

UT receives \$750,000 federal grant to study wind turbines

By Meghan Cunningham : May 19th, 2010

The University of Toledo is one of two institutions in the country selected by the U.S. Department of Energy for funding to advance wind power education and research.

The University was awarded a \$750,000 grant to study the design and development of two-blade wind turbines to generate wind energy from the Great Lakes.

"The two-blade turbine design is much more cost-effective because it weighs less and is less costly to transport and install," said **Dr. Abdollah Afjeh**, the principal investigator of the project and professor and chair of the UT Department of Mechanical, Industrial and Manufacturing Engineering. "The rotational speed is also higher, so it can run faster and reduce the torque and mechanical strain on the drive system, resulting in a longer life."

The University will conduct a study on designing and installing these two-blade wind turbine generators in shallow water, such as lakes, with a less expensive mounting system, Afjeh explained.

Rather than driving a column to install the wind turbine tower in the seabed, UT researchers suggest an innovative system that mounts it on a floatable gravity foundation. This system would entail simply towing the partial or complete system to the site and sinking the turbine-tower assembly in place and securing it to the sea floor with cables, Afjeh said.

The researchers will conduct their design studies for a 1-megawatt wind turbine, but will consider how it could be scaled up to larger wind turbine models and how it could work for a wind farm.

"Our goal is to optimize this design that would reveal a cost-effective and efficient wind turbine that could be more economically installed for offshore use," Afjeh said.

The U.S. Department of Energy invested nearly \$3 million to advance the work of 16 institutions regarding wind power. UT and the University of Delaware received the largest awards with \$750,000 each. There were 14 additional colleges and universities that received educational and training grants ranging from \$65,000 to \$200,000.