UM churns up new turbine for **green** energy

**Scientists** at the University of Malaya have designed a micro-scale vertical-axis wind turbine (VAWT), reminiscent of the stern wheel of an old-fashioned paddle boat, to generate clean electricity by harvesting some of the wind from powered air vents on buildings. Airflow that would otherwise go to waste can now be used to supplement power to the buildings on which such turbines are mounted.

This reduces the greenhouse gas emissions from conventional power generation, earning buildings that use these turbines a higher green rating.

According to the researchers, natural wind in Malaysia is too low-speed and inconsistent for large-scale wind generation. By contrast, "unnatural" wind from powered air vents on buildings forms a strong, predictable, reliable and harvestable energy supply for Malaysia and other countries with similar wind patterns.

The VAWT system can be retrofitted to existing cooling towers, giving them together with powered air vents and air conditioning systems worldwide a high market potential.

The VAWT mounts above, and slightly offset from, a building cooling tower's airstream. It is designed not only to avoid degrading a cooling tower's efficiency, but also to improve it.

A safety enclosure is designed with internal air guides that create a Venturi effect, funnelling the airflow to increase its speed. This pulls air from a cooling tower vent more efficiently and at the same time directs more airflow to the turbine generator's blades.

Field-testing of an early turbine design showed no measurable difference in the speed of the airstream in cooling towers fitted with it.

In fact, the fan motor driving the tower's airflow drew only 0.39% more electricity. By comparison, the new design recovered about 13% of a cooling tower fan's motor energy consumption. The research team says it is now exploring several design improvements that should increase efficiency even further.

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