

Solar energy studied in UNL experiments

By Chuck Beck

Two experiments to study the effectiveness of heating buildings by solar energy are being carried out at UNL.

One experiment is to build a two-bedroom solar-heated house with 1,000 square feet of floor space for under \$28,000, said Richard C. Bourne, assistant professor of construction management. He said most solar-heated homes are many times more expensive than UNL proposal's price.

"Most solar-heated houses being built now use rather expensive collectors to capture solar energy," Bourne said. "Either air or water is forced through the collectors and circulated through the hours."

House heating

Bourne said that the proposed home designed by students and himself as a project within the College of Engineering and Technology would have a transparent covering over the south face of the attic. He added that the attic covering could be constructed of ordinary glass, plexiglass or fiberglass.

The house is heated when the attic space heats up, and a heat pump is used to pump the heat to a water storage tank, Bourne explained. The water is circulated through a coil and air is forced through the coil and to areas throughout the house, he said.

The solar-heated home project began last January when Bourne met with students to plan the project, he said. Six architecture and construction management students have worked alternately with Bourne this semester to earn academic credit, he added.

Heat loss measurement

Another project to measure heat lost from windows began last fall, Bourne said. Four black boxes were set atop Nebraska Hall last week as subjects of the experiment which measures net heat flow through windows, he explained.

Two boxes contain windows facing south and west, while one box contains monitoring equipment for the experiment. The fourth box, which contains no windows, is the control by which heat flow is compared to the boxes with windows, Bourne explained.

Six construction management students also are aiding Bourne with the box project and earning credit for participating in the project.

Minimizing windows

Bourne said there are trends to eliminate windows reducing heat flow through windows.

"Many buildings are being constructed to minimize the window area," he said. "The building space we're enclosing isn't going to be nearly as pleasant to be in because we will have much less natural light entering the building."

"We (UNL experimenters) need to determine how much energy is consumed to heat a building over a period of time, which is what this project does," Bourne added.

Bourne said the box experiment is financed by about \$3,500 in state and federal funds directed to the engineering college.

Although both projects take into consideration that sunlight is an effective heater, Bourne said they are not directly related. He said he did some preliminary research last summer to develop and plan both projects.

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