

Is Propane a Proper Fuel for Cooking Afloat?

Yes, you too can escape slavery to alcohol — and we don't mean the consumable type...The answer, my friend, is to install a gas stove aboard your boat.

by Nick Nicholson

We often do odd things for the sake of safety. Take, for example, the time-honored American tradition of cooking with alcohol aboard boats. Conventional wisdom has it that alcohol is the only safe cooking fuel afloat; cook with gas and you stand a good chance of blowing yourself up.

Somehow though, the rest of the world has failed to get the message. Go to Europe to buy a boat, and what do you get for cooking fuel? Propane, or some other compressed gas. Go to isolated islands in the Pacific, or the Caribbean, and what do people cook with? Propane. Go to millions of rural American homes, and what do people cook and heat with? Propane. Charter a bareboat in the Caribbean, and what do you get to cook with? Propane.

Starting to get the picture? The myth that alcohol is safe and gas is dangerous have brought, if you will, a higher standard of living to boatowners in the rest of the world, while American boatowners cooking afloat struggle along in the dark ages, nursing fragile alcohol flames for hours on end to bring a pot of water to a boil for a cup of coffee, or preparing lasagna that takes four hours to bake while your dinner guests perish from boredom or drink themselves comatose waiting for supper.

Yes, you too can escape slavery to alcohol — and we don't mean

Is Propane a Proper Fuel for Cooking Afloat?

the consumable type. The answer is as near as the mail order catalog and the telephone, or as near as the local chandlery. The answer, my friend, is to install a gas stove aboard your boat.

Choosing a Stove

The brand and model stove you select will depend on the size of your boat, the galley layout, the way the boat is used, and the amount of cooking you do. You can spend anything from \$40 to well over \$1000 for a stove, so a certain amount of planning and common sense is required.

If you have a trailer sailer that is used for weekend jaunts on a nearby lake, your cooking requirements are substantially different from someone taking off on a three-year world-cruise on a 40-footer. As a rule, a gimbaled, multi-burner stove with oven is out of place on boats much smaller than 30 feet, unless they are used for longer cruises.

Rather than use an expensive marine stove, a small cruiser could use one of the inexpensive propane stoves made for trailers and RVs. For a weekender or pocket cruiser you might also consider a simple

two-burner camping stove, which can easily be modified to bolt to a galley counter or cockpit seat when in use. A basic Coleman camping stove can do all the cooking required for weekending on a small boat, and the cost is negligible. Unfortunately, your insurance company probably won't go for the idea of a propane camping stove used aboard a boat, for the simple reason that the standard 14-ounce fuel bottles will be used below decks. In our opinion, such a stove poses very little risk. When not in use, the bottles can be removed from the stove (they are self-sealing) and stowed on deck.

Don't turn up your nose at using a camping stove aboard a boat. We used one for an entire summer on a 47-footer while working on the installation of the "real" stove, and the efficiency of the simple propane camp stove, compared to the normal two burner alcohol stove was overwhelming.

To make a camping stove even more suitable for boats, DeGill Corp., 61 Main, Claremont NH 03743, makes a set of pot holders and rails to attach to a camping stove, allowing pots to be held safely in place. At about \$30, they will keep your total stove in-

vestment to about \$70 – still far less than the simplest two-burner marine alcohol stove, and light years ahead in cooking efficiency.

Of course, camping stoves are mere enameled steel, and may rust out after a few years of use, but at this price, you can afford to replace them periodically.

If your boat is already equipped with the ubiquitous recessed Kenyon two-burner alcohol stove, the company now makes an identical stove for use with propane. Unlike a camping stove, you cannot connect disposable propane cylinders to this stove without a pressure-reducing regulator; as the Kenyon stove is designed to work at much lower gas pressure, like other marine propane stoves.

Replacing a Kenyon recessed alcohol stove with a similar propane stove makes for easy stove installation, but the problems of fuel tank installation would be the same as for a larger stove.

It's hard to justify the complication of an external tank locker on a boat small enough to have its cooking needs met by an ungimbaled two-burner range top. In many cases, the stove installation is less than half the work of the total conversion to propane.

What About Compressed Natural Gas?

The other gas commonly used for cooking in this country is CNG (compressed natural gas), which has both advantages and disadvantages when compared to LPG (propane).

On the plus side, CNG is lighter than air, so if there is a leak in the system, the gas should not collect in low parts of the boat. For this reason, CNG tanks may be installed below decks, without the complicated locker and ventilation requirements of propane.

Nevertheless, wherever CNG is stored, it should be in a ventilated location, so that any gas can, in fact, escape. Storing a CNG tank under a settee or quarter-berth which is not ventilated is a poor practice, as leaking gas could be trapped in the locker. CNG burns at about the same temperature as LPG, so cooking convenience is comparable.

On the negative side, because CNG is always a gas (propane is a liquid under pressure in its tank) and is not compressed as much as propane, the tanks must be quite large in order to give comparable hours of

burner operation. CNG is not as readily available as propane, although the distribution is improving. As long as you sail in an area where CNG is available, that's not a problem. If you want to sail in other parts of the world, it is. Check availability before choosing.

The cost of a CNG system is comparable to that of a propane system, and installation, with the exception of tanks, is the same. With a CNG system, you do not purchase the fuel tanks. You lease them, and exchange your empty tank for a full one when necessary.

With CNG, your choice of stoves is more limited than with propane, as the sale and distribution of CNG gas and appliances is controlled by Gas Systems, 5361 Production Drive, Huntington Beach, CA 92649, (714) 891-2411. LPG (propane) stoves are made by dozens of companies throughout the world, as are the tanks and regulators used in propane systems.

You can pretty much buy propane anywhere in the world, and with the proper tank-filling adaptors, getting your American tanks filled in Tahiti won't be a problem. That makes propane an attractive alternative if you ever plan to cruise to remote places.

Propane really comes into its own on boats used for living aboard for more than a few days at a time, or on boats used for extended cruising. At the risk of sounding hopelessly male chauvinistic, it can also make the difference between a wife or girlfriend who enjoys cruising (let's be realistic about who does most of the cooking aboard most boats) and one who at best tolerates the experience.

For people who spend most of their lives ashore, living aboard a boat for much more than a weekend is an experience about as foreign as a trip to the moon. Think about it for a minute. There you are in a space about the size of a walk-in closet, where two, four, or even six people — perhaps including small, restless children — will eat, sleep and do everything else for an extended period of time. Every now and then, your closet tilts at about 30 degrees to the side and jumps up and down, and sometimes large quantities of water are thrown in your face, even when you're inside the closet. Your clothes are damp, your bed is damp, you don't have enough drawers, closet space, room to dress, or counter space. Food rots in the refrigerator. You have to pump water by hand. You have to pump the toilet by hand. And you want someone to cook on an alcohol stove, to boot?

On a larger boat, a gas stove can make the difference between a pleasurable cruise for all aboard, and an activity which is precariously close to that bizarre form of self-punishment known as "camping out."

A stove used aboard a serious cruiser should have two or three top burners, plus an oven large enough to hold more than a loaf of bread. It must be of corrosion resistant construction, preferably stainless steel.

The pot grates should be bronze or stainless steel, as iron grates tend to rust quickly. There must be a sea rail system along with adjustable racks to hold pots in place in heavy weather.

On a sailing vessel or full displacement powerboat, the stove should be gimballed. However, a poorly gimballed stove is worse than a good fixed stove. A gimballed stove that is unstable when the oven door is opened can dump the contents of the entire stove in your lap. For this reason, ballast on the bottom is highly desirable. (If you're ballasting an existing stove, don't use lead on the inside of the oven. You could contaminate your food.)

Gimballing is accomplished in a variety of ways. One of the best systems is that used by Shipmate, which incorporates two brass pillow blocks simply mounted to brackets installed in the stove well. The pillow blocks are held together with wing nuts, allowing the gimballing friction to be adjusted for different sea conditions — a highly desirable feature.

Ideally, the oven door would be equipped with a positive external latch. Doors relying solely on spring tension can be knocked open in heavy weather. An external oven thermometer is also desirable. A window in the oven door lets you keep track of things without opening the oven door — a simple task that can be hazardous in rough conditions.

These features come at a substantial price. A good, gimballed range and oven with most of these features will set you back between \$800 and \$1500. That's before you've begun to face the cost of installation.

Installation

Before you can buy a stove, you've got to figure out where you're going to put it. An obvious consideration, perhaps, but one not as easily solved as it may first appear. If you're simply replacing a countertop or recessed stove with a gas version of the same stove, installation problems are minimal. However, if you plan on using disposable gas bottles below, you must make provision for securing them in place while the stove is in use. A simple wooden bracket, or even the mounting bracket from

a small fire extinguisher will serve to keep the bottle in place.

Remember, you may be on your own as far as your insurance company goes if you use disposable gas bottles, so check it out. These bottles have an enviable safety record in other uses, but are not accepted for marine use by any of the marine standard-making bodies, such as the American Boat and Yacht Council (ABYC).

Larger gimballed stoves are almost always fitted in a well let into a galley counter. The wells we've seen on most production boats range from excellent to abysmal, so evaluate yours carefully to see what's involved in upgrading the galley stove.

The first, and most obvious characteristic of the well is that the stove must fit into it. This statement isn't an insult to your intelligence. Stove dimensions are not really standardized, and until you see the installation drawings for individual stoves, you don't know if the dimensions given include things like external gimbal blocks, burner controls, or other external protuberances. Don't buy a stove without first getting the installation drawing to see if it will fit in the well on your boat.

A well that is too wide is not usually a problem. Mounting brackets can be fabricated by any good welding shop to mount to the sides of the well. These must be heavy gauge stainless steel, not only for strength (a stove can weigh 100 pounds or more) but to be fire resistant.

The most common problems with stove wells is the lack of adequate depth behind the stove for proper gimballing. Ideally, the stove should be free to gimbal a full 90 degrees, in either direction, without hitting anything. This means that you have to consider the position of any front guard rail across the well, in addition to the fore and aft depth. A freedom of movement of less than 45 degrees is not really acceptable, even though a stove will rarely be called upon to perform in this way. When calculating the

amount of space needed for gimbaling, don't forget to figure out where the fuel delivery hose will enter the well and attach to the stove. You don't want the stove to pinch the hose between itself and the well when it swings.

The stove well should be completely lined with stainless steel sheet metal, and insulation should be installed behind the liner. This insulation should be asbestos board — the soft type, not the cement board, which might fracture when the boat pounds. If the asbestos is sealed thoroughly behind the sheet metal, with no edges exposed, the installation should not be a health hazard. Obviously, you must take precautions, such as wearing a respirator, long sleeves, and gloves, when cutting and handling asbestos products. A lined and insulated stove well can offer a lot of protection to the boat in the event

of a fire, giving you time to extinguish a small blaze before it spreads. This is important no matter what stove fuel is used.

Modification of a stove well to accommodate a specific stove can be a major project, particularly if the well is a fiberglass molding. Only if the galley is of built-up wood construction is any significant change in size likely to be possible. You're better off spending time looking for a stove that fits.

Usually, the actual installation of a new stove in the stove well is one of the easier parts of the project. What you must remember is that a good galley stove is heavy, and must be very securely mounted. Mounting brackets must be strongly bolted to the sides of the well. The stove should not be capable of being lifted off its gimbals or mounting brackets. These must be designed to hold the stove even if the boat is inverted, as a

loose stove would be a dangerous projectile — not to mention the potentially disastrous results of a fuel hose rupturing if the stove comes adrift.

A final consideration when installing the stove is the point at which the fuel delivery hose will enter the well. Regardless of where it enters, it must not interfere with the gimbaling of the stove, and the flexible hose cannot be allowed to chafe. A large loop of hose must be left in the well for completely free gimbaling without a pulling load on the hose. It would probably be best if the hose entered the well somewhere other than at the bottom, to avoid the potential leaking of heavier-than-air propane gas through the fuel hose opening into the bilge.

Next month, in Part II, we'll examine the possible alternatives for plumbing and fuel tank installation for a propane gas system. ■