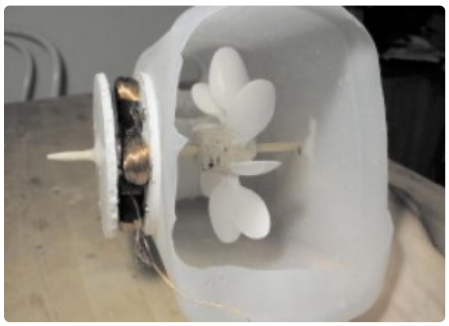
How to Build a Small-Scale Hydroelectric Generator

By Mircea Sandru on March 9, 2010



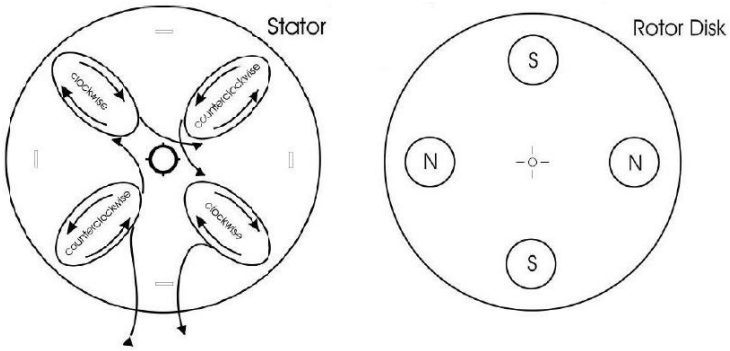
We all know that scientists are in a constant search for alternative energy sources and this happens because in recent years conventional energy sources have started to decrease significantly.

They have developed various systems that convert the energy from nature in electricity and many of these systems could be built at home, on a smaller scale, in order to reduce electricity consumption. After we saw how to produce electricity using magnets or **wind power**, it is time to talk about those people who live near a river.

In this case, the best way to produce electricity is represented by a small-scale hydroelectric generator made at home. Often called as a low-impact hydro, micro-hydro or run-of-stream hydro generator, this system is not very hard to build.

To build such a micro-hydro generator you must follow these steps:

A. Preparing Disks



Our generator will consist of two main parts:
-The stator (this part is not moving and it is equipped with coils of wire to collect electricity)
-The rotor (the rotor is the part that moves and has some powerful magnets that will induce electricity in the coils)
First you need some templates and a cardboard. The two templates that contain the rotor and stator scheme must be cut and attached to the front and back of the cardboard. After these templates are well glued to cardboard make a hole (1 cm) at the center of the stator disk.

B. Attaching the Stator

Now, you have to make 4 coils that will be attached on the cardboard. This requires you to use a cardboard with an oval section. Then, start winding the wires on this cardboard to form a tight coil (200 turns). Remove carefully the coil from the oval section and then, repeat this procedure to make three more coils.

Arrange the coils on the cardboard according to the template scheme (their windings have to alternate between clockwise and counter clockwise). You must be sure that an electron would follow the path shown by the arrows in the template, begining from the left counterclockwise coil.

Connect the ends of coils and use insulation tape to prevent any errors. Use a multi-meter to cehck electrical resistance (ohms). If the wires are properly connected the meter should produce a reading of about 10 ohms.

C. Attaching the Rotor

At this stage you need 4 strong magnets to be attached on the stator template. Check the magnets, mark the south

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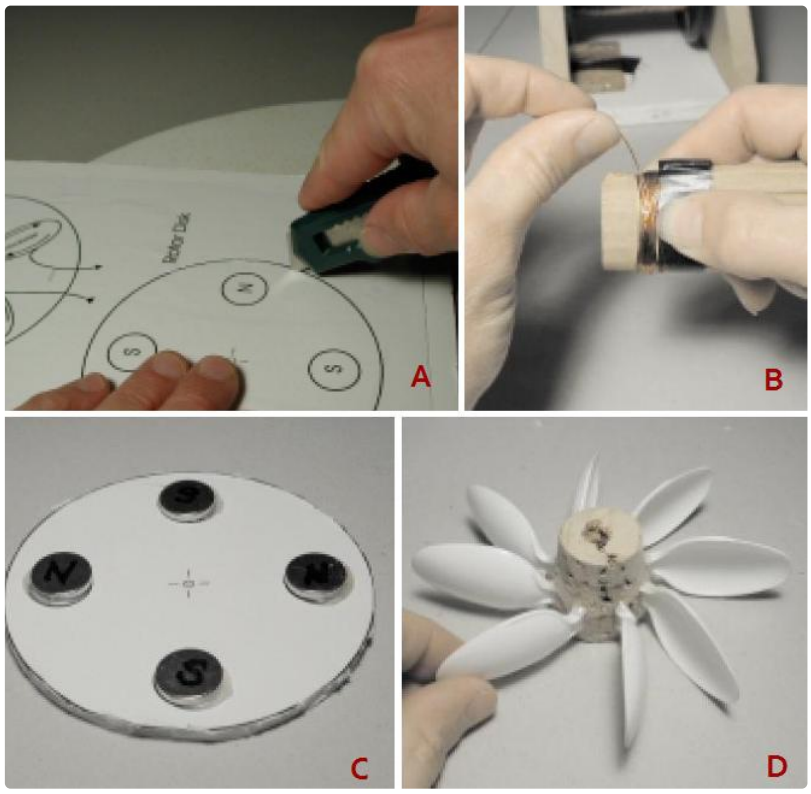
pole on two of them and the north pole of the remaining two. The magnets should be arranged on the template so that their polarity alternates (N-S-N-S).

Then you need a cork and 8 plastic spoons. You have to shorten the spoons so that the handle will not measure more than 1cm. Look at the rotor template and insert the spoons into the cork (1cm depth).

D. The Turbine

Make a 6mm hole through the cork (make sure the hole is centered), fix again the geometrical position of the spoons and add some hot glue to each spoon to secure it.



E. Generator body and Final Assembly

Find a plastic tank or a bottle to attach the rotor, the stator and the small turbine. After you find the center of the tank, make a hole in that place (6mm) and fix the stator with its coils just above the hole. Then, attach on the same shaft the turbine and rotor (the spoons have to face the neck of the bottle and the magnets should be close to the coils (3mm between the coils and magnets)).

It seems that our micro-hydro generator is almost ready to use. All we need now is a stream of water so that the turbine to spin continuously as long as there is water to drive it. If the turbine is properly connected to the generator this stream should produce enough electricity to power our utilities or charging batteries.

Update: Youtube user TheDamHeroes, inspired by the designed shown in this article, posted a working hydroelectric generator. Watch it in action below:

http://youtu.be/j9FodZfH3VQ

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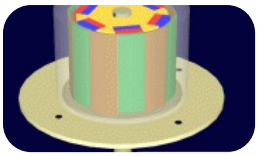


How To Build a Free Energy Generator (Mini Romag)

The Mini Romag free energy generator from Magnetic Energy uses the principle of moving magnetic flow named “the magnetic current” for generating electrical power. According to Magnetic Energy this generator is able to produce 3.5 volts, 7ADC (about 24 Watts) of free electricity while its generate sufficient power to sustain itself…

New Wind Turbine Generator Gets 57% More Power

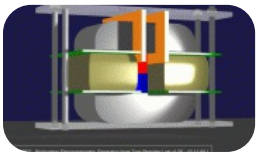
Wind power is one of the cheapest forms of energy available to us, because it mainly depends on wind’s speed, and it works 24/7, with no dependence on the moment of the day. A new company called ExRo Technology, based in Vancouver, BC, wants to commercially develop a new type of generator to be used in wind turbines all over the world. The interesting fact is that this new generator can increase the electricity output by 50%.

DIY: How to Build a Vertical Axis Wind Turbine (VAWT)

Today I found another DIY project for generating alternative energy, by using the wind. It is a Vertical Axis Wind Turbine (VAWT), and it works by the same principle those huge wind turbines do, but they are much more easy and less expensive to build.

BPP Backpack Hydroelectric Generator Provides Up to 500W of Mobile Power

The Bourne Energy company, located in California, has developed a human-portable hydroelectric generator that produces up to 500W of renewable energy and weighs about 30 pounds. The Backpack Power Plant (BPP) can generate clean energy from any stream deeper than 4 feet.



Tom Bearden's MEG Free Energy Generator (Motionless Energy Generator)

Tom Bearden has invented and patented a free energy device called “MEG” (which stands for “Motionless Energy Generator”). This device transforms the magnetic force of a permanent magnet into electricity and achieves overunity. However, it does NOT run by itself, it is run by energy extracted from the vacuum (energy that most people won’t accept [...]

Comments from our readers

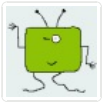
3153 total comments so far. **What's your opinion ?**

#1 by **ogundipe omolara** on March 31, 2012 - 6:21 am

I need help so as to generate the hydro electricity in our home

#2 by **scorpion** on March 23, 2012 - 6:00 am

pls explain in detail how the copper coils are winded and attached to the stator part wit pics.. I need to do this water turbine at the earliest., the only doubt s wit the stator part which s not clear,,



#3 by **Highly Eager Student** on March 20, 2012 - 5:47 pm

Could you explain in detail, the stator and the rotor part. im a grade 9 student thinking of making this project, but not clear regarding the mentioned parts

#4 by **JonDanil** on March 11, 2012 - 5:19 pm

Save money by installing your own “water power” system, discover the astonishing DIY technology that wipe out your dependence on greedy energy companies and expensive alternative energy sources, check this link : **http://power-water.tk/**

#5 by **Science Nerd Wanna Be** on March 9, 2012 - 12:01 pm

If you want more voltage try adding more copper coils and magnets that should do the tick if it doesn’t i’ve got no idea cause what i said worked for me

#6 by **RJ2012** on January 22, 2012 - 3:32 am

We build this generator for our science project but it is not generating enough voltage. Can

anybody tell me how much voltage you got?

#7 by **KOCHAMUCHA** on January 3, 2012 - 4:25 pm

IS THERE SOMETHING EASIER?

#8 by **I-Want-A-Good-Note** on November 2, 2011 - 3:57 am

Should I do this for a science experiment? I'm in grade 8 and we have to do a construction/experiment. Please respond because I need an idea for 11/4/2011 (Friday) thanks

#9 by **varunpr97** on October 30, 2011 - 9:04 pm

Neodymium disk shaped magnets will be optimal and stator u can use enamel wires of about 30 gauge….

#10 by **Nitish** on June 2, 2011 - 1:12 pm

ya this is really fantastic……

#11 by **andrew** on January 31, 2011 - 12:30 pm

i have worked on a prototype for a electricity source with the ability to power my house using no fuel or any outside help it works finally but i can not find a way to stop it before it destroys its self it works allot like the Hydroelectric Generator shown above but different in ways i will not say over the past year i have not seen any other creation like it on the market and was wondering if any 1 else has because this last bug in the prototype i can not fix and was hopping some 1 else has fingered it out please post and offer help

#12 by **darco** on January 19, 2011 - 10:32 am

Fantastic idea, great way of energy sourcing .. .. i have bought it from one of our local **Generator Sets** manufacturers, and its working pretty good..

#13 by **Designer Radiators** on January 11, 2011 - 10:39 am

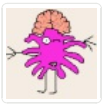
Oh without the scientist and the explorer for truth we would still be in the cave. Well done to those who continue to challenge and take our life to other levels, good and bad.

#14 by **Artesian Well Owner** on December 25, 2010 - 9:40 pm

I have an artesian well that produces a small stream (about a gallon a minute) — can this be used successfully for usable power?

#15 by **Ovidiu Sandru** on December 25, 2010 - 11:13 pm

I guess, if you can charge a battery with it…



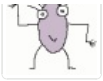
#16 by **superman** on December 24, 2010 - 2:17 am

can you attach the coil with super glue.

#17 by **upvc door** on November 30, 2010 - 7:05 am

This would make a really fun high school science project! Of course if you wanted to employ it in real, daily use, it would have to be more solidly constructed, but as a tool for teaching basic principles itÃ¢â‚¬â„¢s fantastic!

#18 by **Katrina** on November 2, 2010 - 11:56 am



Where is the template for the cork?

#19 by **paul ross** on August 18, 2010 - 5:39 pm

could this be used to powered the pump on a water feature i am about to create in my back garden

#20 by **mahen** on August 9, 2010 - 3:11 pm

i do love this topic..so nice..thanks

#21 by **UPVC Windows** on July 29, 2010 - 7:43 am

Actually, this could be a fabulous additive to the community wind power. Any back up or alternative support for your energy needs is positive for the individual and communities. Any excess energy available from wind power can be fed into the grid. Now this is savings, real savings.

#22 by **Radiators** on July 2, 2010 - 11:04 am

This appears functional and reasonable, however there is a lot of development occurring with community wind power. Does this not conflict with a whole approach rather than individuals?
I am not suggesting we as individuals don't consider this as an option, but for the longer term community wind power is favored.

#23 by **AznHustler** on May 4, 2010 - 1:33 am

I was wondering, what kind of magnets are you using? Also what are all the materials you used for the stator?

Name (required)

E-Mail (required) *(will not be published)*

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This entry was posted on March 9, 2010, 7:13 pm and is filed under How to..., Wave power. You can follow any responses to this entry through RSS 2.0. You can leave a response, or trackback from your own site.

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