

campus

# Prof designs solar refrig

By MARGARET JOHNSON  
Battalion Reporter

Medicine in underdeveloped countries could be stored in solar-powered refrigerators, a Texas A&M University professor says.

There are approximately one million villages or more that have no electricity," said Dr. Richard Field, assistant professor of Mechanical Engineering and designer of the refrigerator.

This would be a practical way to convert direct energy into electricity without having to bring in diesel generators to supply the whole village with electricity.

The photovoltaic/thermoelectric refrigerator consists of two square meters of silicon-coated solar cells. Another chemical is added to this to improve electron emission. The sun causes the solar panels causing the chemical to generate electricity. The energy is then stored in an 18-volt battery which is slightly larger than an automobile battery.

The battery is connected to a thermoelectric plate which conducts the current to the cooling fins. The cooling fins then cool a 3,600-cubic-centimeter area.

This refrigerator is also designed to collapse and become portable. The complete structure, including an 18-volt battery, weighs approximately 88 pounds and could be carried over a semi-rough terrain by one person.

The solar-charged batteries can supply enough energy for 24 hours without sunlight.

The batteries are continuous as long as the sun is shining," Field said. "When there is no sunlight, such as in India during the monsoon, additional batteries can be added. This, however, adds to the weight and cost. There will also be medicine spoilage, but you have to accept that."

Field has sent the photovoltaic/thermoelectric refrigerator designs to various government agencies, including the Solar Energy Research Institute, the United Nations and the Energy Department, but the project has yet to be funded. The refrigerator will cost about \$8,000.

The government is trying to get solar cell costs down to 1/10th of what it is now. If that happens, the cost (of the refrigerator) will reduce to around \$2,000," Field said.

"Since the power of the structure is self-contained, there is no waste energy in converting the DC (direct current) to AC (alternating current), such as in diesel generators," the designer said. "It is a simple, single function."

Field said since use of photovoltaic cells is increasing in remote locations, they will soon be able to compete with the diesel powered generators on an economic scale.

The mechanical engineering professor has been interested in solar power for several years and has written books on the subject. He also has designed other solar-related projects such as a drapery solar liner and a portable solar refrigerator for a car, which holds a six-pack.

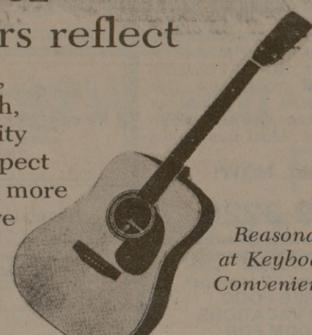


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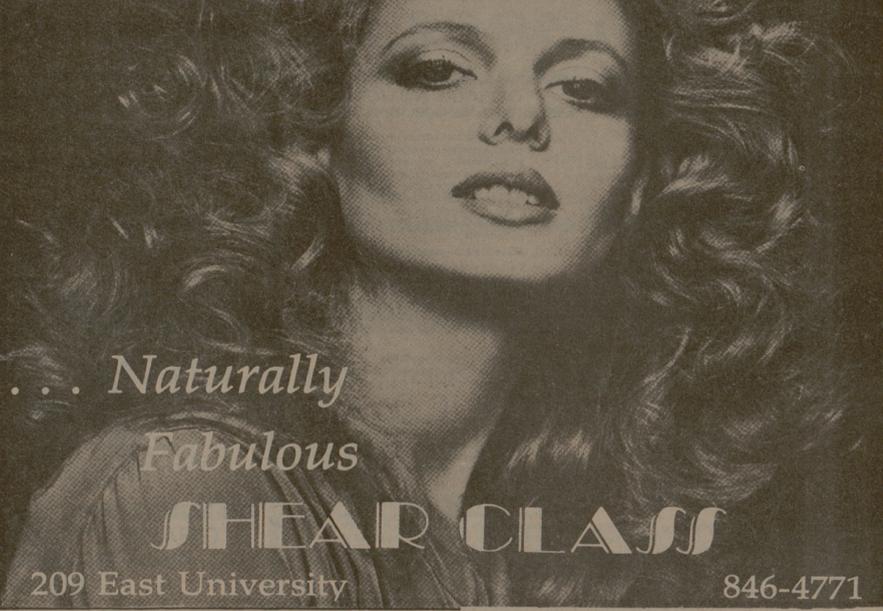
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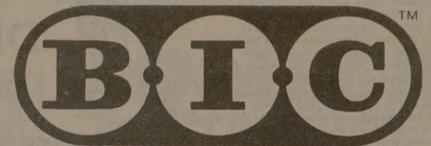
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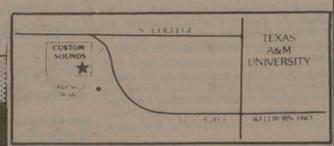


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