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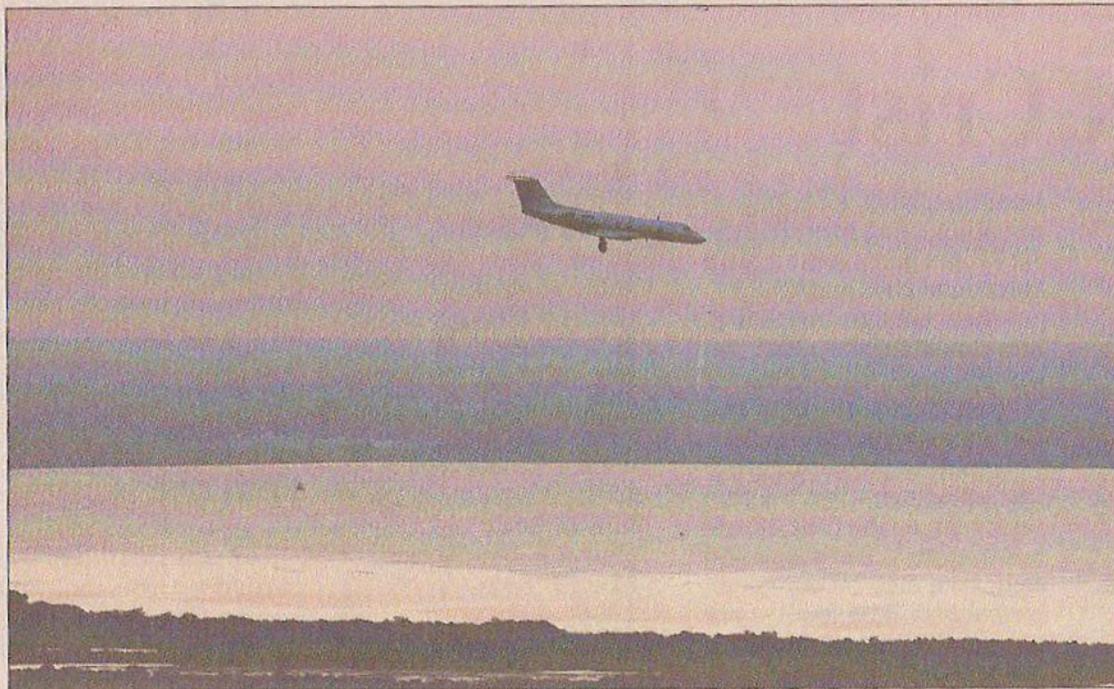


White roof good for planet, cost-effective

The Florida Solar Energy Center has been researching different roof materials for years, and white consistently produces the coolest results, saving homeowners money. **1D**

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BIRD'S EYE VIEW



NASA photos



Photos by Chris Kridler, FLORIDA TODAY

Energy efficient. Rob Vieira, director of buildings research at the Florida Solar Energy Center on the BCC/UCF Cocoa campus, points out white roofs on the research facility. White roofs reflect the most heat and are the most energy efficient.

You can go green with a white roof

It's the quickest, lowest-cost way to energy efficiency

BY CHRIS KRIDLER
FLORIDA TODAY

White roofs are a cool idea when it comes to energy efficiency.

The Florida Solar Energy Center has been researching different roof materials for years, and white consistently produces the coolest results, saving homeowners money.

"White metal reflects 65 percent of the sun," said Rob Vieira, director of buildings research at FSEC, "so it tends to stay pretty cool. It tends to stay clean, too." Clean is important, because a dirty roof reflects less heat.

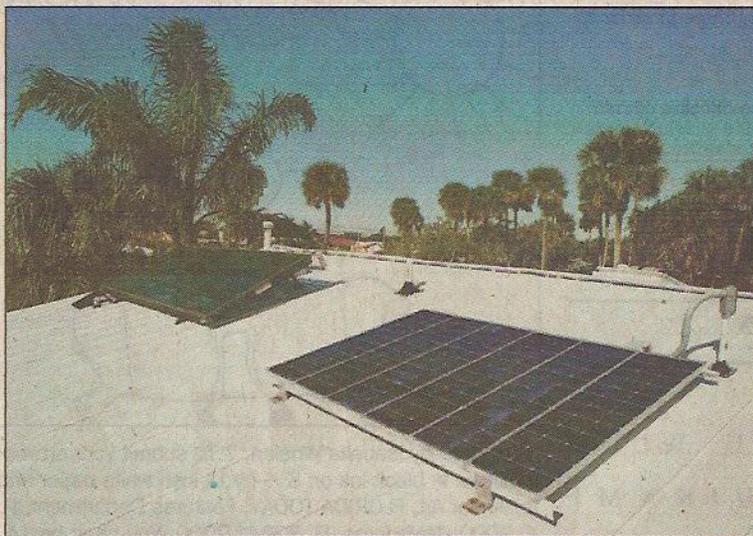
Next to the Florida Solar Energy Center on the Brevard Community College-University of Central Florida Cocoa campus, the Solar Energy Library and two small test buildings all sport white metal roofs.

"Cool roofs are one of the quickest and lowest-cost ways we can reduce our global carbon emissions and begin the hard work of slowing climate change," Energy Secretary Steven Chu said in July as he announced that Department of Energy buildings would be painted white wherever possible.

More and more, municipalities are encouraging the painting of roofs with special white paints. Melbourne's Hy-Tech Thermal Solutions sells one of them, Insul Cool-Coat.

The success of such coatings depends on the surface to be painted, experts say.

Danny Parker, principal research scientist at the Florida Solar Energy Center, coated his shingle roof white in the early 1990s. Energy use for cooling dropped sig-



Cool roof. A white residential roof, on a house owned by a Florida Solar Energy Center employee, reflects the most light and stays cooler than other roofs. This one also sports solar panels; the one on the left is for the water heater.

nificantly, but "we don't recommend coating shingle roofs anymore at all, coating them white," he said, "because one of the problems in Florida is that we have very wet conditions, and water can wick under shingles." White shingles reflect the sun, so they don't dry themselves out. The result could be leaks or water damage.

"But there are roof types that work quite well to be white," said Parker, who eventually installed a white metal roof on his family's Cocoa Beach home. "One of the oldest ones is tile, or you have, like my house, white metal, which works exceedingly well."

One of the great advantages of a white roof is cooling in the attic, he says, where many Florida homes house their ducts. In a hot attic, the conditioned air in the ducts warms before it ever reaches the vents to cool the house.

An early photo shows Parker's white metal roof with a couple of solar panels on it. Now, the south

See ROOFS, 4D

More online

- Roof savings calculator: roofcalc.com
- Department of Energy cool roof calculator: ornl.gov/sci/roofs+walls/facts/CoolCalcEnergy.htm
- Energy Star roof products site: energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=RO
- Roof tax credit information: http://energystar.custhelp.com/cgi-bin/energystar.cfg/php/enduser/std_adp.php?p_faaid=5771
- Information on radiant barriers: fsec.ucf.edu/en/publications/html/FSEC-EN-15/
- FSEC study comparing roofs: fsec.ucf.edu/en/publications/pdf/FSEC-CR-1514-05.pdf

HOME & GARDEN: IMPROVING INSIDE & OUT

Cool roofs reduce carbon footprint

ROOFS, from 1D

side of his roof is about half-covered with solar panels, and a number of other improvements — efficient appliances, improved ducts, better lights and fans, and so on — have reduced his energy bill to essentially zero most months. With the connection fee and taxes, he pays about \$7.

Roof alternatives

One FSEC study showed a white metal roof with a vented attic would reduce heat gain over dark shingles by about 44 percent; metal Galvalume, 12 percent; and a galvanized, unfinished metal roof, 1 percent. Energy savings translate to 15, 4 and 0 percent, respectively.

"If you're doing a dark metal, that's not helpful at all," Vieira said.

White barrel tile can work well but is more susceptible to mildew growth, he said.

"There are some new products out that are called cool shingles," he said. "... The color looks fairly similar, but the material is a little different, so it does reflect in what we call the non-visible spectrum of heat."

There are no federal tax credits for roof coatings, but there is a tax credit for new roofs that meet Energy Star requirements. (See box on 1D for website.)

A "green roof" is a different kind of cool roof. Its plants use rainwater, lowering runoff and keeping a building cooler. A section of UCF's student union roof that was planted in 2005 reduced summer roof temperatures from 130 degrees to 91 degrees. In the winter, the



Photo courtesy of Florida Solar Energy Center

Going green. The Student Union building at University of Central Florida has a "green roof" that research has proven to be cooler than conventional roofs.

roof stayed 11 degrees warmer than the adjacent conventional roof.

The roof of Florida's Showcase Green Envirohome — a cutting-edge, near-zero-energy-use home nearing completion in Indiantonic — also employs a green roof.

The plants are all natives from Melbourne's Maple Street Nursery, says Nonnie Crystal, who is building the house with husband Mark Baker. They include coral honeysuckle, sunshine mimosa, railroad vine, "things that you find on the beach and along the coastline of the Indian River," Crystal said. They are planted in a medium that "literally treats the storm water."

The water is collected on the roof, moves through a filtration system and cistern, and is pumped to the green roof for irrigation before draining through Flexi-Pave (made from old tires).

"We use our rainwater hundreds of times," Crystal said.

Inside the attic

There are energy-friendly options besides reroofing or painting a roof.

A radiant barrier that looks much like a roll of aluminum foil can be stapled on the underside of the roof. This do-it-yourself project can reduce heat that flows from the roof into the house by about 40 percent, Vieira said.

A sealed attic is another option, in which soffits and gable vents are closed and spray foam is used to insulate the space. A contractor would do that kind of work, he said, and it can be expensive.

"All those things will help keep the ductwork cool, as well as reduce heat that gets into your house through the ceiling," Vieira said.

Insulation, which is

usually placed on top of the house ceiling (that is, the attic floor) also is important, he said.

"If you have a well-insulated attic, it's usually not cost-effective to mechanically vent that attic — in other words, pay electricity to vent that attic," Vieira added.

Look at the little things, too. For instance, prevent air leaks by paying a little more for airtight insulated cans for recessed lights that are installed in the ceiling.

While the roof is an important part of an energy-efficient home, it can't do everything to lower your bills.

"People wish there was a magic thing they could do to make your electricity use go down," Parker said. "... The magic bullet consists of a lot of different things." ■

The Associated Press contributed to this article. Contact Kridler at 321-242-3633 or ckridler@floridatoday.com.