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Generator selection, sizing and operation

by Art Nash

Many people in Alaska live out in the Bush. Some of them do not have a power line coming to their house. They are able to live without any utility-provided electricity and still use lanterns and cook stoves that can burn gas. And even some people who live on the Alaska road system use solar panels to collect energy onto 12-volt batteries.

That is OK if you want to get some energy in the daytime — until twilight comes, that is. Or until there is a very cloudy day without much sunshine. What then? If a person wants to use TV, clothes washing machines or maybe a hotplate, they will want electricity. Thus, if you go outside at night in a village, or even on the edge of populated areas, you may hear motors running continuously from generators.

A generator makes — or generates — electricity. It is not a simple process, but it is a long-established one. A motor (think of the kind on a lawn mower for instance) will be running, and attached to it is a metal bulb, which inside creates power. If you could look through the metal casing you would see copper wire and magnets. They turn and make raw electricity. But where does it go from there? Provided that the air filter is clean from dirt and the gas doesn't have water in it, by burning fuel the internal movements can deliver electricity to the generator's plug-in sockets without a glitch.

Selection and sizing

When you choose a generator, you may ask yourself "What is the most electricity I may need? Do I need pure sine waves of electricity, or can modified sine waves do just as well?" Ask yourself, "how big of a unit will provide the amount of power that I want?" This can be a complex topic and you may want to reference the generator manufacturers' "sizing guide." Here is an example from a common generator manufacturer: https://powerequipment.honda.com/generators/wattage-calculator.

This can help you select appliances that can be powered without having to be overly concerned with understanding wattage. See how heavy each model is to see if you want wheels on it. Choose a style you can start. Ask the dealer selling generators what features are helpful for your needs. Maybe read the "Consumer Reports" generator buying guide.

Once you size things right and have a generator that you can start easily, it is important to have the right kind of plug end on a cord you will use to access that generated electricity.

For the everyday appliances plugged into the wall sockets at your house, you want a cord plug that has two flat, metal spades with a round one in between (you may have heard of these as "three prong plugs"). If you want to start large implements with 240 volts, you will need to get a different style plug that may have four prongs. Make sure that you have the right extension cord to draw power from if you expect to get what you need from the generator. You have to make sure you have the right plug to safely get any use out of your generator.

Safety is an important element in running your gen-

erator, as is familiarity. If you don't use your generator daily, start it up and run it under different conditions annually so that you intuitively get a feel for how it should sound and operate without harm to you or your home.

There are a plethora of generators with different interfaces that you can buy. But from where? You can go to a lumber yard, a hardware store, an internet website such as Amazon.com or even order custom items from a website called "generators-r-us"! You might even buy a used one at a pawn shop, computer listing or on social media. But it is best to see what you really need and shop around your needs rather than buying a generator and then using your appliances around the unit. Most new generators have a guarantee, but be sure to check what is being provided in the warranty.

Operation

What kind of fuel should you pour into the generator's tank? It depends on the manufacturer's recommendation as a fuel tank can hold several different fluids, but they may not run the engine correctly. If you have had a generator for a while that burns gasoline, and you can't get it to start, you should ask yourself how long ago you put the fuel into it to see if it is possibly stale. Some generators use furnace heating oil (and believe it or not, even propane or vapor from wood can be burned in others designed as such). When it is started, let it warm up a while before plugging the correct cord in. Listen to hear if it is consistently running, or if it has spikes in the sound of the motor.

When operating in cold weather conditions, the choice of motor oil can make a difference at start up. Using a lightweight synthetic oil can get immediate lubrication to the internal moving parts sooner, as well as make it easier to pull the recoil rope if you do not have a starter and battery assembly on the generator. You also may consider attaching a small silicone heating pad to the oil reservoir that can be plugged directly into to a timer for intermittent warming during extremely cold weather.

Finally, one major safety tip: Do not run a generator in your house. You could poison your family with carbon monoxide. The exhaust dangers are not worth the electricity you might gain. Keep your eye on any gauges as you operate the generator. Don't forget to check the oil from time to time (and be sure to keep it out of the rain and snow).

Conclusion

Even if you receive most of your home power from a utility company, generators are nice to have in case of a sudden outage. Or if you are camping in a remote area, they are good to have. Sure, some generators can be noisy, yet some brands advertise and feature the quiet nature of their units. Do you want to always have a way to turn on lights, cook, or heat? Think of your family's comfort and your pets' welfare when deciding if you want to invest in a generator. It may just be the smartest thing you can do to keep your family happy when in the dark!

To simplify information, trade names of products have been used. No endorsement of named products by the University of Alaska Fairbanks Cooperative Extension Service is intended, nor is criticism implied of similar products that are not mentioned.

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