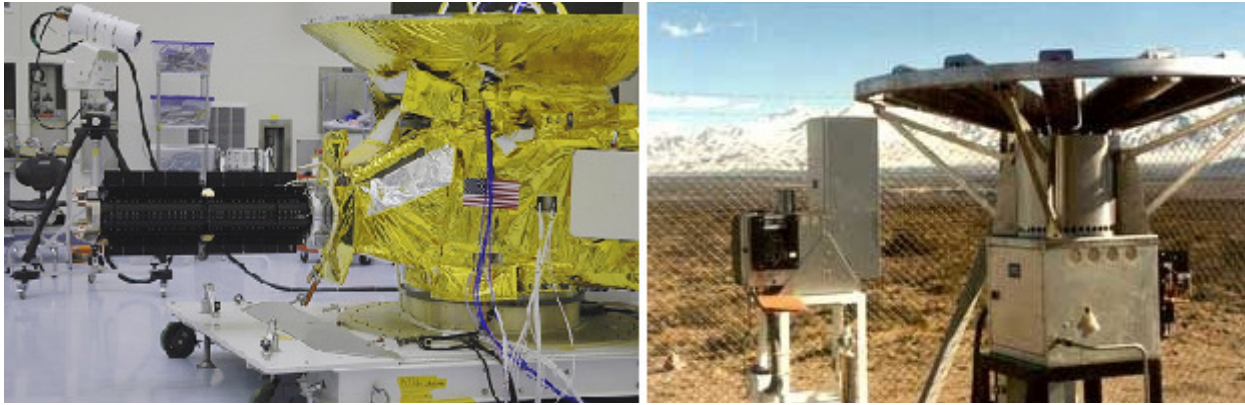


# Becoming Energy Independent With Thermoelectric Generators

Thermoelectric generators have been in use for many years by NASA to power spacecraft and the oil and gas industry to power remote monitoring stations around the globe.

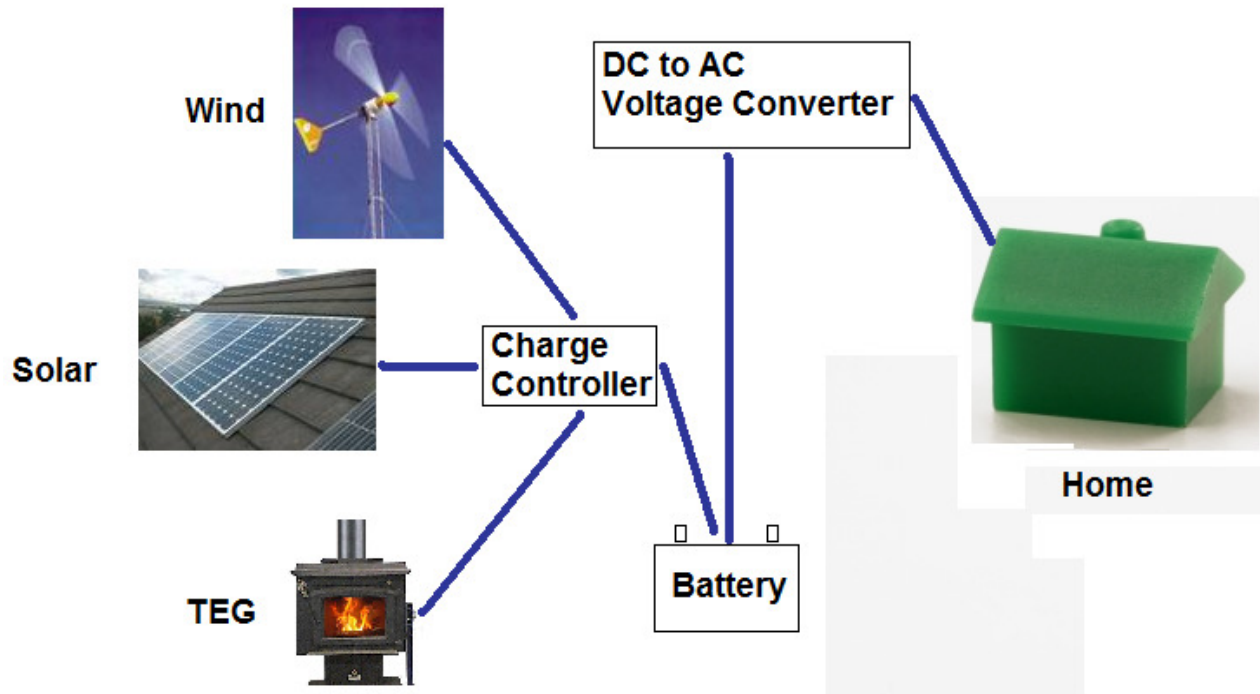


Only in recent years has this technology become available to the general public and TEGPower is at the forefront of this thermoelectric energy revolution because we are the first manufacture to provide practical and affordable thermoelectric generators to the energy conscious consumer. As part of our continuing efforts to educate the public on thermoelectric energy, we are providing this handout so that you may fully understand the options for thermoelectric generators and the advantages to using this wonderful technology.

## Solar, Wind and TEG Power

The installation of a thermoelectric generator (TEG) for off-grid living or supplemental power is very similar to both solar and wind. For example; the power output of both solar and wind power systems vary depending on the amount of sunlight and wind, with a TEG the power output also varies depending on the amount of heat (and cooling).

In addition, with the proper installation of photovoltaic panels or a wind-turbine generator, one or more batteries are added to store the electrical energy created by the systems with the aid of a charge-controller or regulator. The electrical energy to power your needs is then extracted from the batteries, not directly from the solar panels or wind turbine, they are used simply to keep the batteries charged. If an AC current is needed, a voltage converter is then added to convert the DC current to 110 AC or 220 AC. Setting up a TEG system is identical to solar or wind, only how the electricity is generated is different.



In fact, solar & wind systems are very compatible with TEGs and can easily be combined to increase the available power for off-grid users.

### Advantages

TEGs have one very important advantage over solar and wind and that is a TEG can provide electricity 24/7 as long as you have heat and the list of low-cost sources of heat energy is very long! Whereas, solar and wind will only provide power when the sun is shining or wind is blowing. As little as 5 or 6 TEG Power Strips can produce more electricity annually than a 1000 watt solar panel.

TEGs can use a wide variety of fuels (including solar) to provide heat for thermoelectric conversion.

- All forms of burnable alcohol.
- All forms of burnable gases including propane and natural gas.
- All forms of burnable liquids including gasoline, kerosene and diesel. Even lamp oil or used engine oil.
- All forms of burnable organic matter including wood, coal, twigs and leaves, even charcoal briquettes.

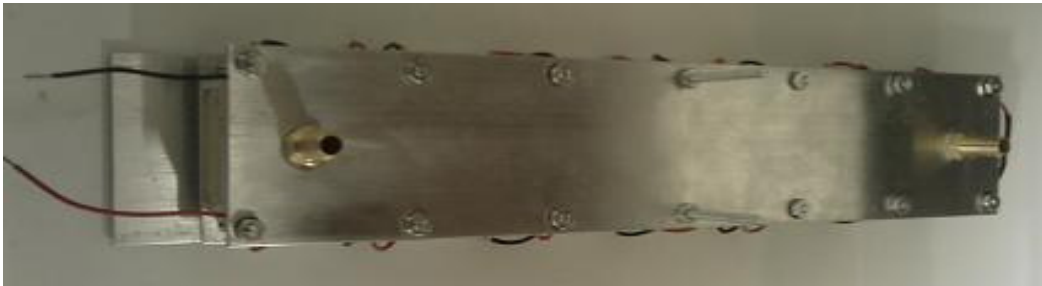
If it burns, you can use it to power your TEG!

TEGs can also use waste heat, such as an engine exhaust to generate electricity.

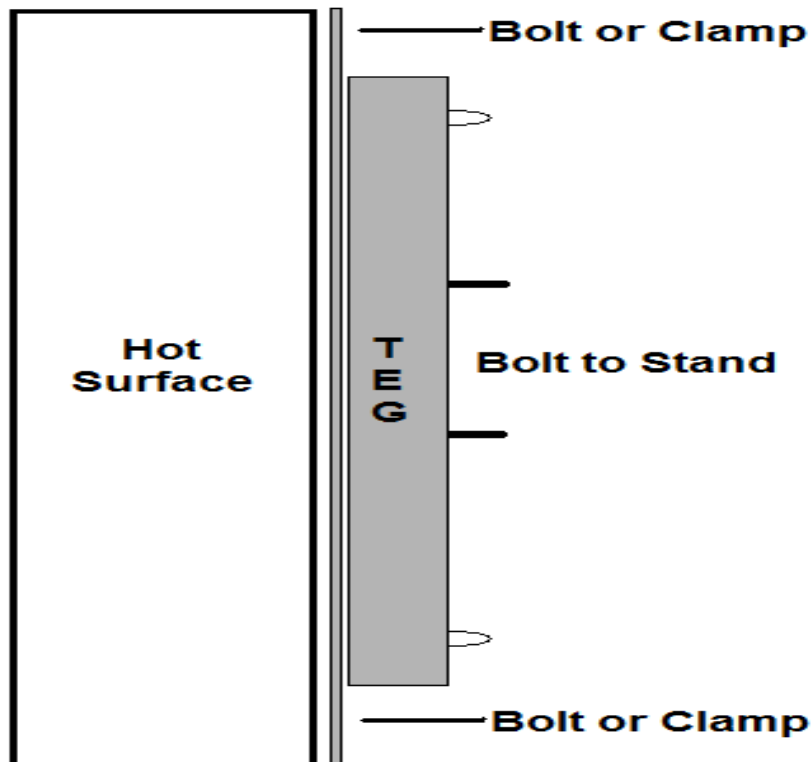
## Other Advantages

- Quite as a mouse.
- Maintenance free.
- Proven dependability! As a point of fact, there are TEG generators in use today that have been operating continuously for more than 30 years.

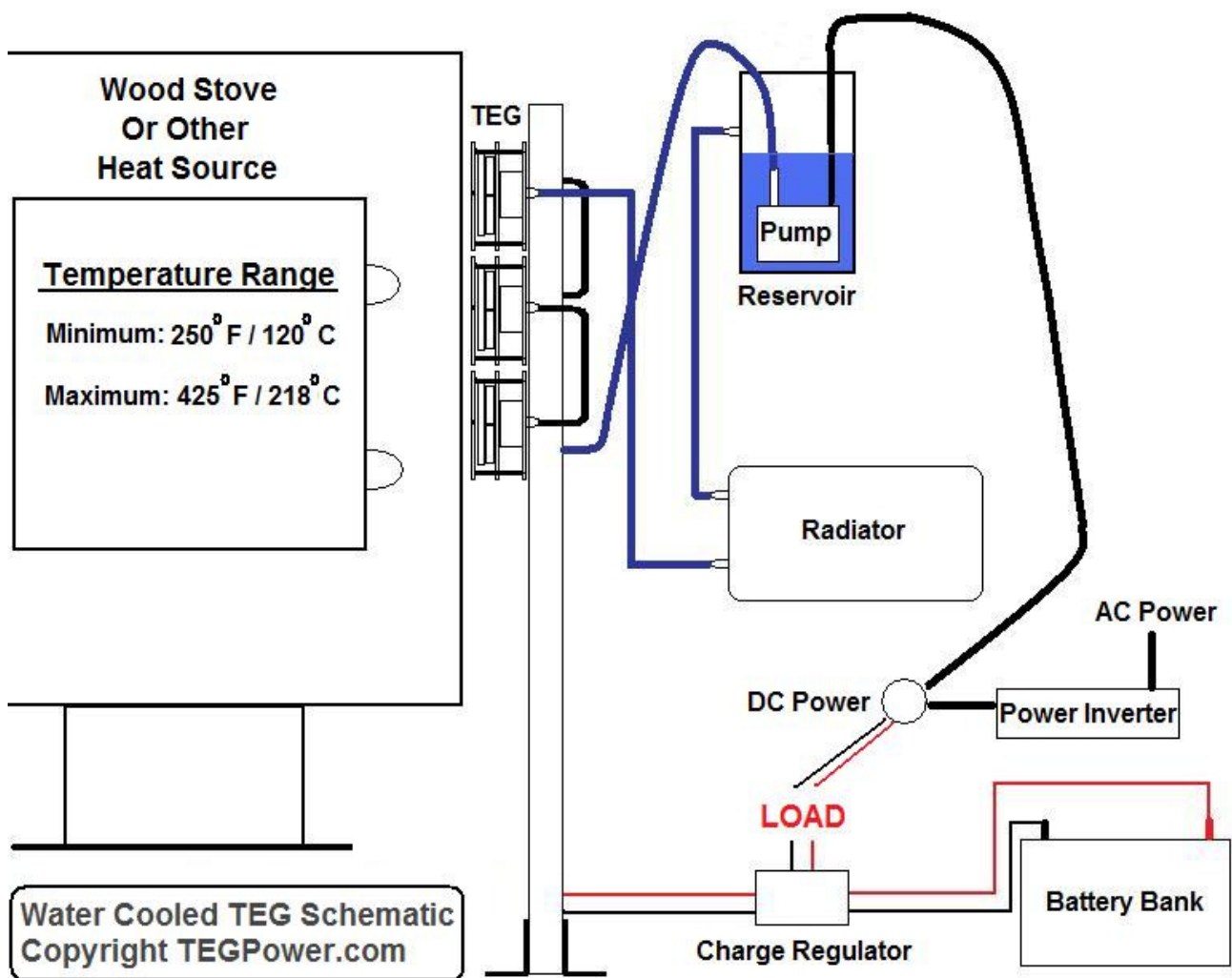
## Using Our TEG Power Strips



Our TEG Power Strips are designed so that they can be clamped or bolted to a flat surface heat source wall such as a wood stove or they can be attached to a stand. Bolting or clamping directly to the side of the heat source wall is the most efficient way to transfer the heat to the TEG, but use of a stand and simply pressing it against the heat source wall is acceptable.



For maximum efficiency and dependability our TEG Power Strips are also designed to be water cooled with the aid of a low current circulating pump and an inexpensive automotive transmission cooler/radiator.

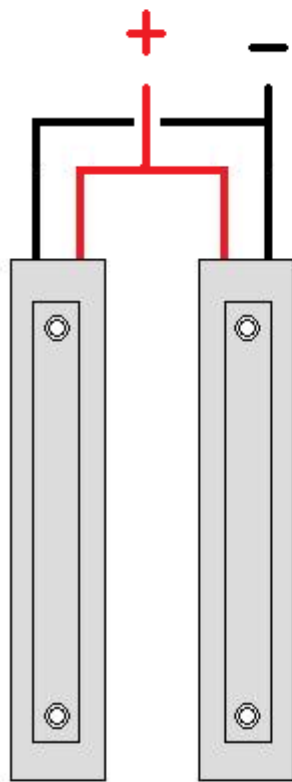


Depending on the ambient air temperature in the environment the TEG is operating in, a fan blowing on the radiator may be necessary to maintain efficiency. As a rule of thumb, if the air temperature is above 80 to 85 degrees Fahrenheit you may wish to add a low current fan.

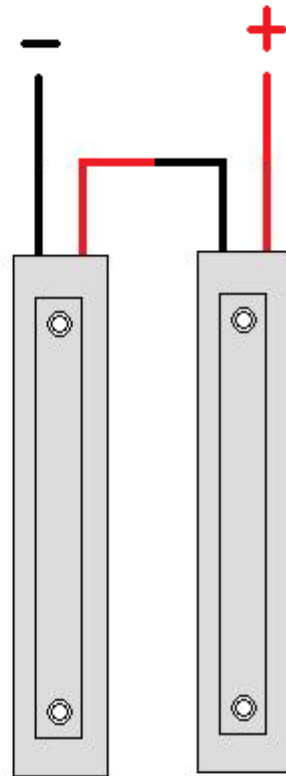
### Adding More TEG Power Strips

One of the great things about our TEG Power Strips is the ease in which you can expand your TEG system. You can start with one or two TEG Power Strips and more power to your off-grid system when you can afford it. When you are ready to add more current to your TEG system, simply wire any additional TEG Power Strips in parallel with your existing TEG system.

## Wiring Multiple TEG Power Strips



**Wire in parallel to  
increase amperage**



**Wire in series to  
increase voltage**

### TEG Power Generating Plant

Setting up a wood fueled TEG system that is 500 watts of power or more is very doable and less expensive than you may think.

Technically speaking even a small wood stove produces enough thermal energy to provide a thousand watts or more of electrical energy with a TEG, but there are practical limitations to a small wood stove. Small home wood stoves lack sufficient surface area to place enough TEG Power Strips on it to produce more than a hundred watts of electricity and unfortunately you can not use the heat in the stove pipe without risking excessive creosote buildup and increasing emissions, which may violate state and federal laws.

Unless you already have a wood burning furnace or steam spa furnace, which has plenty of surface area, you will need to get a bigger wood stove. One of the best choices is a barrel stove kit made by Vogelzang.



Which you can order online [http://www.vogelzang.com/barrel\\_stoves.htm](http://www.vogelzang.com/barrel_stoves.htm) and it is also carried by Tractor Supply Company if you have one in your area.

A barrel stove has ample surface area to bolt on dozens of TEG Power Strips and although it is not a totally flat surface it is close enough to transfer a sufficient amount of heat to the TEG. The barrel kit is very inexpensive and you can stoke it up with huge logs providing many hours of cheap electricity! It can be placed outdoors under a shed roof or work shop creating your own home power generating plant. You can start with just a couple of TEG Power Strips and add more as you can afford to.

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Almost Free Electricity