DIY Projects: 7 Ways To Harness Wind Power To Survive Off-Grid

Wind power is one of the most abundant, available and easy-to-use energy sources on earth.

People learned to harness wind power in ancient times; just think about windmills and sailboats. They were used throughout our history to accomplish everything from transporting goods to discovering new worlds (think Christopher Columbus).

Obviously, things have changed as technology evolved beyond our wildest dreams, but wind power still has many uses, especially when it comes to generating cheap, sustainable power. So, if you're a bit skilled in construction and you'd like to use wind power as an alternative source of free energy or to get off the grid completely, this article is meant to help you.

Today I'll present you with 7 DIY projects which are designed to harness wind power that can help you survive off the grid, shave hundreds of dollars off your electricity bill, or just give you a cool science project to master for future use. You can use these projects for basically anything that runs on electric power.

A great advantage of a DIY wind-power generator is that you can build it yourself from scrap (that means low cost) and it can come in handy in areas where electricity hook-up is not available.

Project 1: How to DIY a 1-KW Wind

Turbine

You can build a 1000 watt (that's 1 kilowatt) wind-powered turbine using readily-available, cheap or free materials for powering your off-grid project, whether it be for a bug-out house in the wilderness or as a backup for your homestead.

A 1kw installation is quite large and this kind of project is usually aimed at charging a battery bank that will power or backup the respective installation.

The project consists of a permanent magnet alternator which produces 3-phase alternative current (AC), rectifies it to direct current (DC) and then feeds it to the charge controller. The magnets in the alternator produce electricity as they spin with the wind and the project uses fixed coils, which are very easy to build and to maintain (there are no brushes or slip rings required in this baby).

The magnet disks are built using 12-inch steel hydro-cut disks and the magnets are mounted on the outside edge (check out the pics in the link). The coil disk is built from magnet wire encased in resin and the bearing assembly is "stolen" from a Harley Davidson bike. The blades for the turbine are made from pine wood encased in airfoil. For detailed information, just visit here. There are lots of pictures and technical details, including the video below.

*Video first seen on **Steve Spence***

Project 2: Build a Wind Turbine for Only $30

Wow, this sounds too good to be true, right? Your own power generator for the price of…I don't know, 5 packs of cigarettes? Well, it's doable! Everybody "knows" that wind

power is expensive and non-reliable, because the wind doesn't blow 24/7. What they don't know is that battery banks take care of this problem in serious wind-powered setups. This project proves that you don't have to be a millionaire to set up your own DIY wind-powered generator.

This DIY project can be built in your backyard with readily-available tools and materials. You can likely use 100% scrapped materials to keep the costs down (except for the pop rivets and bolts), provided you already have the tools necessary for the job.

Just visit here for a detailed tutorial which lists all the tools and materials necessary along with step-by-step instructions and basically everything you need to know for building a wind turbine that can handle up to 75 mph winds.

*Video first seen on **Solar Flower Org***

Project 3: How to DIY a Home Made Windmill

As I already told you in the beginning of this article, wind power has been used by humankind for thousands of years, especially since we've developed our agricultural civilization. Windmills were part of it since its inception. Following this tutorial, you'll be able to DIY your own windmill for your farm or homestead and I recommend this particular project because it's a very low-cost, low-maintenance project and it's easy to build.

Obviously, you can use this windmill in the future to provide you with electricity, but you'll have to attach an alternator to it. This ingenious design uses 27'' snow shovels as blades for the propeller to keep the cost down. Enjoy!

*Video first seen on **My Show Me a Movie***

Project 4: How to Build a Vertical Axis Wind Turbine

This is another dirt cheap project for harnessing wind power, requiring only basic materials that are readily available at your local hardware store, a bit of elbow-grease and moderate construction skills. Vertical axis turbines are very strong and relatively quiet. The best thing about them is that they don't require strong winds to function efficiently.

This is an open-source project called Zoetrope developed by Applied Sciences and the full guide can be found here, including detailed instructions, the list of materials, pictures etc.

Project 5: How to Build a Wind Powered Composter

This project falls into the "Green" category, mixing composting with wind power. Having a wind powered composter is as cool as it gets, because composting is very important for all things that grow and standard composters must be operated by muscle power (usually). Find out how to use the resulted compost in our article on Heating Using Compost.

A self-operated composter that uses wind power seems like an excellent idea, doesn't it? Here's a comprehensive guide about this DIY project, including pictures, detailed instructions and the list of materials. Basically, all that's required is a drum or bucket, plywood, 2×4/2×6's for the frame, lots of screws and a junk motor with a high gear ratio. As for tools, you'll need an angle grinder, a drill press, a jig saw, a hammer, a screw driver and low to medium construction skills. Good luck, have fun!

*Video first seen on **Kelly Dunn***

Project 6: How to DIY a Homemade Wind Generator

This is one of the most important and practical DIY projects involving wind-power that we've found. It's for powering a remote vacation house or homestead, whether it's in the mountains or on the beach, or in any other areas where the power grid is not available. Again, this is a cheap and easy wind generator design that can be used also for lighting up a barn or a storeroom, all for under $100.

Its main components are:

- The alternator – you can use one from an old pick-up truck or buy one for about $80 brand new
- A fan clutch assembly from the same pick-up truck, which costs ~$35 used
- A bracket that's built using pipe and fittings for mounting the generator on the pole/tower($25)
- The respective pole/tower that you can build using 2'' tubing ($20 for 15 feet)

Make sure that the alternator features a built-in voltage regulator if you get it from a junkyard and make sure you get some wires to connect it to your storage battery. Obviously, you'll have to store the wind power (using 6-volt golf cart batteries for example).

Here's the guide with the detailed instructions for building your homemade wind generator, including the parts list and illustrations. The basic principle in this project is the same as in your car, just that the engine is replaced by wind power, which spins the alternator, which produces electricity, which is stored in the batteries for later use. Simple, cheap and efficient!

Project 7: How to DIY a Wind Generator in Your Backyard for Just $150

This particular design is perfect for your backyard as it can easily generate a steady 50 to 250 watts of wind power, depending on the propeller size and wind speed, for about $150. This is significantly cheaper than using solar panels for a similar power output and can be regarded as a first step to becoming self-sufficient in terms of generating your own electricity.

The design is basically the same as any wind turbine, regardless of its purpose. Whether it powers a small radio or a whole town, a wind turbine works on the same principle: the wind blows and spins the propeller together with the alternator that's coupled to the propeller's axle; as it spins, it produces electricity.

Elegant, easy and ingenious, right? All you'll require for this DIY job are simple, basic tools like a jigsaw, a drill, drill bits, a tape measure, a pipe wrench, a crescent wrench, sandpaper and a protractor for measuring the angles for the hub.

The parts you'll need for building this baby are also minimal; just visit here for the detailed instructions and parts required for the DIY wind generator. Most, if not all, of them can be bought in a single stop at your local home improvement store or from Amazon.com. Some of you may even have most of them laying around the garage.

If you have other ideas about harnessing wind power to survive off grid, feel free to comment in the dedicated section below.

*This article has been written by **Chris Black** for Survivopedia.*