NEWS FROM:

Communication and Marketing Department
Isebe loThungelwano neNtengiso
Kommunikasie en Bemarkingsdepartement

Private Bag X3, Rondebosch 7701, South Africa
La Grotto House, Glendarrach Rd, Rondebosch, Cape Town
Tel: +27 (0) 21 650-3733/2, Fax: +27 (0) 21 650-5682
Internet: www.uct.ac.za

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UCT student's award-winning wind generator design uses recycled hard drives

The design for a sustainable wind generator using redundant materials has earned a prestigious international award for Hartmut Jagau, a master's student in electrical engineering at the University of Cape Town.

Jagau won the Student Poster Presentation award at the 2011 Institute of Electrical and Electronics Engineers' Energy Conversion Congress & Exposition that was held in Phoenix, Arizona, USA, in September 2011.

His design reuses the permanent magnets from discarded hard drives to create a sustainable wind generator. This research is part of ongoing work in the Advanced Machines and Energy Systems Research Group in the Department of Electrical Engineering at UCT.

"From a young age, I was always shocked at how much useful stuff we actually throw away," Jagau said. "Since electronic waste is one of the fastest growing solid waste sources, the importance of recycling cannot be overemphasised."

Jagau said: "The generator finds its application in low-power households." His last prototype could generate 328W of electrical power – enough to provide a household with electricity to run one 19-inch colour television, two portable stereos, ten 16W compact fluorescent light bulbs and three mobile phone chargers. "But 328W is only generated at the rated wind speed and the problem with wind energy is that it is intermittent. To ensure continuous power supply to the household, energy storage is unavoidable," Jagau said.

Although Jagau graduates this month, the project will continue under the direction of Associate Professor Azeem Khan and Dr Paul Barendse of the Department of Electrical Engineering at UCT. Further research will address the issue of increasing the power output of the generator.

"I would like to see the generator incorporated into a fully functional wind energy conversion system, which actually changes lives, rather than just proves a concept," said Jagau. "That would involve designing the turbine blades, the housing of the generator, and the support structure of the system. This would open up opportunities to collaborate with the private sector to test the turbine in real conditions."

Caption to accompany attached photo: Hartmut Jagau with the generator he designed using magnets from discarded hard drives

ENDS

Issued by: UCT Communication and Marketing Department

Patricia Lucas
Tel: (021) 650 5428 Fax (021) 650 5628
Cell: 076 292 8047
E-mail: pat.lucas@uct.ac.za
University of Cape Town
Rondebosch
Website: www.uct.ac.za