options can be implemented to achieve the desired potable water quality standards, as indicated in the above images.

# Specifications

## Equipment Performances

	Unit	CPWTP05	CPWTP10	CPWTP15	CPWTP20
Nominal flow rates	m <sup>3</sup> /h	5	10	15	20
Daily production*	m <sup>3</sup> /d	110	220	360	440
Equivalent**	Person	750	1 500	2 250	3 000
Operation	h/d	22	22	22	22
Delivery pressure - treated water	Bar	1	1	1	1
Power	kW	7.5	10	12.5	15
Delivery pressure - effluent	Bar	Atm	Atm	Atm	Atm

\* Based on 22 hours per day

\*\* Based on 150 litres per person per day

Skid-mounted options are available for production of up to 10 megalitres per day

## Materials of Construction

Clarifier	Carbon steel / Polypropylene
Pump	Cast iron body and impeller
Filter	Fibreglass / Mild steel
Piping	u-PVC Class 12
Electrical	400 V 3-phase

Note: In order to supply the correct solution, detailed raw water analysis must be provided.

Equipment can be customised to client requirements

## Connection and Dimensions

		CPWTP05	CPWTP10	CPWTP15	CPWTP20
Connections flange as per SABS 1123 T1000	Inlet	40 NB	50 NB	65 NB	65 NB
	Outlet	32 NB	40 NB	65 NB	65 NB
	Effluent	40 NB	50 NB	65 NB	65 NB
Dimensions	Std. Container Size	6 m	12 m	12 m	12 m





## Recent Projects

### South Africa:

- 70 m<sup>3</sup>/h RO Package Plant: Pulp and Paper Plant
- 300 m<sup>3</sup>/h CPWTP: Coal Mine
- 3 m<sup>3</sup>/h & 6 m<sup>3</sup>/h CPWTP: Coal Mine
- 8 m<sup>3</sup>/h Fluoride removal: Local Municipality
- 8 m<sup>3</sup>/h Nitrate removal: Local Municipality

### Botswana:

- 3 m<sup>3</sup>/h RO Package Plant: Diamond Mine
- 20 m<sup>3</sup>/h CPWTP: Luxury Game Lodge
- 2 x 30 m<sup>3</sup>/h CPWTP: Secondary School

### Zambia:

- 3 x CPWTP: Local Municipality
- 6 combined 40-foot containers providing a 42.5 m<sup>3</sup>/h CWTP: Copper Mine

### DRC:

- 10 x 3 m<sup>3</sup>/h CPWTP: Gold Mine

### Liberia:

- 8 m<sup>3</sup>/h CPWTP: Iron Ore Mine

*\* This is a list of non-exhaustive references, detailed lists available on request.*



# Resourcing the world

## South Africa

### **Modderfontein Head Office:**

Golf View Office Park, 13 Pressburg Road,  
Founders View, Modderfontein, 1609

Tel: +27-11-663-3600

E-mail: [info.southafrica@veolia.com](mailto:info.southafrica@veolia.com)

### **Engineered Systems:**

18 Grader Road, Sebenza,  
Kempton Park, 1619

Tel: +27-11-281-3600

### **Services, Chemicals and Consumables:**

12 Electron Avenue,  
Isando, 1600

Tel: +27-11-974-8161

### **Paarl Office:**

Unit 7 & 13, Riverside Industrial Park,  
25 Textile Street, Paarl, 7646

Tel: +27-21-871-1877

### **Durban Office:**

256 Chamberlain Road,  
Durban South, 4060

Tel: +27-31-579-5529

## Botswana

Unit 5, Plot 50629

Block 3, Industrial Estate,  
Gaborone

Tel: +267-395-3888 • Fax: +267-397-4703

## Namibia

15 Brahman Street  
Northern Industrial Area,  
Windhoek

Tel: +264-61-261-143 • Fax: +264-61-257-628