

Features

New solar generator doesn't need water

Device generates electric power from hot air, may solve solar problems

United Press International
BRUSSELS, Belgium — There's a big hitch to tapping heat from the sun to help solve Third World energy problems. Or there was. The maintenance required by present solar-powered generators is beyond the technical capability available in remote villages that need generators most. Physicists at the European Community's Joint Research Center at Ispra, Italy, have developed a device that may solve that problem. It generates electric power from hot air.

"The major innovation of the device is that it does not require any water, like currently known designs," a JRC official said. "That makes it particularly suitable for arid areas where you want to make sure you don't use a lot of fuel or water. The simplicity of the device is another big advantage. It will require a minimum of maintenance. There is no complicated machinery involved. Moreover, it is flexible, so that a fuel-powered gas turbine can be used at night." The JRC, established 20 years ago

under the Euratom treaty as a nuclear research center, began in the 1970s to broaden the scope of its work. It now carries out research into new techniques, investigates environmental problems and provides support in such fields as consumer protection. More than 30 percent of the budget of its four establishments — at Ispra, at Geel in Belgium, Karlsruhe in Germany and Petten in Holland — is now devoted to non-nuclear studies such as research into alternative sources of energy.

"We started such programs in the early 1970s, even before the oil crisis," an official said. Currently about \$8.4 million a year is spent on testing potentially commercial equipment and exploring new directions for solar energy research. Under the JRC's 1980-83 program approved a few months ago, spending will be doubled.

Two JRC scientists were responsible for the idea of a hot-air system to replace solar energy generators that in the developed world heat water in

a boiler to produce steam for a turbine. Their system heats air to sufficient temperatures to drive a gas turbine.

The device works on the same principle as a jet engine: expanding air to drive a turbine blade. Air can be heated to high temperatures in a concentrator that focuses the sun's radiation. In an alternative form, the hot air can be used to augment a gas turbine powered by conventional methods, burning an oil-based fuel.


With this modification, sun power can be used by day and ordinary oil-

based fuel by night, or when sunlight is insufficient.

The scientists also found that using two solar "receivers" and a two-stage heating cycle — compressing the air and heating it before using it in the turbine — improves the thermal efficiency of the device.

JRC estimates the invention should be able to produce power in the 300 kilowatt-hour to 70 megawatt range. It has been patented and the possibility of commercial exploitation is now being investigated.

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Condominiums — housing of the future?

United Press International
PACIFICA, Calif. — If the San Francisco peninsula is an indication of future trends, there are condominiums down the road for a growing army of home buyers. A middle-class "bedroom" community of 35,000 just south of San Francisco, Pacifica is spread along the northwestern slopes of the peninsula's coastal range. It's a short commute from the heart of one of the nation's most economically active regions, but has little industry of its own besides the sea and what sunshine there is between days of fog and wind. As in many other communities, the market for single family homes is depressed in contrast to the rapid housing growth of the late 1960s and early 1970s. Only one major subdivision of units was completed in the last year. No major single family developments are planned for 1980. Condominiums are another story. Every available piece of property is being looked at by

developers," said Radford Hall, out-going chairman of the city planning commission.

Close to 1,500 new condominiums are in the works. Eight hundred have already passed key review hurdles. A monolithic 700-unit development planned for a quarry off Highway 1 is still several years in the future, but there is a proposal for a 238-unit residential development combined with a 50-room motor inn, restaurants and a small shopping mall.

"Most other north peninsula cities have had almost every major piece of property developed," said Hall. "Pacifica, for reasons of weather and access or what have you, has quite a few areas of raw land left."

Developer Jack Lowe, a chamber of commerce member and a principal in four proposed or approved projects, favors condominiums over apartments.

"The rents are nowhere near comparable to costs of construction and land," he said.

"In the past eight months construction costs have gone up

13 percent in the five Bay Area counties. You build and sell as condos or there'll be no new housing."

Security, a sense of community, little maintenance and shared facilities make condos attractive to young marrieds and small families. The fact that new condominiums sell for about twice what an older single family Pacifica home with comparable floor space goes for leaves little doubt of that.

"The prices (of new condominiums) have surprised me a great deal," said Hall. "The commission was looking at some that will go for \$250,000 a unit."

"About the cheapest was going for \$110,000, and they're almost like apartments. Many of the homes here go for less than that."

Hall said the worst consequence of condominium development would probably "be that it has the potential to overwhelm our services." He favors some kind of ceiling on development, a buffer to give the city time to adapt.

Ball bearings may protect highrises in earthquakes

United Press International
SAN FRANCISCO — In this city that expects a major earthquake in the next decade, a structural engineer proposes to protect high rise buildings by putting them on ball bearings. Caspe says his method might cost as little as \$35,000 for a \$25 million building but has so far been limited to mathematical models on a computer. The problem is finding an initial investor willing to test the theory.

recently protected from the hazards of earthquakes by long flexible support columns meant to "give" during a tremor. Unfortunately, the columns don't always "give," instead suffering major damage.

As examples, Caspe points to the destruction of the Olive View Hospital in the 1971 San Fernando Valley earthquake, and heavy structural damage to the support columns of the Government Services Building in El Centro, Calif. last October.

"Both failures occurred to buildings that were designed to modern standards, during moderate earthquakes having less than one-thousandth the energy released dur-

ing the 1906 San Francisco quake," he wrote in a publication of the Structural Engineers Association of Northern California.

Caspe says his method might cost as little as \$35,000 for a \$25 million building but has so far been limited to mathematical models on a computer. The problem is finding an initial investor willing to test the theory.

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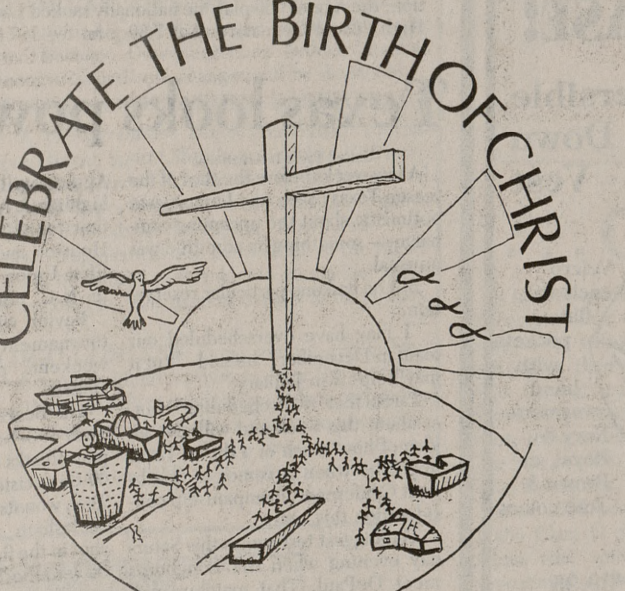
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