



Solar panel mounts on a swivel which allows Grieder to rotate it as winter progresses.

**“SAVES \$100 TO \$200 PER YEAR ON HOME HEATING BILL”**

## Build Yourself A Low-Cost Solar Panel

“It saves \$100 to \$200 per year on my home heating bill and cost only about \$100 to build,” says Dave Grieder, Carlock, Ill., who used common materials such as storm window glass, aluminum irrigation tubing, and an old furnace blower to build his own low-cost solar panel.

Grieder removed a basement window and replaced it with a 1/2-in. plywood insert. A pair of 8-in. dia. insulated flexible ducts run through the window, carrying hot air from the solar panel to the regular house heating ducts. An old furnace blower mounted inside the basement circulates hot air from the panel throughout the house. A thermostat turns the blower on and off.

“It doesn’t replace my furnace, but it adds a lot of supplemental heat and costs far less than \$2,000 to \$3,000 commercial solar panels, most of which heat water and require a lot of work to install. My solar panel is simple to install, almost maintenance-free and anyone can build it. I just set it up in the fall and store it in my garage in the summer.”

The shell of the 10-ft. long, 36-in. high solar panel is made from 2 by 8 boards painted gray and then sealed with silicone. The boards support three double panes of glass removed from storm windows. The windows are separated by a 3/4-in. wide gap. A 1/4-in. plywood sheet under the glass is painted black to absorb sunlight and is insulated on the back side with two layers

of 3/4 in. styrofoam. Six 2-in. dia. pipes run the length of the panel between the glass and plywood. Air pulled through and around the pipes is sucked out one end of the solar panel by the furnace blower while air from inside the house is drawn into the other end of the panel. An oven-type thermometer in one corner of the collector is used to monitor air temperature inside the panel.

“On partly cloudy to sunny days, the blower runs about cycles of 20 min. on, 20 min. off, between 9 a.m. and 4 p.m.,” says Grieder. “It maintains an air temperature of 90 to 110 degrees during the ‘on’ cycle. The weather can be zero degrees outside, but if it’s sunny the blower will still run. When air inside the panel cools down to 90 degrees, the blower shuts off.”

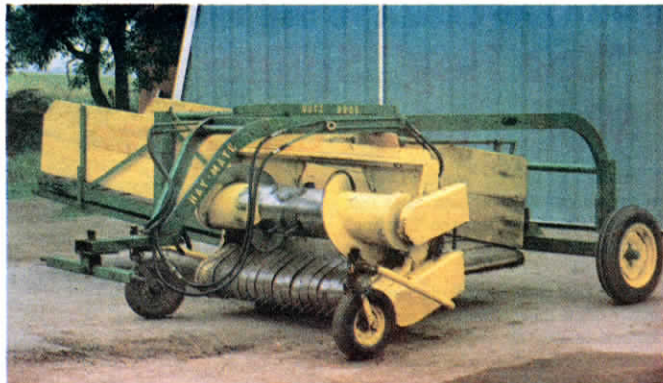
The panel is free to swivel on stakes, allowing Grieder to adjust it as winter progresses to keep it at a 90 degree angle to the sun’s rays for maximum solar intake. He simply loosens a bolt on each stake, swivels the panel, and retightens the bolts.

“The size of my panel was determined by the size of glass I had available,” says Grieder. “The bigger the glass area, the more heat you get. There’s no vacuum between the panels, but they’re sealed as tight as possible. Two air holes between panels relieve any pressure that might build up.”

Grieder sells plans to build the solar panel. Contact: FARM SHOW Followup, Dave Grieder, Rt. 1, Box 11, Carlock, Ill. 61725.



A pair of 8-in. dia. insulated flexible ducts run into house through basement window, carrying hot air from the solar panel to the regular home heating ducts.



This 16-ft. windrow conveyor was built from an old haylage chopper pickup head, side delivery rake frame, and a pair of windrower canvasses mounted end to end.

**PUTS 48 FT. OF HAY INTO SINGLE WINDROW**

## Homemade Conveyor Speeds Hay Making

Nebraska farmer Byron Gutz and his four brothers needed a windrower that would make big windrows in light hay cuttings, allowing their high horsepower tractors to make fewer trips through the field while chopping hay. They tried using large V-rakes but didn’t like the rakes’ uneven flow and tendency to leave dirt in the hay causing excessive wear on chopper knives.

So they built their own 16-ft. windrow conveyor from an old Deere haylage chopper pickup head, side delivery rake frame, and a pair of Versatile windrower canvasses mounted end to end.

“It can be used on 12, 14, or 16-ft. windrows and lets us put up to 48 ft. of hay into one windrow,” says Gutz, who notes that each of the brothers has his own farming operation but that they all own the haying equipment together. They grow a total of 300 acres of hay. “We’ve used it on 8,500 acres with no problems since we built it 10 years ago. It keeps our high horsepower tractors busy and speeds up chopping alfalfa hay, especially on the third and fourth cuttings which usually have lighter windrows. However, it worked so well and reduced chopping time so much that we now use it on almost all of our cuttings.

“By speeding up chopping time about 50% it allows us to operate machinery at slower speeds which is easier on equipment. There are fewer turns at the end of the field. Also, there’s much less chance of leaving metal rake teeth in the windrow. It

works equally well for baling or stacking hay. We operate it at 5 to 8 mph depending on the size of the windrow being conveyed. It leaves a nice fluffy windrow which dries fast.”

Height adjustment for the pickup head is controlled by the 3-pt. hitch. The conveyor and pickup head are individually driven by hydraulic orbit motors which are hooked up to two separate remote outlets on the tractor. “The operator can match ground speed to pickup and conveyor speed and pick hay up gently without bunching the windrow. We usually pick up one 16-ft. windrow and put it on top of the one next to it for a 32-ft. swath, or, by picking up a windrow on the other side, we can make a 48-ft. swath. Any small tractor equipped with a 3-pt. hitch and two remote outlets can operate it.”

Gutz and his brothers bought the Deere haylage chopper pickup head at a farm sale for \$600. They built the conveyor frame and rollers and mounted the two Versatile windrower canvasses end to end. They removed the arches from the side delivery rake and rebuilt the axle to make it heavier, then mounted the pickup head and conveyor on the frame of the rake. “The pickup head is mounted on a pivot point so it floats to the contour of the field,” notes Gutz, adding that total cost to build the windrow conveyor was less than \$3,000.

Contact: FARM SHOW Followup, Byron Gutz, RR 2, Box 140, Osmond, Neb. 68765 (ph 402 748-3706).



Conveyor and pickup head are individually driven by hydraulic orbit motors.