Best wind generators for home use

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Although not yet as popular as gas generators or even solar panels, wind energy has recently become one of the most in-demand backup power technologies in the residential market. Homeowners see it as a cost-effective alternative to grid power. Moreover, wind generators are long-term investments that can last several decades.

Of course, the price issue puts it out of range for many people. According to the American Wind Energy Association (AWEA), it costs a staggering $5,000 and $40,000 to install a wind power system, depending on the output and design,

Read on to learn how a wind generator works, why you should strongly consider installing one, and critical considerations when shopping for a wind power system. We later also review some of the best wind generators to consider.

A wind generator is just another name for a wind turbine. A wind turbine is a device that converts the wind’s kinetic energy into electrical energy. Wind turbines comprise blades that spin when wind passes through them. The rotating turbines, in turn, spin a shaft/coil built into the turbine’s motor.

Remember that motors have a spinning coil sandwiched between two magnets with different polarities. As such, the spinning shaft/coil generates an electromagnetic field, ultimately initiating electron flow that forms an electric current.

Home wind turbines comprise a rotor, a generator or frame-mounted alternator, tail, tower, and wiring. In addition, the systems also have a balancing system comprising controllers, inverters, and batteries.

When there’s wind, the blades spin, transferring kinetic energy to the rotor. The rotary motion drives the generator/alternator, generating alternating current, albeit unstable. The controllers and inverter work side-by-side to stabilize the current and ultimately create stable AC power available via 30A AC, 20A AC, and DC outlets.

Wind turbines are either horizontal axis or vertical axis. Horizontal axis wind turbines (HAWTs), the most common today, comprise two or three blades and rotate parallel or horizontal to the ground. Meanwhile, vertical axis wind turbines (VAWTs) rotate perpendicular or vertical to the ground. VAWTs come in two main types, Darrieus (egg-beaters) and Savonius (wind scoopers).

Of course, you also need to ask yourself whether wind power represents your best solution. For instance, some locations work better with solar power, which is just as effective. Or, you may even consider a mini hydroelectric power station, which is typically even more reliable.

If wind seems the best solution, the next step is to follow up with the local authorities to determine whether your zoning laws allow for wind power installation. You should also consider visiting the Distributer Wind Energy Association’s Permitting and Zoning Resource Center to find out what you need to get a permit.

Most states charge a permit fee. For instance, the wind turbine permit costs $1,000 to $5,000 in San Francisco. So, budget accordingly. You’re ready to start thinking about getting and installing a turbine after passing the permit test.

Next, you need to check whether you have enough wind on the site before installing a wind turbine. In fact, you should test the wind strength before you even pay for the permit.

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