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ENTERPRISE NEWS DIGEST

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Local resident builds energy-efficient 'hybrid house'

By Peter Vandergrift, Enterprise Staff Writer

There are hybrid plants and hybrid cars. Why not hybrid houses?

That's what Emigrant builder Pouwel Gelderloos thinks, anyway.

With an eye on rising energy costs, Gelderloos, 59, has just completed a home in the Paradise Valley he thinks can revolutionize the way people think about "green" building.

"I wanted to get out of the hippie mold," Gelderloos said.

The Dutch-born builder uses sustainable building techniques, such as passive solar heating, gray water reclamation, rainwater collection, as well as wind and photovoltaic power. But he has kept an eye on simplicity when designing and building his 3,000 square-foot "Oasis House," which he shares with his wife Miriam, and three of their eight children.



Enterprise photo by Angela Schneider

Pouwel Gelderloos stands in front of his Paradise Valley home that he calls a "hybrid house," Wednesday, June 4. Gelderloos built his home with energy-reducing and environmentally friendly amenities.

The old and the renewable

It is called a hybrid house because it can work with both alternative and traditional grid-tied

energy sources, slipping seamlessly between the two.

The octagonally-shaped, three-bedroom, three-bath home uses concrete, heavy rock and heavily insulated walls to collect and distribute heat from the sun as its rays pour into the south-facing windowed atrium.

Although the house is equipped with a highly efficient Russian-style fireplace, Gelderloos said he has not needed to fire it up because the sun and radiant-heated floors keep the house very warm even when the outside temperature plummets below zero.

Gelderloos began his building career in Amsterdam, remodeling canal-side structures before moving to the U.S.

In the Livingston area, he has built homes and business buildings, including the Bank of the Rockies, but his dream was to design an efficient house anyone — not just a problem-solving handyman — could live in.

He hopes to repeat the feat for anyone who is interested and share what he has learned with other builders.

Gelderloos said he has spent about \$500,000 on the "Oasis House" and its energy systems, but believes he could build virtually the same house with all the key energy, heating and water systems for \$300,000 next time around.

Although priority is given to renewable resources, Gelderloos has alternative systems, like an on-demand propane water heater and the ability to tie into the power grid.

With a little smart design, the house can function automatically, he said.

Water works

Many of the home's systems are cyclical.

For example, water runs off his roof through a series of oversized gutters filtered through gravel and into 10,000-gallon holding tanks. A roof-mounted evaporating hot water heater warms the water — which may get extra heat from a propane heater — for showers and washing dishes, or into the piping designed to heat the concrete floors in the radiant heat system.

The left-over gray water is then filtered and cleaned in a solar eroder in Gelderloos' atrium and used for irrigating the family's tomatoes, herbs and other edible plants housed in the front sun room.

The water not used for irrigation is stored for flushing the water-efficient toilets, which have both full flush and half-gallon flush modes. The toilet water goes to a septic system.

Sound complicated?

That is why the water system, as well as the energy system, is run by minicomputers — the brains of the home.

The brains of the house

Gelderloos can switch between what the 24 batteries have stored from the 5-kilowatt solar arrays, the 2-kilowatt wind turbine and traditional power service.

"If the sun is not shining, usually the wind is blowing," Gelderloos said of the home's mountain setting.

Gelderloos said he has yet to draw energy from the power grid.

A computer decides if the solar-heated water is warm enough for showers or should be piped through the brushed concrete floors. If more heat is needed, a propane burner kicks in.

The two minicomputers make the systems easy to use, Gelderloos said, adding that was key to the whole project.

"If you don't have to change your lifestyle," Gelderloos said, "a hybrid home is much more appealing."

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