

Portable 12V Air Conditioner --Cheap and easy!

by **CameronSS** on August 13, 2007

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intro: Portable 12V Air Conditioner --Cheap and easy!

This project is my dad's \$10 solution to a \$500 solution to a \$25,000 problem. As I have previously mentioned around the site, my Dad owns an electric 1979 Ford Courier pickup, and is cool enough to let me drive it around. We absolutely love it, and wouldn't trade it for a [Tesla Roadster](#), but one of the few problems with electric cars is heating and cooling. In a gas car, heat is provided by the 80% of the gas that is wasted as heat, and air conditioning is provided by a crankshaft-driven compressor system. Many EVs use hair dryer elements and fans for heat, and some, ours included, feature a powerful gasoline-burning heater.

(Update from 4-22-08: I'd forgotten that I mentioned the gas heater on here. Last fall the gas tank and heater were removed, and a ceramic heater was built in. It works great, although not quite as fast, and doesn't use gas.)

However, air conditioning is trickier because the shaft of an electric motor doesn't always spin. Some have used a compressor driven by the motor shaft anyway, while others have turned a compressor using a separate motor. Finally, my dad came up with part of the concept for this system. It pumps ice water through an evaporator core, which has fans that blow air through it. It is very simple, but we found what we were looking for at [Sporty's Pilot Shop](#). They sell [air conditioners built into ice chests](#) for prices ranging from \$475 for a basic model to \$625 for a 24V, dual fan model. There is also an ArcticAir unit for \$4750 with a full compressor unit. However, we like our \$10 version better. I saw the ArcticAir display at EAA AirVenture Oshkosh this summer, and our unit is more compact and puts out cooler air. All you need is materials, basic construction/assembly and wiring skills, and a bag of ice. Let's go!

Update, 5-12-08: 100,003 views! Yay! I'm no Kipkay, but I'm still proud.

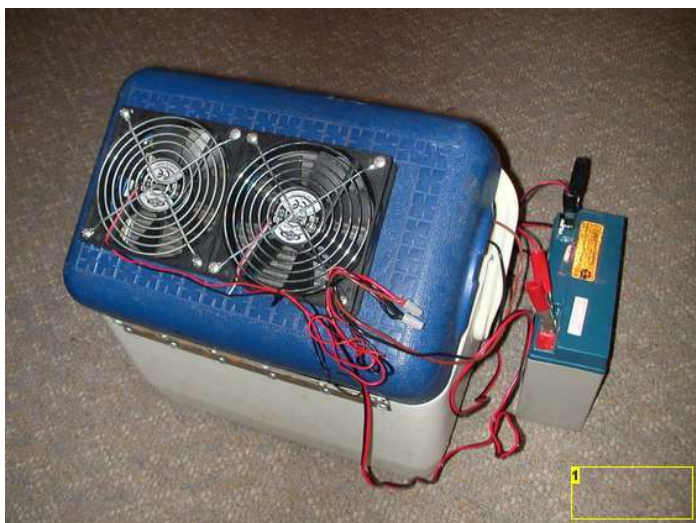


Image Notes

1. The unit is running in this picture, but the flash froze the fans. I have the lighter plug attached to a lighter jack that clips onto this 18.0 AH 12V battery.



Image Notes

1. This is my dad's electric 1979 Ford Courier electric. We have since replaced the truck tires with low-rolling resistance tires and removed a leaf from each spring. 120VDC system, GE Jet 007 motor, 35-40 mile range.

step 1: Background and How it Works

This project is very similar to the ArcticAir Package Unit. In fact, I attached two pictures of it I took at AirVenture this past summer. It looks almost identical to ours, and we built this without ever seeing a picture of the inside! The basic concept is to use a boating bilge pump to circulate iced water through a heater core, thereby chilling it, and to use a pair of 12V box fans to blow air through the heater core.

Advantages: Very compact and portable, lightweight without the ice, no environmentally not-so-friendly chlorofluorocarbons, hydrogenated chlorofluorocarbons, or hydrofluorocarbons, very quiet, and operates off 12VDC, AKA a cigarette lighter. The only disadvantage is that the ice will melt after 30-60 minutes of operation, depending on the size of your cooler. However, it was built for an EV, so we are only ever out for an hour or two maximum, and the ice lasts longer when it's not running. The third image on this step shows the operation. Have I convinced you to build one yet?



Image Notes

1. The ArcticAir Package Unit 24-Quart at Oshkosh. This is the wimpy one-fan model, the next picture is inside the one to the left.

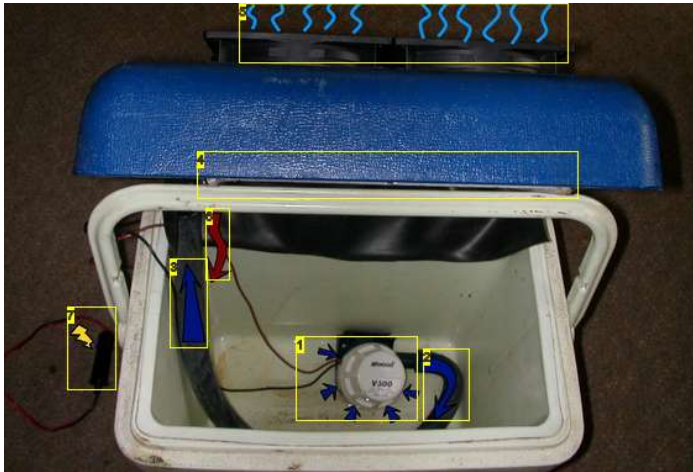


Image Notes

2. Chilled water enters the bilge pump
3. Chilled water flows out to the heater core
4. Chilled water still flowing out to the heater core...
4. In the heater core, a length of coiled tubing is attached to heat-sink vanes, presenting a larger cold surface area to the airflow.
6. Two box fans circulate air through the heater core and blow out very cold, dry air! SUCCESS!
6. The now slightly less chilled water dribbles back down into the ice water to recirculate. A cycle. How symbolic. Of something.
7. 1. 12VDC at about 2.5A for our system. Actual mileage may vary depending on fans and bilge pumps.

File Downloads



arcticair brochure.pdf (3 MB)

[NOTE: When saving, if you see .tmp as the file ext, rename it to 'arcticair brochure.pdf']

step 2: Materials

You can't very well build this without materials to build it with, can you? I have included the prices we paid for them in italics, as well as prices you might pay and places to get them.

Materials:

Ice Chest-free, had it on hand If at all possible, get one with a hinged lid. Free from a storage shed or a dumpster. Or, the Igloo Ice Cube 14 looks like it would work, well, as do the Cool 16 and the MaxCold 24. We used an old 12 quart cooler, and it fit a 7 pound bag of ice.

Heater Core-free, salvaged from a '77 VW Rabbit we're parting out You can find these on eBay for 99 cents to \$20, or from an auto store for around 20 bucks, or at an auto salvage yard. Also, I haven't tried it, but Ufixitautoparts sells heater cores for under 5 bucks apiece.

Box Fans and Blade Guards-free, from stock in basement They're sold out of \$5 120mm 12VDC fans at All Electronics, but Jameco carries these for \$12.95 each. Newegg has a nice assortment, too. Under \$10 on eBay.

Bilge Pump-\$10.44 for a 500GPH unit at Wal-Mart The Attwood V500 was at our Wal-Mart for \$10.44-you can get a similar pump for under \$10 on eBay.

Hose-free, had it in stock Ours came from an auto-parts store, but it can be found at hardware and auto-parts stores for a dollar or so for a few feet.

12V plug-free, chopped off a car accessory Cut one off an old phone charger or other device, or \$5 at Radio Shack, or \$3.75 at All Electronics.

Caulking-free, from the stock in the shop Can be found near the bilge pump, or from a hardware store. A couple bucks.

Piano hinge (depending on cooler)-free, in stock Only necessary if your cooler isn't hinged. A couple bucks at the hardware store.

Inner tube piece (optional)-free, blown tube You may or may not need this-see step 7. If you do, use a blown one, or another piece of rubber, or come up with a substitute. You did save the last blown tube for future projects, didn't you? A couple bucks, tops.

Assorted wire, wire nuts, and screws-free, in stock Depends on what you have in stock and where you get it. It's all at the hardware store, too.

Ice-free, freezer's ice maker If you need me to tell you where to get ice, you shouldn't be doing this project.

Tools:

Screwdrivers

Drill

Cutting devices

Obligatory safety spiel: Cutting devices cut. Don't cut yourself on them. Drills drill. Don't drill a hole in yourself, my dad says it hurt when he did it once. Screwdrivers don't really do anything, but don't throw them into running jet turbine engines. 12V doesn't do much, but watch out. Oh, and wear safety glasses while you're at it.

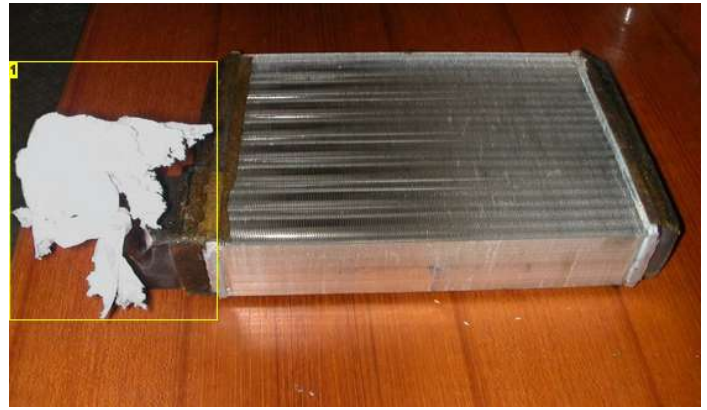
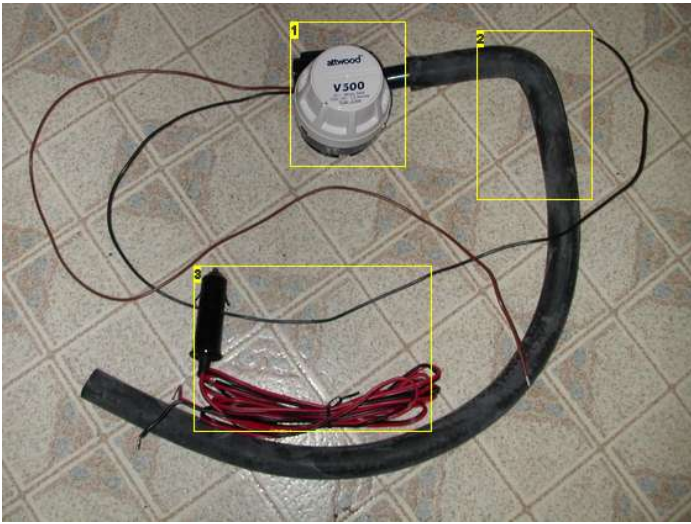


Image Notes

1. We ran water through it to check for leaks, then plugged it with a paper towel. That's not fungus.

Image Notes

1. Attwood V500 bilge pump. We found this in the boating section of a Super Wal-Mart for \$10.44.
2. This is a heater hose-\$1.50 at the auto store at some point in the distant past. It has a molded 90-degree bend, which makes it fit better.
3. 12V cigarette lighter plug. Snipped off of some old car accessory.



step 3: Mark and Cut Holes

An ice chest/cooler has a double lid with a cavity. This is convenient because we can cut separate holes for the fan and heater core.

On the underside of the lid, mark the outline of the heater core, then go in about a quarter inch and cut out a rectangular hole through ONLY the first layer. This will allow airflow through the core, but still make it easy to attach.

Next, you will need to mark the inside of the fans and cut out two circular holes. We originally planned to use a hole saw to cut the holes, but found that we didn't have a bit that big, so we chucked a saw blade into the Dremel Rotary tool and zipped it out, of course wearing safety glasses (hint hint).

Tada! You now have a rectangle on the inside and two circles on the outside. Now that you cut out these lovely holes, lets fill them in.



Image Notes

1. A utility knife worked well to cut this. You could also use a short-bladed nibblers if you feel a power-tool urge, or if you just want an excuse to get more power tools.

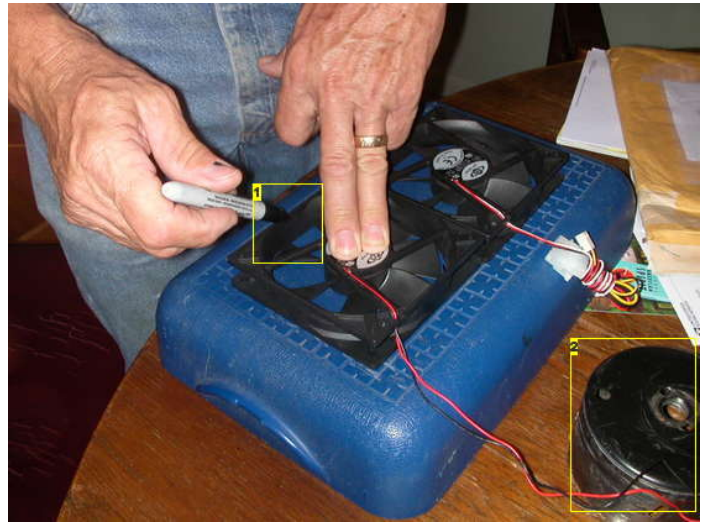


Image Notes

1. Mark the inside circle.
2. We were going to use a hole saw, but this was the largest bit and it's too small.



Image Notes

1. Holding the workpiece in your hand on your lap is a bad idea. My dad's a bad example.
2. Blue dust gets EVERYWHERE, so have a vacuum ready.

step 4: Attach Heater Core and Fans

The next step is to attach the fans. This is fairly straightforward--simply drill a small pilot hole at each corner of each fan, and put a small screw through the bottom hole into the plastic lid. Don't block the top hole if you want to add a fan guard later.

To attach the heater core, we used silicone caulk. A bead all the way around seals the lid and provides plenty of bonding force to hold the heater core in place. Make sure to get the core centered, straight, and with the nozzles pointing in. If your lid is hinged, you will want to do a test fit *before* attaching the core to ensure that the nozzles clear the edges. If your lid is not hinged, it may be easier to attach it first. We ended up cutting the output off to make it fit better.

step 5: Attach the Bilge Pump

The ArcticAir unit just leaves their bilge pump just dangling from the hose, but we wanted it to be more secure. The pump has a twist-off base, so we twisted it off and Gorilla Glued it to the bottom of the cooler. Make sure that it is angled so that you can easily run a hose from the pump output to the heater core input. We attached the base directly to the bottom of the cooler, which works fine, but we probably should have put some spacers in to increase water flow underneath. Also, the picture just shows where it goes. We haven't attached that hose yet, so ignore it.



Image Notes

1. From the bilge pump output...
2. ...to the heater core input.

step 6: Attach the Lid (Optional)

If you used a cooler with a hinged lid, skip this step. Otherwise, read on.

By hinging the lid, it makes it easier to open for loading ice and letting air flow in during operation. It also prevents the lid from sliding off and dribbling water out of the heater core while driving. You can use whatever you want for a hinge—a rubber strip glued on, a couple of cabinet hinges, whatever. We used a piano-type hinge that we found in our stockpile of random stuff. It goes all the way across the back, and allows the lid to flip all the way back, but still close completely.



step 7: Plumbing and Fan Guards

This is fairly straightforward. Connect a hose from the output of the bilge pump to the input of the heater core. In most cases, it doesn't matter which nozzle is used as the input. We just let the output dribble back in, but if the noise bothers you, you could attach a hose to the output. This would also be used as a drain hose.

We also attached a piece of bicycle inner tube rubber to catch water that drips from the output and that condensates on the core. It was cut to fit around the back edge and a couple inches up the sides, and secured with a mega-rubber band we found. This may be unnecessary if you attach a hose to the output, or if your heater core is configured differently.

This would also be a good time to attach wire fan guards to the fans. Just put some screws through the guards into the top holes.

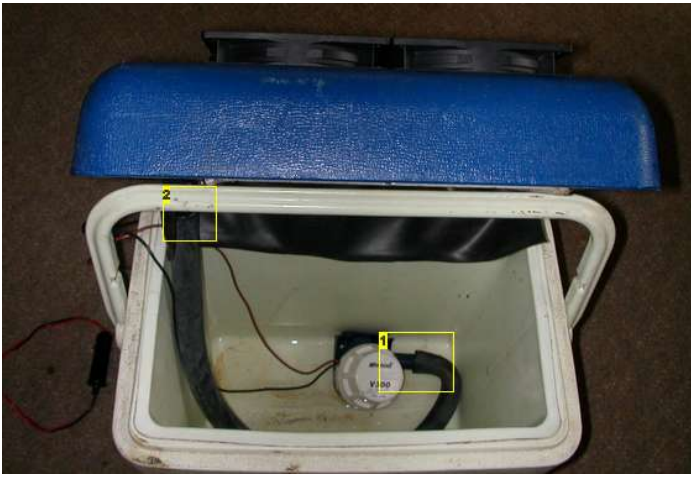


Image Notes

1. From the bilge pump output...
2. ...to the heater core input.



Image Notes

1. The water output dribbles down the rubber back into the ice water. The ice had melted a couple hours before I took this.
2. Easter egg!



Image Notes

1. Fan guards in place. This prevents you from dropping tools, wires, or fingers into the spinning fan blades.

step 8: Wiring

It would be difficult to make the make the wiring for a project easier than this. There should be a red and a black wire coming from each fan, the bilge pump, and the 12V plug. Use wire nuts to attach them all together, and make sure the pump and fans are going the right directions. The fans should be blowing out, and the pump should be pumping through the hose. After everything is moving correctly, you can solder the wires together, or put a switch in the power cord. We also used small zip ties to hold the wires together and to the fan.



step 9: Operation

Pretty easy, really. Dump in enough ice to fill the cooler about 3/4 of the way, pour in about a half-gallon of water (thats two liters for the smart people) so that the bilge pump can work, and plug it in! And flip the switch if you installed one. Make sure that you open the lid slightly for return airflow. We found that flipping the handle over to prop up the lid provides plenty of airflow without letting the ice get too warm.

If everything is hooked up right, the pump should be humming away, and the fans should be blowing. The water is chilled enough to cool the air within a few seconds. You can put this in your car with the dead A/C (note: this will cool pickups and small cars. Don't bother on your Ford Excursion), you can hook it up to a wall outlet through a 12V battery charger, or you can clip it onto a small 12V gel cell.

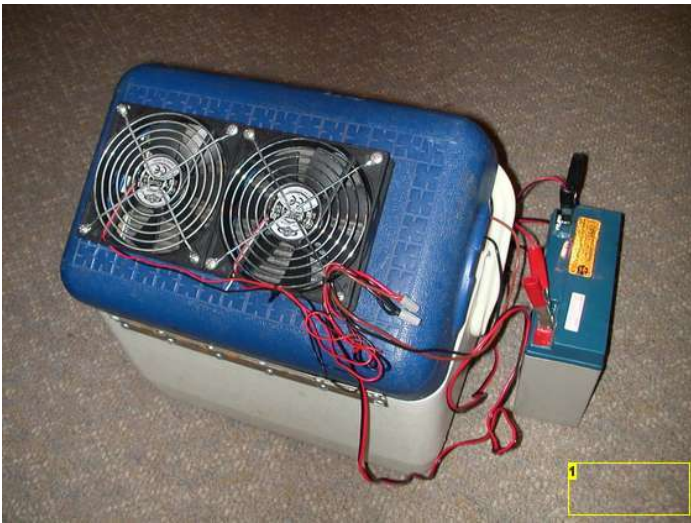


Image Notes

1. The unit is running in this picture, but the flash froze the fans. I have the lighter plug attached to a lighter jack that clips onto this 18.0 AH 12V battery.

step 10: Test Results

We took the unit out to the truck for a test run when it was well over 90 degrees Fahrenheit (mid to high 30s for Celsius people). My dad set it in the truck and plugged it in, then went back to the house to get a camera. By the time he returned to the truck, the air inside had already dropped below 80, and the air was much drier, making it also feel much cooler.

I attached a PDF of JPEG of a scan of a notecard that my dad took notes on. What it basically says is the following: When the unit was started, the air in the cab was 95 degrees, parked in the shade after a morning of sun, and the outside heat index was 108 degrees. Within five minutes the cab had cooled to 75 degrees, and the air output was 65 degrees. With two quarts of water that had been refrigerated and 8 pounds of ice cubes, the ice had melted after 40 minutes, leaving 50 degree water, with an output of 65 degree air.

In other words, it works! And it works great! On Sunday, August 12 we brought it to Kansas City for a monthly meeting of our *electric auto group*. WE met in a small meeting room of a library, and ran the air conditioner off a small 12V battery on a table. Many of the members were impressed that they could feel the room getting cooler, and many tried to buy it from us on the spot. We are also in correspondence with an EV owner from Alabama who is eagerly awaiting the publication of this Instructable (I hope). If you're reading this, you know who you are, and I hope you like it.

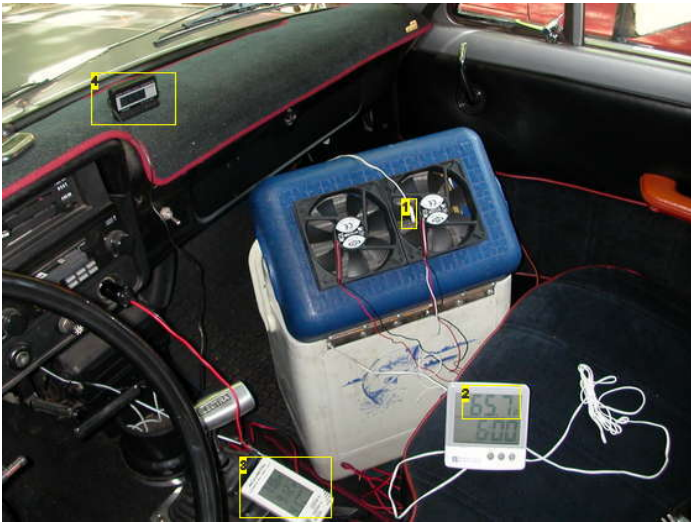


Image Notes

1. Temperature probe
2. Air output temperature
3. This displays the cab temperature and the motor temperature. The motor hasn't been running, and it's shaded, so it's a nice, cool 92 outside.
4. Battery pack thermometer. Only used in winter with the thermal wraps.

File Downloads



Notes.pdf (151 KB)

[NOTE: When saving, if you see .tmp as the file ext, rename it to 'Notes.pdf']

step 11: Possible Modification and Other Notes

We have some ideas for further modification that we may or may not implement. For starters, we will probably connect a hose to the heater core output. This will eliminate the burbling, trickling sound that is hard on one's bladder, as well as make it easier to drain. The ArcticAir units have a valve inside that you turn to redirect the output to an external hose so that you can drain the cooler out the window onto the flight line without wrestling it through the door. Another option would be a drain plug on the bottom, which is already on many models of coolers. We also are considering a vent system, so that the lid could remain closed while still allowing air to circulate. The ArcticAir units have a louver vent on one side for this purpose. A third modification would be some way to redirect the airflow. ArcticAir units have adjustable flaps over the fans, which could work, or some have a duct hose assembly to redirect the airflow where it is needed. A fourth, and painfully obvious, step would be to enclose all the wiring inside the lid or in a project box to make it look neater. However, for the time being, the zip ties are plenty for us. Also, we may try using Blue Ice-type ice packs, so that it would be reusable and not waste water.

This being a Go Green contest, I should put in a spiel about why you would bother with this. The main purpose is to make it more comfortable to drive a zero-emissions electric truck in Kansas in August. This runs off any 12V power source that can shove out 3 amps, so it can be used in other areas that need cooled, such as a hot workshop. Also, the ice lasts for hours when it's not running, and you can leave it on while you run into the store. The only disadvantage is that you could say it wastes water in the form of ice, but you can empty it out on your garden or lawn. It uses only ice water for cooling, which is about as non-toxic and environmentally friendly as you can get, and it kept a hose, a cooler, and a heater core out of a landfill. In other words, it uses environmentally friendly power to run environmentally friendly coolant through recycled parts in a zero-emissions vehicle. Can you get greener than that? I mean, this is #008000 at its best! Just make sure to recycle batteries.

Thank you for reading!



Image Notes

1. The unit is running in this picture, but the flash froze the fans. I have the lighter plug attached to a lighter jack that clips onto this 18.0 AH 12V battery.

Related Instructables



Personal Portable Spot Cooler by farhanians



Portable Air Conditioning by LowCostCrap



cheap personal air cooler from scrap by Big jermini



Mini Desktop AirConditioner by farhanians



Air Cooler/Heater by videokid842



Portable AirConditioner by farhanians



Go Green! by theburn7



Going Green! A couple things you can do to help the environment. by gopher



Comments

50 comments

[Add Comment](#)

[view all 235 comments](#)



cheordinario says:

Apr 11, 2008, 11:45 AM [REPLY](#)

you wrote: *no environmentally not-so-friendly chlorofluorocarbons, hydrogenated chlorofluorocarbons, or hydrofluorocarbons* that's not true, because you or your ice supplier have to use refrigerators with those chemicals for make the ice that you put into the 12v air conditioner.



rokag3 says:
hello,

Jul 13, 2008, 7:01 AM [REPLY](#)

CFC AND HCFC are completely innocent regarding ozone hole.
NASA find out that not even 5% of the quantity of CFC/HCFC needed to make the destruction process start was present .
Not surprising regarding the density of CFC !!!
Now we use A134 which is 20% less efficient that r22 mean more energy to pend for same work
BRAVO GREENPEACE !!! Hope you receive plenty room in the media offer by Dupont de Nemours/Monsanto for your efficient contribution
I can understand that poorly educated people can be trapped by the media(90% of the world media in the hand of 9 conglomerate)



thermoelectric says:
R134a

Sep 27, 2008, 6:46 PM [REPLY](#)



CameronSS says:

Apr 11, 2008, 8:42 PM [REPLY](#)

I really wish you would read through the comments before you reply...This has been discussed already. Multiple people have questioned the eco-friendliness of this device, and I still contend that it is better than most other systems.

In any case, if you built this cooler, would you buy a freezer to make ice for it? Of course not. This device uses no CFCs that would not already be in use.



Dman125 says:

May 10, 2008, 7:09 PM [REPLY](#)

Or you could just use ice/snow from outside, it happens every winter lol



CameronSS says:

May 10, 2008, 8:20 PM [REPLY](#)

Yes, I use an air conditioner *all* the time when it's snowing...



junits15 says:

Sep 4, 2008. 12:43 PM [REPLY](#)

why not try to put a TEC in there somewhere? you will never need to drain the water and the hot air can be exhausted into the ingine somehow



rbfe4ch47 says:

Aug 29, 2008. 9:37 PM [REPLY](#)

hey there camerons, love the idea. in fact had to go out and build one myself. i made a couple of modifications to it. i put a vented drain cap on the top and put the fans so they blow on the heater core. the warm air then is blown over the cold heater core thru the chest and out the vent. i also added a little on/off switch to it. i fly on helicopters and it gets mighty hot sometimes, this was the perfect little idea to cool off with. thanks for the idea.



willquillin says:

Aug 24, 2008. 7:36 PM [REPLY](#)

Here is one I bought on the internet a couple of years ago. May not be as good but it might help someone out. <http://www.kooleraire.com/index.htm>



ericleem says:

Aug 20, 2008. 12:53 PM [REPLY](#)

Maybe hook up one of the fans backward so it blows into the cooler. Or just mount it upside down. Then you have air going into the cooler and then back out. That way you can close the lid, and the air would have to go thru the coil 2 times and cross the ice so it should make for colder air.



butthead95 says:

Nov 13, 2007. 12:15 PM [REPLY](#)

this thing is sick but u should really make it so no air is running through the cooler ice will last longer



ericleem says:

Aug 20, 2008. 12:34 PM [REPLY](#)

Maybe hook up one of the fans backward so it blows into the cooler. Or just mount it upside down. Then you have air going into the cooler and then back out. That way you can close the lid, and the air would have to go thru the coil 2 times and cross the ice so it should make for colder air.



David Cousins says:

Jan 5, 2008. 6:46 PM [REPLY](#)

It doesn't matter that the lid to the cooler is open. The object of this Instructable is to cool the cabin air. So if you open the cooler, the cabin air rushes under the lid, across some ice, and then up through the cold coils. Its getting cold on that trip through the cooler. That's a good thing.



butthead95 says:

Nov 13, 2007. 12:16 PM [REPLY](#)

put the heater core on the outside of cooler with fans on top with hoses thru the lid



CameronSS says:

Nov 13, 2007. 1:41 PM [REPLY](#)

As I mentioned multiple times in the Instructable and in the comments, the heater core was positioned where it is to allow the condensation to simply drip back into the ice water. If we make another one, we'll probably figure out a different drainage system and put the heater core on top.



butthead95 says:

Nov 15, 2007. 5:38 PM [REPLY](#)

true true didnt think about that. if you came up with this idea you can defiatly figure something out like some sort of casing



knexsuperboulderfreak says:

Aug 19, 2008. 1:22 PM [REPLY](#)

where can i get a Heater Core



speedboxx says:

Aug 10, 2008. 3:08 PM [REPLY](#)

For those of you who have built this, I am just wondering how much run time are you guys getting and with what amount of ice? Also, Im wondering approximately how long the ice will last in a useable state in the icebox after sitting inside a hot cabin.



nowuknowjack says:

Nov 9, 2007. 1:18 AM [REPLY](#)

Awesome instructable. I think the KEY word here is Eco-Friendly. Ideas like this will keep the floating island of Debris in the middle of the Pacific from getting larger. As for EV vs. dino power, it is easier to control the pollution coming from a relatively small number of coal burning generators than several million gas burning vehicles. I am thinking of using your instructable in my son's science class and then I will have one for the time I get an EV.



DragonDon says:

Aug 9, 2008. 4:12 PM [REPLY](#)

That floating debris 'island' is BS. Read a couple of articles, not a SINGLE picture of it that shows anything of it's size. All pics show 'stuff' in the water but not even close to being legit. Funny how such a thing is taken as 'real' by those who only read articles and do no research.

Sorry for the off topic comment, just annoys me when it seems that people believe things purely on what they read.

If you did some research, please email the details, I would love to see it.

And I do agree, this is an awesome project! My 78 Volare Thanks the owner as soon as I build one....although Summer is ending so maybe next year it'll see good use :)



nowuknowjack says:

Aug 10, 2008. 12:47 PM [REPLY](#)

Just Google Pacific Gyre or Toxic: Garbage Island

<http://www.cbsnews.com/stories/2004/01/06/eveningnews/main591770.shtml>

[http://en.wikipedia.org/wiki/Gyre_\(definition_of_Gyre\)](http://en.wikipedia.org/wiki/Gyre_(definition_of_Gyre))

<http://science.howstuffworks.com/great-pacific-garbage-patch.htm>

<http://www.treehugger.com/files/2008/04/algaita-junk.php>

<http://www.celsias.com/article/searching-for-the-pacifics-mythical-garbage-island/>

<http://brokenbike.wordpress.com/2008/06/10/toxic-garbage-island/>

<http://vids.myspace.com/index.cfm?fuseaction=vids.individual&VideoID=32055783>

So in conclusion, anything we can recycle into something useful and share in order to reduce the waste in our world is a good thing. (BS I think not!)



CameronSS says:

Aug 9, 2008. 5:23 PM [REPLY](#)

Winter project!

vote vote vote.



mumbytho says:

Aug 7, 2008. 10:04 AM [REPLY](#)

CameronSS, I built my air conditioner per your instructions, however I want to use mine in my office. I am trying to make it as powerful as possible. I know for the computer fans and the bilge pump it would have to be 12volt, but do you know what the highest number of amps I could use with this? I would appreciate any help you could offer me. Thank you.



datoorian says:

Jul 31, 2008. 3:10 PM [REPLY](#)

one comment i have also is... sure you've read enough lol but... pulling hot air over a fan and/or motor reduces its life... so.. practically pushing air is more efficient for a fan but typically pulling air through a condensor is more effective for cooling... give and take kinda



datoorian says:

Jul 31, 2008. 2:54 PM [REPLY](#)

em... i think u guys are too worried on the global impact personally... we're only mere humans... mother nature will put us in check if she needs to.... that said im all about trying to be "better" on using questionable products like freon, but c'mon guys... isnt it a lil nieve to think that we (as in humankind) have that much say in what happens...



datoorian says:

Jul 31, 2008. 3:03 PM [REPLY](#)

coment on myself... goona try and build a similar sysetem using solar power to run the fans... unless its gonna cost me one arm and half a leg to do so



datoorian says:

Jul 31, 2008. 3:04 PM [REPLY](#)

heh... dont mind spelling pls



DragonDon says:

Jul 29, 2008. 7:20 AM [REPLY](#)

I cannot express how awesome of an idea this is! Since we're in the middle of summer right now, I think I'll have of these things built in the next week or so!



CameronSS says:

Jul 29, 2008. 8:01 AM [REPLY](#)

Post pictures!



Wareagle says:
how long does the ice in it last?

Jul 11, 2008. 6:23 PM [REPLY](#)



sloperdude says:
Your cooler doesn't entirely do away with fluorocarbons, unless you're getting that ice from a frozen lake. It's just using the refrigerant from the icemaker that made the ice in the first place.

Jul 9, 2008. 3:27 PM [REPLY](#)



CameronSS says:
I'm trying to be patient and adhere to the "Be Nice" policy, but I'm starting to get annoyed with people who are restating what has already been said. I'm not going to clutter this page up with another long-winded debate, so feel free to read my previous response.

Jul 9, 2008. 8:59 PM [REPLY](#)



markevns says:
This is sweet!

I just moved into a new apartment, it doesn't have AC (nor will the landlord let us install one) and it was 112 today.

This is definitely on my to do list as the swamp cooler doesn't do squat!

Jul 9, 2008. 3:16 PM [REPLY](#)



ben49 says:
i am working on a portable ac that has a heater core in a box outside of the cooler. the cooler has a supply and return line with insulation, of course, feeding the heater core. There is a gap in the box, below heater core that collects condensation. I have created two holes in the back of the heater core box that have 4 " dryer ducts in the back of box. I am then going to slide in two 4 inch marine 12v blowers that will create a tunnel affect right threw the heater core and box. I had 2 80 cfm fans pushing air through the heater core box that did not cool car. You will need more air push then that. Rule industries makes these. they will blow the hell out of the heater core. They are both 255 cfm a piece with quiet operation. They do draw 4 amps so i hope this wont be a problem. I did run wires from the battery directly to the front passenger area that will connect the blowers directly to the battery. Just waiting on 2nd blower. The bilge pump runs off cigarette lighter. When i get rest of parts i will post pics. hope this helps

Jun 17, 2008. 2:51 PM [REPLY](#)



butthead95 says:
dont push it threw heater core u will have a better effect if u pull threw

Jul 9, 2008. 2:38 PM [REPLY](#)



howiez says:
OK, I've started building, but I'm thinking of a few modifications.

I purchased a dual window fan from Walmart for around \$30. This little unit has 2 side by side 9 inch fans, and is just smaller then the lid on a large size cooler. I cut out the top and bottom of the lid, making the bottom slightly smaller, and the fans fit perfectly between the two layers. I will be filling the gap with a in the can foam sealent.

My idea is to put some sort of divider in the cooler, allowing a portion of the cooler to be used to pull in air. Then putting a vent on the side of the cooler that is pulling in air. This will allow the unit to be fully enclosed, and not require popping up the lid to allow air flow. This seems a bit better because if you are driving around with an open cooler full of ice water, and have to stop...

Jun 30, 2008. 1:56 PM [REPLY](#)

Does anyone know the math for the size intake required? Is it directly related to the size/speed of the fans? How can I figure this out?



mnray says:
Have you finished your ac unit? We are having the same problem with ice melting too fast. Trying to figure out more of a closed system...(mnray@aol.com)

Jul 6, 2008. 3:32 PM [REPLY](#)



userhck says:
ok correct me if im wrong, but wouldnt it make more sense to leave the cooler shut to preserve the ice and turn on of the fans the opposite way to blow air in through the heater core, with the other fan pushing it out, therefore creating a closed system?

Jul 2, 2008. 11:18 PM [REPLY](#)



mnray says:
Can you send me more information on your theory? We are trying to adapt the a/c system to fit in a motorcycle sidecar... Probably is ice turns to water to fast (Melts). In Texas we have to replace the ice about every 30 minutes so it doesn't really work for us. I'm interested in you theory about blowing air in through the heater core with the other fan pusing it out. Or do you have any suggestions other than Dry Ice (Carbon Dioxide) to keep the ice longer? CO-2 works but it is extremely dangerous in a sidecar... (mnray@aol.com) thanks

Jul 6, 2008. 3:30 PM [REPLY](#)



Lego man says:
Is it possible to put Ice in it so it blows cold air?

Jul 6, 2008. 7:34 AM [REPLY](#)



CameronSS says:

Did you even read it? Did you read the *title*? Air conditioners don't typically blow warm air.

Jul 6, 2008. 7:57 AM [REPLY](#)



Lego man says:

Sorry It is just really hot out where I live (106 yesterday I believe) and fairly windy blowing hot air. I once tried a portable fans and air conditioners and all it blew was hot air. I saw your design and saw that it was a container that blew air, so I thought if ice was in it it can cool dow the air and blow it out. Sorry if I sounded dumb to you.

Jul 6, 2008. 8:57 AM [REPLY](#)



skunkbait says:

This thing is awesome. I'd been pondering exactly how to do this for like 10 years, and you got it right! I built one, based on your i'ble, but with a larger icechest, a radiator, and a radiator fan. It will freeze you out for about an hour, (before it needs more ice) in my little Mazda car. I'm going to rewire it this weekend as the wires to the cig lighter-plug are getting too warm. Thanks for this ible! It makes June in Arkansas a little more tolerable.

Jun 30, 2008. 2:40 AM [REPLY](#)



troublem8ker says:

I believe I will build one of these for my babies stroller. I plan on a completely sealed unit. I will mount the core externally in a directional housing with the fans. Internally, I will use some of the re-usable hard ice packs that you can get. My pump will be filled with a solution (more than likely just water) and sealed between the inlet, outlet and pump. The water will circulate through flex copper that surrounds several of the reusable ice packs. This way I can just drop in an ice pack and go, and never have to worry about dumping out water. Beauty of this system as well is that I can always dump in ice if I use the ice packs past their point of remaining cold.

Apr 13, 2008. 5:08 AM [REPLY](#)



azuckerman says:

The ice packs are a great idea!

One issue with the not changing water, have you seen a fish tank after a couple of weeks without cleaning? Not pretty. You can add things to the water to help cut down the growth of algae and other junk in the water. I am not certain what that would do the the pump though...

Jun 13, 2008. 7:40 AM [REPLY](#)



troublem8ker says:

If you use distilled water and add a drop of algaecide to the mix, it will have no detrimental effect on the mechanical components internally. Chlorine and the like probably would, but not algaecide.

Jun 17, 2008. 8:09 AM [REPLY](#)



CameronSS says:

If it's sealed, he can simply use distilled water and possibly a bit of an iodine tablet to sanitize it.

Jun 13, 2008. 8:07 AM [REPLY](#)



azuckerman says:

If the unit is sealed, why not use a better thermal conductor (e.g., radiator fluid)?

BTW, the version I am working on is completely A/C driven (one switchable power supply and a fountain pump instead of a bilge pump). If I need to use it in a vehicle, I can use a power inverter.... I have two fans blowing over the heat exchanger (one in and one out for better cooling of the air). My cost to date is about \$80US. I am buying everything new.

And I will include pictures of the construction.

Jun 13, 2008. 9:11 AM [REPLY](#)



butthead95 says:

especially bcuz water is probly doin some damage to ur heater core. use antifreeze (like azuckerman said) and keep your ice packs in a ziploc so the antifreeze dont touch them unless u dont care.

Jul 9, 2008. 2:41 PM [REPLY](#)



mnray says:

Have you tried the radiator fluid? Our problem is that the ice melts too fast and we have to add ice about every 30 minutes. Trying to find a better thermal conductor or a way to keep the ice longer... can't use dry ice to keep the wet ice frozen, because of the hazard in pumping the air into a closed room.

Jul 6, 2008. 3:36 PM [REPLY](#)

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