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HANDS-ON
SAILOR

SYSTEMS BY CHARLES KANTER

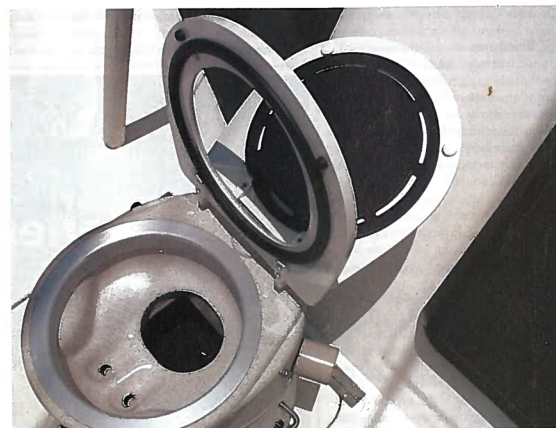
In Praise of the Peat-Moss Toilet

A composting head offers a viable alternative to the slosh, slosh of conventional holding tanks

AS NO-DISCHARGE ZONES proliferate across the country, including in my home state of Florida, more and more cruisers are restricted in their use of Type I or Type II marine sanitation devices (MSDs), which treat waste before it's discharged overboard. The typical response to this is to rely on a holding tank (a Type III MSD). However, these can be difficult to retrofit on older boats and present their own practical, environmental, and health-related problems. My preferred solution is a composting toilet. Legally, a composting toilet is regarded as a Type III device and thus is compliant with U.S. and state laws and can be used in no-discharge zones. After trying various ways to live with what I regard as ill-conceived rules, I've found the composting toilet offers several big advantages over conventional holding tanks.

Composting toilets aren't new. They're used all over the world in places where flush types are either impractical or inconvenient. Here in the United States, they're common in state and national parks, particularly in desert regions where water is scarce or where permafrost or bedrock make ordinary septic drain fields impossible.

Given the advanced state of



The Air Head composting toilet (top) requires only a modest amount of peat moss to prime its bowl (below left). Urine is channeled into a separate container (below right).

Type I and Type II onboard-treatment systems available today, I realize that using a composting toilet is actually a step backward, and I'd much prefer a world where we could use Type I or Type II systems everywhere. But in my view, conventional Type III holding tanks, and the pumpout sta-

tions required to empty them, are even more troublesome, inconvenient, and potentially harmful to users and the environment. Although using a portable toilet (technically a Type III) meets no-discharge rules, these are practical only for daysailers.

A composting head offers

several advantages over conventional Type III systems. They require no through-hulls, consume no water, need no plumbing, and use little, if any, electricity. They're self-contained units that have considerably more capacity than the average holding tank, and they do a good job of masking

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AIR HEAD TOILET

Geoffrey Trott

I was happy—I had bought this great old Dutch-built boat," says Geoffrey Trott. "But then I tried to comply with American regulations for marine toilets and found I couldn't fit anything into the little space I had. There was just no room for the holding tank." And so it began back in 1998. Trott was frustrated by his limited options. "Even if I could comply using existing technologies," Trott continues with a note of frustration, "I still had to deal with the odor coming from a holding tank or a portable toilet." It took some serious studying about solids, liquids, decomposition chemistry, and plumbing, and then he factored in his

experience as a packaging engineer at EOS Design in Mount Vernon, Ohio. The goal was to come up with a compact, waterless, and odorless toilet.

His first decision was to separate the solids from the liquids. Tricky, but possible. The liquids would go into a



separate container on the front that is easily dumped into any onshore commode. Next, and more important, was disposal of solids. But it turns out there's not much to do. In the absence of liquid, and assisted by a 12-volt fan, solid wastes dehydrate quickly and virtually odorlessly. Trott estimates that the Air Head can accommodate up to 80 uses before it has to be emptied. In finalizing the design, care was given to simplicity and economy. After drying, the solids become light—like sawdust. They weigh little and take up almost no space, so you have to empty it only once a season. The dry waste makes great fertilizer or can be dumped along with any garbage. The liquid container has an integrated carrying handle. Even filled to the brim, it weighs only eight pounds, considerably less than a loaded portable MSD. And it has a wide-

mouth design that allows for smooth, gurgle-proof pouring. Installation is simple, and maintenance is minimal. Cost is around \$795—less than installing a typical marine head, holding tank, and plumbing.

The system has been on the market since April 2001. When asked if it's doing well, a confident Trott replies, "Yes, but no inventor should expect to make any money in the first few years."

EOS Design
740/392-3642
www.airheadtoilet.com

MARINE-TEX

Ralph Travers

boaters do, he and his friends would spend hours talking about their hobby—what they loved and what they hated. A big complaint back then was the lack of a good repair/bonding material. What they wanted was one that would set up and adhere underwater or to a wet surface. Dream on, guys.

And Travers did. As Sciblo tells it, "These conversations got Ralph to take his work from the theoretical to the practical." The result was Marine-Tex, which in 1956 was the first epoxy repair material designed specifically for boaters.

Marine-Tex became the flagship product in Travaco,



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The Airhead
Composting Toilet

Reviewed by
Joe Youcha

Years ago I vowed never to review something that I didn't really like. Well, I really like the Airhead Composting Head. It's well made and uses simple technology to answer a difficult question, "How do you deal with human waste on a cruising boat?"

Holding tanks stink. In ALTAIR's case (see page 62) this was more than an expression. Every time we slid the hatch open, there was that smell. We also had to find pumpout stations every few days when we were on a cruise. The boat had a bladder tank and soft plastic piping. The general opinion was that these needed to be replaced every five years—not an appealing prospect for someone who hates plumbing. There had to be a better way. I started doing research. If I went with a hard tank and piping, I'd have to tear up a substantial part of the interior, and it would have been a long plumbing run. The longer the run, the more things that can go wrong. What to do?

I run the Alexandria Seaport Foundation. We're a volunteer-based, boatbuilding organization. Several of our regular volunteers are also serious cruisers. It's sad to say that many of our lunchtime conversations have



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Designed specifically for marine use, the Air Head is a popular choice among recreational boaters.

is not designed to need a heater, composting still needs a minimum temperature of 10°C.

Under ideal conditions it takes about three months for human waste to turn to useful compost. When it is time to empty the can, the contents will most likely be in various stages of decomposition. Emptying the pot at this stage would, therefore, be unpleasant and unwise. An alternative, suggests Steve Ray, of Star Distributing, a U.S. outlet for the Air Head, is leaving the pot over winter and emptying it in the spring. However, the maintenance of heat and the necessity of keeping a fan running during the cold winter months could well be impractical for some boat owners.

Satisfied composting toilet owners claim that a properly operating system is odor-free. To absorb any unwelcome smells, Sun-Mar Mobile places two different kinds of filters, zeolite and carbon, in the venting stack. Air Head has less chance of foul odor because urine is not mixed with the solids. Provided there is a constant flow of air over the mass, any smells are, if nothing else, slightly earthy.

Finally, at a height of 19.5", the Air Head, the smallest of all the composting toilets, may well be too big for smaller boats.

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air head
COMPOSTING TOILET

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Composting Toilet

Disposing of black water is always a concern for boaters. Holding tanks can stink, pump-out stations are rare and new rules make overboard dumping problematic. Luckily, onboard composting is now possible. The new Air Head composting toilet is now available in a marine configuration and will amaze with its capabilities. It even includes a small electrical fan, which draws about one amp, to add oxygen and remove odours. The unit is simple, with solids and liquids separated and treated separately. Sugar eliminates the smell of the liquids, while a hand crank mixes the solids with peat moss. A family of four will need to empty the liquids about every other day while the solids need to be emptied only twice a season, and it's compost for the garden. The Air Head costs less than \$1,000; sales are direct from www.ibeaso.com.
www.airheadtoilet.com

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1. "Cruising World" October 2004;
2. "Boating Magazine" April 2003;
3. "Pacific Yachting" June 2007;
4. "Wooden Boat Magazine" July/August 2006;
5. "Pacific Yachting" June 2008