
PROJECT ENGINEERS IN WATER & WASTEWATER

Our Ref: 5586

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BVI Engineering
Civil department
Upington

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SEWAGE TREATMENT ENQUIRY FOR 35 M³/DAY IN UPINGTON

Becon Watertech has been manufacturing, assembling, supplying, installing, commissioning, operating and maintaining this process for over 39 years on a Design and Supply turnkey basis and as an Own Equipment Manufacturer (OEM).

During this period, more than 1,700 units have been installed in Africa and across the Indian Ocean Islands to local & national government departments (including schools, hospitals, small towns and developments, prisons, border posts, shopping malls, police stations etc); private estates; hotels and holiday developments; private sector industrial locations; power stations and mining sites and villages.

Our reference, company profile and other supporting documentation will be included in the electronic submission requested by you.

Process Description

The Becon Watertech configuration is based on the Trickling Filter Process and deploys the rotating biological contactor (RBC) derivative. The Becon Watertech process includes the following process stages:

- Primary Phase Separation via septic tanks.
The septic tank allows for the gross removal of organic material by settlement and anaerobic oxidation. The septic tank makes provision for the accumulation of this material and has design features incorporated to ensure that this activity does not cause unnecessary blockages across the tank.

All septic tanks do require servicing and desludging at some stage since the rate of sludge accumulation exceeds the slow growth rate of the anaerobic bacteria and hence their capacity to break down organic material.

- The settled sewage from the septic tank is then discharged under gravity to the RBC stage where further organic reduction and ammonia nitrification is achieved under aerobic conditions. The aerobic conditions are achieved by the rotation of the discs, on which the micro-organisms are attached and growing, at a low speed of approximately 3 to 4 RPM. The Becon Watertech discs are manufactured from a polyurethane base and are 2m diameter discs assembled onto a 60mm steel shaft. The discs are high density and impermeable, and tend to float in the RBC basin, reducing the load imposed on the shaft. End bearings are provided to secure the unit to the RBC basin. The energy requirement per rotor is 0.75kW and each rotor contains around 130 discs, providing adequate surface area for the corresponding organic load

A secondary settling tank, or humus tank, is required for the collection and removal of surplus bacteria that is removed from the discs by the rotation action of the disc in and out of the water. The Becon Watertech design utilises the standard Dortmund type tank for this application. The collected humus is returned to the septic tank for anaerobic digestion, eliminating the need for sludge drying beds on site.

A small desludge pump of approximately 0.35kW is provided for this purpose.

- Since pathogenic bacteria are not removed by the micro-organism population generated in any sewage treatment process by any adequate degree, a tertiary disinfection stage is typically deployed to eliminate these potentially disease forming bacteria. Provision has been made for disinfection (sodium hypochlorite dosage recommended).

NOTES:

- 1) RBC plants are not affected by overloading as the plant will readily remove the rated percentage of organic matter from the system.
- 2) Bacteria attach themselves to the rotating discs and therefore cannot be washed out of the system by flash floods or shock loads.
- 3) No daily de-sludging is required as in Activated Sludge Plants. Sludge is continuously returned to the septic tank and this tank may only require to be de-sludged every 12-months or longer.
- 4) RBC plants have separate sealed septic tanks to eliminate any smell or odour.
- 5) The capacity of the septic tank is designed in accordance with recommendations laid down by the South African Institute of Water Pollution Control and the disc area rating designed as specified by CSI

Scope of Work

The average daily flow is determined to be 35 m³/day. At typical domestic raw sewage strength of 600mgCOD/l anticipated, equating to a raw sewage organic load of 21 kgCOD/day.

Offer

We are offering our Becon Model 300 Bio-Filter unit that is capable of treating the anticipated load determined above. The effluent produced will be safe and suitable for discharge or for re-use applications, providing it is operated within the required parameters.

Our standard units that compromise civil works for the septic tank units, rotor basins and secondary humus settling tanks, per standard drawings forwarded under separate cover, together with associated M&E package that comprises the rotor units, each rotor unit complete with 130 discs assembled onto a 60mm

shaft with 380V geared motor drive, end bearings and canopy, electrical control panel, internal humus tank equipment, desludge pump and chlorine dispensing unit (sodium hypochlorite recommended).

Model 300 unit 60 m/3 day:

Civil works, based on local South African rates:	R	540 000.00
M&E package:	R	625 000.00
TOTAL:	R	1 165 000.00

Please note that civil works estimates may vary, it is recommended to obtain local civil works rates for accuracy as Becon Watertech cannot offer to undertake the civil works for this project. Becon Watertech can make our standard Bill of Quantities available for this purpose.

The civil layout can be configured in modules that can fit population growth phases, if applicable. These projections will need to be shared with us in order to configure the treatment options per phase.

Costs include for installation and commissioning of the M&E package and for the preparation of layout and civil construction drawings to our M&E specifications.

Pictures of similar plants







Delivery

Delivery and installation, of the mechanical and electrical equipment, can normally be undertaken within 10-14 working weeks after receipt of an official order.

Payment

40% DEPOSIT WITH ORDER INTO OUR ACCOUNT FREE OF ANY CHARGES.

THE 60% BALANCE TO BE COVERED BY IRREVOCABLE LETTER OF CREDIT IN OUR FAVOUR VALID UNTIL 2 WEEKS AFTER ANTICIPATED COMPLETION, AGAINST WHICH 80% WILL BE PAYABLE WHEN ALL EQUIPMENT ARE READY FOR COLLECTION AND THE BALANCE 20% DUE 7- DAYS FOLLOWING HANDOVER TO CLIENT.

Should a 10% retention be applied for 1-year then this retention must be covered by a Letter of Credit payable 7-days after last day of this 12 months guarantee period.

The client cannot cancel this LC and claims, to be proved in a magistrates Court in Johannesburg, against this retention LC, can only be allowed against judgement of this court.

OWNERSHIP OF GOODS:

IT IS A EXPLICIT CONDITION OF ANY CONTRACT WE MAY ENTER INTO THAT THE OWNERSHIP OF ANY ITEM, READY FOR COLLECTION, VESTS WITH BECON WATERTech UNTIL THE GOODS ARE FULLY PAID FOR.

VALIDITY:

Our budget quote remains open to acceptance for 90-days where after prices must be reconfirmed.

This offer is limited to the equipment, as detailed above, and makes no provision for the supply of any other services.

We trust our offer meets with your requirements but should you require any other information please contact the writer.

Yours faithfully

W Olivier

for Becon Watertech