

Power to the People

BY JOE PROVEY

Compact, quiet and efficient inverter generators serve a wide variety of needs



Because of their efficiency and relatively small size, inverter generators are a logical choice for remote job sites.

So you think you aren't "generator people." You're not preparing for the apocalypse, and you care about waking the neighbors. But what if you could own a small, quiet, efficient machine that could run tools at a remote job site or keep the lights, microwave and TV on during a power outage?

Old-fashioned generators earned their reputation for being big, heavy and loud. But about eight years ago, Honda introduced a new type of machine known as an inverter generator that was smaller, lighter, quieter and more efficient than conventional models. Doz-

ens of these units have since hit the shelves (including many "no-name" brands), sparking interest in inverter generators, spurring competition among manufacturers and raising questions in the minds of consumers. Here's a look at what these machines can do and which features to consider if you decide to shop for one.

The inverter advantage

Inverter generators have some real advantages over conventional generators. First and foremost, they're quiet. In the past, many homeowners and recreational enthusiasts ruled

out the use of generators simply because they didn't want to subject their neighbors, whether at home or on vacation, to the thunderous noise of a conventional machine.

In addition, these new units are a lot lighter and smaller: 1,000-watt inverter generators weigh about 30 pounds and are about the size of a small cooler (see "How Inverter Generators Work," p. 44).

Inverter generators are also about 20 percent more fuel efficient than regular generators. A typical 2,000-watt unit can run at its rated load for nearly four hours on a gallon of fuel.



Inverter generators' low noise, fuel efficiency and light weight are features that make these units ideal for hunters, campers and fishermen.

And finally, inverter generators produce electricity that's somewhat safer for sensitive electronic equipment, such as laptops. (Conventional generators can run computers, too, so this last advantage is debatable. But if you want to run sound equipment and lights without flickering, inverter generators are probably the better choice.)

Typical uses

From the outset, inverter generators were marketed to the thousands of campers, hunters and fishermen who wanted to bring the comforts of home into the great outdoors. **Larger models** can start up 15,000-Btu air conditioners and still have enough juice to power the various appliances found in a large motor home. **Midsized units** are well-suited to mini motor homes and travel trailers, and they can power most 13,500-Btu air conditioners and miscellaneous appliances. **Smaller units** are perfect for pop-up trailers and tents. They are designed for powering coffee pots, blenders, microwave ovens, TVs and lights.

Marketers didn't predict the

many other uses people would find for inverter generators. Today these machines are popular in the construction industry because workers can power up at 7 a.m. or in a quiet zone without disturbing the peace. Inverter generators produce about the same level of noise as a normal conversation (50 to 60 dBA when measured 9 ft. away) — that's quieter than a household vacuum cleaner. Conventional generators, on the other hand, produce 65 to 75 dBA and range from being as loud as a rotary lawn mower or a chainsaw to a jet plane at 50 ft. (When you compare noise levels, keep in mind that decibels increase exponentially from one level to the next. A measure of 90 dBA, for example, is 1,000 times louder than a measure of 60 dBA.)

Tailgaters at races and other sporting events are another huge market for inverter generators. At many venues tailgaters must cart their supplies to a designated area. If you're going to celebrate for a few hours before the game, a small, lightweight portable generator is the ideal companion to power a TV, a satellite receiver, lights and an electric grill.

DIY applications

Inverter generators are also gaining popularity with DIYers who spend their weekends doing projects at home. Want to build a shed or barn beyond the reach of your longest extension cord? Medium-size (2,000- to 3,000-watt) units can power many tools, including heavy-duty 1/2-in. drills, 7-1/4-in. circular saws, electric chain saws and small compressors. Just be sure to select a model that has the surge capacity to start up the tools you need. For a 1-hp compressor that can run big power nailers, you'll need a generator that can supply 4,500 watts of start-up power.

Small and medium-size inverter generators are also handy for homeowners who occasionally experience power outages. There is peace of mind in knowing that even a small portable unit can power a few lights, a TV and a microwave

HOW INVERTER GENERATORS WORK

Generators convert mechanical energy to electricity thanks to a phenomenon called *electromagnetic induction*. Voltage is induced by the movement of a conductor, typically coils of wire, inside a magnetic casing. The mechanical energy used by home generators typically comes from an internal combustion engine that runs on gasoline.

In a conventional generator, each engine rotation produces one sine wave of AC power. For the electricity to produce the standard 120-volt, 60-Hz electricity we commonly use, the engine must run at a constant speed of 3,600 rpm, regardless of the load. An inverter generator is designed to produce more AC electrical energy per engine rotation but not in a form that can be used directly; the raw electricity must first be transformed into DC power. An electronic inverter module then turns the DC power back into standard 120-volt, 60-Hz AC power. The advantage to this approach is that the engine only needs to run at speeds to match the required load and is therefore quieter and more fuel-efficient. — JP

during an emergency. (You just have to run extension cords directly to the receptacles on the generator's control panel.) Larger 3,000- to 6,000-watt inverter generators can power a critical household



Larger models can power RV air conditioners, small appliances and lights.



The control panel on this Subaru Robin unit provides information about its output and the hours it has run as well as the engine controls.

circuit or circuits. If you have a licensed electrician install a manual transfer system it will enable you to connect a portable generator to a power inlet box mounted on the exterior of your house without any worries about back-feeding into the electric grid and perhaps injuring a utility worker.

Features to consider

Small differences in the design of various inverter generators can make a big difference in how easy they are to use and maintain. Keep these factors in mind:

- Control panels on better units include a display that allows you to monitor voltage output, frequency (Hz) and hours of operation. They also include LEDs that warn of overload conditions.

- Many units include controls that allow you to switch from automatic power saving to a power-boost mode when short surges of power are required.

- Weight and size depend largely upon watt output. After narrowing your search to units that provide the power you need, be sure to lift each one to see if it's comfortable to carry.

- Noise levels can vary from manufacturer to manufacturer, even for units with the same output. When evaluating noise, be sure you're comparing apples to apples — especially in regard to how far the unit was placed from the sound-level meter and the load at which it was running.

- Look for an easily accessible gas-tank opening that's wide enough to help prevent spills. Also check the ease of access for chang-



A larger inverter generator can provide power for many of a home's electrical needs in an emergency.



Some models, such as these Honda units, can be connected to double the power output.

two AC units, you'll need a 50-amp receptacle.

- Some units include a battery-charging cable, a spark plug wrench and a generator cover. Units that are designed to connect with another generator (for twice the power) come with parallel cables.

The bottom line

Although inverter generators are less costly to operate than conventional generators, they are more expensive to purchase. A 2,000-watt inverter generator costs \$600 to \$1,200, whereas a conventional unit with similar capacity might cost as little as \$200. Higher-capacity inverter generators get very pricey. If you use your generator frequently, you will recoup some of that in fuel savings. But more important, generator noise will no longer be a nuisance to your neighbors or to you. Whatever unit you decide on, it pays to shop carefully and get the opinions of others about user experience, reliability and service. ♦

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SOURCES ONLINE

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