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STATE'S LOWEST ENERGY-USE HOME?

Key "green" features

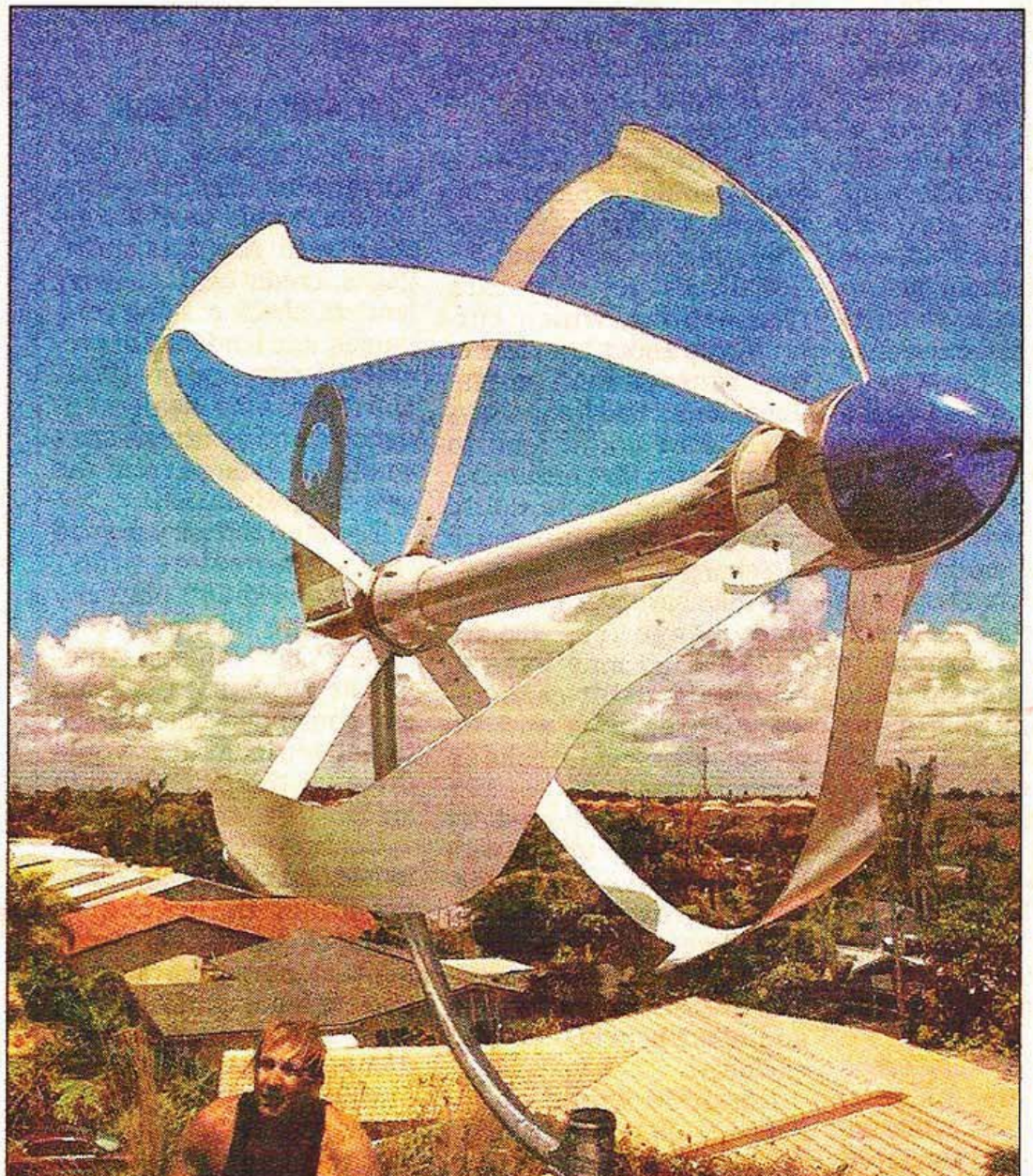
In addition to the solar- and wind-powered air conditioning, Florida's Showcase Green Envirohome has:

- A "living" roof that filters rain into a whole-house "graywater" system that reuses shower and clothes-washer water to sprinkle the lawn and flush toilets.

- A septic tank and drain field that a University of Central Florida researcher says can cleanse 90 percent of the nitrogen and almost all the phosphorus from wastewater, using recycled tire crumbs, sawdust and sand.

- A plan for a 60-square-foot "green wall" inside the home that would be irrigated with gray water. It would generate oxygen and remove volatile organic compounds from indoor air.

To learn more about the house, visit www.FSGE.net.



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Using the wind. Mark Baker works on the roof of his near zero energy use home off Riverside Drive in Indian Lantic. He is bolting down a wind turbine that was installed by a crane.



Malcolm Denmark, FLORIDA TODAY

'Green' home adds turbines

BY JIM WAYMER
FLORIDA TODAY

INDIALANTIC — A husband, a wife and his mother hope the twists and turns atop this "green" roof will keep them all cool this summer.

When the wind dies, solar panels and two wind- and sun-charged 12-volt batteries do the job. It's a unique hybrid concept, energy experts say, and could yield big savings on one of Florida's biggest energy drains.

On Friday, workers used a crane to lift two wind turbines onto Florida's Showcase Green Envirohome, a "near-zero" energy-use home being built at 216 Coral Way. They also propped four low-energy-use air conditioners on the house's sides.

Nonnie Crystal and Mark Baker hope by late this summer to move themselves and Baker's mother into what they say will be

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Nonnie Crystal

among the most energy efficient homes in Florida, America, maybe the world.

It's been an expensive proposition they've accomplished with a lot of brokering with companies that want to showcase their environmentally friendly products. But, they say, it's well worth any cost.

"You could honestly say the most expensive way to build a home is the way we did it." Crvs-

tal said, stopping short of giving a figure. "It's a science experiment."

Crystal researched the technology, most of which they get free, in exchange for allowing walkthroughs to showcase the products. Baker's the builder. Because of the novelty, they design and engineer some of it as they go.

They plan to gather the data to prove the energy savings, so others can do the same. The Florida Department of Environmental Protection also is monitoring several aspects of the project.

The wind turbines, the V-100 and V-200 Energy Ball, are made by Home Energy Americas, a Texas-based company. They start collecting wind energy at winds of only about 4 mph, compared to most turbines that need

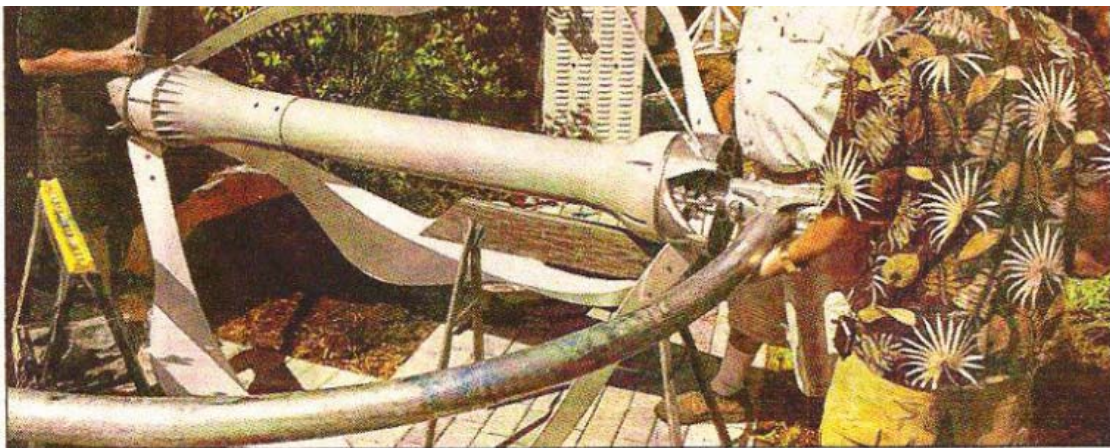
See GREEN 3A

FLORIDA TODAY

Hooking it up. Michael Lanham, COO, Home Energy Americas, Steve Kastner with Kastner Engineering and Tery Sobzak, president, Home Energy Technologies, assemble the wind turbine



Some Home Energy Technologies, assemble the wind turbine known as the V-200 Energy Ball before it was installed on the roof of a near-zero energy use home in Indian-



Malcolm Denmark, FLORIDA TODAY

Green wall inside home planned

GREEN, from IA

about twice that amount.

The V-200, alone, which they got for free, costs \$14,000 to \$18,000 installed and is rated at 2.25 kilowatts, so it can produce that much power per hour in 35 mph sustained winds.

They run quieter than most wind turbines, so neighbors won't hear them, said Michael Lanham, chief operating officer for Home Energy Americas.

"The vibration is nearly zero," he said.

Lanham also said they're safe for birds, which can see them better than the typical wind turbines that resemble airplane propellers.

"The faster it spins, the solidier it looks," he said.

Frances started it

Crystal and Baker's vision began with a microburst from Hurricane Frances, which in 2004 tore the roof off his mother's Indian home. Hurricane Jeanne finished it off.

They're building the Florida's Showcase Enviro-home on the footprint of the original 1967 house that Betty Baker Farley, 77,

bought in 1970 for about \$27,750.

The storm provided fertile ground for mold — which made the home uninhabitable — and an opportunity for Baker and Crystal.

They drummed up 40 sponsors and used his mother's insurance claim.

Last year, they installed a septic tank and drain field that a University of Central Florida researcher says can cleanse 90 percent of the nitrogen and almost all the phosphorus from wastewater, using recycled tire crumbs, sawdust and sand.

They plan a 60-square foot "green wall" inside the home to be irrigated with gray water, which has been used in the home.

The wall generates oxygen and removes volatile organic compounds from indoor air.

An experiment

The home has become an ongoing experiment for University of Central Florida research into green building and stormwater management.

"They're doing a lot of good things there, it looks like," said Frank Leslie, ad-

unct professor in Florida Tech's department of marine and environmental systems.

But he reserves a bit of skepticism about the wind turbines, which he says studies have found don't produce much energy because they're too low to the ground.

Baker and Crystal were limited by the county's 35-foot height limit.

But they say no tall buildings or tall trees obstruct wind there, and they measured winds that were consistently between 18 and 33 mph last year.

"We are the tallest house in the neighborhood and we are on the coastline," Crystal said.

Danny Parker, a researcher at the Florida Solar Energy Center in Cocoa, called it "novel."

"So many projects like this are going on now," he said. "There's not really a lot of them in Florida, but there's a heck of a lot of them out in California."

Saving the lagoon

The couple also plans to spare the Indian River Lagoon by allowing close to zero rainwater to run off their lot. They also hope to

be water-neutral as well as carbon-neutral, using a soil-covered cement board section of roof planted with daisies, honeysuckle and mustard plants.

The "green, living" roof drains rain into a whole-house graywater system that reuses shower and clothes washer water to sprinkle the lawn and flush toilets.

The stormwater system, designed by University of Central Florida's Stormwater Management Academy, will capture close to 90 percent of the rain.

"Our passion is not, 'Hey, build one like us.' Our passion is education," she added. "I want people to get in and see the technologies as soon as we can."

After construction is complete, Baker and Crystal plan to offer tours to school groups. Baker and Crystal want to prove green building concepts work. Crystal said the BP spill could help to accelerate "green" building.

"I think there's a cry, with the impetus of the oil disaster," she said. "I don't think we need to perform unnecessary surgery on Mother Earth." ■

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