Home Made Solar Heated Hot Tub

Description:

Here's the project. There are not many pictures, but the construction is pretty basic.

Frame the collector box with 2"x6" lumber and 1/4" plywood, the size is about 26" x 8'. The collector is a sheet of corrugated tin and 3/4" CPVC pipe. The pipe lays down in the bottom of the corrugations. Glue up all the pipe then apply a bead of flashing cement into each valley, then replace the pipe assembly onto the tin and cinch it down into the valleys with some wire. Paint it all flat black The glazing is just 4 mil plastic sheet, and there is a 1/2" thick sheet of the foil covered polyisocyanurate insulating foam board beneath the tin. The left over piece can be used as a reflector.

The pump came from Lowes and is the Garden Treasures MD170 fountain pump. Its Magnetic drive and rated at 150 GPH at 1' lift. While testing the collector it spent several hours a day, for many days, immersed in 150-160 degree water. The collector can easily and consistently heat a un-insulated bucket of water to 150 and a slightly insulated one to 160 degrees. I then used an old 35 gal plastic trash can as a tank but the side split open at 120 degrees. I was able to note a significant drop in heating, down to about 12 degrees per hour. So far with the 150 gal tank it is about 3.5 degrees per hour, 4.5 with an improvised reflector and occasionally moving collector to track the sun. The pump was meant to run submerged, so I had to modify it to run inline. I epoxy on a short piece of 1/2" CPVC pipe for an inlet tube.

We are real happy with our choice of the 150 gallon Rubbermaid stock tank for our tub. Just the right size for us, (yes we did go to Tractor Supply and sit in a few) also it seems to be a good fit with the collector. The dimensions (being less than 48" wide) also make it easier and cheaper to build the enclosure. The tank has a 1 1/4" threaded drain near the bottom, I used CPVC fittings to add a tee and a valve. I draw the water from the bottom of tank and pump it though the collector and back to a thru hull fitting higher up in the side of tank. The framing for the tank is also pretty simple. I did cover the plywood top with some epoxy and glass cloth left over from other projects. The skirting is from an old fence I replaced.

I am using 3 sheets of the 3/4" blue Styrofoam for the tank cover. The left over pieces were used to build forms around the tank and I then poured in a 2 part urethane foam for insulation. Did this from the bottom. I used 2 gallons. Would have been a lot easier to have it sprayed on... also will add a forth sheet of insulation to the top.