

## Wind Power for Home Heating

Reducing fossil fuel consumption and energy costs are important for everyone. A group of engineering students at Oregon State University believes it can help by creating a home water heater powered by wind. Their novel approach uses rotating magnets and a copper plate to produce thermal energy.

“Copper is the most efficient metal for our heater because of its conductivity,” says Jacques Chiron who, with fellow student Paul Vigansky, created the water heater for their senior project. “The more we can do to help lower fossil fuel consumption, the better. Also, we use recycled copper, which makes the heater even more environmentally sound,” says Chiron. Water heating, he points out, is one of the biggest consumers of energy.

The students’ heater uses a small outdoor turbine that turns when the wind blows, spinning a shaft with an aluminum disk at the base end. Several magnets are attached to this disk, which rotates near the surface of a copper plate measuring a foot square and a quarter-inch thick. The rotating magnets create an electrical current in the copper, which causes the plate to heat up. Attached to the plate is 3/8-inch-diameter copper tubing. Water flowing through this tubing is heated and sent to a holding tank. In a home, this stored hot water can be used for typical domestic purposes, such as showering, washing dishes and hydronic heating.

“A control box continuously monitors the temperature of the water,” Chiron explains. “When it’s hot enough, the plates separate to stop the heating. When it’s colder, the plates are brought into closer proximity.” Water temperatures have reached 140 degrees Fahrenheit in tests, he adds. The turbine can also be turned by water current to create hydroelectric power.

Because sufficient wind and water power are not always available, they “might not be a home’s sole source of hot water,” says Chiron. “But this method could reduce electric bills considerably.

“We wanted to prove the concept that moving magnets in front of copper would create electrical current by heating up copper because the energy has nowhere else to go,” Chiron adds. The students based their experiment on a prototype envisioned by a former teacher, the late Alan Wallace, and they are considering patenting the process and marketing this type of heater. *Cu*