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Thomason Solar System Passes GW Heating Test

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Preliminary results of a study at George Washington University appear to bear out claims by solar pioneer Harry Thomason for the efficiency of his Solaris heating system.

For some time it has been noted that Thomason, who has been living in and refining his system here for 20 years, is a prophet little known to Washington area home builders. When asked if solar energy is in their development plans, the answer usually is that it's a great idea whose time has not quite come.

Then, when asked how much they think it would cost to include solar space heating in a subdivision, they typically come up with a figure of about $20,000. Since Thomason claims his system can be incorporated in a new home for a net cost of $5,000 or less, the next question is automatic:

"Have you looked into Harry Thomason's Solaris system?"

Usually, the answer is that they haven't heard of it. Thomason himself has done considerable public relations work on his own behalf, but for some reason the grapevine is not helping out.

MORE THAN USUAL interest, therefore, greeted the arrival of a "special solar announcement" from the Departments of Housing and Urban Development and Energy telling of a three-year test being conducted by GW on Thomason's system. Heat-measurement devices were placed in dozens of locations within a Solaris house in Calvert County, built 4½ years ago. Thus far only the results during the winter of 1976-77 have been analyzed and reported.

Even for that period the figures are far from complete, because of technical problems during that severe winter. But the GW team led by Dr. Ali Kiper calculated that the sun provided somewhere between 59 and 72 percent of the energy needed to heat the house.

The sun's role varies with the weather, of course. During one especially cold nine-day period, the team found, Solaris provided 30 percent of the heating load.

THE SYSTEM is less effective in providing domestic hot water than for heating the air. GW's researchers found it cut the cost during the winter by about 25 percent. But since the sun shines more directly and longer during the summer, it can be presumed that the water heater uses much less fossil-fuel power the rest of the year.

This water first is warmed in a 40-gallon tank inside the main tank. Prewarmed water flows from it into a 40-gallon oil-fired water heater. This oil heater also serves as the main backup to the solar system, warming water for the storage tank when the sun can't to the job alone.

In this way, Thomason says, he has been able to eliminate the use of a backup furnace, further widening the cost gap between his system and most others.

There are side benefits to the Solaris system that the study did not check, because they are utilized from late spring to early autumn. One is its ability to warm a back-yard swimming pool. The second is the indirect way it can be used to reduce the cost of air conditioning.

TO EXPLAIN THIS it is necessary to describe the system. As with most "active" solar systems, it begins with rooftop solar collectors. Water pumped to the top of the collector panels trickles down between the glass cover and the black-coated aluminum base, absorbing heat, and then is piped to a huge tank — with a capacity of 1,600 gallons — in the basement. Cooler water from the bottom of the tank is pumped back up to the roof, and the cycle is repeated continuously as long as the temperature of the roof water is significantly warmer than that in the tank.

Tons of small rocks surround the tank, filling most of the insulated 7-by-8-by-20-foot bin, and are warmed by it. They are capable of storing up heat to be used on days when the sun is completely blocked by thick clouds. During the cold nine days in January 1977, the air temperature above the rocks ranged from 81.3 to 83.7 degrees F — enough to partially heat a house designed for the Solaris system.

The reason such mild air is able to warm the house is the unusual system

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Thomason uses to circulate it through the rooms. Instead of an expensive system of ducts, he "pipes" it though the home's hollow interior walls and floors. Small openings in the ceilings admit warm air, and cool are is let out of each room near the floor.

THE ROCKS, Thomason found, also are capable of storing coolness and dryness in summer. To hold down the cost of Solaris, he has made no provision for converting the sun's heat into cooling energy. But he does use the energy storage bin to store up the output of a two-ton air conditioner which is allowed to run all night.

The air conditioner doesn't have to work hard at night to overcome the heat of the sun. The cold air is piped into the pile of rocks, as well as through the house. When the sun comes up the air conditioner is turned off and the home's air is piped through the bin. The rocks absorb both heat and moisture from the air all day before it is sent back through the living areas.

The benefits of this setup are that a smaller cooling unit is adequate to do the job at night, and there is no dependence on the power company during its peak load hours. It should be possible (as is done in a few areas) for the utility to reduce its charges at night to reward those who switch their power use away from the busy daylight hours. That way it should not have to build up as much generating capacity.

A PATENT ATTORNEY, Thomason first was drawn to thoughts of solar energy by the sort of accident that started Newton to meditating on gravity and Franklin on electricity. Caught in a storm one summer day in 1956, he took shelter in a barn. He was struck by the warmth of water that dripped on him from holes in the rusty metal roof.

Three years later he had converted his house in District Heights to solar heating, and in subsequent years built two new houses nearby as he worked to improve the system. He now lives in a still newer solar home in the Fort Washington area similar to the one tested by the GW researchers.

Thomason also has set up a nationwide network of contractors, collector fabricators and a distributor of do-it-yourself blueprints to spur the building of Solaris homes. He estimates several hundred in all have been built.

Solar pioneer Harry Thomason points to the solar collector on a model of the four-bedroom rambler in southern Prince George's County in which he lives. It is the inventor's fourth solar-heated residence going back 20 years. his son, JACK

NOTE BY DR. HARRY E. THOMASON:

Following release of the D.O.E./G.W.U. Test Report, and exposure by "60 MINUTES", there came an "avalanche" of questions by Investigative News Reporters, and appearances by Thomason & Thomason. WWL ("Loyola Of The South") gave AN HOUR of PRIME TIME to an interview - questions & answers. WSTP (Salisbury, N.C.) devoted half-an-hour to an interview.

So many newspaper articles have been published that we are not re-producing all of them, only a few.

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