

LIVING ABOARD

ESTABLISHED 1973 • VOLUME XXIV No. IV • JULY/AUGUST '95

Zero Discharge Toilet Alternatives

By John Horanzy

I live aboard a Willard Vega 36 motor sailor at Hurricane Harbor Boatyard, Ft. Lauderdale, FL. In 1994, the city of Ft. Lauderdale became serious about enforcing its no pump-out regulations and I decided to get serious about installing a more environmentally friendly head. Being an avid swimmer, I personally expect clean water. Lake Champlain is a good example: you can cruise on Lake Champlain (which has strict enforcement of zero discharge laws) go swimming, and not be afraid to swallow the water.

I had also become very unhappy with my electric conversion unit. After only two years of use, it was in need of overhaul at a price of \$85 just for parts. I was seriously considering the popular Electrosan unit, but the laws stated: zero discharge. I felt there had to be a better solution than archaic marine toilets and politically debatable treatment units. The logical choice would have been to rebuild the worn-out head, purchase a holding tank and pay \$50 a month for pump-out services. But, if I were logical I'd be living in a house with a mortgage where a \$100 porcelain toilet will outlive the owner.

I purchased a copy of *Mother Earth News*, having remembered ads for flushless and waterless toilets. All but one of the toilets were composting units. The other type of unit was an incinerating toilet. At the time, none of the composting units were small enough to fit on a pleasure boat. The incinerating toilet would easily fit, but the two kilowatt hours per day per person

required could not be supported by my boat away from the dock.

The Sun-Mar Composting Head or Ecolet

Six months after my initial research I received information from SunMar corporation about their new

cleaning around the unit very convenient. A hole was cut out in the dog-house side to install the cap for the vent pipe. I used the old macerator 20 amp 12 volt line with an inline fuse to power the 12 volt muffin fan. The fan draws about 250 milliamps (1/4 amp) and runs

If your boat can accommodate the extra headroom required for the Ecolet or the extra power needed for the Incinolet, you can free yourself from the worries of zero pumpout regulations and make a contribution to cleaner water.

composting toilet designed for boats and RVs. The ECOLET (Ecological Toilet) as they call it has a foot print 19 3/8 inches wide by 23 3/4 deep would fit into my head compartment. One unique requirement is the 29 inches of height required for the unit. You will have to check to make sure you have the needed 10 to 14 inch extra head room required. Since you sit up so high the Ecolet has a fold out foot stool for sitting. The extra height allows the men folk better aim and something to brace against in a seaway.

When my Ecolet arrived from the factory I found it to be built like the Rock of Gibraltar; solid, thick Fiberglass construction. I've seen boats with thinner hulls. Installation was relatively simple. I did have to make a cutout in the head doorway to get the unit in. This cutout is now removable and makes

continuously without any concerns about draining the battery. The Ecolet also uses 120 watts AC or DC for a heater in the liquid evaporating chamber. The Ecolet can be operated away from the dock without the 120 watts, though liquid evaporating capacity is reduced.

After each solid waste use, a cupful of peatmoss is scattered over the waste. During full-time use, the fold down crank handle on the front of the unit is rotated 36 times every third day to mix the compost. The most noticeable thing about the unit is NO ODOR.

The Ecolet has three chambers in the unit. The first chamber is the composting drum and is the chamber that receives the waste. When new, the drum is filled with 2 gallons of peat moss and some rich topsoil to start off the composting process. During full-time use the drum is rotated every three

Zero Discharge . . .

days to aerate, mix and break up the compost. Keeping the compost supplied with oxygen allows the aerobic bacteria to thrive and break the waste down into odorless carbon dioxide and water vapor.

Liquid waste is absorbed into the compost and excess liquid drains through a screen in the drum and falls into the evaporating chamber, the lowest part of the Ecolet. The bottom of the evaporating chamber has a thermostatically controlled carbon film heater imbedded into the layers of fiberglass. This warm to the touch heater along with the 12 volt fan speeds the evaporation of the liquid. The evaporation chamber has an overflow drain that can be connected to a small removable jug or bottle. My drain port is connected to a hose with a cap. Being a single live aboard, the evaporating chamber handles all of my liquid waste. I never have to drain it except for cleaning. When I do start cruising this summer, a 2 1/2 gallon jerry jug will be connected to the overflow port. Two people living aboard full time would have to connect a jug to the drain port. A trip once every 2 weeks to empty a 2 1/2 gallon jug in the head sure beats ... well you know how inconvenient it is to use marina facilities. The waste liquid is thick and brown but is odorless and does not invoke the

gag reflex like formaldehyde treated portapotty or holding tank waste.

The third chamber, the finishing drawer receives compost from the drum when the drum needs to be emptied. Composted material is left in the drawer to finish breaking down completely and to dry out. The finished product looks like dried out garden soil. Again, no odor. I estimate that as a single full time live aboard I remove about 1 to 2 drawers per month. What usually happens is that I empty the drum through the finishing drawer every six to eight weeks and remove about four drawers of compost into a sturdy cardboard box. The unfinished compost has no odor and looks like dark wet topsoil. The cardboard box goes into the dumpster to finish its composting cycle.

As a liveaboard, I find it no problem to empty the waste drawer every two months. I keep one gallon of peat moss onboard in 2 Rubbermaid containers, the one gallon lasts about 2 weeks. SunMar has sent me some experimental, highly compressed and dehydrated, composting material. I have 8 months of compost material stored aboard in the space taken up by two shoe boxes! Although Sun-Mar says any standard toilet paper can be used, I found biodegradable works best for me and that Charmin just would not decompose.

The Incinolet

The Incinolet is another unit worth considering for zero discharge areas. The Incinolet because of its power requirements would be used in boats capable of generating large amounts of power. The Incinolet works by incinerating the waste with an electric heating element. The Incinolet was demonstrated to the Ft. Lauderdale Waterfront Advisory Committee. The Committee gave high praise to this unit because the waste (demonstrated by using a can of dog food) just simply disappeared!!!

The Incinolet, 20" high, has a footprint of only 15" wide by 24" deep,

but requiring clearance in the back for a 3" vent pipe. The Incinolet must be connected to an AC outlet capable of providing 15 amps.

To use, a plastic liner is dropped into the bowl. The bowl is flushed by depressing a pedal that opens the clamshell like door and drops everything into the holding area. After 4 uses, a start button is pushed and the Incinolet burns the waste away. During the incineration cycle, the 1800 watt heater cycles on and off inside the insulated chamber while a fan continuously pulls the exhaust out through a platinum catalyst. Each cycle consumes about 1 kilowatt of electricity. The ash after being heated to 1400 degrees is germ free and is emptied weekly.

The Incinolet is another zero discharge alternative for those boats able to supply the large amount power used for operation.

If your boat can accommodate the extra headroom required for the Ecolet or the extra power needed for the Incinolet, you can free yourself from the worries of zero pumpout regulations and make a contribution to cleaner water.

For more information, call: The Sun-Mar Composting Head at (905) 332-1314; Incinolet: 1-800-527-5551

If you have any information on any other innovative solutions to the pump out problem, please E-Mail me at: John73319@AOL.com. 🌴

The above article is not to be considered an endorsement for the products by the United States Coast Guard.

John Horanzy is an Aircraft Technician 1st Class for the United States Coast Guard, builds boats as a hobby and loves swimming, free diving and scuba diving.

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