



PIRANA™

Pirana Technology Overview

For most of its history the onsite waste disposal industry has relied on physical removal of septage for maintenance. This maintenance did not stop the clogging of the soil pores in the disposal field by biomat and organic solids that causes failure. When these septic systems failed, they could only be repaired by costly structural rebuilds. The *Pirana* installs with “two men, two shovels in about two hours”. The *Pirana* introduces the powerful concept of “disposal field remediation.”

Industries such as brewing, winemaking, baking, and enzyme and pharmaceuticals, to name a few, have traditionally exploited microbiological reactions in their processes. Through long practice they’ve learned to inoculate their products with the appropriate species or strain of beneficial micro-organisms. Attempts to do this in septic tanks have been futile since the “hardware” - anaerobic septic tanks and disposal fields - have been wrong for the most effective bacteria.

With the *Pirana* insert, the best hardware solution has been found. It’s both flexible and economic. Finally the “software” -- the powerful *Pirana Blend* bacteria -- can thrive and flourish in standard septic tanks. Their beneficial actions restore failed septic systems from inside.

The *Pirana*’s simple airlift column contains a coiled 100 sq foot cusped plastic media through which the contents of a standard 1200 gallon septic tank are cycled between 20 and 30 times a day. A fixed-film of *Pirana Blend* bacteria colonizes the media. All the effluent is passed over this microbial community in the form of a hyper-oxygenated foam.

Organic solids in the tank are almost completely eliminated. This leaves an odor-free clarified effluent, rich in facultative bacteria, which are carried into the disposal field. As these bacteria pass into the soil, they rapidly consume the slimy, anaerobic “biomat.” It is this biomat that clogs the soil and causes the disposal field to fail.

The soil pores are opened and effluent once again percolates into the ground. The soil can now filter out viruses and the few pathogenic bacteria not already removed by the *Pirana*. This protects the sources of our drinking water.

A secondary benefit is that ammonia from the tank is no longer converted to stable nitrates, as other aerobic treatment systems, that can contaminate groundwater. The *Pirana Blend* bacteria, being tolerant of ammonia, allow them to thrive in a non-competitive environment. The ammonia concentration within a normal residential septic tank is toxic to other aerobic bacteria that might migrate into the tank through the air stream or somehow survive the passage through our digestive tract. This fact allows the *Pirana Blend* bacteria to devote their entire biotic energy to digesting our waste and not competing chemically with other resident species of aerobic bacteria. Testing for ammonia in the effluent of the *Pirana* tank will indicate the relative health of the *Pirana Blend* bacteria community within the *Pirana* insert. As long as the ammonia remains within normal residential concentrations, the *Pirana Blend* bacteria have a healthy community. When the effluent reaches the aerobic soil, nitrifying bacteria in the soil act on it by oxidizing the ammonia to nitrate. In the nitrification process, the powerful *Pirana Blend* bacteria convert the nitrogen in the ammonia to gaseous nitrogen and CO₂, which escapes harmlessly into the atmosphere.

The *Pirana* can be installed in almost any septic tank ranging from 400 gallon wooden cesspools to the largest compartmented concrete tanks. Being a modular design, more than one can be installed in larger tanks to provide the desired treatment. There are different *Pirana* models for different septic needs. Once in place, air is pumped to the *Pirana* insert in the tank at low pressure and low volume through a PVC pipe, supplied by a 40 watt air pump set conveniently near a household GFI protected 120V outlet. This air pump is contained in a poly basin that protects it and helps provide a nearly silent operation.

After installation, a simple annual maintenance inspection is normally all that is required for trouble free operation of the *Pirana*. The inspection requires a check of the pump diaphragm, addition of a new *Pirana Stick* bacterial applicator, taking a sample of the septic tank effluent for testing, a check of leach field function by measurement of liquid depth of the septic tank and visual check of the site. This inspection should only be performed by a Certified Pirana Installer / Inspector.

When there is a diaphragm failure, **Pirana System** offers the homeowner an air pump exchange at a very reasonable cost or the homeowner can order a diaphragm replacement kit from **Pirana System** and repair it themselves. Replacement bacteria bags are also available for the annual inspection. Simple, easy directions and instructions for the operation and maintenance of the *Pirana* are available at no cost.

The right bacteria, the lack of bacterial competition, one moving part, ease of maintenance, low cost for energy, simple installation without landscape damage makes the *Pirana* a must in the consideration for any septic system.

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