



Solar powered stove using 100% recycled materials by [desertdog](#)

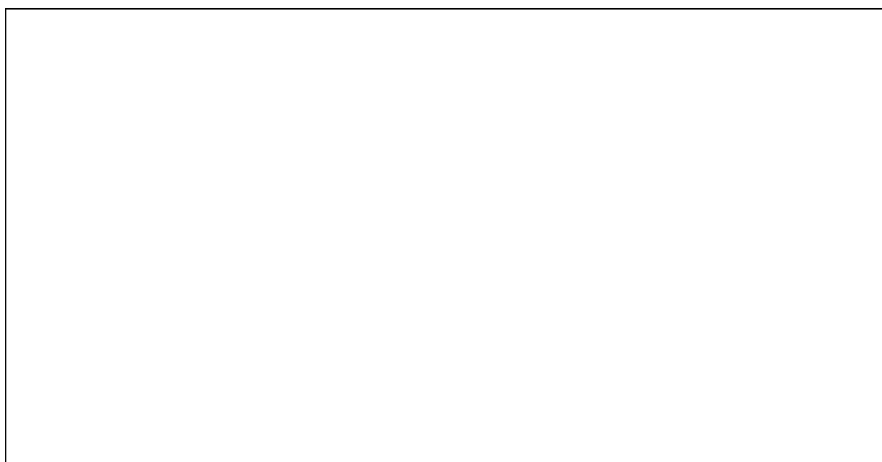


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This is an exercise in recycling and alternative energy. I used a discarded 62 inch satellite dish and used CD's to create this along with materials that I had laying around. Nothing was purchased for this project.

Step 1: Making the base/stand



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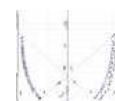
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I did not have the base, so I made one from a 4" PVC plastic pipe inserted in the ground about 10 ft, then filled it with concrete and re-rod for stability.

Step 2: Attaching CD's



I used a combination of the 4000 reflect machines and 4700's machine screws for most of the CD's and a tube of leftover silicone adhesive to attach the outer 2 rows. If you have a fiberglass dish, you would simply use the silicone adhesive for all. The CD's were procured from a high school. They were obsolete. The pre-recorded read only discs seem to last longer and produce slightly more reflectivity than recordable discs.

Step 3: Making the cooker



The link did not come with the receiver, I estimated the focal point using the existing supports for the original receiver. All the parts were things I had in the garage. I also happen to have a welder. Depending on what type of cooker you decide to use will dictate the type of support you should fabricate. I used a 10 x12 wire cooker but you can use anything you have. It must swivel though. You adjust the distance from the focal point to change temperature and to allow use of different cooking vessels.

Step 4: Aiming device



Using the original dish adjuster is perfect for aligning the dish. I believe that this is a 24 volt DC adjuster. I only had a 12 volt battery available. It works but is slower.

Step 5: Getting the alignment with the sun



Place a sheet of paper under the dish at the point where it connects. There is a round opening in the center of the dish. When the sun makes a nice circle in the center you are real close. The final aim is based on observing where the reflection of sun hits the cooker itself. Do not tighten the bolts that allow the dish to swivel on the base. You will use this for following east to west. The electric tilt adjuster is used to fine tune the position of the dish in relation to elevation of sun north- south.

Step 6: Testing the temperature



These pictures show a temperature of 700 degrees. This is adequate for my beer. In an earlier experiment I had CD's covering every available square inch of the surface of the dish. It produced over 800 degrees. More than I needed for cooking. Do not try to retrieve anything from the focal area without a leather glove on. If that didn't come to mind right away then you maybe shouldn't try this.



Post Comment

**PRO yellowcatt** says:

Jun 28, 2012. 9:41 AM

[Reply](#)

This instructable reminded me of this:

3

<http://www.dailytech.com/Hotel+Accidentally+Makes+Solar+Death+Ray+Burns+Lawyer/article19756.h>**melheath** says:

May 21, 2012. 9:51 AM

[Reply](#)

Has anyone tried using the CDs in a box-type cooker? I'm wondering how the reflectivity compares with tin foil for that purpose. I have a LOT of old CDs, great idea to use them! (My only reservation with the dish for cooking is that I have cats that might try to check out an open stationary dish system, and i wonder about wildlife also - birds, squirrels.)also other Q - has anyone tried using the dish concept for water heating? I'm trying to imagine a circulating system to storage in the water heater tank, or something. ?? Thanks for the ingenuity!

**NikonDork** says:

May 4, 2009. 11:18 PM

[Reply](#)

Last summer, I made something similar - but different. My goal was a solar cooker, only instead of an old dish and CDs, I busted up a rather large wooden pallet for the 3x3's it was made with, built a crude frame and mounted a huge Fresnel lens from a 65" projection tv. However it turned out to be something more like lemonie's Death Ray idea - in the mid day summer sun I had it at about 2100-2200 degrees Fahrenheit at its most focused point. I tried cooking a hot dog under it and even with the food well away from the most focused point, it still turned into charcoal. So I switched gears and started melting pennies.

**PRO calskin** says:

May 4, 2012. 2:43 PM

[Reply](#)

Great idea using the lens from the TV! I think I'm going to plunk around a recycling center and see if they let me take one.

3

**sanjay_lim** says:

Mar 27, 2011. 7:57 PM

[Reply](#)

Simple alternative for expensive lens prepare sandwich of plain glass on one side other side convex glass or glass dish fill gap with water , you can have bigger lens.

**PRO Dr Qui** says:

Mar 2, 2011. 11:35 AM

[Reply](#)

I lol'd at this "So I switched gears and started melting pennies" I love when something you build turns out to work just way to well for what you want to use it for practically so it then a case of lets see what damage it can do.

66

I would love a Fresnel lens to play with, but in Ireland there is just not enough sun shine to validate the expense of lens.

You should try reflecting the focused light onto the bottom of a case iron pot or skillet with a mirror. Check out greenpowerscience on youtube.

**SMarshall14** says:

Oct 10, 2011. 8:28 AM

[Reply](#)

try scotland its even colder, but just after its snowed there will be a bit of sunshine ,try then (Still to make one so not to sure).



NikonDork says:

Mar 2, 2011. 7:49 PM

[Reply](#)

Its too cold out now, but my future plans with this beast is to use it to power a solar oven to bake fresh bread.



glorybe says:

Aug 20, 2010. 9:57 AM

[Reply](#)

By chance was that a frozen hot dog? If you put a hot dog that is frozen in a microwave it turns to charcoal or an ash like substance.



NikonDork says:

Mar 2, 2011. 7:50 PM

[Reply](#)

It was not frozen.



Shiftlock says:

Sep 23, 2010. 11:17 AM

[Reply](#)

I don't know what kind of hot dogs or microwave you have, but I used to microwave frozen hot dogs all the time. I would par-cook about 100 of them them on a really hot BBQ grill to get a nice dark exterior, then freeze them so I could enjoy a hot dog that tasted like it was from the grill all winter long. Right out of the freezer and into the microwave for 90 seconds, and they were perfect.

A hot dog is just meat. People microwave frozen meat all the time. It doesn't mysteriously flash into ashy charcoal. There's no reason why it should, unless you're talking about microwaving for a very long time - well past the point of it being very hot. In that case, almost anything with fat in it will turn to charcoal, given enough time, and it doesn't have to be frozen before hand.



timmyghudson says:

Jan 19, 2012. 12:34 PM

[Reply](#)

Shiftlock

You are a genius! I love you man.



glorybe says:

Sep 27, 2010. 2:45 PM

[Reply](#)

If you put the microwave on thaw you can usually cook a frozen dog. But if you put it on high with continuous high energy it will turn into a disaster. It will not have any moisture in it at all and will crush into a powder with ease. Try it.



Shiftlock says:

Sep 27, 2010. 4:50 PM

[Reply](#)

I'm telling you, I used to do this all the time. Frozen dogs wrapped in a paper towel right into the micro. I must have done it 100 times. Maybe wrapping it in a paper towel makes a difference, or maybe the brand of hot dog makes a difference, I don't know. They were, perhaps, a little dryer and slightly more "rubbery" than non-frozen hot dogs cooked in the microwave, but I never had one "crush into powder" on me.

I'll take your word that it can happen under the right circumstances, though. Do you have a theory for exactly what's happening when they turn into "powder"?



NikonDork says:

Aug 20, 2010. 2:37 PM

[Reply](#)

It was not frozen, it was only cold.



thetech101 says:

Jun 8, 2009. 8:58 PM

[Reply](#)

Where can I find a large fresnel lens? I don't need one that large and I would prefer to spend less than 50 dollars.

1



NikonDork says:

Mar 2, 2011. 7:51 PM

[Reply](#)

Keep on the look out for when someone throws out a large projection tv. The front screen is a huge fresnel lens. That's where I got mine.



woodbike says:

Jan 30, 2010. 11:45 AM

[Reply](#)

Try a company that makes the lenses for Stop Lights, most of them are Fresnel lenses, fixed to keep people from jumping lights, At least in Chicago ILLINOIS.

desertdog (author) says:



Thanks.

Jan 30, 2010. 1:40 PM

Reply

1



NikonDork says:

Jun 9, 2009. 4:50 PM

Reply

search craigslist constantly in the free section and wait till someones getting rid of a projection tv. free lens dude.



thetech101 says:

Jun 9, 2009. 5:19 PM

Reply

Thanks. I have been for a while, but so far, nothing.

1



Houdinipeter says:

Jun 6, 2009. 11:11 AM

Reply

thats just like <http://googleblog.blogspot.com/2009/04/will-it-lens.html>

1



thetech101 says:

Jun 4, 2009. 11:47 AM

Reply

Yikes, that looks menacing. Ill have to try it when I build my solar hot water heater.

1



desertdog (author) says:

May 5, 2009. 4:58 PM

Reply

Wow, that is some serious temperatures. I wanted something more in the usable temp. range. But it gives me thought for another project.

1



NikonDork says:

May 7, 2009. 9:13 PM

Reply

Serious temperatures is an understatement! The day I built this thing, my buddy and I were having a blast for hours melting various objects, boiling water in a small Pyrex measuring cup in mere seconds, and making instant fire. Throughout the afternoon, as the sun moved across the horizon, we had to keep manually adjusting its angle to get the best efficiency out of the lens. By the end of the day we had the frame angled so low, that when we walked away from it for a minute or two, it started melting the black-top in my driveway! Word of caution: be very aware where your putting yourself in relation to the focused beam. This thing can give you a serious burn almost instantly.



desertdog (author) says:

May 8, 2009. 6:24 AM

Reply

How far from the lens is the focal point?

1



NikonDork says:

May 8, 2009. 4:29 PM

Reply

I don't remember exactly, but in the midday sun it was about 15-20 inches from the lens. You'll definitely know when you hit the sweet spot. Take a scrap piece of wood and carefully hold it in front of the lens and "focus" the beam by moving the wood closer until it brings the beam down to the size of a dime. In a second or two it should be hot enough to set it alight. Focused beam diameters will vary with the size of your lens and time of day.



build a BOOM says:

May 5, 2009. 11:26 AM

Reply

Several days ago I took a dollar store frenal lens 8" by 11" and was able to melt a new (after 1982) zink copper plate type penny.



desertdog (author) says:

May 5, 2009. 6:23 PM

Reply

I would like to find a deal like that at a dollar store. What store chain did you buy that from. I have some real ideas for that. Let me know.

1



build a BOOM says:

May 7, 2009. 6:15 AM

Reply

I dont remember, but it was 1 dollar and labeled as "full page magnifier" and came in a sort of envelope. I would look in the school supplies section near the paper and possibly other magnifying glasses.



desertdog (author) says:

May 8, 2009. 6:24 AM

Reply

Thanks, I will take a look around for that in my wanderings.

1



EduGreat says:

Jun 9, 2009, 10:09 AM

Reply

WOW! this is great I have a smaller (36inch?) fiberglass dish and have been trying to think of low/no cost reflectors, hadn't thought of the CDs - What do you cook in the basket? If the CDs don't produce enough heat for my smaller dish I may have to go with buying a pack of stick on mirrors from Lakeshore (lakeshorelearning.com item #FF817 \$10.95 for 20 8.5x11 sheets) Thanks again



Treknology says:

Jun 10, 2010, 4:53 AM

Reply

If the dish you're using is solid rather than mesh, why not just use "chrome" paint?

9



sarveshk says:

Mar 26, 2012, 10:56 AM

Reply

Nice Idea! but the author is trying to use only Recycled materials, and by opinion CD is the perfect, recycled, waste material.



PRO Dr Qui says:

Mar 2, 2011, 11:50 AM

Reply

Nice idea,

66

Another reasonably cheap way to do this is to use the foil coated Mylar sheet that is used in hydroponics to reflect light. you can cut pieces from a sheet and use contact glue to apply them to each segment of the dish. the sheet can be heat shrunk slightly to remove the worst of any ripples. Mylar would allow you to catch more of the available light and the focus is slightly better as it follows the parabolic shape of the dish perfectly.

I would love to do more solar experiments, but alas the sun does not shine as much as I would like here in Ireland.



jj.inc says:

Jan 29, 2011, 6:23 AM

Reply

You could probably set it up as a solar tracking one, but you might need to get something for E-W rotation.

10



thepelton says:

Jan 4, 2011, 5:35 PM

Reply

If I still had some, this would be a good use for some of those old AOL trial run disks. Something that just occurred to me. What if you put the CD disks in a saucer sled? It isn't as big, but would get you some light concentrated for your stove.

1



aspiremkd says:

Dec 22, 2010, 4:48 PM

Reply

watch this video

http://www.youtube.com/watch?v=z0_nuvPKli8&feature=player_embedded



(YOUR N says:

Nov 23, 2010, 10:53 AM

Reply

SOSIGE

3



(YOUR N says:

Nov 23, 2010, 10:53 AM

Reply

SOSIGE

3



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