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- [Biotech](#)
- [Nanotech](#)
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- [Blogs](#)
- [Videos](#)
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Friday, July 14, 2006

How To Build a Solar Generator

Affordable solar power using auto parts could make this electricity source far more available.

By [Kevin Bullis](#)

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A set of prototype solar concentrators installed in Lesotho. (Courtesy of Amy Mueller.)

Demand for solar power is rapidly heating up (see "[New Solar Technologies Fueled by Hot Markets](#)"). But constructing and deploying large photovoltaic panels to generate electricity remains expensive. Now two groups at MIT are working on alternative approaches to solar-based electricity that could significantly cut costs -- and put the ability to harvest electricity from the [sun](#) into the hands of villagers in poor countries and backyard tinkerers alike.

During a stint in the Peace Corps in Lesotho in southern Africa, Matthew Orosz, an MIT graduate student advised by Harold Hemond, professor of civil and [environmental](#) engineering, learned that reflective parabolic troughs can bake bread. Now he plans to use these same contraptions to bring power to parts of Africa baked in sun but starved for electricity. His solar generators, cobbled together from auto parts and plumbing supplies, can easily be built in a backyard.

The basic design of Orosz's solar generator system is simple: a parabolic trough (taking up 15 square meters in this case) focuses light on a pipe containing motor oil. The oil circulates through a heat exchanger, turning a refrigerant into steam, which drives a turbine that, in turn, drives a generator.

The refrigerant is then cooled in two stages. The first stage recovers heat to make hot water or, in one design, to power an absorption process chiller, like the propane-powered refrigerators in RVs. The solar-generated heat would replace or augment the propane flame used in these devices. The second stage cools the refrigerant further, which improves the efficiency of the system, Orosz says. This stage will probably use cool groundwater pumped to the surface using power from the generator. The water can then be stored in a reservoir for drinking water.

The design uses readily available parts and tools. For example, both the feed pump and steam turbine are actually power-steering pumps used in cars and trucks. To generate electricity, the team uses an alternator, which is not as efficient as an ordinary generator, but comes already designed to charge a battery, which reduces some of the complexity of the system. And, like power-steering pumps, alternators, including less-expensive reconditioned ones, are easy to come by.

As a result, the complete system for generating one kilowatt of electricity and 10 kilowatts of heat, including a battery for storing the power generated, can be built for a couple thousand dollars, Orosz says, which is less than half the cost of one kilowatt of photovoltaic panels.

"You can't afford something that's designed for solar. You have to buy something that's mass-produced for something else -- that way the cost is reasonable," says Duane Johnson, owner of Red Rock Energy, in White Bear Lake, MN, who developed and sells thousands of the inexpensive LED-based sun-tracking devices Orosz uses to orient the solar concentrators. Most of the devices are used to position photovoltaic panels, he says, but some people are using them with old satellite dishes to concentrate heat and make steam. Sales of his devices have been growing 25 percent a year, a rate similar to that of the solar photovoltaics industry.

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Comments

**Parabolic reflectors**

Guest (Bill) on 07/14/2006 at 12:00 AM

Posts:

1

A book was published in the 70's outlining simple methods of producing parabolic reflectors. As sun trackers were not readily available then, a clock mechanism was used control the orientation of the reflectors.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**car to elaborate? How do you make one?**

Guest (Dale) on 07/14/2006 at 12:00 AM

Posts:

1

I was thinking that the reflector would be the most expensive thing in this solar energy solution. Can these be made by someone with access to the local college metal shop? I'm thinking 50-gal steel drum cut in half, or something like that...

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**Cheap Easy Parabola**

Guest (Andre) on 07/18/2006 at 12:00 AM

Posts:

1

Glue aluminumized mylar (reflective plastic sheet) to a piece of formica and bend, cut end blocks to form the shape and ther at alle you go. Not expensive

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**Parabola**

Guest (John Handy) on 07/19/2006 at 12:00 AM

Posts:

1

Easy and cheap parabola but the shape is critical. Where Can I get a pattern for the end blocks?

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**parabolas**

Guest (Maker) on 07/19/2006 at 12:00 AM

Posts:

1

A parabola is just one-half of an ellipse cut the short way. To make an ellipse, drive two nails into a sheet of plywood at each of a straight line (length doesn't matter really). Then make a loop of string that can hook on one nail and extend past the second nail some distance, say 30% the distance between the two nails (this distance also doesn't matter). Then hook a pencil inside the loop and trace around the two nails, keeping the string taught always. This will draw an ellipse. If you cut the ellipse in half halfway between the nails, each half will be a parabola with the focal point at the nail.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**a 'half ellipse' is not a parabola**

Guest (jimbo) on 07/20/2006 at 12:00 AM

Posts:

1

anybody remember graphing parabolas in high school math? get a presentation pad with gridlines from an office supply store and graph some parabolas. $y=x^2$

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**More on Parabolic Math**

Guest (postman) on 07/26/2006 at 12:00 AM

Posts:

1

To go one further, for a solar trough collector it's also convenient to place your collection pipe level with the endpoints of your parabola. This is good for providing mechanical support and

Local Business Directory



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easily finding your focal point. This requires an extension to the basic parabola formula. Unfortunately I did that derivation 30 years ago when I was far more mathematically astute and don't have it handy any more.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Parabolic math and things](#)

Guest (riverrock) on 07/28/2006 at 12:00 AM

Posts:

1

Shouldn't the parabola used in such a system be very accurately built?

I understand that sun rays hitting points on the parabola will reflect to the focus, thus heating the pipe carrying the liquid.

I found free sites on the internet that provide sun azimuth and vertical angles from any location, based on the time of day, any day.

I believe that a light weight hard, but flexible material covered with a highly reflective surface material could do the job.

What I'd like to learn is how a steam turbine would be connected to the feed pipe at the focus?

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Parabolic Math](#)

Guest (Charlie Queen) on 08/07/2006 at 12:00 AM

Posts:

1

The formula for a parabolic curve is $X^2 = 4 * P * Y$.
To solve for Y, divide X squared by 4* P, where P is the focal point. This will give you the parabolic curve for a given focal point.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Re: a 'half ellipse' is not a parabola](#)

[falk](#) on 10/16/2006 at 9:08 PM

Posts:

1

If the ellipse is eccentric enough, it will be close enough to a parabola to do the job.

Ways to draw an ellipse:

<http://www.uwgb.edu/dutchs/MATHALGO/Ellipses.HTM>

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[how to construct a parabolic concentrator curve](#)

[john milton](#) on 03/02/2007 at 11:43 PM

Posts:

1

1 Obtain a piece of plywood

Avg

Rating:

☆☆☆☆☆

2 Draw a straight line close to one edge (will call this the "base line")

3 Partially hammer in a nail some distance above the base line. this will be the focal point.

4 Obtain a framing square (the metal L shaped thing carpenters use).

5 Place the square so that the outside edge of one leg is touching the nail and the outside corner of the square is touching the base line.

6 Draw a line along the outside edge of the leg of the square not touching the nail, then extend this line to the edge of the plywood

7 Reposition the square to a new location that still meets both the criteria of step #5

8 Draw a new line as per step 6

9 repeat steps 7 & 8 many times, the line segments you draw will describe the parabola (in fact each of them is a tangent to it at some point)

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[cheep and easy](#)

Guest (scott) on 07/21/2006 at 12:00 AM

Posts:

1

I have about 100 sheets of mylar.
what kind of glue should i use to glue it to the formica

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Re: cheep and easy](#)

[Romawat](#) on 09/27/2006 at 2:09 AM

Posts:

1

Avg
Rating:
★★★★★

Someone asked how to glue the mylar to the formica. You can apply it just like window tinting: spray the formica with soapy water, carefully apply the mylar, and squeegee the excess water to and out the sides. Blot the excess liquid and tape the seams (use aluminized tape if you really must), to keep the mylar from peeling. As long as the edges remain taped, the mylar cannot come away from the formica. Smooth formica is best and will provide the superior reflection.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Parabolic Reflectors](#)

Guest (GalaxyM100) on 07/15/2006 at 12:00 AM

Posts:

1

I think nonimaging optics would solve the tracking problem and reduce costs further.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Re: Parabolic Reflectors](#)

[Rob-in-texas](#) on 09/08/2007 at 7:31 PM

Posts:

1

I worked at a solar collection site in New Mexico in the 80s.. The tracking device is actually simple to make. simply use 4 photo-optic sensors in a box with a clear cover facing the sky. The tracking boxes were actually mounted to the tops of the troughs.

Align was achieved by having two sensors in the sun, and two still in the shaded area of the sensor board.. think of it as a rectangle with a smaller square opening.. the output of the photo sensors drove relays to reversible electric motors.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)

**[Parabolic dish](#)**

Guest (John) on 07/31/2006 at 12:00 AM

Posts:

1

A inexpensive parabolic dish can be purchased from Edmund Scientific. They have a pretty short focal length, 3.5". But for \$50 for a 24" dish is pretty cheap.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[Re: Parabolic reflectors](#)**[MyTonyTiger](#) on 12/31/2007 at 5:27 PM

Posts:

1

Avg

Rating:



You could use an old satellite dish. You know, the old 6, 8, 10, or 12 foot dishes hardly anyone uses anymore. Set up correctly, the actuator (motor) on each one could easily track the sun. You could even run the plumbing through the center of the dish up to the focal point and back.

Just an idea. ;-)

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[Re: Parabolic reflectors](#)**[aymaneman](#) on 01/17/2008 at 6:42 AM

Posts:

1

i love to be have a knoleg abuot any thing new , and i like wht yo have in your web set

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[Oh good. They've solved global poverty.](#)**

Guest (WOV) on 07/14/2006 at 12:00 AM

Posts:

1

Another set of engineers saying that because they've made this water pump / electrical generator / seed harvester / cardboard house / what have you, that *this* will solve why rural poor populations don't have electricity.

It's not a technical problem. It's a social one. (Actually a bunch of them.) And as long as engineers continue to come up with new widgets that will solve it for sure this time, it will still be with us...

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[WOV is right](#)**

Guest (MDEX) on 07/14/2006 at 12:00 AM

Posts:

1

These people had the same opportunities as other races to advance, they are just too lazy to do anything. You'd think that because they are poor and stuff, that they would be motivated to come up with ways to help themselves. Instead, engineers of superior races do all the brainwork.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[poor and stuff](#)**

Guest (Steve) on 07/14/2006 at 12:00 AM

Posts:

1

Uh huh... you sound pretty advanced yourself.

The idea is to bring those who are without, no matter what the reason, the ability to grow. It isn't a matter of race. If you have a doubt, check out the local trailer trash parks.

I hope they continue with their work.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[It's not a race thing](#)**

Guest (Ruben) on 07/14/2006 at 12:00 AM

Posts:

1

It's difficult to make great strides in technology when you have to worry about where your next meal will come from or if you have clean water to drink. You make a bad name for your "superior race". Isn't it more superior to help others and share your knowledge for the good of humanity? Thank goodness the engineers who worked on these solar generators were more openminded than you.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[Wow, that's totally racist..](#)**

Guest (shocked reader) on 07/14/2006 at 12:00 AM

Posts:

1

...

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[MDEX was joking](#)**

Guest (Mike Hal) on 07/14/2006 at 12:00 AM

Posts:

1

I thought MDEX made a good show of sarcastic wit to loosen the humorless up a bit - relax already, it's a cool idea... breaking down the institutionalized pricing of an industry like Photov's - seemingly in the 'lucrative' phase - by industrial supply 'dumpster diving' is the key here.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[too much credit](#)**

Guest (Dan) on 07/16/2006 at 12:00 AM

Posts:

1

I think MDEX is being given far too much credit for his/her intellectual and humanitarian capacity.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[Its a social problem](#)**

Guest (Dave) on 07/19/2006 at 12:00 AM

Posts:

1

They have a social problem. When people going to those poor cities for diggin a well, they have to check why they dont dig well before by themselves. Often, its a social problem that cause lazy behavior and ... 3000 years ago they was diggin well, so they can now too. Speak to engeneer without border for more details.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[Not about race...its about ease](#)**

Guest (Jeff) on 07/26/2006 at 12:00 AM

Posts:

1

They dug the wells 3000 years ago because back then there weren't liberal helpniks to enable their lazy behavior. I say giving them some good plans is a move in the right direction but making these things and giving them away goes over the line.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[not racist](#)**

Guest (dudevato) on 07/29/2006 at 12:00 AM

Posts:

1

there's only one human race, we are here together

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[WOV may not be all "right"](#)**

Guest (Luke) on 08/03/2006 at 12:00 AM

Posts:

1
I believe there are a lot of smart people out there but I don't think MDEX or WOV are very educated. Would you think your PEOPLE would be so great if your country is constantly being plagued with drought, war, and disease. Where do you think all their oppourtunity for advancement would come from??

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



Solar Generator

Guest (CLB) on 07/14/2006 at 12:00 AM

Posts:

1

I think this is more of a social economic problem however widgets have historically helping focus populations. I also think every discipline needs to do its part to make an impact, Engineers engineer. The growing need for power is a profound problem and will require many solutions.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



Don't diss this development

Guest (CKE) on 07/14/2006 at 12:00 AM

Posts:

1

Prior 1st world efforts at aiding the 3rd world have largely been failures. This is because they have centered on giving resources to the local governments to implement large publicly shared infrastructure projects. They failed because of the usual reasons: corruption, larceny, incompetence, civil strife, etc. These new efforts are directed instead at the ultimate end users, the villagers. These end users don't have, and don't need any involvement of their governments to implement these tools. Witness how well the cellphone technology has spread into daily life in these countries, they now outnumber the 1st world in cellphone usage. Because the final users are responsible and capable of operating these devices, and because they will be the direct beneficiaries of its operation, this technology approach, and others like it, will be successful.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



Don't diss this development

Guest (Pete) on 07/17/2006 at 12:00 AM

Posts:

1

Totaaly agree with you on that one.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



Re: Solar Generator

[Gopakumar](#) on 09/27/2006 at 1:00 AM

Posts:

1

Dear Sir,
I like too much your technology. I am from Inida now I am working in U.A.E.

I would like to implement your SOLAR GENERATOR SYSTEM for poor villagers in India and Site workers in. U.A.E.

I would like to get technical suport from you for the your greate new technology.

I am looking forward to hearing your replay.

Have a nice day.

Thank with Regards,

Gopakumar
Giffin Traffiks LLC
Section head- Electrical
Abu Dhabi
United arab Emirates.
Tel-00971 2 5553141
Fax-00971 2 5553992
Mob - 00971 50 5215644

Emai-goppikka@yahoo.com
www.signfab.ae

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Re: Solar Generator](#)

[marketofwfgmax](#) on 02/04/2007 at 10:52 PM

Posts:
2

Avg

Rating:



I know this company has already put this products into bulk production and got big sales volume, www.duxlite.com

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[True - Solving Rural Poverty Requires More](#)

Guest (The Teacher) on 07/14/2006 at 12:00 AM

Posts:
1

The solution to the privations of the rural poor is not "inexpensive gadgets". The solution lies in a worldwide economic system that can build wealth for every family. It is not socialism, and current capitalist systems are too brutal and inefficient. WEMSA is presenting a workable, innovative approach that caters to the needs of all groups. See wemsa.net.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[So true](#)

Guest (GalaxyM100) on 07/15/2006 at 12:00 AM

Posts:
1

Starting a company to manufacturer the devices for everyday consumer use. Then use part of the profits to invest in the developing countries.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[debt](#)

Guest (ben) on 07/16/2006 at 12:00 AM

Posts:
1

wanna know why the third world exists? Debt. watch a video on google video called "the money masters" or another called "masters of the universe"

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[There will always be victims](#)

Guest (clan_enoch) on 07/14/2006 at 12:00 AM

Posts:
1

There will always be democrats making them victims...inspite of advancing civilization...available to all who just get up off their DemoWelfare Card...how marxist and so typical...is this really Swim Coach Kennedy?

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Saving the world from poverty...](#)

Guest (kruehunter) on 07/15/2006 at 12:00 AM

Posts:
1

Hear! Hear!
It's good to read signs of intelligent life! Thanx...

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Pretty Pessimistic view](#)

Guest (Remi) on 07/16/2006 at 12:00 AM

Posts:
1

Sorry to hear such a pessimistic perspective. While it's helpful to look at the big picture, we can't let it stop us from trying. How about light a candle instead of cursing the darkness?

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Solutions need to be corporate independent](#)

Guest (CMJ) on 07/19/2006 at 12:00 AM

Posts:

1

While you're waiting for some scientist to develop a mega solution, sell it to the energy companies, and deploy it in a way that provides the next energy monopoly, the rest of us better support the many smaller solutions which allow a means of independence from the grid.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[tools vs people](#)

Guest (Scott Messinger) on 07/19/2006 at 12:00 AM

Posts:

1

You can't MAKE people help themselves. But you can give them the tools to better their situation, if they are so inclined (and able to, given natural, political and social realities). Maybe engineers can't save the world, but they can make the tools to do it.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Re: Oh good. They've solved global poverty.](#)

[KeithBK](#) on 12/12/2007 at 6:43 PM

Posts:

1

I think its rather dangerous to ignore the real time needs of people on the ground. New green Do-it-yourself Technology is the key to free energy for everyone. Wars are fought over access to resources. If technologies like Nanosolar's new cheaper solar panels, Brown Gas/HHO/Hydroxy/Aguagen (as its being called in different countries), and permaculture design become wide spread enough they will equalize the power balance and bring on a new age of cooperation.

I suggest do some more research on what these new technologies make possible.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Thank you for the article](#)

Guest (Rob B) on 07/14/2006 at 12:00 AM

Posts:

1

I don't know about all the geo-political issues but I do know that this and many other good, helpful thoughts ultimately percolate to human good. Engineers provide only the means the rest of a society needs to provide the will to use the tools.

This author gets my thank you

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[bravo](#)

Guest (Clan_enoch) on 07/14/2006 at 12:00 AM

Posts:

1

Yankee ingenuity...love it...

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[solar generators](#)

Guest (mike s) on 07/14/2006 at 12:00 AM

Posts:

1

that's great, now lets start working on "replicators" just like captain kirk has, and we can make all the parts for free.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[my old car...](#)

Guest (Dale) on 07/14/2006 at 12:00 AM

Posts:

1

My car is about ready to hit 2K miles on the odometer. The paint job is shot, interior roof lining torn out, dents in the side, no hub caps, etc - was wondering what to do with it when it finally gives out on me once and for all... now I know. Rather than selling it off for spare parts - I'll do the dismantling and use the working parts to build one of these!! Hmmmm... I think there's a "donor" sticker on this car's license plate :).

Dale

Raleigh, NC

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Wow](#)

Guest (fabberfour) on 07/20/2006 at 12:00 AM

Posts:

1

A WHOLE two thousand miles!!!! That must be one hell of a car!!! XD

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[redrok](#)

Guest (eric blair) on 07/14/2006 at 12:00 AM

Posts:

1

<http://www.redrok.com/main.htm>

Has already mentioned this idea. 10+ years ago.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[already mentioned it?](#)

Guest (Orange) on 07/20/2006 at 12:00 AM

Posts:

1

Good: Maybe if enough people mention it enough times, then it'll catch on!

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[site w/similar system](#)

Guest (charlie) on 07/15/2006 at 12:00 AM

Posts:

1

These guys have good information on a low temperature, low cost solar generating system:

<http://matteranenergy.com/>

See especially the animation pages.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Solar Sterling Engine driving Stirling Engine](#)

Guest (ABC) on 07/15/2006 at 12:00 AM

Posts:

1

While not cost effective liquid air produced by a mechanically driven Stirling Engine can cool any project utilising a Heat Exchanger

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[I was thinking the same thing](#)

Guest (paul) on 07/19/2006 at 12:00 AM

Posts:

1

Actually, I was wondering if the heated oil could just drive a Stirling engine to run

the generator.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[solar reflectors driving stirling engine](#)

Guest (Morgan) on 08/03/2006 at 12:00 AM

Posts:

1

Yep, this company builds giant ones...http://www.stirlingenergy.com

I think it's a bit more challenging to build a dish that would properly focus on one point rather than a parabola to focus on a line... at least for a hobbyist anyway. And a dish also has to move more often to stay pointed at the sun. But cool technology, none the less. I want one on my roof.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Solar Reflector, simple low cost.,](#)

Guest (lee mcclune) on 07/15/2006 at 12:00 AM

Posts:

1

All you need to build a real neat solar concentrator(my son and I built one in'70 for his science project), is a flat piece of light metal, some 3M reflective film(Silverlux (R)), and a parabolic shape(piece of 1" wood), attach film to metal, attach metal/film to to wood shape
, need to predrill holes for the pipe/collector(copper tube,or pipe should be black to adsorb the heat
(can cover with thin plastic or film or leave open(to keep clean)(depending on how long, need a insert about every 2ft, depends on metal and how well bent), good luck, LFM

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Solar Reflector](#)

Guest (Peter) on 07/15/2006 at 12:00 AM

Posts:

1

Why not use the parabolic trough to focus on a line of solar cells, eliminating all the other steps? If the cost of a cell based system at 1X magnification if twice the mechanical system, the concentrated system would only have to give 2X magnification to match the mechanical.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Re: Solar Reflector](#)

Guest (Bob) on 07/16/2006 at 12:00 AM

Posts:

1

The main problem with focusing radiation onto PVs is that they become much less efficient when heated.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Re: Solar Reflector](#)

Guest (CQ) on 08/03/2006 at 12:00 AM

Posts:

1

Bob is correct. You must design a reflective system that also refracts,, and then make sure that you do not reflect any of the the IR portion onto the PV cell. The key is... How can that be done economically?

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[1st hand experience](#)

Guest (William) on 07/15/2006 at 12:00 AM

Posts:

1

I was a consultant to a USAID project for small business development in Namibia, and since involved with and assisting a family and neighborhood there. I can tell you that the problem is grass roots technology that affects the immediate transition from working to barely survive, to working to build some base for advancement. If you think intelligence is racially inherited read Jared Diamond's Gun's Germs and Steel,

and become educated why technology developed faster in some places that were previously backwaters. It was a matter of luck, and later, of oppression and greed, and as in Namibia sometimes wholesale murder. It is not a laughing matter. I'm going to build one of these things. It looks like it will help my friends. Yes they master technology that can be used without overhead they cannot afford.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Plans?](#)

Guest (Marck) on 07/29/2006 at 12:00 AM

Posts:

1

Do you know where to find information on how to build one of these generators?

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Re: Plans?](#)

Guest (Matt) on 08/10/2006 at 12:00 AM

Posts:

1

<http://www.rain.org/~philfear/how2solar.html>

Link to build a solar generator from 1996, build off from there. You could focus the sun and power and middle gen. But the article states the basic philosophy behind it

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[Cheap Hot Water](#)

Guest (Colin) on 07/16/2006 at 12:00 AM

Posts:

1

I was on the island of Abaco in the Bahamas and they had some fiftyfive gallon barrels on the roof of the community laundry that were cut in half with black pvc pipe at the focal point. They looked just like Amy Mueller's picture at the top. These supplied hot water for washing clothes. They may have been lined with foil.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[New Efficient Rotary Engine](#)

Guest (Ralph A. Davis) on 07/16/2006 at 12:00 AM

Posts:

1

This simple turbine is more efficient than any type steam power. See >> hometown.aol.com/ecomtors <<

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[New Efficient Engine](#)

Guest (AndrewM) on 07/17/2006 at 12:00 AM

Posts:

1

Can you please check your link as it seems to be incorrect

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[New Efficient Rotary Engine](#)

Guest (Charlie Corder) on 07/17/2006 at 12:00 AM

Posts:

1

I believe the address you gave needs attention.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



[try adding the o in motor ecomotors](#)

Guest (Matt) on 07/18/2006 at 12:00 AM

Posts:

1

hometown.aol.com/ecomtors

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)

**Ecomotors**

Guest (Dale) on 07/17/2006 at 12:00 AM

Posts:

1

For the record, the url is <http://hometown.aol.com/ecomotors/>

I hope the man gets his patent and funding! That would be awesome.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**ecomotors...**

Guest (DanB) on 07/22/2006 at 12:00 AM

Posts:

1

That site is terrible. The rambles about the government and harnessing a tornado and then expects you to pay \$50 for more information? Gimme a break...

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**why is it so difficult...**

Guest (michael) on 07/18/2006 at 12:00 AM

Posts:

1

to view all the comments to this article? There should be a "view all" button. Scrolling up and down is a real PITA.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**Another nice attempt to**

Guest (Tyler Durden) on 07/19/2006 at 12:00 AM

Posts:

1

save the worlds poverty stricken, but I fear it is too complex a system. What will happen when the engineers have left the system in a village and something breaks? Who is going to fix it? Many of these technology based solutions fail because they fail to address the education problem. This system puts the village electric supply, water supply, and who knows what else all into one system. If one thing goes wrong, all these critical life supports fail at the same time. What will happen if some guy in the village decides he needs the oil in the system for a tractor, or he can sell the oil for enough to buy his family a meal or two? Those reflectors look like they might make a nice roof...

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**Enginuity**

Guest (DrBunsen) on 07/19/2006 at 12:00 AM

Posts:

1

You underestimate the skill base of rural villagers. There's usually someone who knows how to keep cars going with next to nothing in the way of modern tools, if not in that village then a few villages over. As this system is based on common car and plumbing supplies, I don't see this being a problem. Besides, NGOs have learnt a lot from past mistakes and do take these things into consideration these days.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**village life**

Guest (busted 4xs) on 07/19/2006 at 12:00 AM

Posts:

1

while helping sail a dentist's yacht from Bora Bora west, we stopped at the very next island a half day away. Lo and behold the one hotel had a generator that kept the one refrigerator cold which kept the island's total supply of Hinano Beer cold. Alas the engine wouldn't work nor was the beer cold. The islanders were not very happy. When confronted with "no cold beer" I accepted the challenge of the dead engine...and with one twist of a snarkle felder, the engine started withj a whoosh...I was a GOD! We partied for two solid weeks...the whole village came out to honor the GOD. Two weeks later the beer ran out...owell fun while it lasted...I'd bet that many villagers today are near-sighted as a result of the cultural exchange...hahahahaaaaaaa

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



village fife

Guest (NJR) on 07/29/2006 at 12:00 AM

Posts:

1

what's a snarkle felder?

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



Re: village fife

[sandman](#) on 10/03/2006 at 5:31 PM

Posts:

2

He means, none of the villagers could read English, and he turned the valve handle that read "Fuel Supply" to "ON" ;)

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



Helping the poor

Guest (QuidProQuo) on 07/19/2006 at 12:00 AM

Posts:

1

Do you have a better solution? Lets hear it.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



African Ingenuity Unlimited

Guest (Gary Hope) on 07/19/2006 at 12:00 AM

Posts:

1

I am deeply shocked by how limited people think ingenuity and motivation are in the poor and under developed communities of the world.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



African Ingenuity Unlimited

Guest (Gary Hope) on 07/19/2006 at 12:00 AM

Posts:

1

Whilst I can't profess to truly understand the complexities of the contributing factors to and remedies for poverty in poor rural communities, living in Africa and coming into contact with poor people on a daily basis I must admit to being regularly impressed with these peoples capacity to remain motivated and solve the sometimes complex problems of surviving in a simple manner.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



African Ingenuity Unlimited

Guest (Gary Hope) on 07/19/2006 at 12:00 AM

Posts:

1

In the urban areas around where I live you see people who sit on the side of the road and sell use of their cellular phone to other abundant individuals without the luxury of telecommunications, making a margin on the air time used. If you look under the table upon which these transactions take place you will see a twelve volt car battery. As you move further out of town you will notice these vendors become less and less evident, not because there is any less demand but because there is less and less accessible power sources to charge these batteries that literally power these businesses (see how far you can walk whilst carrying a car battery).

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[African Ingenuity Unlimited](#)**

Guest (Gary Hope) on 07/19/2006 at 12:00 AM

Posts:

1

These kinds of innovations can change people's lives for the better overnight. Engineering does not offer a silver bullet to these complex problems, it only provides options, but believe me options may be all that is missing to make significant difference in some communities lives.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[Sterling engine/Solar Generator](#)**

Guest (Mark) on 07/19/2006 at 12:00 AM

Posts:

1

Checkout Infinia corp. they have a solar powered generator using a sterling engine.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[You mean MIT Ingenuity?](#)**

Guest on 07/20/2006 at 12:00 AM

Posts:

1

While the Africans may have provided the first concept for the sun reflectors, it took a lot more original thought and technical design skills to get to this final product. I think your giving the MIT guy too little credit. Finally , someone who thinks of solar energy in the eyes' of an engineer, not an enviromentalist. A completely replenishable energy as long as the sun rises source and modern technologies to store energy when it doesn't, and all people want to think about is how it benefits the enviroment? Well, yeah, great, it makes Earth green, but how do we actually make it cost-effective? This guy figures it, and I applaud him. I'm astounded that this comes after we have all the miserable failures with solar panel cars.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[Pointless in most places at most times](#)**

Guest (rick) on 07/21/2006 at 12:00 AM

Posts:

1

The gigantic downside of this idea is that unless there is enough heat to create steam, which is a decently high thresh-hold, then no power can be produced. Solar cells create some power everyday, even on cloudy days or in the winter.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[reflector](#)**

Guest (Scott) on 07/21/2006 at 12:00 AM

Posts:

1

what kind of glue would to attach the mylar to the board. i just hapen to have a lot of mylar

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[reflector](#)**

Guest (joe) on 07/29/2006 at 12:00 AM

Posts:

1

3M make some nice spray adhesive, that I have used with mylar in the past

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)**[Want to read replies, but not worth the effort](#)**

Guest (Charles) on 07/21/2006 at 12:00 AM

Posts:

1

Is it just me or is it pure hell trying to read these replies with the screen jumping down? Then scrolling back up to find the next response. This reply structure is very annoying.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)[Couldn't agree more](#)

Guest (Chris Horn) on 07/24/2006 at 12:00 AM

Posts:
1

The usability of the reply block is pretty close to as bad as it gets.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)[ABSOLUTELY SPOT ON - DRIVES ME NUTS !!!!!](#)

Guest (vcragain) on 08/09/2006 at 12:00 AM

Posts:
1

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)[Solar Generator](#)

Guest (Tomas) on 07/23/2006 at 12:00 AM

Posts:
1I am building a EcoVillage in Honduras...
Where can I find plans to build this system???

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)[ecovillage](#)

Guest (richard) on 07/23/2006 at 12:00 AM

Posts:
1

Are you looking for people to populate your ecovillage in Honduras or need any assistance at all with this project?

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)[Re: Solar Generator](#)[marketofwgmax](#) on 03/29/2007 at 2:43 AMPosts:
2Avg
Rating:
★★★★★

Our company last year lauched this products and got big sales globally,if you're interested,please contact me:William at market3@wgmax.com or log on our website at www.duxlite.com.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)[not new tech](#)

Guest (brYan) on 08/01/2006 at 12:00 AM

Posts:
1

this is not a new idea.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)[Want to help](#)

Guest (Green) on 08/02/2006 at 12:00 AM

Posts:
1

If you really want to help move to these areas and work with them. The reason cultures advance is competition and fresh ideas. Rural villages don't get a lot of fresh ideas. Same plan as last year, but with different weather is the norm for 2/3rds of the world. When 1st worlders(of any race) become citizens of 3rd world nations and bring wealth and ideas- then things can change.

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)[here is a relevant site w/plans for free!](#)[maken](#) on 09/07/2006 at 4:17 AMPosts:
1Avg
Rating:
★★★★★

<http://phoenixnavigation.com/ptbc/articles/ptbc35.htm>

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



Re: here is a relevant site w/plans for free!
[Herald David](#) on 03/18/2007 at 12:03 PM

Posts:
1

Avg
Rating:



I will like to build one. Can you send me copies of those plans?
 loenzoherald@yahoo.com Thanks,

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



Plans for Orosz's design
[sleepwalker](#) on 04/04/2007 at 12:18 PM

Posts:
1

Avg
Rating:



Sorry, maybe I've missed it but I looked through all of the above web links. I don't see the plans for Orosz's design. Can you please make them available? I'd like to know the type of refrigerant, type of plumbing (copper pipe vs. rubber hoses), brand and model number of the water pumps (or at least the vehicles they came from), details of the heat exchangers, and details of the cycle (temps and pressures). Thx

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



DC lighting product for solar home system
[ablamp](#) on 04/29/2007 at 11:11 AM

Posts:
5

Avg
Rating:



East Power Development Limited are professional manufacturers & exporters of high quality Energy Saving Compact Fluorescent Lamps (CFLs) and LED Replacement light bulbs, Which can direct replacement traditional light bulb and save up to 80% in electricity costs compared to standard incandescent lamps

<http://www.ablamp.com>
info@ablamp.com

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)



Curve for reflector
[leof](#) on 07/26/2008 at 7:35 PM

Posts:
1

Can you email some sketches showing how to draw the curve using a carpenters square.
 Thanks

Rate this comment: ☆☆☆☆☆

[\(Reply\)](#)

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