Software patch makes car more fuel-efficient

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A car wastes energy almost continuously. Whether it is running in first, second, or a higher gear, there is only one position of the accelerator that guarantees optimal performance. Accelerating a little less or a little bit more can cause considerable loss of energy. John Kessels has designed a way to save energy by enabling the car to achieve optimal engine performance more frequently. With a relatively small modification it is possible to reduce fuel consumption by 2.6%. Kessels obtained his doctorate from the Technical University Eindhoven (Netherlands) on Wednesday February 14, 2007.

Car manufacturers are frequently criticized for failing to reduce fuel consumption. In order to meet the Kyoto objectives, European car manufacturers have agreed to reduce the emission of CO_2 for their fleet to 140 grams per kilometer in 2008. Many car manufacturers have not yet attained this reduced emission. Ford is one of them and the company has been diligently searching for a way to further increase the fuel-efficiency of its cars.

One way to reduce fuel consumption is to build so-called hybrid cars. In these cars the internal combustion engine is more fuel-efficient because a secondary power source is available: a generator. If the power from the combustion engine exceeds the actual power demand for driving, this generator stores the excess power in the car's battery. It also works the other way around. The generator can provide extra power if the car needs more power than the combustion engine can provide at optimum performance. Hybrid vehicles thus reduce fuel consumption by 25% or more.

Kessels examined the possible savings without using the advanced hybrid technology. He found that excess power can be used to charge the car battery. In addition, the generator, which charges the car battery, can be turned off when it is inefficient for the engine to power it, which leads to reduced fuel consumption. The car can also brake electrically, generating energy, which can be stored in the battery. Finally, he found that it is possible to partly shut off the electric energy systems, such as rear window and seat heating, for further improvement of the power supply system.

With his new method Kessels can achieve a total fuel savings of 2.6%, without having to replace any of the parts of the car. Simply uploading a software patch to the car's computer and adding one single small cable suffices. If it were possible to shut the engine off when it is idle, a savings of 5 to 6% could be achieved. This, however, would require significant adjustments to the car, including installing a more powerful starter motor and an automatic gearbox.

Source: Eindhoven University of Technology