

# How to build a wood fired clothes dryer

Living "off grid" poses many challenges for "off gridders", mostly during the short, overcast, dark days of December, January, and February. Eight months of the year, there is enough solar energy to keep the house supplied with only the occasional use of a backup generator but the other few months requires careful use of your resource. We purchased a Trome side loader washing machine, which off the shelf, uses only 250 watts hours per load of clothes and 12 gallons of water. Then



we've hung out our clothes on a line, which is a nice easy way to take care of the drying aspect. But, dismal winter weather just won't allow that. Having the clothes hung up on racks and lines strung in the basement works, but made it hard to do the winter, dust frenzy projects we wait for. So I found a used electric dryer for free and ripped out the heating element. Cut a hole in the square heating element tube and attached a 4" dryer hose which was connected to a heat reclaimer that is installed in the wood stove flue. It has worked very well. With some minor wiring changes, the dryer motor will run on 110 volts and use only 200 watts per load! The heat

reaching the dryer from my small wood boiler is 150 F which isn't as hot as the heat derived from a gas or electric element but very dry and is probably easier on the clothes. We found that it takes about a 30% more time than a conventional system. So for a normal one hour load, it will take an hour and twenty minutes. It is still very energy efficient for my modest solar array. Below is some instructions for assembling your own. There are a number of ways to make the heat reclaimer. I chose this way because it was all "off the shelf duct work parts from Home Depot, costing \$50, then the heater hose is another \$10. So for being able to dry your clothes for little money and energy by using waste heat from the wood stove, and a recycling something destined for the dump, has proved to be a worthwhile investment.

(click on thumbs for larger image)

1.The first step is to find a used electric dryer, rather than a gas since it is easier to convert. The local dumps or transfer stations have them free for the taking, usually. They are usually discarded because the heating elements go, but the 110v drive motor is still good.



2.Remove the wires to the heating element and usually one sheet metal screw holds the element in place. Remove it all.

3. Put wire nuts and tape on the wires that were connected to the element.



4. Mark a 4" circle on the element casing and cut with a sabre saw. This is where you'll attach a nipple for the supply hose.

all are 240 volts, all 120 volts. So that was removed



5. I don't know if how all dryers are wired. I do know that they which is two legs of 120 volts. The drive motor and blower are one of the hot legs is going to be for the motor. I used a cord from some appliance. You can easily make a cord as well. I hooked up the cord to one side first then the other till i found what works. Of course, if you don't know anything at all about electricity and the fact that you make your hair stand up straight, then find someone who does. Everything should work on the dryer like it did originally, like the timers and door switch, except there is no heat.



6.. Now to build the heat reclaimer is a little more difficult. Start by locating the pieces. I used two 8"x 8" x 6" registers, three 2' x 3" vent pipes and two sheets of flat duct work metal that were 16" x 24". I also bought air duct sealant which said it was fire proof. It did work okay but smoked for the break in period. I would recommend trying a wood stove sealant or better yet, would be to braze all the pieces together.



7. I started construction by cutting 3 1/8" holes in the end plates and the middle baffle. (I forgot to cut the third hole in the baffle)

duct work. Either 3/8". This is so



8.I bought a sheet metal tool that is for bending the edges of 3/8" or 3/4". In this case, i bent all for edges of the end plates up the plates can be pop riveted to the register ducts.



9. I cut the lengths of the 3" vent pipe to about 18" prior to putting the edges together. Be careful of very sharp edges. Wearing gloves is advised. Once the vent pipes are secured together, cut small 1/2" long cuts 1/2" apart. Every other tab will be bent up to allow the pipe to be secured to the plates. Insert the tabs into the 3" holes and bend the tabs over till the vent pipe is secure to the plate. Do this on all three holes. Do it on the top, then slide the baffle over the tubes till is half way down, which won't need to be secured, then add a bottom plate.

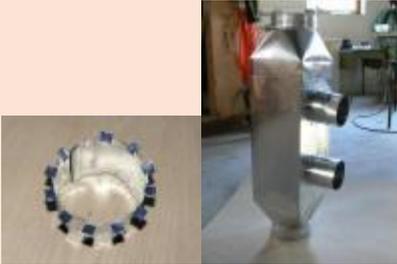
10. The vent tubes will be for the smoke from the wood stove to pass through. A 6" flue is 28 sq inches and the 3" vent pipe is a little over 7 sq inches so three of them is 22 sq inches. 6 sq inches less seemed like a lot to me, but is equal to a little over 5". This is all at the base of the chimney and i saw no difference with smoke or performance.



11. Attach the end plates to the inside of the register ducts, top and bottom, making sure that the two register ducts will be close enough for the flat metal to cover each end about 3/4".



12. With it pop riveted together or sheet metal screws, this is when i used the duct sealant over any possible leakage area. After that was done I bent the flat sheet metal around the register ducts, fastening with sheet metal screws as I went along.



13. The last flap of the enclosure will have the hose flanges mounted in place. The baffle will separate the air flow. The finished reclainer is ready to install into the woodstove flue. Then a 4" hose is attached to the flange on the heating element tube. The dryer's blower is blowing air out which draws the air in through the bottom flange, around the baffle and out the top. The wood stove needs to be going strong to create enough heat. A larger, longer heat reclainer would work even better. Any questions, [email](#) me.