New electric diwheel hints at future of city transportation

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(PhysOrg.com) -- In a bit of technical wizardry, students from the University of Adelaide, Australia, have devised and built an electric diwheel, that with modification, could possibly solve inner city

transportation problems. The team, comprised of 14 mechanical engineering students, has taken the idea of a diwheel and quite literally, turned it on its head, and in the process have created a vehicle that could be used to safely transport people around; all with a minimum amount of energy.

The diwheel is a vehicle with two wheels on the same axle, i.e. in parallel, like the back two wheels on a wheelchair, and works by mounting a cabin of sorts for a driver between them. In this case, the power source is electricity stored in a battery. Diwheels have been created before, and have of course been seen in sci-fi movies; what's new here is the stability control. Traditionally, the problem with creating a diwheel is in keeping the driver from gerbiling, an effect that comes about when you consider how a diwheel is constructed. If you simply connect the cab to the axle, the driver would spin around as the wheels turn, a truly nauseating experience to be sure. Thus diwheels are constructed by using a frame that allows the axle to spin independent of the rider, which works great once you're moving at an even speed. Unfortunately, though, when stopping or starting, the frame tends to ride up a bit, or trail behind causing a rocking motion for the rider, which again, would not be very pleasant after a while. This is where the cleverness of the team came in; they use specially designed computer hardware and software to control the wheels and the movement of the frame, which they manipulate using a joy-stick; the result is a smooth stable ride from beginning to end.

Though only capable of a top speed of 40km/hr and moving up inclines no higher than 12 degrees, the Electric Diwheel with Active Rotation Damping (EDWARD) is still very much a peek into what could be the future of city driving. Because early transportation designers didn't have to figure in the amount of space a vehicle took up on the road, cars grew large right from the start, evolving into the behemoths we now have. The biwheel is a way of going back to the beginning and starting from

scratch; where one vehicle doesn't take up much more room than one person. The EDWARD shows it can be done, though of course in a more refined manner. In fact, after watching a video demonstration of the new diwheel in action, it's very easy to imagine a similar vehicle with a protective covering, air filled tires, more power and an improved center of gravity; one that could be recharged wherever it's been parked. The result; more lanes on existing roads, more parking space, elimination of smog and perhaps best of all, quiet city streets.

More information: EDWARD - Electric Diwheel With Active Rotation Damping