



Dealing with Humidity

Steve,

I'm trying to do something about the humidity that makes my boat smell bad and even leaves mold on soft goods and rust on metal surfaces. Do you think that the chemical dehumidifiers are any good?

Chemical desiccants have their place. They work well, but their capacity is extremely limited, so they only work in a very well sealed environment. Boats are inherently sealed but they still aren't sealed well enough unless you take extra steps, like shrink-wrapping the whole boat. If you do use them make sure that there is some provision for containing the collected condensate, beyond the container provided with the original product.

Controlling the humidity, in a boat sitting at dockside takes more aggressive measures. If the boat has air conditioning, the most obvious alternative is to leave the air conditioner on. This works well, but I don't recommend it for the long term, for several reasons:

- The power consumed is expensive and wasteful
- Raw water-cooling is very susceptible to fouling, especially at dockside.
- You are putting a great deal of wear and tear on an extremely expensive system.

Less conventional alternatives to marine air conditioning are:

- Use a household dehumidifier. These are the best deals going at yard sales. The only thing wrong with the old ones is the condensate collection container is usually lost or broken. Just position it over an open bilge with an operational automatic bilge pump. You might want to put it on an appliance timer and only have it run at night, for two reasons: There is no humidity problem during the day because the sun heats things up enough to drive moisture out and the dehumidifier is not designed to work in the ambient temperature of a sealed up boat in the hot sun.
- Use a small window air conditioner. This is my personal favorite. A 5000 Btu air conditioner costs less than \$100 brand new! It draws less power than a dehumidifier, and cools the boat rather than adding heat to it. You'd be surprised at how much apparent cooling you get from such a small air conditioner. Except when the sun is really heating up the boat, there is almost no need to cool the boat. You can get "apparent" cooling just by removing the humidity. You might even be able to enjoy your boat at dockside, in the evenings or overnight, without a marine air conditioner. Household window air conditioners have a reputation of running and running for years, until the cabinet looks so bad that it gets thrown out. It will surely outlive your marine air conditioner that is prone to overheating every time some flotsam is ingested by the pump. Heck, replacing the pump costs more than a little window A/C.

Installing a domestic window air conditioner in a boat is easier said than done. Very few boats have a nearly vertical window that is big enough and opens. If you have such a window, use it. Some people modify a door or any other vertical surface to provide a

mounting hole, but most often you have to figure out how to use a deck hatch. It's challenging because you have to keep the rain out, and arrange for separate incoming and outgoing air paths and make it fairly easily removable.

I've seen people mount A/C's using just plastic and duct tape, but it usually leaks rainwater and must be pretty much destroyed and rebuilt to remove and replace the A/C. I've seen more successful installations using a very large plastic storage container turned upside down and put over a hatch, with a cutout for the air conditioner. I presume that they use some sort of a divider to keep the supply and return air from mixing and short cycling. Constructing a small halyard-supported awning over the air conditioner can provide redundancy for weather tightness.

My favorite approach to mating a window A/C to a hatch utilizes construction foam board that has a layer of aluminum foil on both sides. It's extremely easy to cut with a carpet knife and glue with "liquid nails" or similar product.

- Set the air conditioner on the edge of the open hatch, and put as many pieces of foam panel under as needed to almost level the air conditioner. Close the hatch onto the A/C and adjust the position for a good fit.
- Cut some triangular foam panels as exactly as possible to fill the big holes left by the partially open hatch.
- Open the hatch. Cut a section of foam panel to act as a separator between the warm and cool air paths that is just wide enough to contact the triangular panels. Use duct tape to get things in position, and to seal things up. Caulk in some adhesive to make it permanent.
- Use foam panels to make a box that covers the whole assembly (except for the hot air vents of the air conditioner) to make things weather proof and to control the heat gained from the sun. You have to keep the sun off of the duct tape or it will fail shortly.
- Use adhesive caulk to replace as much tape as possible, once you have all the pieces fitted together. Don't caulk to the deck or the air conditioner, so that you can remove and replace the whole thing easily. As long as your boat has a raised combing around the hatch, gravity should keep the water out, while at the dock.

The aluminized panels look more industrial than yacht-like, but it works, for cheap!

Stephen Sommer is a degreed electrical engineer with extensive experience in electrical, mechanical, refrigeration and air conditioning systems and holds a USCG Masters license. He consults in all areas of yacht systems, which include all the equipment on board yachts beyond a basic hull and motor or sails.

Have a systems problem or question? Ask Stephen Sommer. Email: steve@boatek.com