

# harvesting waste power in carpark

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I was up at my local shopping centre the other day, and the place was packed. I'm not sure how many cars were in this large 5+ level-carpark,

but if there were fewer than 5000 cars in there at the time, with 300 driving about looking for spots or trying to leave, I'd be surprised.

On each level in this carpark, and on the ramps between levels there are speed humps — lots of them — the aim of which is to keep speeds down to about 15kph (roughly 9 mph US). At the time, the volume of traffic was doing this comfortably enough, but of course, during shoulder periods speeds can increase. In the course of finding a spot and then subsequently leaving, I crossed 45.

It occurred to me that these humps probably do quite a bit of cumulative damage to the front ends of vehicles — the humps themselves are often scarred and gouged from people who for some reason or another

were travelling too fast when they reached them but even those who do the right thing are undoubtedly putting more stress on their ball joints, axles, shock absorbers etc. Of course, you also end up using energy fairly inefficiently, braking far too much, having the engine turning over at a higher average rate than you would if there were no speed hump.

But what if these humps were replaced with something like a see-saw with a slightly convex underside, about 3.6m/12 feet in length, placed over some medium capable of being compressed — say a gel, or even water? Then, the momentum or "work" taken from the vehicle could be converted by hydraulic action into the expansion of a series of pistons

connected to a crank and thereafter a turbine to generate electricity.

The owner of the vehicle would lose as much momentum (and perhaps more)

going into the see saw device but because the initial impact (all else being equal) would be smaller, and because the device would dissipate some of the force of the impact to the medium, the damage to the front end

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would be lowered and vehicles could afford to enter at slightly higher speed reducing the braking required and thus avoiding cumulative recurrent costs and even fuel cost.

If the system could work this way, then everyone would be ahead — the carpark gets useful energy to sell/use, and vehicle owners get comparatively lower costs. The busier the carpark, the more energy you'd harvest, and since this is peak time, the match is a good one. It

even occurred to me that some time well into the future, when EVs were the rule, one could plug in one's vehicle and trickle charge a battery from power generated by these speed pumps, in effect, recovering some of the energy that they've put in.

Is this a viable idea? Assuming vehicles are on average about a ton, and are entering these devices, on average, at about 15kph, how much electricity could reasonably be harvested?

Fran

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