

# Save your money and the environment!!!!

## BIONEST onsite waste water treatment solutions

### Introduction

Qatar is an extremely dry and arid environment with very little natural water courses and very low levels of annual rain fall. Most of the water is either bottled (local and imported) or desalinated. Qatar has one of the world's highest ratios of vehicles to population. This has compounded pressure on the infrastructure, which has seen a huge increase in traffic, resulting in a massive congestion problem.

It is estimated that 500,000 people in Qatar (approximately 1/3 of the population) are not connected to mains drainage.

### BIONEST on-site waste water treatment solutions

Bionest is the name of a Canadian company that designs, manufactures and markets equipment that provide solutions for the treatment of domestic water. In simple terms it is a waste water purification plant.

Bionest Technologies has developed and convincingly demonstrated that the use of its treatment technology can produce an exceptionally clean effluent, one that is very close to fresh water quality.

This technology can also generate a short term payback on the investment required for its installation by reusing the treated effluent for a variety of on site uses such as commercial laundry, washing equipment, dust abatement, firefighting, toilet flushing, urinals, and other uses, or disposing of any surplus wastewater through infiltration.

**The payback is generated by reducing and possibly eliminating transport and disposal costs to an approved installation and reducing costs for fresh water through the reuse of a large proportion of the treated effluent. Thus, savings that produce the payback continue onward for the life of the work project.**

### Our Perspective

Gulf Contracting Company looks forward to enormous benefits through BIONEST the way it operates from an Environmental, Business and Economic Stance, namely:-

**Environmental:** Reduce carbon emissions, water preservation, waste management, sustainable development, living within our environmental limits, promoting good governance, socially responsible, reduce noise pollution, eliminate risk of contamination.

**Business:** Alliance with our sustainable development policy, maximize efficiency, financial savings, compliance with OHSAS 18001, innovation.

**Kudos:** Enhance reputation, investment in the future, and strong market position among peers.

**Economic:** Reduces demand for desalinated water, reduce traffic, meet's Qatar's 2030 vision, and compliance with Ministry of Environment policy.

### **Technical Description**

The BIONEST System is a biological process consisting of an extended aeration submerged fixed film bioreactor. The biomass (good bacteria) develops and firmly attaches to both sides of the ribbon shaped plastic media.

With a tremendous amount of bacterial growth and the support offered by the media for their growth, provides the reactor its high performance and resistance to hydraulic shocks (peak flow).

The other key factor is the retention time. This ensures sufficient time for the bacteria to remove pollutants as well as minimizing the biological sludge production. While other biological treatment systems require settling tanks and sludge handling, the relatively low food/microorganism ratio as well as high detention time in the BIONEST reactor create low sludge production.

In fact, the sludge produced does not require more than one removal per year.

The BIONEST bioreactor is aerated in the first section which is kept turbulent to ensure better treatment without short-circuiting. There is a high level of dissolved oxygen which assists the oxidation process but in a calmer environment. This calm zone ensures that no solids will escape the bioreactor and the effluent will be extremely clear (no color).

A key factor in the system is the constant recirculation of the treated water back to the head of the Bionest treatment tank, which makes this system a multi pass treatment system.

The aeration of the system is done using multi-unit low power consuming linear air pumps. Several pumps are used to supply air to each module. This allows for

redundancy which ensures treatment performance even during maintenance, replacement or failure of one or more of the air pumps.

The constant aeration of the reactor with cool air from a building assures constant and optimal biological activity independently from the outside temperature.

Bionest final effluent is combined with Tablet Chlorination Disinfection to disinfect the treated water prior to reuse in Toilets and urinals.

## **The Process**

The treatment train takes place in two tanks installed in series. The primary treatment is composed of a conventional two-compartment septic tank equipped with an effluent filter. The second two compartment tank is called the "bioreactor". The waste water flows to the bioreactor by hydraulic displacement from the primary treatment tank. Treatment of bioreactor is achieved using a biological process of microbial culture, fixed to a synthetic media, in an aerobic condition. The media is a non-toxic polymer ribbon, engraved to facilitate the fixation of microbial culture, having a relative density of 1.04. A specific quantity of bionest media is placed into each of the two compartments. Continuous aeration of the first compartment of the bioreactor is provided by a linear air pump and fine bubble air diffusers. A recirculation pump is installed in the last compartment of the bioreactor and part of the treated effluent is returned to the septic tank to provide denitrification.

## **Certifications**

Bionest advanced waste water treatment systems have been certified to standards set by internationally recognized standard setting organizations. For certifications and water test results click on to the link [www.bionest.ca](http://www.bionest.ca)

Testing of the BIONEST Technologies was conducted under the provisions of ANSI/NSF Standard 40 for Residential Wastewater Systems (November 2004 revision). NSF/ANSI Standard 40 was developed by the NSF Joint Committee on Wastewater Technology. The treatment quality of the final effluent will meet or exceed the performance requirements established by NSF/ANSI Standard 40 for Class 1 effluent.

## **BIONEST Advantages**

- Low operating costs
- Below ground installation

- Superior performance (up to 10 x the active surface area of MBBR biofilm carriers)
- High level of treatment
- Organic and hydraulic shock resistant
- Gravity flow (no transformer pumps, filter feed pumps, dosing pumps)
- No skilled operator
- Clear and odorless effluent (below ground or containerized)
- No hazardous chemicals (only chlorine tablets)
- 3 simple components (settling tank, bioreactor, tablet chlorinator)
- Media never to be replaced
- Reliable and long- lasting components
- Low maintenance costs
- Minimal sludge removal (once per annum)

## **Business Highlights**

- Each BIONEST module of 45m<sup>3</sup>(300 men/day) replaces one 10,000gal Sewage tanker truck.
- The modules can be configured in many ways to fit your available space.
- The modules can be designed to be installed above ground and re-locatable.
- The disinfected treated water exceeds international bathing water standards.
- The disinfected treated water can be reused for many applications including toilets, urinals, irrigation as well as other permitted uses.
- Payback is achieved after 14 months and annual savings for the rest of the project life.
- The Bionest system which is patented, costs approximately half of a similar sized traditional activated sludge system after taking into consideration operating and maintenance costs.
- Saves 70% of money currently spent on potable water purchase and sewage water removal per annum.
- The filter media used in the Bionest system is made in Canada.
- 15,000 units sold to date worldwide.

## **Our Strategic Alliance with BIONEST**

Since signing a contract with Gulf Contracting Company (GCC) to design, supply, supervise and commission a treatment plant for 1600 men at a labour camp near Doha, Bionest has been introduced to and signed a MOU with Interserve.

GCC in conjunction with their Interserve PLC associate companies do have the rights to sole and exclusive Agency of the BIONEST products and technology.

Jointly Bionest and Interserve will analyze the client's requirements and design and supply the equipment, expertise and documentation to complete and offer ongoing maintenance for the systems we propose.

GCC shall procure the design, price and equipment from BIONEST on timely basis and BIONEST shall be actively available in Qatar to support the design process including design development, supervision and final inspection, testing and commissioning of the system.

GCC offers attractive schemes to potential customers which would include Sale, Rental/Hire options.

### **Contacts**

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