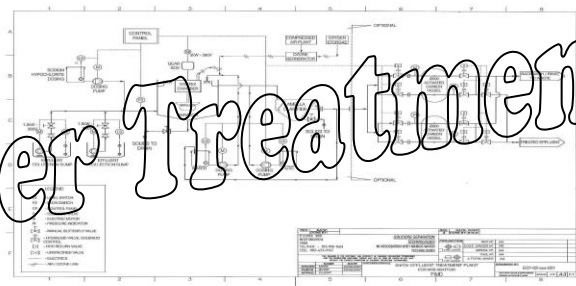


Water Treatment



Nimbus Treatment-Package Plant – Skid or Container Systems

- Designed Water Treatment Plant.
- 1.2 – 400 m³ / day & highly flexible.
- Quick Start-up vs. conventional civil works.
- Fully Automatic and Mess Free.
- Meet any raw water treatment requirements.
- Typical applications include, wastewater in general, shopping centers, Camps, Military, Schools, Universities, housing projects, hotels, lodges, games farms, hospitals, remote locations, mining waste water, commercial & industrial effluent to discharge standards.



Nimbus Infiltrant & Effluent Solutions
 Basic Design & Schematic of the Potable Water Treatment unit of 10.0m³ for 400-5.0m³ for Biogas Plant

View from – Entrance to the PWTP container water treatment plant – work in progress.

Nimbus Water SA (Pty) Ltd

Nimbus Water Purification Solutions
 Basic Design & Schematic of the Potable Water Treatment unit of 10.0m³ for 400-5.0m³ for Biogas Plant

4 x refurbished 6m containers arrive @ works – WaterTec – per April long week end – 30/11 April 2012 can START prep & build.

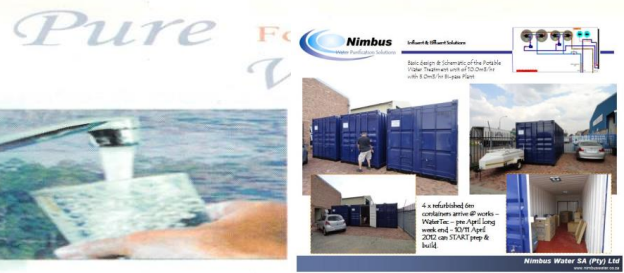
Nimbus Water SA (Pty) Ltd

Example of System Design Basis

Nimbus Water (Pty) Ltd & WaterTec Water Treatment Technologies will base the design of the water treatment plant [WTP or WWTP, or Potable or Waste Water Treatment Plant], including RO or UF Plant, on the following criteria:

- Incoming raw water supply - Borehole, or other source of water supply
- Incoming raw water quality - As per analysis supplied
- Required flow rate - 2m³ per hour on demand, or as required.

Water treatment & purification solutions



Method of Operation

1. Water will be taken from the source and pumped to raw water tanks (not supplied by us) – water storage on site and part of current reticulation system.
2. The water is then pumped from the tank and dosed with a sodium hypochlorite solution and a pH correction chemical flocculent. Dosage rates will need to be optimized on site and will depend on seasonal fluctuations of the source water
3. The water will flow through an inline flash mixer which will aide in the contact time with the water.
4. Water will be pumped through a filtration system consisting of a sand filter, a BIRM iron removal filter and an activated carbon filter
5. The water is then stored in a clean product water tank (not within our scope of supply)
6. It is dosed with sodium hypochlorite to ensure residual disinfection in the tank and throughout the distribution network

System

The following items are included in the scope of supply:

- Inlet isolating valve
- Feed pump
- Dosing pump and tank for hypo dosing
- Dosing pump and tank for pH dosing
- Inline flash mixer
- pH monitor and controller
- Sand filter
- Birm iron and manganese removal filter
- Activated carbon filter
- Automatic control valves
- Control panel
- Flow switches
- All inter-connecting piping and connections.
- Operating manuals

Sand Filter

Sand filtration is one of the most important basic technical processes in water treatment. It is a mechanical separation process in which suspended particles in water are retained in a filter layer (e.g. a layer of sand) through which water is passed. During the filtration process the pores in the filter layer become blocked by contaminants removed from the raw water passing through it. This leads to a gradually increasing drop in pressure.

The backwash phase will be initiated by the filter flush timer. Here, the impurities are flushed out of the filter layer. During the operating phase, water passes downwards through the filter, while during the back-washing phase, it travels back up through the filter layer. The layer of sludge which has built up on the surface of the filter layer is broken up at the start of the back washing process, creating a fluidised bed. The rotating motion of the grains of sand removes the dirt particles which have become attached to the surface of the granules and they are carried away from the filter with the rising flow of water



Specifications

Type of filtration or application	-	Dual media
Model number	-	SF16
Number of filter tanks	-	1
Design flow rate	-	2m ³ /hr
Operating pressure	-	3.0 – 5.0 bar
Dimensions	-	14" x 65"
Inlet/outlet manifold	-	25mm
Valve operation	-	Automatic
Backwash operation	-	Timer
Material of manufacture	-	FRP

Birm Iron Removal

Birm is an efficient and economical media for the reduction of dissolved iron and manganese compounds from raw water supplies. It may be used in either gravity fed or pressurized water treatment systems. Birm acts as an insoluble catalyst to enhance the reaction between dissolved oxygen (D.O.) and the iron compounds. In ground waters the dissolved iron is usually in the ferrous bicarbonate state due to the excess of free carbon dioxide and is not filterable. Birm, acting as a catalyst between the oxygen and the soluble iron compounds, enhances the oxidation reaction of Fe⁺⁺ to Fe⁺⁺⁺ and produces ferric hydroxide which precipitates and may be easily filtered. The physical characteristics of Birm provide an excellent filter media which is easily cleaned by backwashing to remove the precipitant. Birm is not consumed in the iron removal operation and therefore offers a tremendous economic advantage over many other iron removal methods.

Specifications

Type of filtration or application	-	Birm Filter
Model number	-	IR16
Number of filter tanks	-	1
Design flow rate	-	2m ³ /hr
Operating pressure	-	3.0 – 5.0 bar
Diameter	-	16" x 62"
Inlet/outlet manifold	-	25mm
Valve operation	-	Automatic
Backwash operation	-	Timer
Material of manufacture	-	FRP

Activated Carbon Filter

The carbon filter is designed to remove taste, odour and mainly chlorine and excess ozone which can be extremely harmful to humans if consumed in large quantities. The backwash phase will be initiated by the filter flush timer in the control panel. Here, the impurities are flushed out of the filter layer



Specifications

Type of filtration or application	-	Activated Carbon
Model number	-	AC16
Number of filter tanks	-	1
Design flow rate	-	2m ³ /hr
Operating pressure	-	3.0 – 5.0 bar
Dimensions	-	14" x 65"
Inlet/outlet manifold	-	25mm
Valve operation	-	Automatic
Backwash operation	-	Timer
Material of manufacture	-	FRP

Pricing & see summary pricing/quote schedule below:

1 x Filtration system as detailed above

R 165,500.00 excluding VAT

Installation of Equipment

Installation allows for the connecting of our equipment to existing pipe work as supplied by the customer. Should you require Nimbus Water Pty Ltd or Nimbus appointed sub-contractors, to provide additional pipe work, flanges and connectors, a further cost would apply. Nimbus's installation rates are as follows:

Installation Labour	-	R 3 900.00 per day
Travelling charges (local)	-	R 4.80 per kilometer
Out of pocket expenses	-	For your account on a cost plus basis

- **A site visit would be needed to determine exact cost relating to installation and commissioning.**

Nimbus & sub-contractors Exclusions

The following items are excluded from Nimbus's scope of supply:

- Delivery to site
- Installation and Commissioning (rates given above)
- Client is to provide raw water supply.
- Client is required to provide feed/delivery pumps (if required)
- Feed and delivery piping.
- Client is to provide a solid concrete plinth and to provide roofing for the unit.
- Client is to supply 220v power supply to the unit.
- Raw and treated water tanks not included and need to be supplied by the client.
- Waste water drains to be within 15 meters of the plant.



Warranty

Products manufactured by Nimbus Water Pty Ltd & WaterTec Water Treatment are warranted to the original user only to be free of defects in material and workmanship for a period of 12 months from date of delivery and/or installation, but not more than 24 months from date of manufacture.

Nimbus Water Pty Ltd will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with Nimbus Water Treatment printed installation and operating instructions.

To obtain service under this warranty, the defective product must be returned to Nimbus Water Pty Ltd & WaterTec Treatment together with proof of purchase and installation date, failure date, and supporting installation data.

Terms and Conditions

- | | | |
|---------------------------|---|---|
| Price basis | - | Excluding VAT |
| Payment Terms | - | Nett
50% deposit balance
50% prior to dispatch (subject to client inspection)
Installation costs on commissioning |
| Availability | - | +/- 6 weeks subject to component availability |
| Validity | - | This proposal is valid for a period of 30 days |
| Conditions of sale | - | Available on request |



- **Designed for potable water, effluent or wastewater treatment requirements and end result required.**
- **Any Capacity and designed to specifications.**
- **From design, fabrication, installation, commissioning and on-site training, a Nimbus WWTP will deliver the results.**
- **Meet future legislation requirements with regard to discharge of wastewater, or effluent.**

Robust Operation –

Nimbus Water Treatment Package Plant meet stringent standards consistently. Backed by EEC International design & service.

