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Bladeless Windmill Research Receives NSF Grant

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DAYTON, Ohio, August 28, 1975 --- A bladeless windmill, the latest energy research project at the University of Dayton, has been funded by the National Science Foundation. The $85,600 project will be headed by Dr. John E. Minardi.

The UD Research Institute is in an ideal position, according to Minardi, to take advantage of the swing away from nuclear energy toward other alternatives, UD projects include wind and solar energy, recycling of waste products into fuel, gasified coal and the Rich combustion turbine.

Theoretical investigation of electrofluid dynamics, which is the principle behind the bladeless windmill, have been underway for the past nine years under contracts with Wright Patterson Air Force Base.

The design consists of two series of parallel bars. One series of bars will induce droplets of moisture containing electrical charges. The charged particles will then be driven across an open space to a second bank of parallel bars which will serve as the collector electrode. The electromotive force induced on the collector electrode would be dissipated by being recycled into the system, running into a ground and/or being conducted where it is needed.

Unlike other generators, the only moving parts of this one will be the wind driven, charged particles. Their movement from electrode to electrode is similar to the spinning of an armature.

Initially, the bladeless windmill is ideally suited for use at sea or the seaside. However, it could be used anywhere there is a source of moisture. The hypothesis will be tested with laboratory models.

Advantages of the bladeless windmill, according to Minardi, are its efficiency and inexpensiveness. Preliminary estimates are that a bladeless windmill could be built for one fourth the cost of a conventional windmill. As there are no moving parts in bladeless windmill, maintenance is minimized.

Minardi with Dr. Henry Chuang also has researched solar energy under a grant from the Larsh Foundation of Dayton. Results of that research can be seen in the Direct Solar Energy Laboratory in the engineering building at UD. Results of the project also are being applied in feasibility studies for the installation of solar energy systems at the public library in Troy, Ohio, and a new high school to be built in tornado ravaged Xenia, Ohio.

A corollary to all research into wind and solar energy is investigation of increasingly efficient energy storage systems for days when wind or sun are not at optimum levels. This too is being done at the UD Research Institute. A project with Wright Patterson Air Force Base being directed by Dr. Joseph Davison, a research metallurgist with the UD Research Institute, is charged with the search for energy storage systems to be used in space. Results will have terrestrial applications as well.

Ironically, the energy sources presently being investigated have been suspended in an embryonic stage since World War II. "Research stopped when everyone believed that nuclear energy was going to save the world," Minardi said.

With the recent proliferation of atomic capability, it's beginning to look as if energy safer than nuclear power will be the most responsive to a world in crisis.