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# Biking 2.0: MIT 'smart' wheel tracks mileage, traffic, friends

University shows off e-wheel that can store energy then give riders a boost on hills

By Sharon Gaudin, Computerworld

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Why just go for a plain old bike ride when you could pedal and keep track of traffic, mileage and your friends all at the same time?

With the center of the wheel [full of electronic gadgets](#), it's able to store energy and then release it during tough climbs up steep hills, say researchers at MIT, who built the wheel and showed it off at the [Copenhagen Conference on Climate Change](#) today.

And by using a series of sensors and a Bluetooth connection to the rider's [iPhone](#), which can be mounted on the bike's handlebars, the wheel is designed to monitor the cyclist's speed, direction and distance traveled, while it also monitor whether any of the rider's friends are nearby.

"Over the past few years we have seen a kind of biking renaissance, which started in Copenhagen and has spread from Paris to Barcelona to Montreal," says Carlo Ratti, director of the MIT SENSEable City Laboratory and the Copenhagen Wheel project. "It's sort of like Biking 2.0, whereby cheap electronics allow us to augment bikes and convert them into a more flexible, on-demand system."

The wheel is expected to go into production in 2010, the university says.

MIT students and professors aren't strangers to thinking up new ways to use bicycles or to tackle the problem of overcrowding in city streets. Two years ago, a group of 10 MIT cyclists put their legs to the test, [pedaling to power a supercomputer](#) calculating research on nuclear fusion for nearly 20 minutes. The university said that it was the largest human-powered computation in history.

The same year, a group of researchers from MIT also designed [a foldable, stackable electric car](#). Called the "City Car", it's a two-seater vehicle designed to fold in half so the cars can be stacked up eight deep in one city parking space.

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And earlier this year, a team of MIT researchers [built a race car that runs on solar power](#) . Dubbed "Eleanor", the car can maintain a cruising speed of 55 mph and run all day -- if the sun is shining, MIT says.

Now with the smart bike wheel, scientists are hoping to promote bike riding by making it easier for people to cover greater distances in greater comfort. To help with this, they've designed the wheel so that every time the rider hits the breaks, energy is stored and then can be used when the rider needs a boost up a big hill or needs an extra surge of speed.

"The Wheel uses a technology similar to the KERS (Kinetic Energy Recovery System), which has radically changed Formula One racing over the past couple of years," Ratti said in a statement. "When you brake, your kinetic energy is recuperated by an electric motor and then stored by batteries within the wheel, so that you can have it back to you when you need it. The bike wheel contains all you need so that no sensors or additional electronics need to be added to the frame and an existing bike can be retrofitted with the blink of an eye."

MIT noted that the prototypes of the wheel were developed in conjunction with [Ducati Energia](#) , an Italian company that produces electronic components, and the Italian Ministry of the Environment.

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