

BIONEST ZENITH™

OWNER'S MANUAL

You are now the Owner of one of the highest performing yet simple class B-IV wastewater treatment systems on the market; peace of mind is now yours. By acquiring a BIONEST® system, you become an important contributor in preserving our precious *water* resource for today...and for the future.

The BIONEST® system respects CAN/BNQ 3680-600 standard, for class B-IV. This system is specifically designed for domestic type wastewater treatment in accordance with current regulations.

This document contains important operating instructions and principles, as well as your system's warranty certificate; please take a moment to read it carefully.

Should you encounter any problem with your system, make sure you have the information shown on the identification label (located on the alarm) on hand before contacting Bionest.

Our After Sales team is there to assist you and may be reached using our toll free line **1 866 538-5662**. You may also visit our website at **www.bionest.ca**.

Ontario

BIONEST

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System tested and certified by the
Bureau de normalisation du Québec (BNQ)
according to CAN/BNQ 3680-600 standard
(BTT-1325 to BTT-10000 and
BST-1250 to BST-2600 models)

All trademarks shown are property of Bionest Technologies inc. and used under license. The BIONEST® technology, its process and their use are protected under the EP 1 430 000 B1 European patent throughout the 27 countries members of the European Patent Office, patents 7 578 398 and 7 582 211 in the United States, 2 461 668 and 2 793 914 in Canada, 602197 in New Zealand, 61/317023 in Australia and by patents pending in the United States, in Europe and according to the patent cooperation treaty.

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1 OPERATING PRINCIPLES

The BIONEST® system uses a technology which replicates an accelerated natural purification process normally occurring in the ground. This biological process takes place in a restricted and controlled environment removing organic and microbial pollutants harmful to your health and the environment.

The BIONEST® technology works according to the treatment principle of aerobic biological culture fixed on a self-supported synthetic support called “BIONEST® media”.

Primary treatment collects wastewater and clarifies it by naturally separating solids and fat by settling and flotation. The water then flows to the BIONEST® reactor, filled with media. The reactor is aerated by an air pump and a diffuser.

Finally, the treated water is discharged in accordance with the current regulations.

Figure 1-1: BIONEST® reactor components

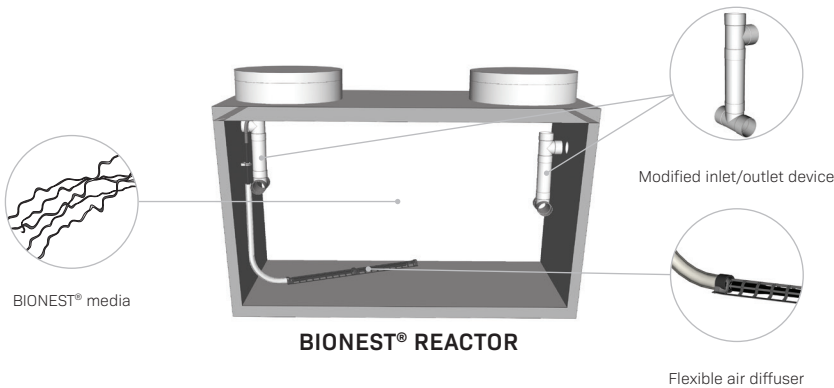
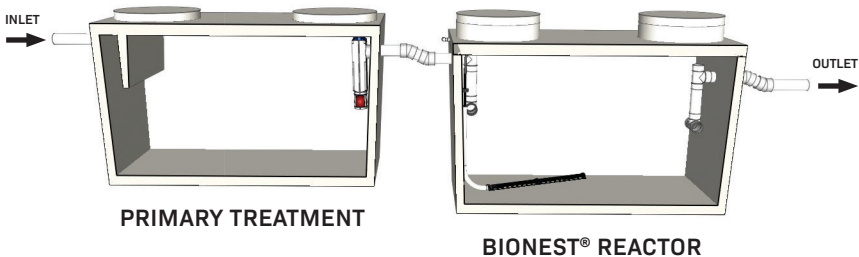


Figure 1-2: Flow diagram*



* Also available in single tank configuration

2 MODEL DESIGNATION

The models are designed to treat domestic wastewater from dwellings and other buildings with less than or equal to 10,000 L /d flow rates.

The BIONEST® system consists of units preassembled and ready to ship for easy and quick installation. This range adapts to all field configurations, regardless of the type of soil.

The next table shows the required model according to the daily flow rate of an isolated dwelling.

Residential and other buildings applications

		Model	Treatment capacity Daily flow rate (L/d)
TWO TANK SYSTEMS		BTT-1325	1,325
		BTT-1800	1,800
		BTT-2250	2,250
		BTT-2750	2,750
		BTT-3400	3,400
		BTT-3900	3,900
		BTT-4900	4,900
		BTT-6250	6,250
		BTT-8900	8,900
		BTT-10000	10,000
SINGLE TANK SYSTEMS		BST-1250	1,250
		BST-1700	1,700
		BST-2100	2,100
		BST-2600	2,600

3 COMPONENTS

3.1 Identification plate and serial number

Identification plates, located on the alarm and on the BIONEST® reactor, show your system's own specifications.

The system's serial number is located on the alarm.

3.2 BIONEST® media

The media is a non-toxic patented polymer ribbon, scored to promote growth of the bacterial biofilm.

3.3 Air diffuser

Aeration is provided by a diffuser which is connected to an air pump. The diffuser is installed in the BIONEST® reactor. The length of the diffuser varies depending on model.

3.4 Air pump

The air pump provides oxygen to the system continuously. The continuous aeration allows to maintain ideal conditions for biological treatment.

3.5 Alarm

The BIONEST® system is equipped with a visual and audible alarm allowing to detect aeration malfunction. The alarm is compliant with CAN/CSA C22.2 No. 205 standard (where applicable).

3.6 Effluent filter

An effluent filter is installed at the outlet of the primary treatment. The effluent filter holds those solid particles larger than the filtration slots, thus preventing premature clogging of the downstream treatment system.

4 IMPORTANT OPERATING INSTRUCTIONS

It is the Owner's responsibility to respect all applicable regulation in effect, namely regarding the system's maintenance and discharge standards as well as any discharge into the environment.

The primary treatment and BIONEST® reactor must always be completely filled with clear water prior to system start-up.

Air pump must be working at all times. Make sure air pump and its alarm are connected to a functional power outlet upon system start-up. For seasonal or intermittent use, refer to section 6.

It is best to wait for the completion of works (ex.: plastering, painting) before using the septic system and turning on the air pump. Use of your septic system when the air pump is not operating may result in external odors, clogging of the polishing field and warranty cancellation.

In order to ensure proper and efficient functioning of your BIONEST® wastewater treatment system, it is crucial that the following instructions be respected.

These instructions also apply to any septic installation type.

NEVER dispose of the following in any of the building's sanitary facilities:

- Paints (latex, acrylic or alkyd), plaster and solvents (do not rinse paint brushes in any sanitary facility)
- Caustic clog removers (Liquid-Plumr®, Drano®, etc.)
- Petroleum products, waxes and resins, oils and greases (domestic and/or industrial)
- Wastewaters from a recreational vehicle
- Large quantities of household cleaning products or chlorine bleach
- Large quantities of antibacterial products (hand or dishwashing soaps)
- Automatic toilet or shower cleaners
- Pesticides
- Septic tank additives
- Any non biodegradable object (cigarette butts, sanitary napkins, tampons, condoms, etc.)

Backwash from a water softener or other potable water treatment system, a spa or pool must not be directed towards the system. Garage and drainage pipes as well as gutters must not be connected to the system.

Failure to follow these instructions may result in odor problems, warranty cancellation and/or possible costs related to improper use.

IT IS FORBIDDEN :

- To alter the configuration of your septic installation and/ or of your BIONEST® treatment system. Should you engage in any landscaping activity, please inform your contractor of the location of your septic installation to avoid any damage.
- To plant trees less than 3 m from your septic installation.
- To place objects weighing over 200 kg such as soil, rock or snow piles less than 3 m from your septic installation's location and pipes.
- To drive or park any vehicle less than 3 m from your septic installation.
- To build a permanent installation over the septic installation, unless it has a 1,75 m minimum height clearance.

Any contact with wastewaters constitutes a biological hazard.

ATTENTION : CONFINED SPACE SAFETY HAZARD

It may be extremely dangerous, even deadly, to totally or partially enter a septic tank, pumping station or any confined space of a wastewater treatment system, without the required protection equipment and without knowledge of the confined space work and safety instructions set by a qualified trade person.

The Owner must not open any of the BIONEST® reactor covers to perform any modification or intervention nor handle its components without prior authorization by a Bionest authorized representative.

Power supply must always be disconnected prior to handling any of the BIONEST® system's electrical components.



Grounding reduces the risk of electrocution. The BIOLARM® and air pump are equipped with a cord and grounding plug. The plug must be inserted into a grounded outlet according to applicable codes and local regulations.

SERIOUS ELECTRIC SHOCK HAZARD



There are underground pipes and electrical wires close to your septic installation. **BEFORE** digging or undergoing any work within this area, please contact your installer.

Power supply must always be cut off prior to any maintenance activity on any BIONEST® electrical component.

5 WHAT TO DO IF...?

BEFORE CALLING BIONEST, PLEASE REFER TO FOLLOWING INDICATIONS :
IT COULD SAVE YOU THE COST OF A SERVICE VISIT.

Possible cause is :	First step :	If problem persists :
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Please have the information listed on the identification label of your system (located on the alarm) on hand before contacting Bionest.

I notice abnormal odors around the building	Often caused by a defective or inadequate vent	I make sure the building is equipped with an adequate, functional, unclogged and undamaged vent	I contact Bionest
I notice a backflow	Home plumbing or effluent filter is clogged or primary treatment needs to be emptied	I contact my plumber; I proceed with cleaning my effluent filter, if needed	
I notice ground flooding	Ground is low permeable or flood prone; there is a leak in a tank or pipe; polishing field is clogged	I immediately contact my installer	

6 SEASONAL AND INTERMITTENT USE

The BIONEST® system is designed to provide adequate operation even without supply of wastewaters for a prolonged period of time. Power supply must thus not be interrupted when the system is used on an intermittent basis (period of use with short periods without wastewater supply).

For seasonal use (ex. : summer cottage) and in cases where the system will not be used for more than a six consecutive week period, the system's air pump power supply may be disconnected. The air pump must however be restarted upon return of the occupants.

7 MAINTENANCE

OWNER'S RESPONSIBILITIES

The BIONEST® system must remain accessible at all times. It is your responsibility to provide quick and easy access to all covers upon interventions.

7.1 Emptying

Primary treatment, such as the septic tank, should be cleaned when sludge and / or scum accumulation represents one third of the useful volume of the tank. Your municipality may have adopted a specific regulation on the emptying of septic systems involving a different emptying frequency. The Owner of a BIONEST® wastewater treatment system must comply with the requirements of current regulations regarding the maintenance of their system.

ONCE THE EMPTYING IS COMPLETE, MAKE SURE THAT ALL TANKS ARE COMPLETELY FILLED WITH CLEAR WATER BEFORE USING YOUR SEPTIC INSTALLATION.

7.2 Effluent filter

Cleaning of the effluent filter is normally required twice a year, but may require additional cleaning, should an important deposit be noticed on the effluent filter. Refer to manufacturer's maintenance instructions for further information.

7.3 BIONEST® reactor

7.3.1 Air pump

The filter of each air pump must be cleaned periodically. According to the air pump's location (dusty area), a more frequent cleaning by the Owner may become necessary; a clogged filter may cause overheating or pump failure.

7.3.2 Alarm

Your BIONEST® treatment system is equipped with a visual and audible alarm located inside or outside the building; this alarm indicates an air pump malfunction. If the alarm emits a signal, press the "silence" button and communicate immediately with Bionest at **1 866 538-5662**.

WARRANTY CERTIFICATE

Preamble

For the purpose and interpretation of the present:

“client” is the person who has acquired a BIONEST® treatment system;

“successors” is any other person entitled to exercise the client's rights.

Nature of the warranty

During the first year following the date of purchase, Bionest offers a full warranty on labour for BTT-1325 to BTT-10000 and BST-1250 to BST-2600 models.

Models BTT-1325, BTT-1800, BTT-2250, BTT-2750, BTT-3400, BTT-3900, BTT-4900, BTT-6250, BTT-8900, BTT-10000, BST-1250, BST-1700, BST-2100, BST-2600 :

Media : TWENTY (20) years

Parts and components: TWO (2) years

Periodic replacement parts* : ONE (1) year

*“Periodic replacement” parts refer to air pump diaphragms, which must be replaced **periodically**, according to model and surrounding environment. Cost of such replacement parts, beyond period shown on this warranty certificate, will be invoiced to the client or his successors.

Replacement parts:

Any replacement part: THREE (3) months as of date of replacement.

Limitation of the warranty range

The range of the warranty is limited to the province in which the BIONEST® system components were delivered.

Notification obligation

Your BIONEST® treatment system is equipped with an alarm; should the alarm emit a signal, contact Bionest immediately.

Furthermore, for the warranty to remain valid, the client must immediately notify Bionest of any apparent abnormality or malfunction. Failure to advise Bionest within reasonable delay may void the warranty.

Bionest agrees to assess the situation and make necessary corrections, if required, within reasonable delay of notification, if the present warranty conditions are applicable.

The client must allow access to the septic installation to any Bionest representative at all times.

Exclusions

Not included in the present warranty are the following damages or problems:

Any damage or problem caused by a fortuitous event or an « Act of God » , such as, without limiting the generality of the preceding, earthquakes, floods, freezing, hurricanes, landslides, explosions or dynamiting.

Any damage or problem caused by the fault or act of a third party.

Any damage or problem arising from an installation, modification, correction or addition carried out by a person not authorized by Bionest.

Any damage or problem arising from an installation, modification, correction or addition to the wastewater treatment system carried out after the installation of the BIONEST® system, without Bionest's written approval.

Any damage or problem caused by the use of a primary treatment non compliant to applicable regulation requirements in effect.

Any damage or problem, if it is proven that the BIONEST® system was not used according the terms and conditions of the Owner's manual.

Any damage or problem, if the maintenance of the BIONEST® system was not performed according to Bionest recommendations.

Any damage or problem caused by the fault or action of the client or the client's successors including, but without limiting the generality of the preceding, refusing access to the system for inspection purposes.

Any damage, problem or work required to access the BIONEST® system which, under normal conditions, does not require any special action, including, but without limiting the generality of the preceding, excavation, snow removal or demolition.

Particular exclusions

It is further expressly understood that the client may not carry out or cause to be carried out any repair, maintenance and/or verification of the BIONEST® system, nor attempt to carry out any work whatsoever nor to apply any corrective measures whatsoever to the aforementioned systems (except for the air pump filter cleaning, the effluent filter cleaning and the emptying and sludge level measurement of the primary treatment specified in the present manual), according to provisions of this warranty certificate and before Bionest has visited the installation to assess the situation.

If the client carries out, attempts to carry out, or causes to be carried out any repair or any corrective measure whatsoever to the BIONEST® system, without prior authorization from Bionest, the present warranty shall be considered as null and void; Bionest will thus be considered as completely discharged from all obligations under this warranty.

Indemnities and damages

The liability and obligations of Bionest under this warranty certificate for corrective measures and/or means of correcting a problem, of which it is duly advised, shall be limited to the replacement of one (1) or any component of the BIONEST® system as well as required labour, if applicable, in compliance with the herein warranty.

Damage limitation

Bionest may in no way be held liable for any other damage sustained by the client or third party; Bionest's compensation or indemnification obligation shall be limited to the provisions under this agreement.

Bionest does not assume any liability for personal injury or property injury caused by the use or misuse of the BIONEST® system. Bionest shall not, in any event, be liable for special, incidental, indirect or consequential damages. Bionest's liability shall, in all instances, be limited to the provisions of this warranty certificate and will terminate upon expiration of the applicable warranty period.

Ownership transfer

In the event of a transfer of ownership, sale, reassignment or disposition in any other way of the client's property to a third party, this warranty shall continue to apply on the express condition that the new Owner confirms in writing to Bionest that he is the new Owner of the property, is cognizant of the warranty certificate and accepts its terms and conditions.

The client agrees to give to the buyer or the buyer's successors the present warranty certificate and the Owner's manual, which were given to the client upon completion of the installation.

For the provisions of the first paragraph of this section, the buyer or any of the buyer's successors, must complete, within a reasonable delay, the ownership transfer form and return it to Bionest.

If the buyer or any of the buyer's successors does not send the ownership transfer form duly completed, the present warranty certificated shall no longer prevail and shall be considered null and void.

Inspection

The client or the client's successors shall allow any Bionest representative to perform all necessary monitoring and/or inspection measures, when deemed necessary, for the assessment and validity of this warranty certificate.

If the client or the client's successors requests an inspection by Bionest in regards to a warranty claim and it is found, upon duly authorized inspection, for the validity of the aforementioned warranty claim, that the BIONEST® system is performing according to standards, regulations and specifications herein, charges will be invoiced to the client and/or the client's successors, as required. Otherwise, no charge shall be applicable.

Interpretation

The terms of this warranty certificate shall be interpreted according to the laws of the province or territory where the system has been aquired and the provisions herein.

Priority of the warranty certificate

This warranty certificate is considered as an integral part of the Owner's manual given to the client; in case of discrepancy between this warranty certificate and other documents issued by Bionest, the terms of this warranty certificate shall prevail.

Purchaser and successors

Subject to the provisions of this warranty certificate, the terms and conditions of this warranty shall continue to apply to the purchaser and/or the client's successors and have full effect until the end of the warranty period.

Jurisdiction

The parties acknowledge that any litigation regarding the present warranty certificate must be introduced in the judicial district of Renfrew County.

8 APPENDIX - INSTALLATION SPECIFICATION



Check material : if a component is missing and/or defective, contact the assembler

Indicates the slope to meet

Tighten hose clamps using a screwdriver



Make sure the pipe contains no sagging sections

Install insulation; cover adapters



Cut the pipe

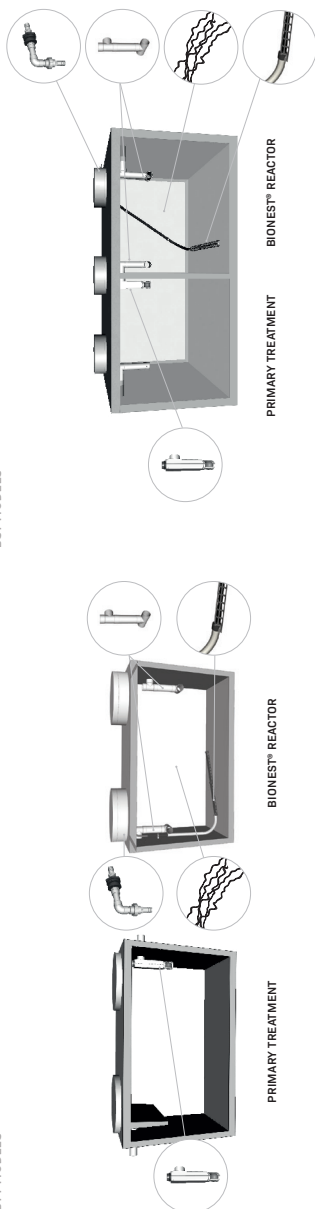
Make electrical connections according to applicable standards and regulations in effect



Backfill by layers of 150 mm [6"] around the pipe using a bedding plate between each layer

BTT MODELS

BST MODELS

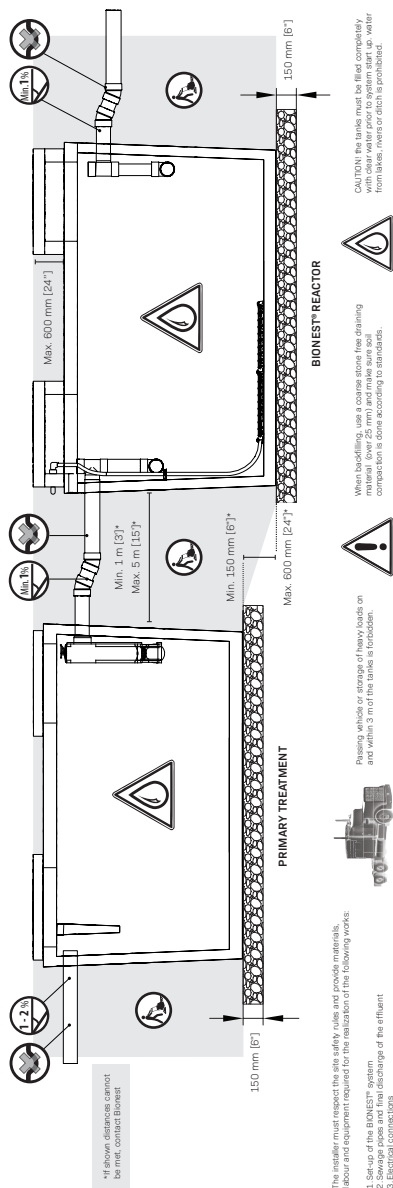


Model	Daily flowrate (L/d)	Primary treatment Minimal volume (m ³)	BIONEST [®] reactor		Air pumps	
			Minimal treatment volume (m ³)	Number	Model	
BTT-1025	1,325	1.3	2.7	1	HP-60	
BTT-800	1,800	1.8	3.7	1	HP-80	
BTT-2250	2,250	2.3	4.6	1	HP-80	
BTT-2750	2,750	2.8	5.7	1	HP-100	
BTT-3400	3,400	3.4	7.0	1	HP-150	
BTT-3900	3,900	3.9	8.1	1	HP-150	
BTT-4900	4,900	4.9	10.2	1	HP-200	
BTT-6250	6,250	6.3	12.9	2	HP-150	
BTT-8900	8,900	8.9	18.4	2	HP-200	
BTT-10000	10,000	10.0	20.7	2	HP-200	

Model	Daily flowrate (L/d)	Primary treatment Minimal volume (m ³)	BIONEST [®] reactor		Air pumps	
			Minimal treatment volume (m ³)	Number	Model	
BST-250	1,250	1.3	2.6	1	HP-60	
BST-700	1,700	1.7	3.5	1	HP-80	
BST-2300	2,100	2.1	4.3	1	HP-80	
BST-2600	2,600	2.6	5.4	1	HP-100	

lay tanks so they adapt to the ground slope according to installation standards. Connect the tanks to the outlet of the building, to the final discharge device and with each other according to good practice.

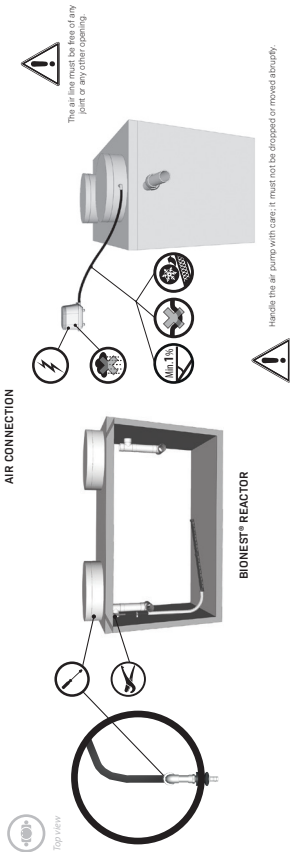
When performing any construction work, excavation or wastewater installation, always follow the Ontario Safety Code, and follow best safety practices.



The installer must respect the site safety rules and provide materials, labour and equipment required for the realization of the following works:

1. Set-up of the BIONEST® system
2. Sewage pipes and final discharge of the effluent
3. Electrical connections

AIR CONNECTION



ALARM

The BONE® system is equipped with an alarm to detect a malfunction of the aeration. Please refer to the manufacturer's installation specifications to install this component. Connect then the pressure switch located on the air pump in the alarm casing using the supplied 2C-18 wire. The alarm complies with Standards CAN/CSA-C22.1 and CAN/CSA-C22.2 (where applicable).

TO GIVE TO THE CUSTOMER



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